

Odonatological Abstract Service

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1997

10317. Croyle, B.T. (1997): Population and community ecology of stream macroinvertebrates: the role of disturbance. M.Sc. thesis, Zoology, Texas Tech University, Lubbock: VII + 98 pp. (in English) [Texas, USA. "Quantifying factors that influence the abundance, distribution, or diversity of species within communities is a major focus of ecology and conservation biology. As concerns for the preservation and maintenance of worldwide biodiversity increase, identifying and understanding these factors becomes a critical endeavour. This goal should not be limited to large preserves of endangered habitat such as Yellowstone National Park or the plains of Africa. Indeed, knowledge gained from addressing such topics in small, accessible localities is of interest in its own right, and may prove useful when dealing with endangered habitats. Streams play vital roles in terrestrial ecosystems, as a source of water, in cycling nutrients, and as habitat for many organisms during part or all of their life cycles. This study assesses factors that affect the community structure of streams (i.e. the distribution, abundance, and diversity of aquatic macroinvertebrates)." (Author) The list of taxa sampled includes *Hetaerina americana*, *Agria* sp., *Basiaeschna*, *Dromogomphus*, *Hagenius brevistylus*, *Eretogomphus* sp., *Libellula* sp., *Brechmorhoga mendax*, and *Macromia* sp.] Address: not stated

1999

10318. Erickson, B.R. (1999): Fossil lake Wannagan (Paleocene: Tiffanian) Billings county, North Dakota. Miscellaneous series No. 87 North Ddkota Geological Survey: IV + 9 pp. (in English) ["Fossil Lake Wannagan is a new name for a local freshwater lake of undetermined size that existed as part of a floodplain system during the Late Paleocene. It is located in the upper breaks of the badlands of the Little Missouri River in western North Dakota. Fossil Lake Wannagan is recognized from: sediments of fluvial, paludal and lacustrine character; a section of shoreline with well-defined beach cusps; and an exceptionally well-preserved freshwater assemblage of fossils. A sequence of stratified sediments records the brief history of its development and termination by crevasse splay deposition. Limnogeological and paleoenvironmental aspects of this ancient lake are presented along with its age and correlations. The name "Fossil Lake Wannagan" is, herein, introduced for the first time."

(Author) *Gomphaeschna schrankii* is listed as member of the Wannagan creek fauna.] Address: Erickson, B.R., Department of Paleontology, The Science Museum of Minnesota, St. Paul, Minnesota 55101, USA

2000

10319. Ketelaar, R.; Clausen, W.; Busse, R.; Eilk, J.L. van (2000): *Coenagrion ornatum* in Europe and its chances in The Netherlands. *Brachytron* 4(2): 8-15. (in Dutch) ["*C. ornatum* is a rare damselfly in Europe with an intriguing outpost north of Osnabrück, 90 kilometers from the Dutch border (Germany). *C. ornatum* is present here in very small streams with extensive *Berula erecta* vegetation. The species is in serious decline and is currently reproducing in moderate numbers (tens of individuals) at only one location. The main reasons for the decline of *C. ornatum* in central Europe are the cold winter of 1995 / 1996 when many localities became deep frozen, the lack of management practice, or too intensive management, habitat destruction, dessication and eutrofication. This article discusses the possible occurrence of this species in The Netherlands. Although suitable habitat is locally present and the dispersal capacities of *C. ornatum* seems to be rather well developed, climatic conditions and the lack of a large source population appear to be limiting factors. For the moment, it is not likely that *C. ornatum* can be recorded in The Netherlands." (Authors)] Address: Ketelaar, P., p/a De Vlinderstichting, Postbus 506, NL-6700 AM Wageningen, The Netherlands. E-mail: ketelaar@vlinderstichting.nl

10320. Luzon-Ortega, J.M.; Tierno de Figueroa, J.M. (2000): First records of Odonata (Insecta, Odonata) from the Sierra de Huetor Natural Park (Granada, Spain). *Boletín de la Asociación Española de Entomología* 24(1-2): 257-259. (in Spanish) [16 Odonata species from 12 localities are documented.] Address: Luzon-Ortega, J. M., Departamento de Biología Animal y Ecología, Facultad de Ciencias, Universidad, 18707, Granada, Spain

10321. Petr, J. (2000): Aquatic insects (Odonata, Heteroptera, Trichoptera, Coleoptera) of small lakes in selected peatbogs of the Bohemian Forest and their relation to some environmental factors. *Silva Gabreta* 5: 121-134. (in Czech, with English summary) [*Aeshna juncea*, *A. subarctica*, *Anax imperator*, *Sympetrum danae*, *Leucorrhinia dubia*, *Cordulia aenea*, *Coenagrion hastulatum*, and *Ischnura elegans* are reported from four localities in the

Modravské peatbog area studied during 1993-1995.] Address: Petr, J., Jihočeská univerzita, Pedagogická fakulta, Jeronýmova 10, CZ-37115 České Budejovice, Czech Republic

2002

10322. Kadoorie Farm & Botanic Garden; Reels, G.T. (2002): Report of Rapid Biodiversity Assessments at Maershan Nature Reserve, Northeast Guangxi, China, 1998 and 2001. South China Forest Biodiversity Survey Report Series: No. 16 (Online Simplified Version): ii + 20 pp. (in English) ["Thirty-one dragonfly species were recorded during the survey, including some undescribed species. Most frequently encountered were *Copera ciliata*, *Idionyx carinata*, and *Orthetrum triangulare*. Some of these records represent extensions of the known range: The *Oligoaeschna* is an important record; very few *Oligoaeschna* specimens have been obtained from China and none from continental China. The female of *O. petalura* from Hainan is undescribed; *O. pyanan* is known from Hainan. *Boyeria sinensis* has not previously been recorded from Guangxi. Several species recorded, including *Bayadera melanopteryx*, *Indocnemis orang*, *Planaeschna suichangensis*, *Idionyx carinata* and *Somatochlora dido*, are indicators of high stream integrity." (Author)] Address: Reels, G., H-3-30 Fairview Park, Yuen Long, Hong Kong. E-mail address: gtreels@gmail.com

10323. Kadoorie Farm and Botanic Garden; Wilson, K. (2002): Report of a Rapid Biodiversity Assessment at Qingshitan Headwater Forest Nature Reserve, Northeast Guangxi, China, 25 to 26 August 1998. South China Forest Biodiversity Survey Report Series (Online Simplified Version) No. 17: ii + 12 pp. (in English) ["Sixteen species of odonates were recorded, including two which have not yet been identified. The record of *Calopteryx melli* is important, as the genus had not been recently recorded from China and was previously known only from Guangdong. The Qingshitan record follows the first provincial record for the species, made at Huaping on 16 August 1998." (Authors)] Address: Wilson, K.D.P., 18 Chatsworth Rd, Brighton, E Sussex, BN1 5DB, UK. E-mail: wilsonkd@ntlworld.com

10324. Kano, K.; Miyahata, T. (2002): So many victims in *Sympetrum frequens* floating on the water surface. Tombo 45: 27-28. ["On August 25, 2002, we found many dead specimens of *Sympetrum frequens* floating on the water surface of Shobu-ike pond (alt. 700 m asl) at the hillside of Mt. Akagi, Japan, where the ambient temperature seemed low and several individuals of *S. frequens* perched on grasses at the water edge looked white because they were drenched with dew drops. A few of them fled up weakly, and soon *Aeshna nigroflava* grasped one of them, but he did not eat but released it. The *S. frequens* fell on the water surface, became the victim of water striders. According to the weather data of Akagi station rainfall continued for 15 days from the beginning of August, and rainfall at night might have lowered the body temperature of *S. frequens*, and caused such accidents." (Author)] Address: Kano, K., 5-19-17-01, Koishikawa, Bunkyo-ku, Tokyo, 112-0002, Japan

10325. Karube, H. (2002): Two new species of the genus *Planaeschna* (Odonata: Aeshnidae) from central Vietnam. Tombo 45: 7-11. (in English) [*Planaeschna owadai* sp. nov. (holotype male, Bach Ma National Park, Thua Thien Fue, central Vietnam, 4-X-2001, M. Owada

leg.) and *P. bachmaensis* sp. nov. (holotype male, Bach Ma National park, Thua Thien Fue, central Vietnam, 7-VI-2001, H. Karube leg.) are described. The former is closely related to *P. intersedens* from northern India, and the latter is related to *P. suichangensis* from South China. The holotypes are deposited in the collection of the National Science Museum, Tokyo, Japan.] Address: Karube, H., Kanagawa Prefect. Mus. Nat. Hist., 499 Iryuda, Odawara, Kanagawa, 250, Japan

10326. Kawashima, I (2002): Description of the larva of aeshnid dragonfly *Sarasaeschna niisatoi* (Karube, 1998) (Aeshnidae: Gomphaeschninae) from northern Vietnam. Tombo 45: 15-19. (in English) ["The larval morphology in last two instars of *S. niisatoi* is described and illustrated. The external larval characters of this species are compared with the larvae of *S. pryeri* and *S. kunigamiensis*.] Address: Kawashima, I., Nagasawa 1-50-9, Yokosuka-shi, Kanagawa, 239-0842 Japan

10327. Rahaman, A.A. (2002): Mangrove insect fauna of Muthupet, Tamil nadu. National Seminar on Conservation of Eastern Ghats, March 24-26, 2002, held at Tirupati, Andhra Pradesh: 327-338. (in English) [India; this is an additional frustrating example on ongoing rack and ruin of proper taxonomy and taxa identification in African and Asian countries: "Among the delicate Odonates Aeshnid sp and *Rhyotherus varigata* were of common occurrence.": "*Rhyotherus varigata*, *Acisoma panorpoides*, *Aris vivida*, *Crocothemis erythraea*, *Orthetrum brunneum*, *Libellula luctuosa*, 3 unidentified species."] Address: Rahaman, A.A., 21, Vidhya Nagar, Erode-638009, India

10328. Rocha, C.F.D.; Dutra, G.F.; Vrcibradic, D.; Menezes, V.A. (2002): The terrestrial reptile fauna of the Abrolhos Archipelago: species list and ecological aspects. Braz. J. Biol 62(2): 285-291. (in English, with Portuguese summary) [Bahia, Brazil; the diet of the lizard, *Tropidurus torquatus* is dominated by ants, but also included one unidentified Odonata specimen.] Address: Rocha, C.F.D., Departamento de Ecologia, Instituto de Biologia, Universidade do Estado do Rio de Janeiro, Rua São Francisco Xavier, 524, Maracanã, CEP 20550-019, Rio de Janeiro, Brazil. E-mail: cfdrocha@uerj.br

10329. Yokoi, N.; Kano, L. (2002): Odonata collected in Lak Sao and its neighbouring regions, central Laos, in spring. Tombo 45: 23-26. (in Japanese, with English summary) [A total of 40 Odonate species recorded in Lak Sao and its neighbouring regions, central Laos, during April 29 to May 3, 2001 is listed. Among them are 14 species recorded from Laos for the first time. Some taxonomically and zoogeographically interesting species are illustrated.] Address: Yokoi, N., 2-37-11, Kaisei, Koriyama, Fukushima, 963-8851 Japan

2003

10330. Aberlenc, H.-P.; Lentenois, P. (2003): Les insectes du bois de Païolive. In: Holthof, J.F. & Schnetzler, J. (Eds), *De Saint-Eugène en Païolive, Montmélian et les Vans, La Fontaine de Siloé et Saint-Eugène en Païolive*. 320 pp: 55-72. (in French) [Département Ardeche, France. The Bois de Païolive is a forest situated at the eastern fringe of the Cevennen. It grows on a karstic plateau south of the river Chassezac within the administrative area of the villages Les Vans, Banne and Berriasset-Casteljau. A total of 38 Odonata species is listed, in-

cluding *Coenagrion mercuriale*, *Oxygastra curtisi*, and *Macromia splendens*. This species protected by the European law are briefly commented. Supplemental data to the regional fauna are updated in Aberlenc (2008) and Aberlenc (2011: www.aberlentomo.fr/1listeinsectespaoliolive29jan2011.doc) Address: Aberlenc, H.P., CIRAD, UMR CBGP, TA A-55/L, 34398 Montpellier cedex 5, France

10331. Bass, D. (2003): A survey of freshwater macroinvertebrates in Tobago. *Living World - Journal of the Trinidad and Tobago Field Naturalists' Club*, 2003: 64-69. (in English) ["A survey of macroinvertebrates inhabiting the freshwater environments of Tobago was made during April, May, and June of 1996. This collection yielded 61 species, bringing the total number of freshwater macroinvertebrate taxa known from Tobago to 112. Dominant taxa included a few species of gastropods, decapod crustaceans, ephemeropterans, odonates, hemipterans, and coleopterans. Species richness was usually greatest in streams having cobble substrates and flowing through undisturbed forested land. Generally this macroinvertebrate fauna is sparse when compared to that of continents, most likely due to the relatively small size of Tobago and to a much lesser extent, human disturbance of freshwater environments in some areas of the island. Further studies are likely to find additional species that were previously unknown to occur on Tobago, some of which may be endemic to the island." (Author) The following taxa are listed: *Argia* sp., *Dythemis* sp., *Erythemis vesicula*? *Ischnura ramburii*, *Micrathyrta* sp.] Address: Bass, D., Biology Dept, Univ. of Central Oklahoma, Edmond, Oklahoma, USA 73034. E-mail: Dbass@ucok.edu

10332. Birkin, E.; Quin, B.; Jelinek, A. (2003): *Hemiphlebia* damselfly / *Hemiphlebia mirabilis*. *Flora & Fauna Action Statement* 46: 1-5. (in English) [State of Victoria, Australia; distribution and conservation status of *H. mirabilis* are outlined, and the major conservation objectives and intended regional management actions are listed.] Address: Publishers: Dept Sustainability & Environment, 8 Nicholson St. East Melbourne, Victoria 3002 Australia

10333. Eda, S. (2003): Annual meeting of the Japanese Society for Odonatology in 2003. *Tombo* 46: 33-34. (in Japanese, with English summary) ["The Annual meeting of the Japanese Society for Odonatology was held at saga city in Kyushu, on May 31 and June 1, 2003, and 53 members attended." (Author)] Address: Eda, S., 3-4-25 Sawamura, Matsumoto, Nagano 390-0877, Japan. E-mail: SND 02767@nifty.com

10334. Eda, S. (2003): Annual meeting of the Japanese Society for Odonatology in 2002. *Tombo* 45: 35. (in Japanese, with English summary) [The Annual meeting of the Japanese Society for Odonatology was held at Shibaura Institute of Technology in Tokyo, Japan, on November 23 and 24, 2002. 78 members attended.] Address: Eda, S., 3-4-25 Sawamura, Matsumoto, Nagano 390-0877, Japan. E-mail: SND 02767@nifty.com

10335. Eda, S. (2003): On the black stripes on the lateral sides of thorax appeared in *Sympetrum e. eroticum* (Selys). *Tombo* 46: 33. (in Japanese, with English summary) ["On September 28, 2003, a male of *S. e. eroticum* having black stripes instead of black spots on the first lateral sutures was captured at the lake Kutsuzawa-ko in Shiojin City, Nagano Prefecture. Though the black stripes are somewhat slender, they resemble to that of *S. darwinianum*." (Author)] Address: Eda, S., 3-4-25 Sawamura, Matsumoto, Nagano 390-0877, Japan. E-mail: SND 02767@nifty.com

10336. Fukunaga, K.; Tomita, M.; Sumida, W.; Toshiro, K. (2003): Discovery of *Libellula angelina* Selys at Mishima Island of Hagi City in Yamaguchi pref. *Tombo* 46: 29-30. (in Japanese, with English summary) [13-V-2003; Mishima, a small island of the Japanese Sea about 45 km remote from the main island of Honshu, Japan.] Address: not stated in English

10337. Ishikawa, H. (2003): A new record of *Ictinogomphus pertinax* (Selys) from Kanagawa pref. *Tombo* 45: 40. (in Japanese, with English summary) [On August 13, 2002, a male of *I. pertinax* was captured at Futatsu-ike pond in Yokohama, Kanagawa Prefecture, Japan. This species has rapidly spread its distribution to the north and east during the past ten years. This is the first record for the Kanagawa Prefecture and the Kanto district, and thought to be the northern most and eastern most record of distribution at present." (Author)]

10338. Kano, K. (2003): *Copera tokyoensis* Asahina bitten by an ant on the mesotibia. *Tombo* 46: 8. (in Japanese, with English summary) ["On July 6, 2003, I observed that a deceased ant *Lasius japonicus* was attached to the mesotibia of *Copera tokyoensis* in Itakura, Gunma Prefecture, Japan] Address: Kano, K., 5-19-17-01, Koishikawa, Bunkyo-ku, Tokyo, 112-0002, Japan

10339. Kawashima, I. (2003): Redescription of the larva of the aeshnid dragonfly, *Sarasaeschna kunigamiensis* (Ishida, 1972) (Aeshnidae) from Okinawa-jima Is., Ryukyu Is. *Tombo* 46: 13-16. (in English) ["Many external characters of this species are closely allied to those of *S. pryleri* (Martin, 1909) from the mainland of Japan, not to *S. niisatoi* (Karube, 1998) from northern Vietnam." (Author)] Address: Kawashima, I., Nagasawa 1-50-9, Yokosuka-shi, Kanagawa, 239-0842 Japan

10340. Kojo, T. (2003): On the nocturnal roosting in *Orthetrum albistylum speciosum*. *Tombo* 45(1/4): 36-38. (in Japanese, with English summary) ["The author observed three cases of nocturnal roosting by males of *O. albistylum speciosum* during middle and late August, 2001, in a condominium garden in a suburban area of Saitama Prefecture, Kanto District, Japan. The observations on all cases were made from the moment they touched the branches of low trees in the late afternoon to the moment of flight in the early morning. Roosting time was about 12 hours on average. They hung vertically on the branch with their wings spread and their dorsum to the west. After the dark, they became insensitive and never moved at any time during their roost. Just before flying off, they appeared sometimes to warm up by clipping wings and bobbing abdomen." (Author)] Address: not transliterated into English

10341. Kojo, T. (2003): *Sympetrum infuscatum* changes posture in the nocturnal roosting. *Tombo* 46: 23-28. (in Japanese, with English summary) ["The author observed the nocturnal roosting posture, *S. infuscatum* during the period from Aug. to Sept. 2001 and again in Aug. to Sept. 2002 in a condominium garden in a suburban area of Saitama Prefecture, Kanto District, Japan. In this report, I describe the changes in the roosting posture using photographs. One of the typical characteristics of *S. infuscatum* is that adults change posture during a period of nocturnal roosting. More precisely, although they hang horizontally during the beginning of the nocturnal roosting period, they gradually change posture to a vertical direction during the middle of the night and then change posture again to a horizontal position before flying off in the early morning. This is a remarkable difference from *Or-*

thetrum albistylum speciosum which does not change posture during nocturnal roosting." (Author)] Address: not stated in English transliteration

10342. Marine, N. (2003): Triple connection of *Orthetrum albistylum speciosum* (Uhler). Tombo 46: 34. (in bilingual in Japanese and English) [20-VII-1997; Nakamura City, Kochi Prefecture, Japan.] Address: not stated in English transliteration

10343. Miyagawa, T. (2003): A new record of *Trithemis aurora* from Kumamoto pref., Kyushu. Tombo 45: 39. (in Japanese, with English summary) [male and female specimens of *T. aurora* were found on September 12, 2002. This is the first record from the Kumamoto Prefecture, Kyushu, Japan.] Address: not transliterated into English

10344. Müller, O. (2003): Interaktion zwischen invasiven Amphipoden und Gomphidenlarven. Libellennachrichten 8/9: 10. (in German) [The paper introduces to the potential treat of Odonata larvae caused by the invasive neozon species *Dikerogammarus villosus*.] Address: Müller, O., Fischerstr. 45, 15230 Frankfurt/Oder, Germany. E-mail: o.mueller@gauss-gymnasium.de

10345. Ozono, A. (2003): A case of oviposition of *Lestes sponsa* (Hansemann) into mud and dead plants. Tombo 46: 31-32. (in Japanese, with English summary) ["*L. sponsa* has been known to lay eggs into the living tissues of aquatic plants and grass on the water's edge. During observation at an artificial irrigation pond in Hojo City, Ehime Prefecture, Japan on October 12 and 13 in 2001, some pairs of *L. sponsa* laid their eggs into the stalks of the dead plants in the water's edge, and some others laid eggs into the fragments of plants or into the mud of the bottom of the pond of which the water level had fallen and exposed at those times, though most pairs laid eggs into the living tissues of *Potamogeton* and/or into grass of the shore." (Authors)] Address: not transliterated into Japanese

10346. Taketo, A. (2003): Recent information on the odonate fauna of Ishikawa pref. Tombo 46: 21-22. (in Japanese, with English summary) ["Recent habitat situation of several rare odonate species (incl. *Asiagomphus pryeri* and *Gynacantha japonica*) in Ishikawa Prefecture, Hokuriku District, Japan, in 2002 were reported. Adults of *Mnais pruinosa* nawai Yamamoto were taken from Notojima Is., a solitary island in Nanao Bay. Exuviae of two stream dwellers, *Anisogomphus maacki* and *Sieboldius albardae* were found in a typically lentic habitat, Lake Shibayama-gata in Kaga City." (Author)] Address: Taketo, A., 1-19, Ishibiki 1-chome, Kanazawa City, 920, Japan

10347. Teixeira, M.D.; Nacinovic, I.B. (2003): Food of Roseate Spoonbill, *Ajaia ajaja* (Linnaeus, 1758) in central Brazil (Ciconiiformes, Threskiornithidae). Arqs Mus. nac. Rio de J. 61(1): 49-54. (in Portuguese, with English summary) [Odonata larvae were found in the stomachs of 5 out of the 20 spoonbills examined from Bananal island, state of Tocantins.] Address: Teixeira, M.D., Museu Nacional/UFRJ, Departamento de Vertebrados. Quinta da Boa Vista, São Cristóvão, 20940-040, Rio de Janeiro, RJ, Brasil

10348. Teixeira, R.; Vrcibradic, D. (2003): Diet of *Leptodactylus ocellatus* (Anura; Leptodactylidae) from coastal lagoons of southeastern Brazil. Cuad. herpetol. 17(1-2): 111-118. [Only one Odonata specimen has been established in the diet of fifty-seven specimens of *L. ocellatus*. No species name provided.] Address: Vrcibradic, D., Se-

tor de Ecologia, Instituto de Biologia, Universidade do Estado do Rio de Janeiro, Rua São Francisco Xavier 524, 20550-011, Rio de Janeiro, RJ, Brasil. E-mail: da-vor@centroin.com.br

10349. Van Swaay, C.A.M.; Groenendijk, D.; Ketelaar, R. (2003): Monitoring butterflies and dragonflies in The Netherlands in 2002. Rapport VS2003.005, De Vlinderstichting, Wageningen: 31 pp. (in Dutch, with English summary) ["In 2002 dragonflies were counted every fortnight between May and September at 306 sites. The average number of dragonflies per transect were higher than previous years (table 2; figure 9). Like other years *Enallagma cyathigerum* was the most common species with almost 80000 individuals. For the first time indices are presented for a number of species (chapter 8). An alarming decreasing trend was detected for *Leucorrhinia pectoralis*. Another Red List species, *Lestes virens*, shows a positive trend. A translation for the Dutch vernacular names is given in chapter 10." (Authors)] Address: Groenendijk, D., De Vlinderstichting, Postbus 506, NL 6700 AM Wageningen, The Netherlands. E-mail: dick.groenendijk@vlinderstichting.nl

10350. Watanabe, K. (2003): A brief observation on the oviposition of *Tetracanthagyna plagiata* in West Malaysia. Tombo 46: 30. (in English) [Verbatim: "Species of *Tetracanthagyna* are known to oviposit in moss-covered branches 5 m or more above streams in thick forest (Corbet 1999). During my odonatological survey in west Malaysia in May, 2002, I had an opportunity to observe egg-laying behaviour by a female *T. plagiata*. The female, sitting in oviposition posture, was found on a decayed wood in a lowland jungle, at an altitude of 30 m, 20 km north of Kota Tinggi, Johor at 9:10 a.m. on May 5. Up until the time the insect was captured by me for a voucher, she continued to lay eggs into the decayed wood, about 150 cm above the water surface of a river. The surface of the wood was not covered with moss, a different situation from that observed by Corbet (1999). As the place of oviposition was above the water, it is likely that the hatched larvae drop down into the river water." (Author)] Address: Watanabe, K., 145-1, Maesato, Ishigaki, 907-0002 Japan

10351. Watcharee, L. (2003): The diet and feeding factors of the Wrinkle-lipped Free-tailed Bat (*Tadarida plicata*) at Khao-Chong-Pran, Ratchaburi Province. Master of Science (Forestry) thesis, Major Field: Forest Biology, Department of Forest Biology, The Pattaya School. University College of Agriculture Pattaya: 90 pp. (in Thai, with English summary) [Thailand; Odonata contributed with 6% to the diet of *T. plicata*] Address: not stated

2004

10352. Cowell, B.C.; Remley, A.H.; Lynch, D.M. (2004): Seasonal changes in the distribution and abundance of benthic invertebrates in six headwater streams in central Florida. *Hydrobiologia* 522(1-3): 99-115. (in English) ["Seasonal variations in invertebrate assemblages at two sites (upstream and downstream) on six central Florida headwater streams were compared by sampling at quarterly intervals with core and dip net samplers. Two of the streams were reclaimed following phosphate mining (app. 6 yr prior to this study), two received runoff from mined lands, and two were disturbed by agriculture and/or residential developments. Physical and chemical characteristics of the reclaimed streams differed markedly from those of the non-reclaimed streams; principal differences

between the streams were in current velocity, percent organic matter (POM), Mn, conductivity and alkalinity. Annual mean densities of meiofauna and smaller macrofauna for the 12 stream sites ranged from 20 896 to 175 212 m² and the mean for all sites was 56 492 m². The reclaimed streams and one of the streams influenced by agriculture had annual means of less than 40 000 m², 3- to 5-fold lower than the other streams. Fall and winter core densities were 2.4-fold greater than those for spring or summer when drought and low dissolved oxygen prevailed. Meiofauna comprised 68.91% of the core sample invertebrates in reclaimed streams but only 43.62% in the non-reclaimed streams; principal functional groups were: gathering collectors - 61.5%, predators - 19.3% and filtering collectors - 15%. The taxonomic composition of the reclaimed streams was predominated by crustaceans (60.71%) while chironomids and annelids were more abundant (71.92%) in the non-reclaimed streams. Dip net sampling added 21 larger macrofauna species (Odonata, Hemiptera and Coleoptera) to our list of taxa, producing a total of 209 species. Species richness and diversity (H and N₂) indices were lower in the reclaimed streams, but evenness was more variable. The Czekanowski-Dice-Sørensen similarity index showed that the reclaimed stream sites were quite similar to each other, but differed markedly from the other stream types; there was large variation both within and between seasons. For central Florida headwater streams, drought appears to have a larger influence on invertebrates than the type of land use, however this relationship should be confirmed using streams of similar hydrology." (Authors) The following Odonata taxa have been collected: *Anax junius*, *Boyeria vinosa*, *Gynacantha nervosa*, *Brachymesia gravida*, *Pachydiplax longipennis*, *Hagenius brevistylus*, *Argia* sp., *Calopteryx maculata*, and *Enallagma* sp.] Address: Cowell, B., Dept Biol., Univ. S. Florida, Tampa, FL, 33620, USA. E-mail: cowell@chuma1.cas.usf.edu

10353. Eda, S. (2004): Two cases of interspecific tandem formation between different genera. Tombo 47: 52. (in English, with Japanese summary) [(1) Tandem between male of *Stylurus oculatus* and female of *Anisogomphus maacki*, September 18, 2003, at Miya-gawa river in Suwa city and (2) tandem between male of *Anax parthenope julius* and female of *Aeshna nigroflava*, September 16, 2004 at Ebinoko-ike pond in Shiojiri city, Japan.] Address: Eda, S., 3-4-25 Sawamura, Matsumoto, Nagano 390-0877, Japan. E-mail: SND 02767@nifty.com

10354. Grosser, N.; Schmidt, P. (2004): Die Tier- und Pflanzenarten nach Anhang IV der Fauna-Flora-Habitatrichtlinien im Land Sachsen-Anhalt. Naturschutz im Land Sachsen-Anhalt 41 (Sonderheft): 1-142. (in German) [The legally protected species in Sachsen-Anhalt (Germany) are treated in a monographic style. Information for each species including *Aeshna viridis*, *Stylurus flavipes*, and *Leucorrhinia albifrons* is presented and is dealing with its threat category and conservation status in Germany and Sachsen-Anhalt, biology and ecology, biogeographic distribution, regional distribution. Brief description of the taxon and regional threats and protection measures are presented as well. The profiles are prepared by Rosemarie Steglich and Joachim Müller.] Address: Steglich, Rosmarie, Zollstr. 1/128, 39114 Magdeburg, Germany. E-mail: roeseli@mdcc-fun.de

10355. Hampe, A. (2004): Comunidades de libélulas (Odonata) en el río Barbate (Cádiz): relictos glaciales y colonizadores orientales. Revista de la Sociedad Gaditana de Historia Natural 4: 205-215. [(Odonate communities of

the Barbate river: glacial relicts and oriental colonizers.) The odonates of the upper and middle reach of the Río Barbate (Alcalá de los Gazules, Cádiz, Spain) were surveyed, and their flight phenology, larval development and biogeographic origin were compared. Faunistic similarity was very low. No species reproduced at both upper and middle reach. More species were recorded at the middle reach (19 vs 12). The flight phenologies showed similar patterns, although species abundances grew remarkably through the summer at the middle reach but not at the upper reach. Semivoltine species occurred only at the upper reach whereas species with two or more generations per year formed an important fraction of 77 % at the middle reach. These were mostly Libellulidae that have probably colonized southern Spain from the eastern Mediterranean Basin after the Pleistocene glaciations. In contrast, the species of the high tracks have most probably been present in the area during longer times and are (at least) glacial relicts." (Author)] Address: Hampe, A., UMR 'Biodiversité, Gènes & Communautés' (INRA), 69, Route d'Arcachon, F-33612 Cestas Cedex - France. E-mail: arndt.hampe@pierroton.inra.fr

10356. Kawashima, I.; Yoshida, M. (2004): External morphology of the last instar larvae (exuviae) of hybrids between *Sympetrum maculatum* Oguma and *S. darwinianum* (Selys) (Libellulidae). Tombo 47: 37-40. (in Japanese, with English summary) ["The external morphology of the last instar larvae (exuviae) of hybrid individuals between male *Sympetrum maculatum* Oguma, 1915 and female *S. darwinianum* (Selys, 1883) are described and illustrated. Hybrid exuviae showed the intermediate state of parent species in the external characters and almost could not be distinguished from each other. However, the lateral abdominal spines are long and slender, and more resemble those of *S. maculatum*, but are only slightly different distinguished from *S. darwinianum*. Moreover, the hybrids were clearly larger than each of the parent individuals." (Authors)] Address: not transliterated into English

10357. Lawton, J.H. (2004): Japan prize commemorative lecture: Biodiversity, conservation and sustainability. Notes Rec. R. Soc. Lond. 58(3): 321-333. (in English) [John H. Lawton, who stated his scientific career 1969 with a Ph.D. thesis at the University of Durham, UK, on "Studies on the ecological energetics of damselfly larvae (Odonata; Zygoptera)", was awarded the 2004 Japan Prize for 'Observational, experimental and theoretical achievements for the scientific understanding and conservation of biodiversity'. In this framework he gave a lecture on 21 April 2004, in Tokyo, Japan, on the occasion of the 20th Anniversary of the Japan Prize. This lecture focuses on bracken ecology, and includes no references to Odonata.] Address: Lawton, J.H., Natural Environment Research Council, Polaris House, Swindon SN2 1EU, UK and Centre for Population Biology, Imperial College, Silwood Park, Ascot SL5 7PY, UK

10358. Naraoka, H. (2004): Fluctuations of the daily activity and the reproductive behaviour of *Mortonagrion selenion* (Ris). Tombo 47: 53-57. (in Japanese, with English summary) ["The adult behaviour of *M. selenion* was examined in a period between 2000 and 2004, at a rice field in Kuroishi-City, Aomori Pref. Japan. Adults appeared from the middle of June to early August with a peak from late June to middle July. The mate-searching flights of males and copulations commenced at nearly 4:00 am or around sunrise and ended about 8:00 am. After that, males spent their time perched during almost every hour of the day. Copulation is divided into 3 stages.

Stage I was very longer when the male's abdomen was pumping ($x=2\text{ h }23\text{ m }20\text{ s} \pm 37\text{ m }34\text{ s}$, $n=13$). Stage II with intermittent pumping and Stage III with no pumping were short, $1\text{ m }57\text{ s} (\pm 31.8\text{ s})$ and $19.8\text{ s} (.5.5\text{ s})$ in mean, respectively. The total duration of copulation was negatively correlated ($P<0.01$) with the time of day (Fig. 2). The male may guard female during pre-oviposition from rival males." (Author)] Address: Naraoka, H., 36-71, Aza-Motoizumi, Fukunoda, Itayanagi-cho, Kita-gun, Aomori Prefecture, 038-3661, Japan

10359. Notario, A.; Castresana, L. (2004): Contribución al estudio de la entomofauna del Monte del Estado Seladores-Contadero (Jaén). *Investigación agraria. Sistemas y recursos forestales* 13(1): 191-200. (in Spanish, with English summary) [Spain; records of the following species are listed: *Erythromma lindenii*, *Ceragrion tenellum*, *Ischnura graellsii*, *Calopteryx haemorrhoidalis*, *Orthetrum coerulescens*, and *Trithemis annulata*.] Address: Notario, A., Depto de Ingeniería Forestal. ETS de Ingenieros de Montes. Universidad Politécnica de Madrid. Spain. Address: E-mail: anotario@montes.upm.es

10360. Seymour, A. (Ed.) (2004): Monitoring forest degradation and animal populations in the forests of Central Buton: preliminary results from the pilot study. <http://www.opwall.com/Library/Opwall%20library%20pdfs/Reports/Indonesia/Indonesia%20Terrestrial/Management/2004%20Forest%20science%20programme%20summary.pdf>: 96 pp. (in English) [A total of 808 odonate specimens were collected; details are not given.]

10361. Yeh, W.-C.; Chen, Y.-M. (2004): Taxonomic notes on two odonate species from Taiwan. *Tombo* 47: 25-26. (in English) ["The taxonomic status of the enigmatic *Anisogomphus* sp. described by Matsuki (1978) is verified to be *A. maacki* (Selys). *Neurobasis chinensis chinensis* (Linnaeus) is reported from Taiwan for the first time based on an old specimen collected from Lanyu Island in eastern Taiwan and deposited in the collection of the National Museum of Natural Science in Taichung." (Author)] Address: Yeh, W.-C., Division of Forest Protection, Taiwan Forestry Research Institute (TFRI), 53 Nanhai Rd. Taipei Taiwan

2005

10362. Brunken, G. (2005): Zur Odonatenfauna eines Tongrubengewässers bei Zwinge (Eichsfeldkreis). *Naturkundliche Berichte zur Fauna und Flora in Süd-Niedersachsen* 10: 113-121. (in German) [Thüringen, Germany; between May and October 2005, in a clay pit near Zwinge (Eichsfeldkreis) 26 Odonata species were found. The habitat is characterised by a high diversity and high abundances of species.] Address: Brunken, G., Kalklage 1, 37077 Göttingen, Germany

10363. Murphy, G.W.; Newcomb, T.J.; Orth, D.J.; Reeser, S.J. (2005): Food habits of selected fish species in the Shenandoah River Basin, Virginia. *Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies* 59: 325-335. (in English) ["Food habits of redbreast sunfish (*Lepomis auritus*), smallmouth bass (*Micropterus dolomieu*), and white sucker (*Catostomus commersoni*) populations in the Shenandoah River Basin, Virginia, were assessed during 2002 to identify dietary pathways and patterns potentially affecting mercury uptake. Aquatic insects (71% to 83%) were the principal food item of redbreast sunfish, while small-

mouth bass mainly consumed aquatic insects (32% to 48%), crayfish (19% to 31%), and fish (22% to 29%). Principal food items of white sucker included aquatic insects (20% to 26%) and detritus (66% to 70%). Dipterans, ephemeropterans, and trichopterans were the main taxa of aquatic insects consumed by all species." (Authors) The contribution of Odonata to the diet of the fish species is quite limited.] Address: Murphy, G.W., Delaware Division of Fish and Wildlife, 4876 Hay Point Landing Road, Smyrna, DE 19977, USA

10364. Resende, D.C. (2005): Libellulidae (Anisoptera: Odonata) phylogeny and body size and thermoregulation effects on behavioural evolution. Tese. Universidade Federal de Viçosa: VII + 93 pp. (in Portuguese, with English summary) ["Adult males of Libellulidae (Anisoptera: Odonata) are classified as perchers or fliers as a function of the time spent in flight. Insect thermoregulation depends on body length and may restrict behaviour. The family Libellulidae (Anisoptera: Odonata) had its monophyly corroborated by several phylogenetic hypothesis. I proposed here a phylogenetic hypothesis for Libellulidae using morphologic characters, including 33 Brazilian genera and four genera from other regions. Using this phylogeny, I tested if flight ability depends on body length, expecting that larger species control better the body temperature. I also tested if species that spent more time in flight have an increase in their hind wing anal area or an increase in their abdomen surface as adaptations to thermoregulation. Three Corduliidae species were used to polarize the characters in the phylogeny and branch support was estimated by Bootstrap. Species behaviour was obtained from an Odonata data bank and I was used a phylogenetic autocorrelation to exclude phylogenetic dependence of species. *Macrothemis*, *Miathyria*, *Tremea*, *Oligoclada*, *Rhodopygia*, *Erythemis*, *Brachymesia*, *Uracis*, *Perithemis*, *Diastatena*, *Zenithoptera*, *Nephepeltia* and *Elasmothemis* genera had their monophyly corroborated. *Palpopleurinae* is a paraphyletic group and *Brachydiplacinae*, *Leucorrhininae*, *Trithemistinae*, *Libellulinae*, *Sympettrinae* and *Tremeinae* were polyphyletic groups. Morphometry and behavioural measures showed high phylogenetic dependence. Flying time was dependent on species body weight. There was no relationship between hind wing anal area or abdomen surface and species flying time. However, total wing area increased with species body length, suggesting a possible natural selection leading to passive fly in larger species. There was a reduction in body length during Libellulidae evolution. It is possible that basal species, with large bodies and solar radiation dependence, are more restricted to open areas and that occupation of shadow environments caused a directional body length reduction. Decreasing of body length may have affected geographic distribution and diversification rates, affecting the conservation strategies to this group." (Author)] Address: Resende, D.C., Laboratório de Bioinformática e Evolução, Departamento de Biologia Geral, Universidade Federal de Viçosa, 36570-000, Viçosa-MG, Brasil. E-mail: dcrese@ig.com.br

10365. Yanoviak, S.P.; Fincke, O.M. (2005): Sampling methods for water-filled tree holes and their artificial analogues. In: Leather, S.R. (Ed.): *Insect Sampling in Forest Ecosystems*: 168-185. (in English) [Conclusions: "Although there is a growing number of studies documenting the insect fauna of water filled tree holes around the world (Kitching 2000, Yanoviak 2001a), current knowledge remains overwhelmingly biased towards potential

disease vectors. Despite considerable interest in the ecology of this system, few studies have addressed the importance of microbial diversity and ecology in tree holes (e.g. Walker & Merritt 1988; Walker et al. 1991). Decomposer microbes (bacteria and fungi) form a critical link between the nutrient base (e.g. leaf litter) and secondary consumers (e.g. mosquito larvae) in tree holes (Fish E.; Carpenter 1982). Various other microorganisms, such as microcrustaceans, rotifers, and protozoans, also occur in tree holes (Kitching 2000, Yanoviak 2001a), and may function as prey or competitors with the macrofauna. Microbial ecology has been largely overlooked in tropical tree holes, and several basic questions remain to be answered for this system in general. For example, what regulates microbial diversity and productivity in tree holes? How does the composition of detritus affect decomposer assemblages? Does microbial diversity influence macroorganism diversity or productivity? Are microbial assemblages more species-rich in tropical tree holes? The ecology of microorganisms has been examined in other phytotelmata (e.g. Addicott 1974, Cochran-Stafira & von Ende 1998, Carrias et al. 2001), and these studies exemplify the kinds of investigations that are needed in tree holes. Likewise, few studies have addressed the ecological importance of inorganic nutrients (e.g. nitrogen and phosphorus) in tree holes (e.g. Carpenter 1982; Walker et al. 1991). Microbial and nutrient dynamics have been described for many large freshwater systems, and some of the techniques commonly used by stream and lake ecologists to quantify these parameters could be transferred to tree holes. In summary, water-filled tree holes are tractable habitats for ecological and behavioural studies; sampling their insect fauna is a relatively simple process, and the use of artificial holes is an inexpensive way to increase sample size and control multiple factors for experiments. The extent to which inferences from tree hole data have a more general application for freshwater systems remains to be seen. Nevertheless, given their important ecological role, these aquatic microhabitats merit much more attention than they have received, especially in tropical forests." (Authors) The paper includes references to Odonata.] Address: Finke, O.M., Dept Zool., Univ. Oklahoma, 730 Van Vleet Oval, Room 314, Norman, OK 73019, USA. E-mail: finke@ou.edu

2006

10366. Airaud, J.-Y.; Rochelet, B.; Cotre, N. (2006): *Anax napolitain* (*Anax parthenope*). La Virgule. Bulletin de liaison du groupe «Entomo» de Deux-Sèvres Nature Environnement 1: 9. (in French) [Departement Deux-Sèvres, France; the following records of *A. parthenope* are documented: 1 male, Plibou, 27/06/06; 2 mâles, Étang du Bois de Bressuire (Chiché), 24/07/06; 1 male, Forgineaux (Petite Boissière), 06/08/06; 1 male, Étang des Mothes, 7/09/06.] Address: not stated

10367. Baranovskiy, B.A.; Ivan'ko, I.A.; Zagubizhenko, N.I. (2006): Vlianiye rezhima osveschennosti pribrezhnoi zony ozera Kniaginina na sostav macrophytnikh biogidrocenozov. – [Influence of the illuminance conditions on macrophytes communities at the coastal zone of Knyaginya lake]. Ecology 14(2): 12-16. (in Russian, with English summary) [Lake Knyaginya, valley of the Samara river, situated in the southeastern part of European Russia; results from a study to investigate the influence of light regime on the occurrence of macrozoobenthos and

higher vegetation are presented. The taxa-list includes *Aeshna grandis*, *A. cyanea*, *Anax imperator*, and *Coenagrion sp.*] Address: Baranovskiy, B.A., Visnyk of Dnipropetrovsk University. Biology, Dnipropetrovsk, 49050 Ukraine

10368. Brady, V.J.; Bradley J.C.; Gathman, J.P.; Burton, T.M. (2006): Does facilitation of faunal recruitment benefit ecosystem restoration? An experimental study of invertebrate assemblages in wetland mesocosms. Restoration Ecology 10(4): 617-626. (in English) ["We used wetland mesocosms (1) to experimentally assess whether inoculating a restored wetland site with vegetation/sediment plugs from a natural wetland would alter the development of invertebrate communities relative to unaided controls and (2) to determine if stocking of a poor invertebrate colonizer could further modify community development beyond that due to simple inoculation. After filling mesocosms with soil from a drained and cultivated former wetland and restoring comparable hydrology, mesocosms were randomly assigned to one of three treatments: control (a reference for unaided community development), inoculated (received three vegetation/sediment cores from a natural wetland), and stocked + inoculated (received three cores and were stocked with a poorly dispersing invertebrate group—gastropods). All mesocosms were placed 100 m from a natural wetland and allowed to colonize for 82 days. Facilitation of invertebrate colonization led to communities in inoculated and stocked + inoculated treatments that contrasted strongly with those in the unaided control treatment. Control mesocosms had the highest taxa richness but the lowest diversity due to high densities and dominance of Tanytarsini (Diptera: Chironomidae). Community structure in inoculated and stocked + inoculated mesocosms was more similar to that of a nearby natural wetland, with abundance more evenly distributed among taxa, leading to diversity that was higher than in the control treatment. Inoculated and stocked + inoculated communities were dominated by non-aerial invertebrates, whereas control mesocosms were dominated by aerial invertebrates. These results suggest that facilitation of invertebrate recruitment does indeed alter invertebrate community development and that facilitation may lead to a more natural community structure in less time under conditions simulating wetland restoration." (Authors) Taxa collected from wetland mesocosms and a nearby natural wetland included *Aeshniidae*, *Orthemis sp.*, and *Coenagrionidae*.] Address: Brady, Valerie, Natural Resources Research Institute, University of Minnesota Duluth, 5013 Miller Trunk Highway, Duluth, MN 55804, USA.

10369. Chandra, G.; Chatterjee, S.N.; Ghosh, A. (2006): Role of dragonfly (*Brachytron pratense*) nymph as bio-control agent of larval mosquitoes. Bul. Penel. Kesehatan 34(4): 147-151. (in English) ["The failure of traditional vector control operations through chemical insecticides renewed interest in biological control method. In the present study Dragonfly (*Brachytron pratense*) nymph has been proved to be a strong biocontrol agent of *Anopheles subpictus* larvae in the laboratory condition. Average daily larval feeding rate of *B. pratense* nymph decreased when the search area was increased. Feeding rate increased when prey density was increased. In the field conditions also, *B. pratense* played very effective role as predator of different species of larval mosquitoes." Please note: *B. pratense* is not a member of Indian dragonfly fauna.]

10370. Hobart, H. (2006): And they don't even bite or sting! Newsletter of the Indian Ponds Association 6(4): 7. (in English) [General account on dragonflies.] Address: Hobart, H., Indian Ponds Ass., P.O. Box 383, Merstons Mills, MA 02648, USA

10371. Odin, N. (2006): Reports from Coastal Stations - 2006: Landguard Bird Observatory, Suffolk. Atropos 30: 72-73. (in English) [UK; *Erythromma viridulum* on 6-VIII-2006; *Libellula quadrimaculata* on 2-VII-2006] Address: not stated

10372. Stav, G.; Kotler, B.P.; Blaustein, L. (2006): Direct and indirect effects of dragonfly (*Anax imperator*) nymphs on green toad (*Bufo viridis*) tadpoles. *Hydrobiologia* 579 (1): 85-93. (in English) ["We conducted an artificial pond experiment to assess the direct and indirect effects of predation on *Bufo viridis* tadpoles. We ran three treatments: free *Anax* (unrestrained predatory dragonfly nymph *Anax imperator*), caged *Anax* (non-consumptive effects), and control (no *Anax*). *Anax* showed both strong consumptive and non-consumptive effects on *Bufo* tadpoles. Free *Anax* eliminated all of the tadpoles within six days. Tadpoles preferred the shady side of the ponds. Caged *Anax* caused tadpoles to increase their spatial preferences. Tadpoles avoided the center of the pond, and in the presence of the caged predator, they were found in the center even less. Tadpoles also showed a strong preference for crowding together, and in the presence of a caged *Anax*, they tended to crowd more. Moreover, *Bufo* metamorphosed earlier and at a larger size in the caged *Anax* ponds, possibly by providing extra food resources due to the extra organic matter excreted by the predators." (Authors)] Address: Stav, G., Jacob Blaustein Institute for Desert Research, Mitrani Dept of Desert Ecology, Ben-Gurion Univ. of the Negev, Sede-Boqer Campus, 84990 Negev, Israel. E-mail: gstav@tulane.edu

10373. Tavares, A.S.; Odinetz, O.; Enricone, A. (2006): The Podostemaceae family in Amazonian rivers and insect community associated. *Insula* 35: 19-50. (in Portuguese, with English summary) [In most cases Odonata larvae (*Libellulidae*, *Agrionidae*) contributed very few to the insect biomass living between the leaves of several species of the Podostemaceae family.] Address: Tavares, A.S., Universidade Federal de Santa Catarina, Departamento de Botânica, Campus Universitário, Trindade, Florianópolis, se, 88040-900. Brasil. E-mail: asprada@ccb.ufsc.br.

2007

10374. Environment & Heritage Service (2007): Northern Ireland Species Action Plan: Irish Damselfly *Coenagrion lunulatum*. March 2007. <http://www.Belfast-hills.org/minisite/adultversion/draftirishdamselflysapmar07-2.pdf>: 11 pp. (in English) [This is a detailed schedule for protecting *C. lunulatum* in Northern Ireland.] Address: Environment & Heritage Service, Klondyke Building, Cromac Av., Gasworks Business Park, Lower Ormeau Road, Belfast, BT7 2JA, UK. www.ehsni.gov.uk

10375. Geraeds, R.P.G. (2007): Golden-ringed dragonfly along the Venbeek brook. *Natuurhistorisch Maandblad* 96(1): 17-18. (in Dutch, with English summary) ["In Limburg, *Cordulegaster boltonii* is known to occur in the Haeselaarsbroek and Meinweg nature reserves. At Meinweg, which houses the largest population in the Netherlands, the species occurs along the Boschbeek, Roode

beek and Nartheciumbek brooks. Recently, specimens have also been observed along the Venbeek brook, probably representing the fourth subpopulation of *C. boltonii* at the Meinweg reserve." (Author)] Address: Geraeds, R.P.G., Bergstraat 70, 6131 AW Sittard, The Netherlands

10376. Hermans, J.T. (2007): De Gewone bronlibel in de Meinweg [The Golden-ringed dragonfly at the Meinweg National Park]. *Natuurhistorisch Maandblad* 96(6): 165-169. (in Dutch, with English summary) ["*Cordulegaster boltonii* has always been a rare species in the Netherlands, whose main area of distribution in the country is restricted to the province of Limburg. The population of *C. boltonii* at the 'De Meinweg' National Park is the largest in the Netherlands. At the Meinweg area, the species has three sub-populations along the Bosbeek, Nartheciumbek and Venbeek brooks. The sub-population along the Venbeek brook is the result of recent colonisation. The habitats in which the species occurs at the Meinweg National Park are shallow streams, which are characterised by their small size, the presence of organic litter as a biotope for the larvae and the fact that they are fed from local springs producing oxygenous groundwater with a low mineral content and a constant low temperature. In 2006, several individuals were marked with different colours to investigate possible exchanges between the sub-populations, but no such exchanges could be confirmed. *Calopteryx virgo* and *Orthetrum coerulescens* are the most characteristic accompanying dragonfly species at the Meinweg. One of the main threats to the presence of *C. boltonii* at this nature reserve is that the streams where they breed run dry during periods of drought." (Author)] Address: Hermans, J.T., Hertestraat 21, 6067 ER Linne, The Netherlands.

10377. New, T.R. (2007): The Hemiphlebia damselfly, *Hemiphlebia mirabilis* Selys (Odonata, Zygoptera) as a flagship species for aquatic insect conservation in south-eastern Australia. *The Victorian Naturalist* 124(4): 269-272. (in English) ["The endemic *H. mirabilis* has been a focus of conservation attention since its rediscovery in Victoria was publicised in the mid 1980s. It was listed under the state's Flora and Fauna Guarantee Act (FFG) in 1991. Discovery of additional colonies has indicated that *Hemiphlebia* is far more widespread than earlier supposed, and continued study indicates that it is variously secure or vulnerable in different places – rather than 'endangered', as previously thought. The history of study of the species is summarised briefly, and its values in promoting awareness of insect conservation as a 'flagship species' in southern Australia are discussed." (Author)] Address: New, T.R., Dept of Zoology, La Trobe University, Victoria, 3086, Australia. E-mail: T.New@latrobe.edu.au

10378. Olias, M.; Günther, A. (2007): Libellen. In: Grüne Liga Osterzgebirge e.V.: Naturführer Ost-Erzgebirge, Band 1: Pflanzen und Tiere. Sandstein-Verlag. Dresden: 350-363. (in German) [Sachsen, Germany; Czech Republic; 17 regional Odonata species are introduced giving information of morphology, habitat, phenology and sibling species. A Czech version of the paper is also available: Olias, M. & Günther, A. (2007): Vážky. In: Grüne Liga Osterzgebirge e.V.: Přírodou východního Krušnohoří. - 1. Svazek: Přehled rostlin a živočichu, Sandstein Verlag Dresden: 298-309.] Address: Günther, A., Naturschutzinstitut Freiberg, Waisenhausstr. 10, 09599 Freiberg, Germany. E-mail: a.guenther@abo.freiepresse.de

10379. Parkes, K. (2007): Broda-bodied Chaser Survey 2007. *Atropos* 32: 58. (in English) [Verbatim: "Following

the success of the Banded Demoiselle survey, the BDS repeated the format for the 2007 season, requesting records of Broad-bodied Chaser *Libellula depressa*. Collaboration with Flytech encouraged younger participants, with a free remote controlled dragonfly being given to the first 15 confirmed records from under 16-year olds. The response was again very good with over 700 records received, despite the inclement weather for much of the flight period. The survey repeated last year's achievements, with confirmed records of Broad-bodied Chaser in several new areas. The full results of the survey and a selection of the stunning photos sent by contributors can be found via the BDS website at <http://www.dragonflysoc.org.uk>. Look there next year for a new survey to get involved in." Address: Parkers, Katharine, BDS Conservation Officer, c/o Natural England (West Mids), Attingham Park, Shrewsbury SY4 4TW, UK. E-mail: katharine.parkes@naturalengland.org.uk

10380. Perović, G.; Perović, F. (2007): Preliminary results of research into dragonflies (Odonata) in Medimurje, Croatia. *Entomol. croat.* 10(1/2): 87-103. (in Croatian, with English summary) [During 1998-2005, 31 Odonata species were documented. *Sympetrum pedemontanum* is recorded for the first time from Croatia. Records of *Coenagrion ornatum* and *Lestes dryas* are also considered of regional interest.] Address: Perović, F., Hrvatski prirodoslovni muzej, Demetrova 1, Zagreb, Croatia

10381. Pollheimer, M. (2007): Streifzüge durch die Tierwelt des Kremstals. *LANIUS – Information* 16(3-4): 3-5. (in German) [*Onychogomphus forcipatus*, *Gomphus vulgatissimus*, *Ophiogomphus cecilia*, *Calopteryx splendens*, *C. virgo*, and *Cordulegaster boltonii* are listed for the river Krems, Austria.] Address: <http://www.lanius.at/cms/fileadmin/Files/Lanius-Info/Laniusinfo3-42007.pdf>

10382. Sahuquillo, M.; Poquet, J.M.; Rueda, J.; Miracle, M.R. (2007): Macroinvertebrate communities in sediment and plants in coastal Mediterranean water bodies (Central Iberian Peninsula). *Ann. Limnol. - Int. J. Lim.* 43(2): 117-130. ["Sediment and plant-associated macroinvertebrates were sampled in six shallow water bodies along the central part of the coast of Mediterranean Spain. The size of ponds, salinity and hydroperiod were highly variable. Seventy-one taxa were recorded, some of them were endemic or uncommon species, evidencing the important contribution of these ponds to biodiversity. Crustaceans and gastropods of biogeographical interest were found in the most primeval site. Correspondence analysis showed that macroinvertebrate assemblages responded to environmental variables such as salinity, temporality and eutrophication. The brackish water fauna was dominated by crustaceans, while *Oligochaeta* and insect larvae were abundant in freshwater conditions. *Oligochaeta* were abundant at localities with high trophic level, whereas localities with semi-permanent waters were dominated by chironomids. The density of macroinvertebrates was clearly related with trophic state but we did not find significant relationships between density and salinity or water permanence. For plant associated samples our results showed negative relationships between species richness and temporality or salinity, contrary to sediment samples, where the *Oligochaeta/Chironomidae* ratio in sediments and the percentage of sensitive taxa (Ephemeroptera, Odonata, Trichoptera) were useful indices, and were dependent on pond typology. This study emphasizes the broad ecological variety of ponds found in these wetlands and their importance for biodiversity. Some ponds act as permanent biodiversity reservoirs in

fluctuant marshes with seasonal dryness, calling for more attention on their ecological relevance for management strategies." (Authors) Odonata taxa are mentioned as follows: *Sympetrum fonscolombii*, *Ischnura elegans*, *Pyrhosoma nymphula*, *Coenagrionidae*, *Libellulidae*, *Corduliidae*, *Lestidae*.] Address: Sahuquillo, M., Departament de Microbiologia i Ecologia, Facultat de Biologia, Universitat de València, E-46100 Burjassot, València, Spain

10383. Salcher, M. (2007): Beobachtungen zur Ausbreitungsfähigkeit der Zarten Rubinjungfer (*Ceriatagrion tenellum*) auf dem Bodanrück (Odonata: Coenagrionidae). *Mercuriale* 7: 8-11. (in German) [Baden-Württemberg, Germany; the successful colonisation of new habitat resp. establishment of a new population, 750 m apart from the next known population, is documented by comparison of old bank data with new records. In addition, specimens were found up to 6,5 km remote from source populations in habitats not suited for this species.] Address: Salcher, M., Ferdinand-Weiß-Str. 92, 79106 Freiburg, Germany

10384. Sierra, R.; Burke, R. (2007): Dietary habits of Diamondback Terrapin *Malaclemys terrapin* in the Jamaica Bay Wildlife Refuge, New York, Section VII. In: W.C. Nieder & J.R. Waldman (eds.): Final report of the Tibor T. Polgar Fellowship Program 2006, Hudson river Foundation, NY: 20 pp. (in English) [The diet of this turtle species includes Odonata larvae identified to order level.] Address: not stated

10385. Stange, G.; Schmeling, F.; Berry, R.; Lenz, G.; (2007): The temporal resolution of flight attitude control in dragonflies and locusts: Lessons for the design of flapping-wing MAVs. Australian National University Canberra. Research School of Biological Sciences. Contract Number: FA48690610059; Report Number: A038474: 16 pp. (in English) ["In order to identify stability constraints in flapping-winged MAVs, within the context of longitudinal stabilization of flight attitude, the question is examined whether insects are capable of controlling flight attitude at the temporal resolution of a single wing beat. It is found that the phenomenon of phase locking between a periodic light flash and the wingbeat of insects is suitable for the examination of the time resolution with which vision contributes to stabilization. In tethered locusts, flying in a wind tunnel with a wingbeat frequency of 22 Hz, phase locking can be readily obtained by a periodic stimulus of UV light. It is suggested that the effect is a by-product of the animal continuously trying to apply corrections. Therefore, in the closed-loop situation of free flight, frequency components of the visual input at or above wing beat rate are also present and must contribute to stability control. The response is mediated by the median ocellus. In dragonflies, with a wingbeat frequency of 50 Hz, the effect is not observed. This suggests that organisms or MAV of the size and wingbeat rate of locusts require active damping by visual inputs, whereas the same is not necessary in smaller systems." (Authors)] Address: Stange, G., Centre for Visual Sciences, Research School of Biological Sciences and ANU Electron Microscopy Unit, Australian National University, P.O. Box 475, Canberra, ACT, 0200, Australia. E-Mail: gert.stange@anu.edu.au

2008

10386. Aberlenc, H.-P. (2008): Les Insectes du Bois de Païolive: premier supplément à l'inventaire. *Les Cahiers de Païolive* 1: 155-167, pl. 17-18. (in French) [Departement

ment Ardeche, France. This paper contents additions to the list published in 2003 viz. *Sympecma fusca*, *Aeshna mixta*, *Anax parthenope*, *Gomphus graslinii*, *G. simillimus*, *G. vulgatissimus*, *Sympetrum fonscolombii*, and *S. pedemontanum*. *Calopteryx splendens* was deleted from the regional list.] Address: Aberlenc, H.P., CIRAD, UMR CBGP, TA A-55/L, 34398 Montpellier cedex 5, France

10387. George, B.M.; Batzer, D. (2008): Spatial and temporal variations of mercury levels in Okefenokee invertebrates: Southeast Georgia. *Environmental Pollution* 152: 484-490. (in English) [USA; "Accumulation of mercury in wetland ecosystems has raised concerns about impacts on wetland food webs. This study measured concentrations of mercury in invertebrates of the Okefenokee Swamp in Georgia, focusing on levels in amphipods, odonates, and crayfish. We collected and analyzed total mercury levels in these invertebrates from 32 sampling stations across commonly occurring sub-habitats. Sampling was conducted in December, May, and August over a two-year period. The highest levels of mercury were detected in amphipods, with total mercury levels often in excess of 20 ppm. Bioaccumulation pathways of mercury in invertebrates of the Okefenokee are probably complex; despite being larger and higher in the food chain, levels in odonates and crayfish were much lower than in amphipods. Mercury levels in invertebrates varied temporally with the highest levels detected in May. There was a lack of spatial variation in mercury levels which is consistent with aerial deposition of mercury." (Authors)] Address: George, B.M., School of Science and Technology, Georgia Gwinnett College, 1000 University Center Lane, Lawrenceville, GA 30043, USA. E-mail address: bgeorge@ggc.usg.edu

10388. Holuša, O.; Vaněk, J. (2008): The fauna of dragonflies (Odonata) in the Krkonoše Mts. *Opera Corcontica* 45: 81-98. (in Czech, with English summary) [Between 1982-2004, 25 odonate species were found at 19 localities in the Krkonoše National Park (i.e. in the Giant Mts.) and adjacent localities of the Podkrkonosi Region. E-dominant species are: *Aeshna caerulea*, *Enallagma cyathigerum*, *Sympetrum danae*, *A. juncea*, dominant species: *Leucorrhinia dubia*, *S. vulgatum*, *Lestes sponsa*, *S. sanguineum* and *Somatochlora alpestris*. The population of *A. caerulea* in the Krkonose Mts. is the most stable and the largest population in the Czech Republic. Only two reophilous species in lower abundance - *Calopteryx splendens* and *Cordulegaster bidentata* - were found.] Address: Holuša, O., Bruzovská 420, CZ-738 01 Frýdek-Místek. E-mail: holusao@email.cz

10389. Huber, A. (2008): Data to the Odonata fauna of North-East Hungary III. *Folia historico-naturalia Musei Matraensis* 32: 93-102. (in Hungarian, with English summary) ["The author present the results of his dragonfly collecting carried out in the lowland following the river Bodrog and Takta (Bodrogekőz and Taktaköz) and in the territory enclosed by the river Hernád, river Sajó and the state border between Hungary and Slovakia. The collecting took place between 11.05.2005 and 03.07.2008. The data come mainly from the Bodrogekőz, Taktaköz, Aggtelek-mountains, the Putnok-hills and the valley of the Sajó river. The author found 46 dragonfly species in this area, 37 as larva, 35 as exuvium and 40 as imago. 7 species (*Aeshna affinis*, *Ischnura elegans*, *Lestes dryas*, *L. sponsa*, *Leucorrhinia pectoralis*, *Sympecma fusca*, *Sympetrum flaveolum*) are new in larval or exuvial form to the Bodrogekőz, and 5 species (*Anax imperator*, *Crocothemis erythraea*, *Epitheca bimaculata*, *Erythromma viridulum*,

Leucorrhinia pectoralis) to the Taktaköz." (Author)] Address: Huber, A., Aggteleki Nemzeti Park Igazgatóság, H-3758 Jósavafő, Hungaria. E-mail: epitheca@freemail.hu

10390. Kawiisar-ul-Yaqoob; Paiidit, A.K.; Wani, S.A. (2008): Some aspects of habitat ecology of aquatic entomofauna in two freshwater lakes of Kashmir Himalaya. Sengupta. M. & Dalwani, R. (Eds): *Proceedings of Taal 2007: The 12th World Lake Conference: 1916-1921*. (in English) ["The present investigation deals with the habitat ecology of lacustrine insects of Dal and Nilnag lakes of Kashmir valley 111 relation to the depth of water column and the quality and quantity of aquatic macrophytes. Three main categories of aquatic insects belonging to four different orders viz, Coleoptera, Hemiptera, Diptera and Odonata (*Macromia* sp., *Aeshna* sp., *Coenagrion* sp., *Lestes* sp., *Helocordulia* sp.) have been recognized. It has been seen that the quality of water, the diversity and density of aquatic vegetation and suitable substratum are among the favourable factors increasing the potential of aquatic insects to inhabit their suitable ecological niches." (Authors)] Address: Kawiisar-ul-Yaqoob, Aquatic Ecology Laboratory, P.G. Dept of Environmental Science, The University of Kashmir, Srinagar 190006, J&K, India

10391. Lucker, T. (2008): Wirkungen von Revitalisierungsmaßnahmen am Beispiel des Ise-Projektes. *Schriftenreihe des Deutschen Rates für Landespflege* 81: 76-80. (in German) [Niedersachsen, Germany; the Ise is a small brook formerly strongly influenced by agricultural land use. In the early 1990th, adjacent land was bought and extensified. The brook itself was revitalised. A monitoring proved the success of the conservation measurements. *Ophiogomphus cecilia*, *Cordulegaster boltonii* and *Calopteryx virgo* extended their ranges along the brook.] Address: Lucker, T., Aktion Fischotterschutz e. V., Sudendorfallée 1, 29386 Hankensbüttel, Germany. E-mail: t.lucker@otterzentrum.de

10392. Müller, J.; Steglich, R. (2008): Zur Reproduktion der Frühen Heidelibelle *Sympetrum fonscolombii* (Odonata: Libellulidae) in der Bodeniederung bei Unseburg. *Entomologische Mitteilungen Sachsen-Anhalt* 16(1): 41-47. (in German) [The paper outlines some current discussion on the taxonomic status of the species and document recent records from the Bode-region, Sachsen-Anhalt, Germany. The authors also include a compilation of the records from Sachsen-Anhalt and present field characters of the species.] Address: Müller, J., Frankfelde 3, 39116 Magdeburg, Germany. E-mail: FaunOek.J-Mueller@t-online.de

10393. Perova, S.N. (2008): The taxonomic composition of macrozoobenthos in central Russian small Karst lakes. *Inland Water Biology* 1(4): 371-379. (in English) ["The macrozoobenthos taxonomic composition in small karst lakes of Vladimir oblast is studied for the first time. In the structure of bottom communities, 149 taxa one rank below the genus have been found. Chironomid larvae and other amphibiotic animals, as well as oligochaetes, prevail. Most of them are species widely distributed in the surface waters of European Russia. The highest macrozoobenthos species diversity was recorded in neutral lakes, and the lowest diversity was in lakes with weakly acidic waters." (Author) *Epitheca bimaculata*, *Coenagrion* sp., *Cordulia aenea*, *Platycnemis pennipes*, *Somatochlora arctica*, *S. flavomaculata*, *S. sahlbergi* are listed; these taxa are partly taken for misidentified by R. Bernard, a specialist in this regional fauna. Original Rus-

sian Text © S.N. Perova, 2008, published in *Biologiya Vnutrennikh Vod*, No. 4, 2008, pp. 63–71] Address: Perova, S.N., Papanin Institute for the Biology of Inland Waters, Russian Academy of Sciences, Borok, Yaroslavl oblast, 152742 Russia. E-mail: perova@ibiw.yaroslavl.ru

2009

10394. Carriço, C.; Santos, T.C.; Costa, J.M.; Trapero Quinta, A.D. (2009): Occurrence of *Neoneura maria* (Scudder, 1866) (Odonata: Protoneuridae) for the Province of Santiago de Cuba. *Biota Neotropica* 9(4): 261-263. (in Portuguese, with English summary) ["During the period 2005-2006 the macroinvertebrates associated with the root system of *Eichhornia crassipes* (Mart.) Solms, 1883 were studied in the overflow Chalons dam in Santiago de Cuba. The larva of *N. maria*, endemic for Cuba, reported to the three Sectors of the island, was collected and constitute the first report for the Provincia de Santiago de Cuba." (Authors)] Address: Carriço, C., Programa de Pós-graduação em Biologia Animal - PPGBA, Instituto de Biologia, Univde Federal Rural do Rio de Janeiro - UFRJ BR 465, Km 7, CEP 23890-000, Seropédica, RJ, Brasil. E-mail: carrico82@hotmail.com

10395. Corbet, P.S. (2009): List of publications including observations on Odonata. *Agrion* 13(2): 90-96. (in English) [List of publications including observations on Odonata compiled by Philip S. Corbet up to 2000, thereafter by Sarah A. Corbet, and further additions abstracted from IDF Report 14: 1-39 compiled by Hoffmann & Schorr, 2008]

10396. Crewe, M.D.; Coheir, C. (2009): *Viridithemis viridula* Fraser, 1960: discovery of the first known male. *Agrion* 13(2): 54-55. (in English) [8-XI-2007, Madagascar, Zombitse Forest, part of the Zombitse-Vohibasia National Park. GPS: S 22.88339 E 44.69447, 800 metres asl.; start of the main rain season.] Address: Crewe, M.D.: E-mail: mike.sturnus@btinternet.com

10397. Hacet, N. (2009): The easternmost record of *Somatochlora borisi* Marinov, 2001 from Turkish Thrace, with a zoogeographic assessment on the distribution of the species (Odonata: Corduliidae). *J. Ent. Res. Soc.* 11 (2): 51-56. (in English) ["A synopsis of the known distribution of this endemic species is given. The present records add an additional locality (Istanbul-Çatalca, Incegiz village, 41°11'N 28°24'E, 70 m asl, 24-VI-1998), which is the easternmost one for this species not only for Turkey, but also for its whole range. The morphological features of the species are discussed, and its distribution is mapped. A zoogeographic evaluation on the distribution of *S. borisi* in the Balkans is included. The localization of this species underlines the biologic and zoogeographic importance of the Balkans in terms of biodiversity for the whole Eurasia." (Author)] Address: Hacet, Nurten, Trakya University, Faculty of Arts and Sciences, Dept of Biology, TR-22030 Edirne, Turkey. E-mail: nhacet@hotmail.com

10398. Hankinson, C. (2009): Naturally curious. *Findlay Spring* 2009: 16-17. (in English) [Ohio, USA; "Dwight Moody, Ed.D., an outdoorsman, educator and researcher, has conveyed his enthusiasm for the natural world to thousands of students during his 34-year tenure as professor of natural science at The University of Findlay. He retired from full-time teaching in 2008, but maintains his ties with the institution by serving as an adjunct faculty member and continuing his research... In addition, he

has done Odonata surveys at Kitty Todd Nature Preserve for the Nature Conservancy in Toledo, Ohio, in 2001-02 and the Sheldon Marsh Nature Preserve in Sandusky, Ohio, in 2002-03. Much of his work is also funded by research grants, including one from the Ohio Department of Natural Resources to establish the status of the Ohio Emerald Bog Skimmer in 1994. In 2007-08 the Ohio Historical Society funded "A State-wide Survey for the Federally Endangered Hine's Emerald Dragonfly." (Author)] Address: not stated

10399. Hu, P.; Zha, L.-s. (2009): Records of Edible Insects from China. *Agricultural Science & Technology* 10(6): 114-118. (in Chinese, with English summary) [Larvae of *Anax parthenope julius*, *Gomphus cuneatus*, *Crocothemis servilia*, *Orthetrum albistylum*, *O. triangulare melania*, *Pantala flavescens*, and *Sympetrum uniforme* are listed as edible among a list of 283 species out of 13 insect orders and 73 families classified as edible.] Address: Hu, P., Tianyi Middle School, Huaibei City, Huaibei 235000, China

10400. Humala, A.E.; Polevoi A.V. (2009): On the insects fauna of south-east Karelia. *Proceedings of the Karelian Scientific Center, Russian Academy of Sciences* 4: 53-75. (in Russian, with English summary) ["At the verge of the 21st century, the insect fauna of SE Karelia remained rather poorly known compared with other parts of the republic. Systematic entomological research that began in the areas of Karelia east of Lake Onego in the 1990s yielded substantial amounts of material on the insect fauna. This paper is the first publication of all data on the insect fauna in south-east Karelia (biogeographic provinces Karelia transonegensis, Karelia pudogensis) known to the authors. In addition, data on the species distribution, their biology and «red-list» status are provided for some most interesting findings." (Authors) 40 sampling sites were studied for their fauna. 30 Odonata species are listed. The list includes species as *Coenagrion armatum*, *C. hastulatum*, *C. johanssoni*, *C. pulchellum*, *Aeshna caerulea*, *A. crenata*, *A. subarctica elisabethae*, *Somatochlora arctica*, *S. flavomaculata*, *S. metallica*, *Epitheca bimaculata*, and *Leucorrhinia caudalis*.] Address: Humala, A., Forest Research Institute, Karelian Research Centre, Russian Academy of Science, 11 Pushkinskaya St., 185910 Petrozavodsk, Karelia, Russia. E-mail: humala@krc.karelia.ru

10401. Kiany, M.; Minaei, K. (2009): The dragonfly family Libellulidae (Insecta: Odonata: Anisoptera) of Shiraz and its vicinity (Fars Province, Iran). *Iran Agricultural Research* 27/28: 65-78. (in English, with summary in Farsi) [Thirteen libellulid species were collected near Shiraz and its vicinity (Fars province, Iran) by studying 19 localities. *Orthetrum anceps*, *O. taeniolatum*, *O. chrysostigma*, *Sympetrum fonscolombii*, *S. meridionale*, *Crocothemis servilia*, *Trithemis kirbyi*, and *Pantala flavescens* are new provincial additions. All species are listed locality wise in a table and briefly discussed. The paper includes a welcome identification key of the regional Libellulidae detailed on the genus and species level and furnished with informative figures.] Address: Kiany, M., Department of Plant Protection, College of Agriculture, Shiraz University, Shiraz, I. R. Iran. E-mail: mohsen.kiany1@gmail.com

10402. Kronenbitter, J. (2009): Laichhabitatwahl des Kleinen Granatauges (*Erythromma viridulum*) (Zygoptera: Coenagrionidae). *Der Einfluss verschiedener Habitatparameter*. Diplomarbeit. Bayerische Julius-Maximilians-Universität Würzburg: 201 pp. (in German, with English

summary) ["Human-induced climate change has caused distributional shifts of many species of Odonata in Europe within the last few decades. Among them, *E. viridulum*, a naturally holo-mediterranean distributed species is today found in many parts of Germany. Within just a decade the number of locations it has been identified in Bavaria has increased nearly tenfold. According to a number of authors, besides the influence of climate change, this increase in its distribution can also be explained by its having been previously overlooked. This is due to the fact that individuals of this species are commonly found far from the vicinity of water bodies. Until now, a systematic survey of *E. viridulum* has been hindered by the fact that no studies which allow quantitative statements about the habitat requirements of the species exist. The method of statistical habitat modelling I used in this study provides the opportunity of identifying and quantifying the relevant habitat factors which determine the presence of a species at a habitat. The data acquisition was undertaken in the area around Würzburg and Haßfurt in the North of Bavaria, Germany. I surveyed 92 standing water bodies for the presence of *E. viridulum* and recorded various potentially relevant parameters. The forecast values of the habitat models I created on the basis of this data proved to be a good representation of the likelihood of the presence of this species. The occurrence probability increased with the low isolation of a water body, a large expanse of open water surface without any swamp plants, a low degree of shading and the presence of immersed leaf vegetation, especially large stands and plants with an extremely fine-branched leaf structure. Relationships between preferred parameter values and the biology of the species are discussed. To identify suitable breeding sites, damselflies need to discriminate between different values of the relevant habitat parameters and polarotaxis plays a major role in this. At artificial ponds I undertook experimental measurements over different light regimes of the reflection-polarisation patterns of the water surface, of different ground colours and of immersion leaf vegetation at several depths. I showed the possibility of distinguishing between different parameter values on the basis of very few characteristics of the reflection-polarisation patterns. For damselflies this suggests the advantage of being able to select a preferred breeding site from a distance simply on the basis of visual information." (Author)] Address: Kronenbitter, Jenja, Schwabenstr. 21., D-76646 Bruchsal, Germany

10403. Lingane, P.J. (2009): The design and fabrication of a micro mechanical dragonfly. Senior Thesis. Project Report. Submitted March 19, 2009: 51 pp, app. (in English) ["The goal this project was to create a scaled model of a flapping wing aerial vehicle. The design was initially based on a remote controlled model available at many toy stores. This model was in the form of a dragonfly but about four times the size in each dimension. My project was to scale this down, ideally to the size of a real dragonfly. This however was difficult, and a half scaled prototype (twice life size) was constructed instead. Scaling was done using dimensionless fluid parameters such as the Reynolds and Strouhal numbers which effectively related the various properties of each model. Testing and modification of the prototype were carried out, and in the process an analytical model was made to model the dynamics. Although still not flying, the prototype will hopefully soon be ready for testing against the theory. In the future, more testing will be completed, and minor modifications made to get the scaled prototype flying. All of this is part of a larger goal to miniaturize a flapping flying ro-

bot of which this project is only a part." (Author)] Address: Lingane, P.J., Department of Mechanical Engineering, Union College, Schenectady, NY, USA

10404. Mey, E. (2009): Beobachtungen an Libellen (Insecta, Odonata) in Thüringen, insbesondere in der Umgebung von Rudolstadt. Rudolstädter naturhistorische Schriften 15: 39-98. (in German, with English summary) [Germany; "The scientific study of dragonflies and damselflies in Thüringen goes back to the first half of the 18th century, is connected with the rise of natural history cabinets, and had its hesitant beginnings in the pre-Linné era in (e.g.) the work of the Nordhausen natural theologian F. C. Lesser. For the first concrete data between 1773 and 1818 we have to thank A. C. Kühn and A. J. G. K. Batsch, but above all J. M. Bechstein and G. L. Scharfenberg. All available historical records up to the middle of the 20th century are here collected together according to their faunistic aspects and annotated. At least nine Odonata eruptions from various regions of Thüringen are known from the last 250 years or more: 1746, 1806, 1816, 1822, 1839, 1853, 1857, 1881, and 1917. They concern population explosions of a single species each time: *Libellula depressa* (twice) and *L. quadrimaculata* (five times). The original accounts are documented here. No Odonata eruptions have been recorded in Thüringen for more than 90 years. Between the end of the 18th century and about 1950, 47 species of Odonata were recorded in Thüringen. However, during this period of more than 150 years faunistic interest in dragonflies and damselflies was only sporadic. Between 1952 and the present day, reports of 17 further species have been published, bringing the total number of Odonata species recorded in Thüringen to 64. From 1984 to 2008 an attempt was made to record the entire Odonata species spectrum occurring in and around Rudolstadt (eastern Thüringen). The material consists of around 2000 data points. It deals with parts of the following natural landscapes: the central Thüringer Wald (Forest), the high Thüringen shale hills, the Schwarzsaal-Sornitz region, the Ilm-Saale-Ohdruf shell limestone plateau, the Paulinzella bunter sandstone woodland area, the Saale sandstone plateau, and the central Saale Valley. Within this region, 48 Odonata species have been recorded, including some older valuable specimens in the Natural History Museum in Rudolstadt (*Cordulegaster bidentata*, *Gomphus vulgatissimus*, *Onychogomphus forcipatus*, and *Leucorrhinia rubicunda*). In addition, some observations on the life style of *Cordulegaster boltonii* made by the author are given. Contrarily to other reports, there are no confirmed records of *Somatochlora arctica* from Thüringen." (Author)] Address: Mey, E., Naturhistorisches Museum im Thüringer Landesmuseum Heidecksburg zu Rudolstadt, Schloßbezirk 1, 07407 Rudolstadt, Germany. E-mail: mey-rudolstadt@t-online.de

10405. Müller, Z.; Kiss, B.; Juhász, P. (2009): Faunistical data to complete the nationwide occurrence of Ornate Damselfly [*Coenagrion ornatum* (Selys-Longchamps, 1850)]. *Folia historico naturalia musei Matraensis* 33: 97-101. (in English) [The authors add 42 watercourses inhabited by *C. ornatum* to the known 63 localities for the species in Hungary; data were obtained from studies from 2003 to 2009.] Address: Müller, Z., BioAqua Pro Kft. H-4032 Debrecen, Soó R. 21, Hungary. E-mail: mullerz@bioaquapro.hu

10406. Ou, J.-f.; Huang, H.; Liu, G.-q.; Yu, H.; Zheng, Ji.-h.; Zhang, T.-p. (2009): Research on diversity of Odonata in Zhuhai area, Guangdong Province. *Journal of Environmental Entomology* 31(4): 356-360. (in Chinese, with

English summary) [Between 2006 and 2008, 24 Odonata species were recorded in the Zhuhai region, Guangdong Province, China. *Paracercion hieroglyphicum* and *P. calamorum* are new records for the province.] Address: Guangdong Entomological Institute, Guangzhou 510260, China

10407. Schilling, E.G.; Loftin, C.S.; Hury, A.D. (2009): Macroinvertebrates as indicators of fish absence in naturally fishless lakes. *Freshwater biology* 54: 181-202. ["1. Little is known about native communities in naturally fishless lakes in eastern North America, a region where fish stocking has led to a decline in these habitats. (2.) Our study objectives were to: (i) characterise and compare macroinvertebrate communities in fishless lakes found in two biophysical regions of Maine (USA): kettle lakes in the eastern lowlands and foothills and headwater lakes in the central and western mountains; (ii) identify unique attributes of fishless lake macroinvertebrate communities compared to lakes with fish and (iii) develop a method to efficiently identify fishless lakes when thorough fish surveys are not possible. (3.) We quantified macroinvertebrate community structure in the two physiographic fishless lake types (n = 8 kettle lakes; n = 8 headwater lakes) with submerged light traps and sweep nets. We also compared fishless lake macroinvertebrate communities to those in fish-containing lakes (n = 18) of similar size, location and maximum depth. We used nonmetric multi-dimensional scaling to assess differences in community structure and t-tests for taxon-specific comparisons between lakes. (4.) Few differences in macroinvertebrate communities between the two physiographic fishless lake types were apparent. Fishless and fish-containing lakes had numerous differences in macroinvertebrate community structure, abundance, taxonomic composition and species richness. Fish presence or absence was a stronger determinant of community structure in our study than differences in physical conditions relating to lake origin and physiography. (5.) Communities in fishless lakes were more speciose and abundant than in fish-containing lakes, especially taxa that are large, active and free-swimming. Families differing in abundance and taxonomic composition included Notonectidae, Corixidae, Gyridae, Dytiscidae, Aeshnidae, Libellulidae and Chaoboridae. (6.) We identified six taxa unique to fishless lakes that are robust indicators of fish absence: *Graphoderus liberus*, *Hesperocorixa* spp., *Dineutus* spp., *Chaoborus americanus*, *Notonecta insulata* and *Callicorixa* spp. These taxa are collected most effectively with submerged light traps. (7.) Naturally fishless lakes warrant conservation, because they provide habitat for a unique suite of organisms that thrive in the absence of fish predation. ... A total of 46 Hemiptera, Coleoptera, Odonata and Chaoborus taxa were identified from submerged light trap and littoral sweeps, with eight taxa abundant in most fishless lakes. The total number of captured macroinvertebrates and total species richness, as well as richness at the family level, did not differ between fishless kettle lakes and fishless headwater lakes. No taxa collected in littoral sweeps showed significant differences in abundance or per cent occurrence between fishless kettle lakes and fishless headwater lakes. The total number of macroinvertebrates captured in submerged light traps was greater in fishless lakes than fish-containing lakes, with greater abundances of Hemiptera, Coleoptera and Odonata in fishless lakes. Odonates associated with fishless lakes were Aeshnidae, Libellulidae and Coenagrionidae, with *Aeshna eremita* and *Leucorrhinia glacialis* more abundant, as well as present in more lakes lacking

fish. Seven species were unique but not widespread among fishless lakes, including *Leucorrhinia patricia* in two lakes. Four species were unique to fish-containing lakes, *Enallagma geminatum* and *E. carunculatum*, *Lesites vigilax* and the haliplid *Haliplus connexus*. None of these was widespread, each occurring in two fish-containing lakes."(Authors)] Address: Gaenzle Schilling, E., Department of Wildlife Ecology, University of Maine, 5755 Nutting Hall, Orono, ME 04469-5755, USA. E-mail: emily.schilling@umit.maine.edu

10408. Schweighofer, W. (2009): Seltener Besuch aus der Sahelzone – die Schabracken-Königslibelle. *LANI-US-Information* 18(3-4): 7-8. (in German) [Niederösterreich, Austria; the author reports three records of *Anax ephippiger* emergence in 2009 from a gravel pond near Pöchlarn and two shallow storm water retention ponds near Rohr/Loosdorf and Nenndorf/Markersdorf.] Address: Schweighofer, W., Ötscherblick 10, A-3661 Artstetten, Austria. E-mail: wolfgang.schweighofer@schule.at

10409. Sharapova, T.A. (2009): [Study of the zooperiphyton of the River Demyankov]. *Bulletin of Environment, Forest and Landscape* 9: 146-154. (in Russian) [The river Demyankov is situated at app. 59 N 71 E in Russia. *Somatochlora graeseri* is the single odonate species mentioned.] Address: Sharapova, T.A., Institute of Northern Development, Siberian Branch of the RAS, Tyumen, Russia

10410. Srivastava, S.K.; Babu, N.; Pandey, H. (2009): Traditional insect bioprospecting – as human food and medicine. *Indian Journal of Traditional Knowledge* 8(4): 485-494. (in English) ["The wisdom that indigenous people have regarding bioprospecting is embedded in their belief system and their culture. Food insects play an important role in the new insect focus. Ants, bees, termites, caterpillars, water bugs, beetle larvae, flies, crickets, katydids, cicadas, and dragonfly nymphs are among a long list of edible insects that provide nutrition for the people of Asia, Australia, Africa, South America, the Middle East, and the Far East. Insects represent an important food source for a wide variety of other animal species. By weight, termites, grasshoppers, caterpillars, weevils, houseflies and spiders are better sources of protein than beef, chicken, pork or lamb. The traditional healers use insects as medicine. Chemicals produced by insects against self defense can be used for antibacterial and anticancer drugs. The nutritional and economic value of edible insects is often neglected and we should further encourage their collection and commercialization, given the benefits to the environment and human health. It is an interesting concept, managing pest insects by developing them into a sought after delicacy." (Authors)] Address: SK Srivastava, S.K., National Research Centre for Women in Agriculture, (NRCWA), (Indian Council of Agricultural Research), P.O. Baramunda, Bhubaneswar 751 003, Orissa, India. E-mail: srivastavasknrcwa@yahoo.com

10411. Stenman, K.; Johansson, F. (2009): Röd flickslända och finnmyrten – två nya arter för Piteå kommun. *Skörvöpparn*, Umeå 1: 25-26. (in Swedish) [Sweden; *Pyrrhosoma nymphula* was observed ca 30 km V Piteå; N 7257639, O 1735730; RT90.] Address: Johansson, F., Department of Ecology and Environmental Science, Animal Ecology Group, Umea University, 90187 Umea, Sweden. E-mail: frank.johansson@eg.umu.se

10412. Theischinger, G.; Miller, J.; Miller, R.; Krogh, M. (2009): Rediscovery of *Austrocordulia leonardi* in the suburbia of Sydney. *Agrion* 13(2): 50-53. (in English) [A.

leonardi is considered as one of Australia's rarest dragonflies. "Ecological information accumulated during the recent search for the species is presented and discussed." (Authors)] Address: Theischinger G., 2A Hammerley Road, Grays Point, NSW 2232, Australia. E-mail: Gunther.Theischinger@environment.nsw.gov.au

10413. Torralba Burrial, A.; Ocharan, F.J. (2009): Temporalidad y perturbaciones antrópicas en las comunidades de macroinvertebrados de la subcuenca del río Arba (Zaragoza, NE España). Boletín de la Real Sociedad Española de Historia Natural. Sección biológica 103: 131-144. (in Spanish, with English summary) ["Benthic macroinvertebrate communities of the Arba river basin (Aragon, NE Spain) have been studied with the aim of evaluating its ecological status. In the summer of 2001 two samplings campaigns were carried out with a Surber net, coincident with the season of lower flow. Community structure was studied by means of taxa richness and diversity, equitability and dominance indices. Water quality was evaluated by taxa number of Ephemeroptera, Plecoptera and Trichoptera (EPT groups), IASPT and IBMWP indices, using this last one to classify the ecological status of the sampled reaches. In the upper reaches the superficial water is reduced to isolated pools; nevertheless they maintain diverse communities with high values in the IBMWP. There were differences among tributaries due to the diverse degree of anthropic disturbance that they support, being more serious in the downstream part of the basin. Temporality and anthropic disturbance explain the composition of the benthic macroinvertebrate communities in these Mediterranean rivers." (Authors) The taxa list includes 'Aeshnidae' and 'Gomphidae'.] Address: Torralba Burrial, A., Departamento de Biología de Organismos y Sistemas, Universidad de Oviedo, E-33071 Oviedo, Spain. E-mail: antoniotb@hotmail.com

10414. Xu, C.; Zhang, G. (2009): Biodiversities of Daqing wetland and counter measures for protection. Chinese Agricultural Science Bulletin 25(11): 215-219. (in Chinese, with English summary) [From March 2007 to December 2008, the biodiversity of Daqing Longfeng and Zhalong wetland nature reserve, Dangnai section was studied. 469 plant and 316 vertebrate species were found. Sympetrum croceolum and Coenagrionidae are also mentioned in the text.] Address: Xu, C., Department of Life Science, Daqing Normal College, Daqing Heilongjiang 163712, China. E-mail: changjunxu@126.com

10415. Zhao, Y.; Tong, J.; Sun, J.; Chen, D.; Zhang, J. (2009): Property tests of nano indentation on membranous wings of dragonflies. Journal of Agricultural Mechanization Research 2009(11): 26-29. (in Chinese, with English summary) ["The nano - mechanical behaviour of dragonfly membranous wings was investigated with a nano - indenter. The holding time and the loading rate were selected 20 s and 53 μ N/s by the method of test optimization. In nano - indentation experiment, 6 indentation measurements were done in an area of 0.075mm - 0.01mm and then took the mean value as the nano - mechanical parameter of this position. It was shown that the maximums of the reduced modulus and the hardness of the living dragonfly *Anax parthenope julius* and *Pantala flavescens* are about at position of 0.7 L of their wings, where L is the total length of their wings. The maximums of the reduced modulus and the hardness of the *Sympetrum striolatum* are at position of 0.5 L of its wing, where L is the total length of the wing. The reduced modulus and the hardness of *A. parthenope julius* are maximum on the corresponding parts among the three drag-

onflies, related to the large somatotype." (Authors)] Address: The College of Mechanical and Power Engineering, Henan Polytechnic Univ., Jiaozuo 454000, China

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10416. Anderson, C.N.; Grether, G.F. (2010): Character displacement in the fighting colours of *Hetaerina* damselflies. Proc. R. Soc. B 277(1700): 3669-3675. (in English) ["Aggression between species is a seldom-considered but potentially widespread mechanism of character displacement in secondary sexual characters. Based on previous research showing that similarity in wing coloration directly influences interspecific territorial aggression in *Hetaerina* damselflies, we predicted that wing coloration would show a pattern of character displacement (divergence in sympatry). A geographical survey of four *Hetaerina* damselfly species in Mexico and Texas showed evidence for character displacement in both species pairs that regularly occurs sympatrically. *Hetaerina titia*, a species that typically has large black wing spots and small red wing spots, shifted to having even larger black spots and smaller red wing spots at sites where a congener with large red wing spots is numerically dominant (*H. americana* or *H. occisa*). *H. americana* showed the reverse pattern, shifting towards larger red wing spots where *H. titia* is numerically dominant. This pattern is consistent with the process of agonistic character displacement, but the ontogenetic basis of the shift remains to be demonstrated." (Authors)] Address: Anderson, C.N., Departamento de Ecología Evolutiva, Instituto de Ecología, Universidad Nacional Autónoma de México, Circuito Exterior s/n, Apdo. Postal 70-275, México D.F. 04510, Mexico. E-mail: cndanderson1980@gmail.com

10417. Anonymus (2010): Listing Actions: Two Hawaiian Damselflies. Endangered Species Bulletin 35(2): 39. (in English) [Verbatim: "On June 24, the Service listed two species of Hawaiian damselflies as endangered. The flying earwig Hawaiian damselfly (*Megalagrion nesiotis*) historically occurred on the islands of Hawai'i and Maui but is now found only on the latter. The Pacific Hawaiian damselfly (*M. pacificum*) once lived on all of the main Hawaiian Islands (except Kaho'olawe and Ni'ihau) but now occurs only on the islands of Hawai'i, Maui, and Molo'ka'i. Damselflies are close relatives of dragonflies, which they resemble in appearance. With the extensive modification of stream and wetland habitats and the degradation of native forests, Hawaii's native damselflies, including the two species most recently listed, experienced a tremendous reduction in habitat. In addition, predation by a number of nonnative species that have been both intentionally and, in some cases, inadvertently introduced into the Hawaiian Islands is a continuing threat to all of the state's native damselflies."] Address: not stated

10418. Barros, P.; Moreira, P.; Ferreira, S. (2010): Contribution to the knowledge of the Odonata fauna of northern Portugal. Boletín de la S.E.A. 46(1): 533-539. (in English, with Spanish summary) ["The known distribution of 36 species of dragonfly in Portugal is extended with 220 records from 50 localities in the north of the country, collected between 2008 and 2009. The new data include information from three Sites of Community Importance of the Natura 2000 network: PTCON0003-Alvão-Marão, PTCON0025-Montemuro and PTCON0021-Rio Sabor e Maças; and five protected areas: Serra da Estrela Natural Park, Azibo's Lagoon Protected Landscape, Alvão Natural Park, Douro International Natural Park and Mon-

tesinho Natural Park." (Authors) The records include the legally protected Odonata species *Coenagrion mercuriale*, *Gomphus graslinii*, *Macromia splendens*, and *Oxygastra curtisii*.] Address: Ferreira, Sónia, CIBIO/UP - Centre de Investigate) em Biodiversidade e Recursos Geneticos, Universidade do Porto, Campus Agrário de Vairao, P-4485-661 Vairão, Portugal. E-mail: hiporame@gmail.com

10419. Bedjanic, M. (2010): Three new Drepanosticta species from Sri Lanka (Zygoptera: Platystictidae). *Odonatologica* 39(3): 195-215. (in English) ["*D. mojca* sp. n. (holotype male: 10km NE of Deniyaya; Matara distr.; Southern prov.; N 6.360, E 80.460; 02-V-2003; to be deposited at Sri Lanka National Museum, Colombo), *D. bine* sp. n. (holotype male: Opanayake, Ratnapura distr.; Sabaragamuwa prov.; N 6.620, E 80.660; 13-X-1970; deposited at National Museum of Natural History, Smithsonian Institution, Washington, USA) and *D. anamia* sp. n. (holotype male: Katugas Falls near Ratnapura; Ratnapura distr.; Sabaragamuwa prov.; N 6.680, E 80.410; 04-V-2003; to be deposited at Sri Lanka National Museum, Colombo), are described. Their currently known distribution, phenology, ecology and threat status are presented and discussed. The remarkable Drepanosticta diversity in Sri Lanka makes the island a globally important Platystictidae hotspot." (Author)] Address: Bedjanic, M., Kolodvorska 21b, SI-2310 Slovenska Bistrica, Slovenia. E-mail: matjaz.bedjanic@yahoo.com

10420. Behrends, T. (2010): NABU-Landesstelle Wasser meldet ersten Monitoring-Erfolg: Kleine Königslibelle wiederentdeckt. *Betrifft Natur - Magazin des NABU Schleswig-Holstein* 2/10: 11. (in German) [The current situation of *Anax parthenope* in Schleswig-Holstein, Germany is briefly discussed on the basis of most recent records.] Address: Behrends, T., NABU-Landesstelle Wasser, Langes Str. 43, 24306 Plön. Germany. E-mail: Thomas.Behrends@NABU-SH.de

10421. Belevich, O.E.; Yurchenko, Yu.A. (2010): Twilight activity of dragonflies of the genus *Aeshna* Fabricius, 1775 (Odonata, Aeshnidae) in the southern part of West Siberia. *Euroasian entomological journal* 9(2): 275-279. (in Russian, with English summary) [The paper provides information on crepuscular feeding aggregation of eight Aeshnidae (*Aeshna affinis*; *A. crenata*; *A. grandis*; *A. juncea*; *A. mixta*; *A. serrata*; *A. subarctica*; *A. viridis*) in the forest zone of southern W Siberia (Novosibirsk region, Russia). *A. viridis* was the dominant crepuscular species with abundances of 80-100% of all Aeshnidae caught at one place. This behaviour can be recorded over the summer season, starting in early June, with a peak occurring in the second half of July, and ending in the early September. The average duration of the crepuscular flight was ca 1 h. The extreme values of temperatures with feeding activity varied between 9.5 and 25.5°C. Swarming dragonflies concentrated mainly near the forest edges or solitarily standing trees.] Address: Belevich, O.E., Institute of Systematics and Ecology of Animals, Russian Academy of Sciences, Siberian Bran, Frunse str. 11, Novosibirsk 630091 Russia

10422. Bönsel, A. (2010): Zum Vorkommen der Libellenarten aus den Anhängen der FFH-Richtlinie in Mecklenburg-Vorpommern (Odonata). *Naturschutzarbeit in Mecklenburg-Vorpommern* 53(1/2): 24-33. (in German) [Maps of the distribution of the legally protected Odonata species *Aeshna viridis*, *Stylurus flavipes*, *Leucorrhinia albifrons*, *L. caudalis*, and *L. pectoralis* in Mecklenburg-Vor-

pommern, Germany are presented.] Address: Bönsel, A., Vasenbusch 15, D-18337 Gresenhorst, Germany. E-mail: andre.boensel@gmx.de

10423. Buczyński, P. (2010): Polish and dedicated to Poland odonatological papers. 8. The year 2009 and supplement to the year 2008. *Odonatrix* 6(2): 61-64. (in Polish, with English summary) [The author presents a list of Polish and dedicated to Poland odonatological papers that were published in the year 2009 (33 papers in 2009, 8 papers in 2008).] Address: Buczyński, P., Dept of Zool., Maria Curie-Skłodowska University, Akademicka 19, PL-20-033 Lublin, Poland. E-mail: pawbucz@gmail.com

10424. Buczyński, P.; Buczyńska, E. (2010): Another record of dragonflies (Odonata) in a light trap. *Odonatrix* 6(1): 1-2. (in Polish, with English summary) ["On June 15, 2007 in the valley of the River Raba near the village Marszowice (southern Poland) *Platycnemis pennipes* (2 males) and *Ischnura elegans* (1 male) were caught to a light trap. Both species occurred numerously on the river or in an adjacent gravelpit and they were probably activated by the strong light." (Authors)] Address: Buczyński, P., Dept of Zool., Maria Curie-Skłodowska University, Akademicka 19, PL-20-033 Lublin, Poland. E-mail: pawbucz@gmail.com

10425. Cross, D.; Jefferys, E. (2010): Catalogue of insects collected by William Sharp Macleay in Cuba 1825-1836. *Proceedings of the Linnean Society of New South Wales* 131: 27-35. (in English) ["All of William Sharp Macleay's labelled Cuban insects are now in a separately labelled Cuban insect cabinet in the Macleay Museum. There are over 7,349 labelled, pinned and partially identified. Other unlabelled specimens are still to be found throughout the collection. The geographical area where Cuba lies is also within the bio-geographical area for the southern United States, the Bahamas, the Caribbean and the northern most areas of South America. The biological scientists of these surrounding countries will find the information and knowledge of the distributions of insects of Cuba found in 1825 to 1836 of tremendous interest in relation to the possible distributions of insect faunas found or no longer found in these areas today." (Authors) The 24 Odonata specimens are still unidentified.] Address: Cross, D., Univ. of Sydney, Faculty of Agriculture, Food and Natural Resource, NSW 2006, Australia. E-mail: dcro3102@uni.sydney.edu.au

10426. Davis, J.M.; Rosemond, A.M.; Eggert, S.L.; Cross, W.F.; Wallace, J.B. (2010): Nutrient enrichment differentially affects body sizes of primary consumers and predators in a detritus-based stream. *Limnol. Oceanogr.* 55(6): 2305-2316. (in English) ["We assessed how a 5-yr nutrient enrichment affected the responses of different size classes of primary consumers and predators in a detritus-based headwater stream. We hypothesized that alterations in detritus availability because of enrichment would decrease the abundance and biomass of large-bodied consumers. In contrast, we found that 2 yr of enrichment increased the biomass and abundance of all consumers regardless of body size. Furthermore, during the fourth and fifth year of enrichment, the abundance and biomass of large-bodied primary consumers continued to increase, while small-bodied primary consumers returned to pretreatment levels. The size structure of a dominant primary consumer (*Pycnopsyche* spp.) also shifted during the 5-yr enrichment: its average and maximum individual body size increased in the treatment stream compared with the reference stream. Positive en-

richment effects also occurred on small-bodied predators, but not on large-bodied predators. Thus, enrichment increased prey body size, but these positive effects on large prey did not propagate up to higher trophic levels to affect large predators. Because consumer body size can be an important species-specific trait determining population dynamics and ecosystem processes, these observed shifts in consumer size distributions suggest a potentially important pathway for global increases in nutrient enrichment to alter stream structure and function...The predator community was dominated by app. 20 taxa of invertebrate (e.g., Beloneuria [Plecoptera], Ceratopogonidae [Diptera], Cordulegaster, Hexatoma [Diptera], and Lanthus)." (Authors)] Address: Davis, J.M., Stream Ecology Center, Dept of Biological Sciences, Idaho State Univ., Pocatello, Idaho, USA. E-mail: jmdavis@isu.edu

10427. Dow, R.A. (2010): A review of the *Teinobasis* of Sundaland, with the description of *Teinobasis cryptica* sp. nov. from Malaysia (Odonata: Coenagrionidae). *International Journal of Odonatology* 13(2): 205-230, pl. II. (in English) ["*Teinobasis cryptica* sp. nov. (holotype male: Borneo, Sarawak, Bahagian Samarahan, Kota Samarahan, old UNIMAS campus, disturbed peat swamp forest, 25 ii 2008, RMNH) from Malaysia is described from both sexes and compared with other *Teinobasis* species known to occur in Malaysia. The members of the genus known from Sundaland are reviewed. Records of *T. ruficollis* from Borneo are clarified. New records of other Bornean species are listed. The females of *T. laidlawi*, *T. rajah* and *T. ruficollis* are described for the first time. Keys are given to both sexes of all named species from the genus known from peninsular Malaysia, Singapore and the Greater Sunda Islands and the species are placed provisionally into two groups: the *laidlawi*-group and *ruficollis*-group. The former group also includes *T. rubricauda* from the Palawan region of the Philippines, which may be a junior synonym of *T. laidlawi*." (Author)] Address: Rory A. Dow, Netherlands Centre for Biodiversity Naturalis, P.O. Box 9517, 2300 RA Leiden, The Netherlands. E-mail: rory.dow230@yahoo.co.uk

10428. Dozark, K.G. (2010): Sediment effects on aquatic macroinvertebrates in a prairie pothole, Oak Lake, in eastern South Dakota. Dissertation, South Dakota State University: 90 pp. (in English) ["The Clean Water Act aims to maintain the physical, chemical, and biological integrity of the nation's waters. Sedimentation is a major pollutant to world, national, and state waterbodies. The developments of Total Maximum Daily Loads (TMDLs) are required to improve water quality problems through the use of Best Management Practices (BMPs). Sedimentation can be detrimental to aquatic ecosystems by reducing feeding ability, smothering habitat, clogging respiratory apparatuses, and increasing scouring and abrasion to exoskeletons of aquatic organisms. This study examined the influence of regional sediment loads on aquatic macroinvertebrate communities in the littoral zone of a prairie pothole lake, Oak Lake. Ten emergent macrophyte bed and ten rocky shoreline locations were treated with varying levels of soil to simulate regional sediment loads of 25 tons/km², 250 tons/km², 2,500 tons/km² and 25,000 tons/km². Five plots were treated and sampled at each of ten locations during the summers of 2005 and 2006. Invertebrates were subsampled, identified to the lowest practical taxonomic level, and classified into habitat and feeding guilds. A total of 129 invertebrate taxa were identified throughout the experiment. Macrophyte beds contained an average of 23 genera and rocky

shores contained an average of 18 genera. Sedimentation significantly decreased the percentages of collector-gatherers and sprawlers in both habitats. Percentages of gliders, swimmers, and scrapers increased with the addition of sediment in both habitats. Macrophyte beds exhibited an increase in Ephemeroptera, Trichoptera, and Odonata richness following sedimentation. The percentage of sprawlers in rocky shorelines was significantly decreased due to sedimentation. These relationships were log linear. Oligochaeta, *Caenis latipennis*, Endochironomus and Coenagrionidae abundances were reduced following treatment in macrophyte beds. In rocky habitats abundances of Oligochaeta, water mites, and *Hyalella azteca* increased following treatment. However, *C. latipennis* and *Hydra* abundances decreased. Overall, macroinvertebrate communities changed little following sedimentation. Other studies suggest that macroinvertebrate communities in the Prairie Pothole region are tolerant to environmental disturbances and changes. Non-anthropogenic factors, such as lake morphology, may be more influential to macroinvertebrate communities than anthropogenic factors, such as human development along lake shorelines. Future studies should examine possible macroinvertebrate threshold levels with higher sediment loads than were used in this study." (Author)] Address: not stated

10429. Dudarev, A.N. (2010): Strekozy (Insecta, Odonata) verkhovo bolota „El'nya" [Dragonflies (Insecta, Odonata) of the high peat bog „El'nya"]. *Vesnik Vitebskaya dzerzhavnaga universiteta* 2010(2): 80-84. (in Russian) [Belarus; 20 Odonata species have been found in the bog of El'nya, Belarus. Dominant species are *Lestes sponsa*, *Sympetrum flaveolum* and *Enallagma cyathigerum*. Noteworthy species are also *Coenagrion hastulatum*, *C. pulchellum*, *Somatochlora flavomaculata*, *Leucorrhinia albifrons*, *L. rubicunda*, and *L. dubia*.] Address: Dudarev, A.N., UO Vitebsk State Univ., PM Masherau, Belarus

10430. Geraeds, R.P.G. (2010): Habitat and development of larvae of the Club-tailed dragonfly in the river Roer. *Natuurhistorisch Maandblad* 99(11): 249-255. (in Dutch, with English summary) ["The locations and timing of emergence of in the river Roer (in the Dutch province of Limburg) have been thoroughly investigated in recent years. It is assumed that the dragonflies generally emerge close to their larval habitat. Since surveys of actual larval habitats in the Netherlands have been very rare, four transects of the Roer were checked for the presence of larvae of the Clubtailed dragonfly (*Gomphus vulgatissimus*) during 2006-2009. The goal was to discover what type of substrate the larvae prefer, and if the places where the dragonflies emerge are situated close to the actual larval habitats, as well as to find out how long larval development along the river Roer takes. The survey of larvae was carried out in four transects (Muytert, Melicker Ohé, Zwarte Berg and Roermond). The larvae were caught with a hand brailer which is normally used for fish and amphibian surveys. For each of the larvae caught, I noted the type of substrate in which it was caught and its distance to the riverbank, measured the width of its head and determined its sex. Larvae of the Clubtailed dragonfly develop in 14 stages (F13 to F0), and the stage of development can be identified by measuring the width of the head. The last hibernation before emergence always takes place in the final stage of development (F0). The larvae do not grow during hibernation, i.e. from October to May. Each transect was investigated eight times during the 2006-2009 period, and 615 larvae of *G. vulgatissimus*

simus were caught. Most were caught at the Melicker Ohé transect (245), while only four larvae were caught at the Roermond transect. Most larvae were found within a 1 m distance of the riverbank, and almost 50% even within 0.50 m from the bank. The largest distance from the bank at which larvae were caught was 5 m. Most larvae were found in mixed substrates, dominated by a combination of silt and detritus. Only a few larvae were found in substrates dominated only by silt, detritus, sand or gravel. The widths of the larval heads ranged from 1.3 to 6.5 mm. According to Müller (1995) and Kern (1999), this means that the larvae were in the last seven developmental stages (F6 to F0). Most of the larvae were in the final stage (F0). Surveys during hibernation yielded only larvae in the last six stages (F5 till F0). The distribution of developmental stages of larvae caught during hibernation shows that most of the larvae of the population in the River Roer develop over a period of three years, which means that most of the larvae hibernate successively in stages F4, F2 and F0." (Author)] Address: Geraeds, R.P.G., Bergstraat 70, 6131 AW Sittard, The Netherlands

10431. Grand, D. (2010): Observations tardives d'*Aeshna mixta* Latreille, 1805 dans la Dombes (Ain) à l'automne 2009 (Odonata, Anisoptera: Aeshnidae). *Martinia* 26(1-2): 52. (in French) [France; data on fall phenology of *A. mixta* (and *Sympetrum meridionale*, *S. striolatum*) are presented.] Address: Grand, D., Impasse de la Voûte, F-69270 St. Romain-au-Mont d'or, France. E-mail: danielgrand@yahoo.fr

10432. Hacet, N.; Çamur-Elipek, B.; Kirgiz, T. (2010): A study on the Odonate larvae of Turkish Thrace: with larval identification keys to the considered taxa. *J. Entomol. Res. Soc.* 12(2): 57-74. (in Odonata, larvae, identification key, Turkish Thrace, Turkey) ["A total of 26 species were recorded based on larval specimens collected from the region during sampling period between years 1982 and 2009. New localities for the odonate species, except *Caliaeschna microstigma*, *Gomphus flavipes*, *Cordulegaster insignis*, and *Sympetrum fonscolombii*, were added to their distributional ranges inside the region. Furthermore, *Anax imperator*, *Brachytron pratense*, and *Libellula fulva* were recorded from the provinces where they had not previously been found. Keys including illustrations of the larvae recorded in the region were provided." (Authors)] Address: Hacet, Nurten, Trakya University, Faculty of Science, Department of Biology, TR-22030 Edirne, Turkey. E-mails: nhacet@hotmail.com

10433. Han, J.-s.; Chang, J.W.; Kang, I.-m.; Kim, S.-t. (2010): Flow visualization and force measurement of an insect wing based on dragonfly hovering. 28th AIAA Applied Aerodynamics Conference, 28 June - 1 July 2010, Chicago, Illinois: (in English) ["Flow visualization and aerodynamic force measurements were conducted in order to investigate the flow phenomena around the wing of a hovering dragonfly. Two pairs of 4-bar linkage mechanisms were installed in a flapping model and driven by a stepping motor. The fore- and hindwing have a phase difference angle of 180°. The stroke amplitude, pitch angle and incidence angle of the model were 75°, 0-90° and 60°, respectively. A wing beat frequency of 0.087 was chosen, and the corresponding Reynolds number was 2.0×10³ based on the forewing. Each wing generated LEV at the start of downstroke and the LEV was developed and maintained on the upper surface of the wing. Aerodynamic forces were also generated in the downstroke motion in all cases. When the wings stroke together, the LEV on the hindwing was deformed by the

forewing, and the forces on the hindwing are lower than in the hindwing only cases. These results indicate that the wing-wing interaction have a negative effect on the generation of aerodynamic forces." (Authors)] Address: Chang, J.W., Korea Aerospace University, Hanggongdae-gil 100, Deogyang-gu, Goyang-city, Gyeonggi-do, Republic of Korea. E-mail: jwchang@kau.ac.kr

10434. Hanson, M.A.; Palik, B.J.; Church, J.O.; Miller, A.T. (2010): Influences of upland timber harvest on aquatic invertebrate communities in seasonal ponds: efficacy of forested buffers. *Wetlands Ecology and Management* 18(3): 255-267. (in English) ["We assessed community responses of aquatic invertebrates in 16 small, seasonal ponds in a forested region of north central Minnesota, USA, to evaluate potential influences of timber harvest and efficacy of uncut forested buffers in adjacent uplands. Invertebrate data gathered before (2000) and during the first 4 years following clearcut timber harvest (2001–2004) indicated that tree removal was followed by shifts in aquatic invertebrate communities in adjacent seasonal ponds. Retention of forested buffers appeared to partially mitigate influences of tree removal, but benefits of buffers may be limited by wind throw or other factors. Additional research is needed to clarify relationships between ecological characteristics of seasonal ponds and upland silviculture activities, and to better document efficacy and longevity of forested buffers." (Authors) Odonata are treated at the order level.] Address: Hanson, M.A.; Minnesota Dept of Natural Resources, Wetland Wildlife Populations & Research Group, 102 23rd St. NE, Bemidji, MN 56601, USA. E-mail: mark.hanson@dnr.state.mn.us

10435. Hippke, M. (2010): Bemerkenswerte entomologische Beobachtungen in Mecklenburg-Vorpommern (2010): Odonata (Libellen). *Virgo - Mitteilungsblatt des Entomologischen Vereins Mecklenburg* 13(2): 70. (in German) [Germany. Records of *Anax parthenope*, *Leucorrhinia caudalis*, *Aeshna affinis*, *A. subarctica*, and *Erythromma viridulum* are documented.] Address: Hippke, M., Wiesenring 29, 19370 Parchim, Germany. E-Mail: Mathias-Hippke@web.de

10436. Höttinger, H. (2010): Die Libellen- und Tagfalterfauna des „Tiergartens“ in Schützen am Gebirge (Burgenland, Österreich). *Beiträge zur Entomofaunistik* 11: 13-26. (in German, with English summary) [Austria; "The Esterházy-"Tiergarten" at Schützen am Gebirge in the Leitha mountains exists since 1756, has 1.200 hectare in size and is surrounded by a wall. The area is characterized by partly semi-open and park like structure, some parts of ancient woodland and high diversity of habitats. Data on the fauna of the area were sparse until yet. Therefore in the year 2009 outline mapping on birds, bats, amphibians and insects (butterflies, dragonflies, saproxylic beetles) was ordered from the owner, the Esterházy company. [...] 36 of the 58 species of dragonflies reported from Burgenland were found and about five further species can be expected. Notably four "critically endangered" species from the Austrian red list were recorded (*Coenagrion ornatum*, *C. scitulum*, *Lestes dryas* and *L. virens*). Two species are classified as "endangered" (*Libellula fulva*, *Lestes barbarus*) and further six species "vulnerable". At least 22 of the 36 species possibly or sure can reproduce in the area." (Author)] Address: Höttinger, H., Institut für Zoologie, Department für Integrative Biologie und Biodiversitätsforschung, Universität für Bodenkultur, Gregor Mendel Str. 33, 1180 Wien, Austria. E-Mail: helmut.hoettinger@boku.ac.at

- 10437.** Joniak, T. (2010): Benthic fauna of humic lakes of Drawieński National Park – history of research and state of knowledge. In: Joniak, T. (Ed.), *Functioning and protection of marsh ecosystems. Vol 3. Benthic fauna of Polish national parks.* Department of Water Protection Faculty of Biology A. Mickiewicz University, Poznań: 40-46. (in Polish, with English summary) ["The work present the history of research and state of knowledge of macrozoobenthos of humic lakes in Drawieński National Park, Poland. The specific feature of humic lakes is the presence of dissolved, mainly humic organic matter. The process of lake humification is connected with the inflow of organic substances cause significant changes in the water environment as well as the formation of a specific association of hydrobionts. The increase in the concentration of humic acids in lake waters leads to changes in the abiotic features of the environment, such as high water colour, decline in the thickness of the trophogenic zone, pH decrease (<6.5), limitation of the bioavailability of biogenic compounds. In these conditions some groups of benthic fauna are not found (for example Crustacea, Mollusca), and species diversity and number are reduced." (Author) The following Odonata species are mentioned: *Cordulia aenea*, *Enallagma cyathigerum* and *Ischnura elegans*.] Address: Joniak, T., Adam Mickiewicz University of Poznań, Faculty of Biology, Department of Water Protection, Umultowska str. 89, 61-614 Poznań, Poland. E-mail: e-mail: tjoniak@amu.edu.pl
- 10438.** Jović, M.; Stanković, M.; Andus, L. (2010): *Aeshna grandis* (Linnaeus 1758) - A new species in Serbian fauna (Odonata: Aeshnidae). *Bulletin of the Natural History Museum* 3: 137-140. (in English, with Serbian summary) [10-VIII-2009, Badovinci (NW Serbia)] Address: Jović, M., Natural History Museum, Njegoševa 51, 10000 Belgrade, Serbia. E-mail: milos.jovic@nhmbeo.rs
- 10439.** Kery, M.; Gardner, B.; Monnerat, C. (2010): Predicting species distributions from checklist data using site-occupancy models. *Journal of Biogeography* 37(10): 1851-1862. (in English) ["Aim (1) To increase awareness of the challenges induced by imperfect detection, which is a fundamental issue in species distribution modelling; (2) to emphasize the value of replicate observations for species distribution modelling; and (3) to show how 'cheap' checklist data in faunal/floral databases may be used for the rigorous modelling of distributions by site-occupancy models. Location: Switzerland. Methods: We used checklist data collected by volunteers during 1999 and 2000 to analyse the distribution of *Aeshna cyanea*, a common dragonfly in Switzerland. We used data from repeated visits to 1-ha pixels to derive 'detection histories' and apply site-occupancy models to estimate the 'true' species distribution, i.e. corrected for imperfect detection. We modelled blue hawker distribution as a function of elevation and year and its detection probability of elevation, year and season. Results: The best model contained cubic polynomial elevation effects for distribution and quadratic effects of elevation and season for detectability. We compared the site-occupancy model with a conventional distribution model based on a generalized linear model, which assumes perfect detectability ($p = 1$). The conventional distribution map looked very different from the distribution map obtained using site-occupancy models that accounted for the imperfect detection. The conventional model underestimated the species distribution by 60%, and the slope parameters of the occurrence–elevation relationship were also underestimated when assuming $p = 1$. Elevation was not only an important predictor of blue hawker occurrence, but also of the detection probability, with a bell-shaped relationship. Furthermore, detectability increased over the season. The average detection probability was estimated at only 0.19 per survey. Main conclusions: Conventional species distribution models do not model species distributions per se but rather the apparent distribution, i.e. an unknown proportion of species distributions. That unknown proportion is equivalent to detectability. Imperfect detection in conventional species distribution models yields underestimates of the extent of distributions and covariate effects that are biased towards zero. In addition, patterns in detectability will erroneously be ascribed to species distributions. In contrast, site-occupancy models applied to replicated detection/non-detection data offer a powerful framework for making inferences about species distributions corrected for imperfect detection. The use of 'cheap' checklist data greatly enhances the scope of applications of this useful class of models." (Authors)] Address: Kéry, M., Swiss Ornithological Institute, 6204 Sempach, Switzerland. E-mail: marc.kery@vogelwarte.ch
- 10440.** Kołeczek, D.; Tończyk, G. (2010): *Ischnura elegans* (Zygoptera: Coenagrionidae) as a prey of *Machimus* sp. (Diptera: Asilidae). *Odonatrix* 6(1): 3. (in Polish, with English summary) [Skórzyn (western Poland, 52°07' 17,18"N, 15°02'21,18"E)] Address: Kołeczek Dagmara, Instytut Ekologii Stosowanej, Skórzyn 44a, 66-614 Maszewo, Poland. E-mail: instytut@ies.zgora.pl
- 10441.** Koltthoff, D. (2010): *Libellen im Landkreis Leer.* Verlag H. Risius. Weener: 82 pp. (in German) [Niedersachsen, Germany. 34 Odonata species are characterised in a monographic style.]
- 10442.** Krieg-Jacquier, R. (2010): *Epithea bimaculata* (Charpentier, 1825) dans le département de l'Ain (Odonata, Anisoptera, Corduliidae). *Martinia* 26(3/4): 83-97. (in French, with English summary) [*E. bimaculata* was found in the Ain department, France at 19 localities. At two of them a univoltin development of specimens is possible.] Address: Krieg-Jacquier, R., 18 rue de la Maconne F-73000 Barberaz, France. E-mail: regis.krieg.jacquier@gmail.com
- 10443.** Kück, P.; Meusemann, K.; Dambach, J.; Thormann, B.; Reumont, B.M. von; Wägele, J.W.; Misof, B. (2010): Parametric and non-parametric masking of randomness in sequence alignments can be improved and leads to better resolved trees. *Frontiers in Zoology* 2010, 7: 12 pp. (in English) ["Methods of alignment masking, which refers to the technique of excluding alignment blocks prior to tree reconstructions, have been successful in improving the signal-to-noise ratio in sequence alignments. However, the lack of formally well-defined methods to identify randomness in sequence alignments has prevented a routine application of alignment masking. Here, the effects on tree reconstructions of the most commonly used profiling method (GBLOCKS), which uses a predefined set of rules in combination with alignment masking, are compared with a new profiling approach (ALISCORE) based on Monte Carlo resampling within a sliding window, using different data sets and alignment methods. While the GBLOCKS approach excludes variable sections above a certain threshold which choice is left arbitrary, the ALISCORE algorithm is free of a priori rating of parameter space and therefore more objective. ALISCORE was successfully extended to amino acids using a proportional model and empirical substitution matrices to score randomness in multiple sequence

alignments. A complex bootstrap resampling leads to an even distribution of scores of randomly similar sequences to assess randomness of the observed sequence similarity. Testing performance on real data, both masking methods, GBLOCKS and ALISCORE, helped to improve tree resolution. The sliding window approach was less sensitive to different alignments of identical data sets and performed equally well on all data sets. Concurrently, ALISCORE is capable of dealing with different substitution patterns and heterogeneous base composition. ALISCORE and the most relaxed GBLOCKS gap parameter setting performed best on all data sets. Correspondingly, Neighbour-Net analyses showed the most decrease in conflict. Alignment masking improves signal-to-noise ratio in multiple sequence alignments prior to phylogenetic reconstruction. Given the robust performance of alignment profiling, alignment masking should routinely be used to improve tree reconstructions. Parametric methods of alignment profiling can be easily extended to more complex likelihood based models of sequence evolution which opens the possibility of further improvements." (Authors) The data set includes *Libellula quadrimaculata* and *Cordulia aenea*.] Address: Kück, P., Zool. Forschungsmus. A. Koenig, Adenauerallee 160, D-53113 Bonn, Germany. E-mail: patrickkueck@web.de

10444. Kulijer, D.; Marinov, M. (2010): Odonata from Bulgaria in the collection of National Museum of Bosnia and Herzegovina. *Acta entomologica serbica* 15(2): 161-169. (in English, with Serbian summary) ["The entomological collection of the National Museum of Bosnia and Herzegovina is one of the oldest Balkan insect collections. 87 dragonfly specimens from 19 species that originate from Bulgaria were found in this collection. In this paper we present the oldest and till now unknown records of dragonflies from Bulgaria from this collection. Some interesting and new distribution data on several species are also presented and discussed." (Authors) The collection includes the following taxa: *Calopteryx splendens*, *C. splendens balcanica*, *Calopteryx virgo*, *Lestes sponsa*, *L. dryas*, *L. barbarus*, *L. macrostigma*, *S. fusca*, *Ischnura elegans*, *I. pumilio*, *Coenagrion puella*, *Platycnemis pennipes*, *Gomphus flavipes*, *Sympetrum sanguineum*, *S. flaveolum*, *S. meridionale*, and *Crocotthemis erythraea*. The occurrence of *C. s. balcanica* in Bulgaria needs further confirmation.] Address: Kulijer, D., National Museum of Bosnia and Herzegovina, Zmaja od Bosne 3, 71000 Sarajevo, Bosnia and Herzegovina. E-mail: dejan.kulijer@gmail.com

10445. Lamond, B. (2010): Drugstore Dragonfly. *The Wood Duck* 64(4): 85. (in English) [Brantford, Ontario, Canada, 8-VIII-2010, a female *Stylurus scudderi* flew through an open door into a pharmacy perching at the ceiling. The paper includes additional regional records of this Odonata species.] Address: Lamond, B. E-mail: bill-lamond@hotmail.com

10446. Levy, D.E.; Seifert, A. (2010): Parameter study of simplified dragonfly airfoil geometry at Reynolds number of 6000. *J. Theor. Biol.* 266(4): 691-702. (in English) ["Aerodynamic study of a simplified Dragonfly airfoil in gliding flight at Reynolds numbers below 10,000 is motivated by both pure scientific interest and technological applications. At these Reynolds numbers, the natural insect flight could provide inspiration for technology development of Micro UAV's and more. Insect wings are typically characterized by corrugated airfoils. The present study follows a fundamental flow physics study (Levy and Seifert, 2009), that revealed the importance of flow separation

from the first corrugation, the roll-up of the separated shear layer to discrete vortices and their role in promoting flow reattachment to the aft arc, as the leading mechanism enabling high-lift, low drag performance of the Dragonfly gliding flight. This paper describes the effect of systematic airfoil geometry variations on the aerodynamic properties of a simplified Dragonfly airfoil at Reynolds number of 6000. The parameter study includes a detailed analysis of small variations of the nominal geometry, such as corrugation placement or height, rear arc and trailing edge shape. Numerical simulations using the 2D laminar Navier-Stokes equations revealed that the flow accelerating over the first corrugation slope is followed by an unsteady pressure recovery, combined with vortex shedding. The latter allows the reattachment of the flow over the rear arc. Also, the drag values are directly linked to the vortices' magnitude. This parametric study shows that geometric variations which reduce the vortices' amplitude, as reduction of the rear cavity depth or the reduction of the rear arc and trailing edge curvature, will reduce the drag values. Other changes will extend the flow reattachment over the rear arc for a larger mean lift coefficients range; such as the negative deflection of the forward flat plate. These changes consequently reduce the drag values at higher mean lift coefficients. The detailed geometry study enabled the definition of a corrugated airfoil geometry with enhanced aerodynamic properties, such as range and endurance factors, as compared to the nominal airfoil studied in the literature." (Authors)] Address: Levy, D.E., School of Mechanical Engineering, Faculty of Engineering, Tel-Aviv Univ., Tel Aviv, Israel

10447. Malikova, E.I. (2010): Zoogeographically interesting dragonfly (Odonata) records from the Upper Amur region. *Eurasian Entomological Journal* 9(2): 291-294. (in Russian, with English summary) ["New records of 10 species are reported. *Lestes temporalis*, *Paracercion calamorum*, *Anax parthenope julius* and *Sinictinogomphus clavatus* are recorded for the first time from the region. The W Palaearctic *Orthetrum cancellatum*, reported from Upper Amur (Blagoveshchensk, Amurskaya Oblast, Russia), probably migrated from Chinese Inner Mongolia, following a mass migration of the beet webworm (*Loxostege sticticalis*) in 2008." (Author) Address: Malikova, E.I., Blagoveshchensk St. Pedagog. Univ., Lenina 104, RUS-675000 Blagoveshchensk, Russia

10448. Michalczyk, W.; Buczyński, P. (2010): The second recent locality of *Coenagrion ornatum* (Odonata: Coenagrionidae) in the southeastern Poland. *Odonatrix* 6(1): 15-21. (in Polish, with English summary) ["*Coenagrion ornatum* is a critically endangered species in Poland. It has been known from 24 localities so far, of which only one is preserved till now - in Śniatycze situated east of Zamosc (south-eastern Poland). The authors give and discuss a new species locality situated west-north-west of Zamość, ca. 40 km from Śniatycze, in the village of Średnie Duże (50°50'32"N, 23°01'15"E, UTM: FB43). The species inhabits the River Rakówka. The discovery was made on 13 July, thus the estimating of population number is uncertain, however, it can be at least equally numerous as the population in Śniatycze which is regarded as large and stable. New data moves the boundary of the current range of *C. ornatum* in Poland a bit to the north. The presence of the species in south-eastern Poland is probably associated with its occurrence in western Ukraine, where it was recorded at ca. 20 localities. Although many of them are historical ones, there is also fresh data from the Shatsk Lake District (Chrokalo,

Werwes 2009). *Rakówka* seems to be untypical as a habitat of *C. ornatum* due to high values of river section and flow velocity. However, the calculated parameters of flow turned out to be similar to these from the other localities of this species. The discussed locality is seriously endangered due to its localization in the centre of a village - the small river is fragmented into many stretches with different type of using. *C. ornatum* has been observed on the stretch of the total length of ca 200 m, however, the numbers were different. In places with the least favourable conditions (with the bottom of concrete and removed vegetation) the species was absent. Passive and active protection of this locality is a must." (Authors)] Address: Buczyński, P., Dept of Zool., Maria Curie-Skłodowska University, Akademicka 19, PL-20-033 Lublin, Poland. E-mail: pawbucz@gmail.com

10449. Michalkiewicz, M. (2010): Long-term changes of macrozoobenthos Rosnowskie Duże Lake. In: Joniak, T. (Ed.), Functioning and protection of marsh ecosystems. Vol 3. Benthic fauna of Polish national parks. Department of Water Protection Faculty of Biology A. Mickiewicz University, Poznań: 61-68. (in Polish, with English summary) ["The paper presents the results of bottom macrofauna found in Rosnowskie Duże Lake in the years 1986-2006. The study included 2 profundal stations and 3 of the littoral. The dominant forms in the profundal where Chaoborus and Chironomidae, while in the littoral Gastropods, *Asellus aquaticus* and Chironomidae. Most frequently occurred in the littoral was *Potamopyrgus antipodarum*, which reached an average size of over 23000 individuals per 1 m² of the bottom. The variability in individual basins of benthofauna's lake affected different physical-chemical parameters of water." (Author) Odonata are not specified in detail.] Address: Michalkiewicz, M., Poznań University of Technology, Institute of Environmental Engineering, Division of Water Supply and Environment Protection, Piotrowo str. 5, 60-965 Poznań, Poland. E-mail: drmichal@poczta.onet.pl

10450. Muehlbauer, J.D.; Doyle, M.W.; Bernhardt, E.S. (2010): Macroinvertebrate community responses to a dewatering disturbance gradient in a restored stream. *Hydrol. Earth Syst. Sci. Discuss.* 7: 9599-9630. (in English) [Timberlake mitigation site, Carolina, USA. "Dewatering disturbances are common in aquatic systems and represent a relatively untapped field of disturbance ecology, yet studying dewatering events along gradients in non-dichotomous (i.e., wet/dry) terms is often difficult. Because many stream restorations can essentially be perceived as planned hydrologic manipulations, such systems can make ideal test-cases for understanding processes of hydrological disturbance. In this study we used an experimental drawdown in a 440 ha stream / wetland restoration site to assess aquatic macroinvertebrate community responses to dewatering and subsequent rewetting. The geomorphic nature of the site and the design of the restoration allowed dewatering to occur predictably along a gradient and decoupled the hydrologic response from any geomorphic (i.e., habitat heterogeneity) effects. In the absence of such heterogeneous habitat refugia, reach-scale wetted perimeter and depth conditions exerted a strong control on community structure. The community exhibited an incremental response to dewatering severity over the course of this disturbance, which was made manifest not as a change in community means but as an increase in community variability, or dispersion, at each site. The dewatering also affected inter-species abundance and distributional pat-

terns, as dewatering and rewetting promoted alternate species groups with divergent habitat tolerances. Finally, our results indicate that rapid rewetting – analogous to a hurricane breaking a summer drought – may represent a recovery process rather than an additional disturbance and that such processes, even in newly restored systems, may be rapid." (Authors) The supplementary material contains the taxa lists identified to the genus level (*Anax*, *Enallagma*, *Ischnura*, *Erythemis*, *Miathyria*, *Pachydiplax*.)] Address: Muehlbauer, J.D., Curriculum for the Environment and Ecology, Univ. of North Carolina, Chapel Hill, NC, USA. E-mail: jeffreym@unc.edu

10451. Müller, J.; Westermann, A.; Steglich, R. (2010): Erstnachweis der Zierlichen Moosjungfer (*Leucorrhinia caudalis*) in Sachsen-Anhalt. *Naturschutz in Sachsen-Anhalt* 47(1-2): 52-53. (in German) [08-VI. and 11-VI-2008, limestone quarry west of Schwanebeck, Sachsen-Anhalt, Germany; 17.VI.2008, gravel pit east of Hohenwarthe, Sachsen-Anhalt, Germany.] Address: Müller, J., Frankelfelde 3, 39116 Magdeburg, Germany. E-mail: FaunOek.JMueller@t-online.de

10452. Palacios, M.J.; Pérez, J.; Sánchez, A.; Muñoz, P. (coords.). (2010): Catálogo Regional de Espedes Amenazadas de Extremadura. Fauna I. Consejería de Industria, Energía y Medio Ambiente. Junta de Extremadura: 342 pp. (in Spanish) [The following species are introduced in details: *Macromia splendens*, *Aeshna juncea*, *Gomphus simillimus*, *G. graslinii*, *Onychogomphus uncutus*, *Orthetrum nitidinerve*, *Coenagrion mercuriale*, *C. caeruleum*, *C. scitulum*, *Oxygastra curtisii*. Special emphasis is given on regional distribution, habitat and conservation measures.] Address: Junta de Extremadura, Plaza del Rastro, S/N, 06800 Merida, Spain

10453. Papp, J. (2010): In memoriam Dr Henrik Steinmann (1932–2009). *Annales historico-naturales Musei nationalis hungarici* 102: 5-19. (in English) [27-III-1932 - 26-XI-2009. To odonatologists Steinmann was known as author of the two volumes of "World Catalogue of Odonata, Vol. I. Zygoptera. – Das Tierreich. The Animal Kingdom, Part 110. – 500 pp." and "World Catalogue of Odonata, Vol. II. Anisoptera. – Das Tierreich. The Animal Kingdom, Part 111. – 636 pp." both published in 1997.] Address: Papp, J., Dept of Zoology, Hungarian Natural History Museum, 1088 Budapest, Baross utca 13, Hungary

10454. Relyea, R.A.; Edwards, K. (2010): What doesn't kill you makes you sluggish: How sublethal pesticides alter predator-prey interactions. *Copeia* 2010(4): 558-567. (in English) ["Pesticides commonly occur in ecological communities at relatively low concentrations, leading to growing interest in determining the sublethal effects of pesticides. Such effects should affect individuals and, in turn, alter interspecific interactions. We sought to determine how sublethal concentrations (0.1 and 1.0 mg/L) of two common pesticides (carbaryl and malathion) affected predator and prey behaviour as well as subsequent predation rates. We conducted a series of experiments using three species of larval amphibians (Gray Treefrogs, *Hyla versicolor*; Green Frogs, *Rana clamitans*; and American Bullfrogs, *R. catesbeiana*) and three species of their predators (larval dragonflies, *Anax junius*; adult water bugs, *Belostoma flumineum*; and adult Red-spotted Newts, *Notophthalmus viridescens*). We found that the pesticides frequently reduced the activity of all three tadpole species. For the two invertebrate predators (*Anax* and *Belostoma*), the pesticides were lethal, precluding us from examining sublethal effects on predator-prey inter-

actions. However, newt survival was high and the addition of the pesticides reduced the predation rates of newts in one of the three tadpole species. There were no effects of the pesticides on the striking frequency of the newts or on their prey capture efficiency. Thus, the mechanism underlying the pesticide-induced reduction in predation rates remains unclear. What is clear is that sublethal concentrations of pesticides have the potential to alter prey behavior and species interactions and thereby alter the composition of ecological communities." (Authors)] Address: Relyea, R.A., Dept Biol. Sciences, University of Pittsburgh, Pittsburgh, Pennsylvania 15260, USA. E-mail: rarelyea@pitt.edu

10455. Roland, H.-J.; Roland, U.; Pollard, E. (2010): Incidental records of dragonflies and damselflies (Order Odonata) in Cambodia. *Cambodian Journal of Natural History* 2010(2): 97-102. (in English) [The authors publish an updated version of Roland & Roland (2010) New records of Odonata on a birding trip to Cambodia 12th-26th February 2010. *Agrion* 14(2): 30-33.] Address: Roland, H.-J., Im Mühlahl 35, 61203 Reichelsheim, Germany. E-mail: Hjuergenroland@aol.com

10456. Sage, W. (2010): Fahrt der ZGB zum Neusiedler See vom 12. bis 16.052010. *Mitteilungen der Zoologischen Gesellschaft Braunau* 10(1): 119-132. (in German) [Austria, Neusiedler See, 12-16.052010; *Anaciaeschna isoceles* and *Libellula quadrimaculata* are listed.] Address: Sage, W., Seibersdorfer Str. 88a, 84375 Kirchdorf am Inn, Germany

10457. Sathe, T.V.; Bhusnar, A.R. (2010): Biodiversity of mosquitovorous dragonflies (Order: Odonata) from Kolhapur district including Western Ghats. *Biological Forum* 2(2): 38-41. (in English) ["Biodiversity protection and conservation is on national and international agenda and responsible for sustainable development of a region or a country and secondly dragonflies are potential bio control agents of mosquitoes. Therefore, biodiversity of mosquitovorous dragonflies of Kolhapur district including Western Ghats of Maharashtra has been studied. In all, 43 species of dragonflies were found feeding on mosquitoes. The important genera includes *Gomphus*, *Burmagomphus*, *Cyclogomphus*, *Microgomphus*, *Anax*, *Macromia*, *Orthetrum*, *Potomarcha*, *Pantala*, *Chlorogomphus*, *Epophthalmia*, *Indionyx*, *Amphithemis*, *Hylaeothemis*, *Heliogomphus*, *Davidiodes*, *Bradinopyga*, *Crocothemis* and *Lameligomphus*." (Authors)] Address: Sathe, T.V., Dept of Zoology, Shivaji University Kolhapur (MS), India

10458. Schweighofer, W. (2010): Naturkundliche Beobachtungen am ÖBB-Becken Nenndorf bei Markersdorf. *LANIUS—Information* 19(3-4): 7-8. (in German) [Niederösterreich, Austria; ca 48°11'N, 15°30'E; in 2009 and 2010, in a shallow storm-water retention pond 33 Odonata species have been recorded including *Lestes barbarus*, *L. virens*, *Coenagrion scitulum*, *Orthetrum albistylum*, *Anax parthenope*, *Sympetrum flaveolum*, *S. fonscolombii*, *S. pedemontanum*, and *S. meridionale*. The author emphasizes on records of *Anax ephippiger* and *Lestes macrostigma*.] Address: Schweighofer, W., Ötscherblick 10, A-3661 Artstetten, Austria. E-mail: wolfgang.schweighofer@schule.at

10459. Simard, G. (2010): *Flying Dragons*. Editions Albus. ISBN: 978-2-9526011-5-3: 144 pp. (in English) ["Flying Dragons rule supreme over the world of insects. High-speed manoeuvres, instant changes of direction, hovering, reverse flight, dragonflies can do almost anything on the wing. The photographs of Ghislain SIMARD

open a fresh window into a world where aerial motions are too fast to be observed by human eyes. The photographer's lens offers a journey through miniature landscapes around ponds, canals, streams, rivers and peat bogs. The chapters are arranged to show the diversity of behaviour that these spectacular insects enjoy. Frail Damselflies are unpredictable, Broad-bodied Chasers always return to the same roost, Keeled Skimmers mate in flight, Common Darters play with their reflections in the water while the Emperor flaunts its aerial prowess. The briskness of dragonflies' actions turns the photography of their flight into an almost impossible task. To shoot such actions, high-speed equipment dedicated to flying insects is required. Some tools have even been designed specifically to arrest dragonflies in flight. The final section of the book details this working method for wildlife photographers." (Publisher) Coffee table book] Address: not stated

10460. Singh, H.; Gusain, O.P.; Gusain, M.P. (2010): Benthic insect-substratum relationship along an altitudinal gradient in a Himalayan stream, India. *International Journal of Ecology and Environmental Sciences* 36(4): 215-231. (in English) ["Takoli Gad is a small spring-fed tributary of the River Alaknanda (a tributary of River Ganga) in Tehri district of Uttarakhand (India). Insect-substratum relationship was studied at five sampling sites representing an altitudinal gradient in Takoli Gad during January 2000 to February 2002. The swift flowing stream is largely dominated by pebbles and boulders (>32 nun). In general, the substrate composition ranged from coarse sand ($\phi = 0$) to small pebbles ($\phi = -4$). The benthic fauna comprised of 34 genera belonging to 09 orders and 25 families of insects. It included mostly the nymphs and larvae of Ephemeroptera, Plecoptera, Trichoptera, Coleoptera, Lepidoptera, Odonata, Neuroptera, Diptera and Hemiptera. The total benthic density was maximum during winter III (3408.0 ind. m²) at downstream site, and minimum during monsoon I (283.0 ind. m²) in the middle stretch. The Simpson Index of Diversity (D) for substrate heterogeneity was low for headwater region of the stream. The Index of Representation (IR) revealed that the heterogeneous substratum was the preferred habitat of most of the taxa during the winter. The distribution of the benthic insects varied slightly along the longitudinal gradient. Many genera were seasonally absent in different sections of the stream. Seasonal variation in the density of benthic insects was correlated with the change in the substrate composition, notably during the rainy season when the mean grain size changes to cobbles (Md = 8). A relatively stable substrate composition during winter together with low to moderate current velocity (0.4-0.6 m s⁻¹) and shallow water depth (0.14-0.20 m) along with abundant detritus favours a rich and diverse insect community. Further, clustering method also shows the substratum during winter to be preferred by majority of the taxa." (Authors) Odonata taxa are *Hagenius!* and *Ophiogomphus*.] Address: Singh, T., Freshwater Biology Unit, Department of Zoology, HNB Garhwal University, Srinagar-Garhwal 246174, Uttarakhand, India

10461. Skevington, J.H.; Beatty, C.D.; Van Gossum, H.; Donnelly, T.W.; Sherratt, T.N.; Rashed, A.; Kelso, S. (2010): Molecular phylogenetics of *Nesobasis* and *Melanesobasis* (Odonata: Coenagrionidae): exploring the evolution of a large insular insect radiation. *Cladistics* 26: 224-225. (in English) [Verbatim: "In 1990 Nick Donnelly revised a large part of the Fijian damselfly fauna. An unusual anomaly was discovered—some species appeared to be heavily female biased. In an effort to better under-

stand this phenomenon, we decided to create a phylogenetic hypothesis for the two large, near-endemic, Fijian genera, *Nesobasis* and *Melanesobasis*. These putative sister taxa had never been studied phylogenetically; however, Donnelly postulated the existence of several species groups and some sister species relationships based on a few characters. We refute the concept that *Nesobasis* and *Melanesobasis* are sister taxa and provide quantitative evidence supporting most of Donnelly's perceptions about relationships within *Nesobasis*. Two mitochondrial genes (COI and 12S) and one nuclear gene complex (ITS1 and ITS2, and ribosomal 5.8S rDNA) were sequenced for 45 taxa in our analysis. This represents most of the extant species of *Nesobasis* and *Melanesobasis* and all of the numerous undescribed species. Female-biased species were found in more than one lineage. Results and analytical methods will be discussed and ecological traits will be explored in light of our phylogenetic hypothesis." (Authors)] Address: Skevington, J.H., Agriculture and Agri-Food Canada, Canadian National Collection of Insects, Arachnids and Nematodes, 960 Carling Avenue, Ottawa, ON, K1A 0C6, Canada

10462. Straka M. (2010): Preliminary studies on the durability of damselfly (Odonata: Zygoptera) exuviae. *Odonatrix* 6(2): 46-49. (in English, with Polish summary) ["Twenty exuviae of *Coenagrion puella* were marked and observed for three weeks in 2005. The number of marked exuviae rapidly declined and after 23 days there were only 30% of exuviae left; these were so weather-worn that it was impossible to identify them. To collect 50% of the exuviae it would be necessary to visit a locality 10 days after emergence." (Author)] Address: Straka, M., Institute of Botany and Zoology, Faculty of Science, Masaryk University, Kotlářská 2, Brno, Czech Republic. E-mail: michal.straka@centrum.cz

10463. Tończyk, G.; Zemko, K. (2010): Preliminary estimation of population total abundance of *Leucorrhinia caudalis* and *L. pectoralis* in "Zdręczno Lake" nature reserve (Tuchola Forest, Poland). *Odonatrix* 6(1): 9-14. (in Polish, with English summary) ["A study upon the total abundance of *Leucorrhinia caudalis* and *L. pectoralis* was performed at the beginning of June 2008 in the nature reserve „Zdręczno Lake”, Tuchola Forest, Poland. The abundance estimation was based upon the number of exuviae collected within the reserve, among the reed and shore vegetation, also in some distance from the shore. Altogether 76 samples were gathered, each composed of exuviae collected from the area of 1m². In total 101 exuviae of *L. caudalis* (mean density: 1.33 ind/m², density range: 0-7 ind/m², SD=1.32) and 176 exuviae of *L. pectoralis* (mean density: 2.32 ind/m², density range: 0-7 ind/m², SD=1.68) were found. Based on aerial photographs the total area of habitat available for *Leucorrhinia* larvae in Zdręczno Lake was estimated to be from 12,179 m² (1.2 ha) to 65,969 m² (6.6 ha). Concluding, the total population abundance in the reserve was calculated as 16,198 - 97,739 individuals for *L. caudalis* and 28,255 - 153,048 individuals for *L. pectoralis*." (Authors)] Address: Tończyk, G., Katedra Zoologii Bezkręgowców i Hydrobiologii, Uniwersytet Łódzki, ul. Banacha 12/16, 90-237 Łódź, Poland. E-mail: karolzemko@vp.pl

10464. Tończyk, G.; Osobka, M. (2010): Macrofauna colonising yellow water-lily (*Nuphar lutea* (L.) Sibth. & Sm.) – distribution and structure analysis. In: Joniak, T. (Ed.), *Functioning and protection of marsh ecosystems. Vol 3. Benthic fauna of Polish national parks.* Department of Water Protection Faculty of Biology A. Mickiewicz Uni-

versity, Poznań: 74-79. (in Polish, with English summary) [Poland; "Macroinvertebrates associated with aquatic vegetation (epiphytic fauna) are among the ecofunctional groups having key importance in inland aquatic ecosystems. Our study in the Pilica River oxbow-lake revealed taxonomic composition (on genus/species level), dynamics and colonisation rate of community inhabiting yellow water-lily. In total we found 112 taxa differing in spatial distribution. The community is not highly specific as it consists mainly of predators and animals feeding on periphyton. Only caterpillars of aquatic moth were characteristic for the plant green parts. The colonisation rate is directly dependent on food availability (thickness of periphyton) and indirectly on the oxbow-lake trophy." (Authors) The following Odonata species are listed: *Enallagma cyathigerum*, *Coenagrion puella*, *C. pulchellum*, *Erythromma najas*, *Aeshna cyanea*, and *Somatochlora flavomaculata*.] Address: Tończyk, G., Zakład Limnologii i Ekologii Bezkręgowców, Katedra Zoologii Bezkręgowców i Hydrobiologii, Uniwersytetu Łódzkiego, ul. Banacha 12/16, PL-90-237 Łódź, Poland. E-mail: tonczyk.grzegorz@gmail.com

10465. Torralba-Burrial, A.; Alonso-Naveiro, M. (2010): Biodiversidad de odonatos de la sierra de Fonfría y cuenca del Jiloca (Teruel): faunística. *Xiloca* 38: 111-147. (in Spanish, with English summary) ["Odonata communities from 21 localities in Fonfría Mountains and Jiloca River Basin (province of Teruel, Spain) were surveyed. Thirty five species were found during this study, including first records of *Coenagrion scitulum* and *Libellula quadrimaculata* to Teruel province, and confirming the reproduction of *Lestes sponsa*, *L. virens* and *Aeshna cyanea*. Populations of the threatened *C. mercuriale*, *C. caerulescens*, *C. scitulum*, *Onychogomphus uncatus* and *Sympetrum flaveolum* are interesting from a conservation point of view." (Authors)] Address: Torralba Burrial, A., Depto de Biología de Organismos y Sistemas, Universidad de Oviedo, E-33071 Oviedo, Spain. E-mail: antoniob@hot-mail.com

10466. Vanappelghem, C.; Hubert, B. (2010): Suivi de la population de *Coenagrion mercuriale* (Charpentier, 1840) dans la Réserve naturelle régionale des dunes et hauts de Dannes-Camiers (Pas-de-Calais) (Odonata, Zygoptera: Coenagrionidae). *Martinia* 26(3/4): 131-137. (in French, with English summary) [A monitoring of *C. mercuriale* and its habitat in the dunes and hills of the Dannes-Camiers Regional Natural Reserve (Pas-de-Calais department, France) revealed that an anthropogenic caused seasonal variation of the water depth could be related with the population decline between 2006 and 2007 compared with 2008 and 2009.] Address: Vanappelghem, C., 14, rue Brûle Maison, 59000 Lille, France. E-mail: cedvana@free.fr

10467. Watson, G.S.; Watson, J.A.; Hu, S.; Brown, C.L.; Cribb, B.W.; Myhra, S. (2010): Micro and nanostructures found on insect wings – designs for minimising adhesion and friction. *International Journal of Nanomanufacturing* 5(1/2): 112-128. (in English) ["Adhesion and friction have been measured on insect wings where contamination (water and/or contaminating particles) can potentially have a detrimental effect on their flight capabilities or daily functioning. Adhesion forces as low as 2 nN were recorded in air for particles with radii of 10-15 nm, and 20 nN for particles of 31 nm radius. The effective coefficients of friction were in the range of 0.01 to 0.10. The low adhesion and frictional values demonstrate that only very low out-of-plane and in-plane forces are required to

remove contaminants of nanometre and micron dimensions from the cuticle membranes. Many of the surfaces demonstrate superhydrophobic properties and will not only reduce the effects of contact with surfaces but also promote a self-cleaning function for removing foreign bodies. It has also been demonstrated that surface structures and properties can be duplicated on polymer surfaces by using the wing membrane as a 'natural template'. (Authors) *Rhyothemis phyllis chloe* is among the insects studied.] Address: Watson, G.S., School of Pharmacy and Molecular Sciences, James Cook University, Townsville, QLD 4811, Australia

10468. Wellenreuther, M.; Sánchez-Guillén, R.A.; Cordero, A.; Hansson, B. (2010): Development of 12 polymorphic microsatellite loci in *Ischnura elegans* (Odonata: Coenagrionidae). *Molecular Ecology Resources* 10: 576-579. (in English) ["We isolated and characterised 12 polymorphic microsatellite loci 35 for *I. elegans* by screening a genomic library enriched for microsatellite motifs. The loci showed high variability for the number of alleles, and the expected and observed heterozygosities, and thus will be useful for future molecular studies. Cross-amplification in *I. graellsii*, *I. ramburii* and *I. pumilio* showed that the majority of the microsatellites also produced polymorphic products in these species." (Authors)] Address: Wellenreuther, Maren, Department of Animal Ecology, Ecology Building, Lund University, SE-22362 Lund, Sweden. E-mail: Maren.wellenreuther@zoekol.lu.se

10469. Whisenant, A.; Snyder, W. (2010): Bioassessment of Lake Mexia. *Water Quality Technical Series. WQTS-2010-01: 70 pp.* (in English) [Lake Mexia, USA was investigated in the 2002 A concern, due to depressed dissolved oxygen concentrations, was raised following the taxa list prepared for the impaired water bodies. In response to the concern, a dissolved oxygen monitoring project and concurrent bioassessment were conducted [...] in 2002 and 2003. The bioassessment included fish, benthic macroinvertebrate, zooplankton, aquatic macrophyte and shoreline habitat surveys. *Argia* sp., *Enallagma/Coenagrion*, *Acanthagrion* sp., *Epitheta* sp., and *Gomphus* sp. are listed from the locality.] Address: Whisenant, A., Water Resources Branch, Texas Parks and Wildlife Department, Tyler, TX, USA

10470. Yang, G.-h.; Mao, B.-y.; Zhang, D.-z. (2010): A new species of the genus *Nychogomphus* from Yunnan, China (Odonata, Gomphidae). *Acta Zootaxonomica Sinica* 35(4): 880-882. (in Chinese, with English summary) ["*Nychogomphus bidentatus* n.sp. is described and figured. This new species is similar to *N. flavicaudus* and *N. lui* in the colour pattern of thorax, but can be separated from the later two species by the following distinct characters: 1) antehumeral stripe complete; 2) superior appendages of male with two subapical teeth; 3) inferior appendages black. Holotype male, China, Yunnan, Lingcang, Gengma (98°50'N, 23°25'E), 7 Aug. 2004, collected by MAO Ben-Yong, deposited at Dali University, Yunnan, China. Etymology. The name *bidentatus* is derived from the Latin, in reference to the two subapical teeth present on male superior appendages." (Authors)] Address: Yang, G.-h., College of Science and Chemistry, Dali University, Yunnan 671000, China

10471. Yurchenko, Yu.A.; Belevich, O.E. (2010): Daily dynamics of distribution of *Enallagma cyathigerum* (Charpentier, 1840) (Odonata, Coenagrionidae) in different biotopes of the forest-steppe zone of the southern part of West Siberia. *Euroasian entomological journal* 9(2): 280-

284. (in Russian, with English summary) [Barabinskoy steppe in the south of Western Siberia, Russia; the selection of biotopes within the habitat of *E. cyathigerum* depends on its physiological development status. Immediately after emergence, dragonflies dismigrate from the water. "After reaching maturity, they prefer open habitats, away from water, where they copulate during the first half of the day. As the mated pairs return to the water for oviposition, during the second half of the day, the number of individuals in all terrestrial habitats decreases sharply. Near-water habitats are transient. To move in strong winds (up to 7 m/s), *E. cyathigerum* uses the space between plants over the soil surface." (Authors)] Address: Belevich, O.E., Inst. Anim. Syst. & Ecol., Russ. Acad. Sci., Frunze 11, RUS-630091 Novosibirsk

10472. Zawal, A. (2010): New locality of *Crocothemis erythraea* in western Poland. *Odonatrix* 6(1): 6-8. (in Polish, with English summary) [17.07.2008; Dzwonów (53°24'43"N, 15°12'37"E) is the northernmost site of this species in Poland.] Address: Zawal, A., Uniwersytet Szczeciński, Wydział Nauk Przyrodniczych, Katedra Zoologii Bezkręgowców i Limnologii, ul. Wąska 13, PL-71-415 Szczecin, Poland. E-mail: zawal@univ.szczecin.pl

10473. Zawal, A.; Stojanovski, S.; Smiljkov, S. (2010): Preliminary investigation on Odonata from the lake Orchid (Macedonia). Second Balkan Conference on Biology 21-23 May 2010, Plovdiv. 50 Years University of Plovdiv: 636-638. (in English) [476 specimens of imaginal Odonata - collected in June 2009 at 21 stations - resulted in 17 species. Only 12 of these are presented in the paper.] Address: Zawal, A., Uniwersytet Szczeciński, Wydział Nauk Przyrodniczych, Katedra Zoologii Bezkręgowców i Limnologii, ul. Wąska 13, PL-71-415 Szczecin, Poland. E-mail: zawal@univ.szczecin.pl

10474. Zhukov, O.N.; Bezmaternykh; D.M. (2010): [Zoo-benthos of lakes in the the northern region of Kazakhstan]. *World of science, culture and education* 6(25): 277-281. (in Russian) [In 2009 and 2010, 15 lakes have been investigated. 58 species of benthic invertebrates were identified, including *Coenagrion vernale* (= *C. lunulatum*); this taxon is reported for three of the 15 lakes.] Address: Zhukov, O.N., Et. IWEP SB RAS, Barnaul, Russia. E-mail: jukova@iwep.asu.ru

10475. Zoder, S. (2010): *Libellula fulva* MÜLLER, 1764 (Spitzenfleck) am Unteren Inn (Odonata, Anisoptera, Libellulidae). *Mitteilungen der Zoologischen Gesellschaft Braunau* 10(1): 91-94. (in German) [Bayern, Germany; four records of the regionally rare *L. fulva* are documented: (1) 24.05.2010, Schambach, near Geigen (48.19°53.48'N, 13.15°10.59'E), Bad Füssing / LK Passau; *Coenagrion ornatum* also occurred in the same stretch of the ditch, (2) 05.06.2010, near Grießer (48.17°29.15'N, 13.7°54.10'E), Ering, LK Rottal-Inn. (3) 02.07.2008, 25.05.2009, "Biotop" Egelse (48°14'37"N, 13°07'15"E), Ering. (4) 05.06.2009, (48°17'05"N, 13°00'00"E), Simbach am Inn/LK Rottal-Inn.] Address: Zoder, S., Am Ziegelstadelberg 17, 94094 Rottalmünster, Germany

2011

10476. Acharya, S. (2011): Presage Biology: Lessons from nature in weather forecasting. *Indian Journal of Traditional Knowledge* 10(1): 114-124. (in English) ["The method used by local and indigenous peoples for predicting rainfall and other weather conditions solely on the

basis of bio-indicators – the phenology of plants and behavior of animals – is coined as a new term: Presage Biology. Some of these activities of floral and faunal diversity are described in their application to predict oncoming rain, based a literature review as well as personal observations of present author as well as other reference sources pertaining to India and different parts of the world. ... When humidity reaches saturation, a couple of hours before dragonflies move in swarms indicating rain." (Author)] Address: Dept of Botany, Tipura (Central) Univ., Suryamaninagar 799130, West Tripura, India. E-mail: phytosandeep@yahoo.com

10477. Acorn, J.H. (2011): Sand hill arthropods in Canadian grasslands. In: *Arthropods of Canadian Grasslands (Volume 2): Inhabitants of a Changing Landscape*. Edited by K. D. Floate. Biological Survey of Canada: 25-43. (in English) ["Sand hill environments in the Canadian grasslands can be classified as sandstone outcrops, upland dunes, sand features associated with water, non-human disturbances, anthropogenic disturbances, beach dunes, or sandbars. Insects and other arthropods use these environments for burrow construction, access to sand-associated host plants, open ground predation and scavenging, thermoregulation, and locomotion in a quiet substrate. The arthropod faunas of sand hills in the Canadian grasslands are diverse, include organisms that are specific to sand hills, and include a number of rare or endemic taxa. Dune stabilization is cause for conservation concern, whereas the threat of global warming may reverse the stabilizing trend and create larger areas of open drifting sand. ... Various Anisoptera are often found perched on open ground, including non-vegetated sand, from which they fly up in pursuit of prey and potential mates (Dunkle 2000). Typical open-ground species include *Ophiogomphus severus* and *Stylurus intricatus*, as well as species in the genus *Sympetrum*. Most other anisopterans prefer to perch in vegetation, as do species of Zygoptera. However, on sand hill sites near water, various damselflies (e.g., *Enallagma* spp., *Coenagrion* spp., *Lestes* spp.) will forage in the relatively open vegetation on and around open sand patches." (Author)] Address: Acorn, J.H., Department of Renewable Resources, 751 General Services Building, University of Alberta, Edmonton, Alberta, Canada, T6G 2H1

10478. Adeogun, A.O.; Fafioye, O.O. (2011): Impact of effluents on water quality and benthic macroinvertebrate fauna of Awba stream and reservoir. *J. Appl. Sci. Environ. Manage.* 15(1): 105-113. (in English) [Nigeria; the paper includes the following nearctic Odonata taxa: "*Macromia magnifica*, *Herlocordulia* [sic] species, *Progomphus* species".] Address: Adeogun, A.O., Department of Zoology, University of Ibadan, Ibadan, Nigeria. E-mail: ainaadeogun@yahoo.com

10479. Adriaens, T.; Vercruyse, W.; Feys, S. (2011): An exceptional dragonfly spring in 2011. *Libellenvereniging Vlaanderen - nieuwsbrief* 5(2): 4-7. (in Dutch, with English summary) ["A very sunny and dry spring clearly led to a number of exceptional observations of dragonflies in Belgium and further western Europe. After a message from Portugal telling that thousands of *Anax ephippiger* migrated north it was hoped that a few of these would be seen in the low countries as well. In Belgium between 22th of April and 24th of May at least 12 specimens of this species were observed, an unequalled number for the country. *Brachytron pratense* had been historically known from the neighbourhood of Ghent and had been rediscovered in 2002. But this spring this rather rare spe-

cies was found in a lot of sites in the province of Eastern Flanders and was even discovered for the first time in the province of Western Flanders." (Authors)] Address: Adriaens, T., Instituut voor Natuurbehoud, Kliniekstr 25, B-1070 Brussel, Belgium. E-mail: tim.adriaens@instnat.be

10480. Aguilera Arango, A.; Isaza Guzmán, G.; González, R. (2011): Diversidad y abundancia de la arthropofauna en bromelias de bosques de Manglar de la Bahía de Buenaventura (Valle, Colombia). *Boletín del Museo de Entomología de la Universidad del Valle* 12(1): 1-11. (in Spanish, with English summary) [2047 specimens from 42 arthropod genera were collected that breed in bromeliads (*Guzmania musaica* and *Tillandsia* sp.) of mangrove swamps, near the village of Punta Soldado in the Buenaventura's bay (Colombia). Samples include 41 (3.95%) specimens of *Leptagrion* sp.] Address: Aguilera Arango, Gustavo Isaza Guzmán lexis, Universidad del Valle, sede Pacifico. Depto de Biología, Avenida. Simón Bolívar Km 9 Buenaventura, Colombia. E-mail: 23@yahoo.com

10481. Anderson, C.N.; Grether, G.F. (2011): Multiple routes to reduced interspecific territorial fighting in *Hetaerina* damselflies. *Behavioral Ecology* 22(3): 534-534. (in English) ["Interspecific territoriality may be adaptive if territories contain depletable resources that are valuable to both species, but it can also arise as a maladaptive by-product of intraspecific territoriality. In the latter scenario, sympatric species ought to diverge in ways that reduce interspecific fighting. We studied 4 *Hetaerina* damselfly species that can be found in sympatry in North America. Prior work showed that sympatric populations have diverged from each other in wing coloration and competitor recognition in 2 of the 4 sympatric species pairs (*H. titia* / *H. occisa*, *H. titia*/*H. americana*). Here, we show that sympatric populations of these 2 species pairs overlap completely in habitat use, and yet, interspecific territorial fights occur much less frequently than intraspecific fights. Experimentally manipulating the wing coloration of male *H. occisa* and *H. americana* to more closely resemble *H. titia* increased the rate of interspecific fights, which provides direct evidence that divergence in wing coloration is partly responsible for the low rate of interspecific fights. We found that interspecific fighting is also reduced in the other 2 species pairs (*H. occisa* / *H. cruentata*, *H. americana* / *H. cruentata*), even though prior work showed that heterospecific territory intruders are attacked just as aggressively as conspecific territory intruders. In these cases, however, the sympatric species differ sufficiently in habitat use to reduce the interspecific encounter rate and thereby account for the reduced rate of interspecific fighting. Thus, interspecific fighting is reduced relative to intraspecific fighting in all 4 species pairs, albeit through different mechanisms.] Address: Anderson, C.N., Department of Ecology and Evolutionary Biology, University of California, Los Angeles, 621 Charles E. Young Drive South, Los Angeles, CA 90095-1606, USA. E-mail: cndanderson1980@gmail.com

10482. Andrew, R.J.; Thaokar, N.; Dhamani, A.A. (2011): Oviposition and details of egg shell fine structure in *Ceragrion coromandelianum* (Fabricius) (Zygoptera: Coenagrionidae). *Odonatologica* 40(3): 169-178. (in English) ["In central India, floating leaves of *Nymphaea nouchali* form a perfect site for landing and oviposition for *C. coromandelianum*. Experiments with *N. nouchali* leaves suggest that oviposition occurs preferentially within distinct region of the leaf lamina. Oviposition is maximal in the lateral region of the lamina (LRL) which was the most popular site over the whole period of observation and

least in the petiolar region (PRL) while at the basal and apical regions (BRL & ARL) the total number of oviposition are similar to each other and intermediate between the lateral and petiolar regions. There is a direct correlation between the position of leaf lamina region used for oviposition and the day of oviposition. There is also a direct association between the day of the bouts of oviposition and the position of the leaf lamina region used for oviposition. In *C. coromandelianum*, visual and tactile cues play an important role in leaf lamina preference. It is not the toughness of the leaf lamina (thickness of the epidermis) but its submergence which is an important decisive factor for oviposition. 1 Scanning electron microscopic examination of the egg reveals that it is elongate and cylindrical with a pointed anterior and rounded posterior end. The egg chorion is composed of an outer, thin, lightly corrugated exochorion and an inner, thick, smooth, non-porous endochorion. The anterior end is surrounded by 5 micropylar orifices. Each orifice is semicircular and continues as a long horizontal streak on the endochorion and concludes at a bifid terminal point. This forms the entry point of the micropylar chute which penetrates the endochorion. The vitelline envelope below the endochorion is thin and smooth." (Authors)] Address: Andrew, R.J., Post Graduate Dept of Zoology, Hislop College, Civil lines, Nagpur-440001, India. E-mail: rajuandrew@yahoo.com

10483. Anjos-Santos, D.; Pessacq, P.; Costa, J.M. (2011): Description of the last instar larva of *Neoneura kiautai* Machado (Odonata: Protoneuridae). *Zootaxa* 2916: 65-68. (in English) ["Here we describe the last instar larva of *Neoneura kiautai* Machado, 2007 based on specimens collected in Rio de Janeiro State, Brazil, therefore increasing the known distribution area of this species formerly known only from Minas Gerais and Espírito Santo States, Brazil (Machado, 2007)."] (Authors)] Address: Anjos-Santos, D., Museu Nacional, Univde Federal do Rio de Janeiro, Depto de Entomologia, Setor de Insetos Aquáticos, Quinta da Boa Vista, São Cristóvão, 20940-040, Rio de Janeiro, Brazil. E-mail: danielleanhos2@yahoo.com.br

10484. Ashton, H. (2011): "Damselfly Genera of the New World: An Illustrated and Annotated Key to the Zygoptera". *Reference Reviews* 25(6): 36-37. (in English) [Book review of: Rosser W. Garrison, Natalia von Ellenrieder & Jerry A. Louton. 2010, The Johns Hopkins University Press, Baltimore. ISBN 978-8018-9670-5. 490 pp, 2586 fgs., 24 color pls., \$125.00. (Incl. additions and corrections for previous book, *The Dragonfly Genera (Odonata: Anisoptera) of the New World, 2006*, by the same authors)] Address: not stated

10485. Aweng-Eh, R.; Ismid, S.; Maketab, M. (2011): Effects of land use on benthic macroinvertebrate assemblages at three rivers in Endau catchment area, Kluang, Johor, Malaysia. *Journal of Applied Sciences in Environmental Sanitation* 6(2): 97-103. (in English) ["Study was conducted for six times from November 2008 to June 2010 to determine the effect of land use on benthic macroinvertebrate assemblages in Mengkibol, Madek and Dengar rivers. Eight stations were selected which two stations from each river except Dengar which has two sampling reach comprised of four stations. A 500 meter reach of the stream was selected for each sampling site. One sampling reach comprises of two sampling stations where one station is located at the upper reach, while the other station is situated at the lower reach. Surber Net measuring 500 micron mesh size combined with a rectangular quadrat of 30 cm x 30 cm (0.09 m²) was used to

sample macroinvertebrates. The results showed that undisturbed river has complete sensitive taxa namely Ephemeroptera, Plecoptera and Trichoptera (EPT). Meanwhile, there were only two sensitive taxa namely Ephemeroptera and Trichoptera were found in the river which flows through palm oil plantation. Similar scenario was found in the river which flows through logging area where there were also two sensitive taxa namely Ephemeroptera and Trichoptera found in this river. In addition, the results obtained for urban river was the other way round where there was an absent of all three sensitive taxa (EPT) in the river which flows through urban area. Most of the macroinvertebrate taxa that were found in this station are pollution resistant taxa comprised Diptera, Odonata, Mesogastropoda, Basommatophora, Hirudinea and Haptotaxida. The results can be use as a biological indicator for river water quality assessment." (Authors) Records of Odonata are as follows: Forest (Un-disturbed): none; Agriculture (Palm Oil): "Arigomphus, Hagenius, Dromogomphus, Gomphaeschna, Somatochlora"; Logging: Arigomphus, Dromogomphus; Urban (Kluang Town): Ophiogomphus, Helocordulia. Identification was done using keys from North America.] Address: Aweng-Eh, R., Faculty of Agro Industry and Natural Resources, Universiti Malaysia Kelantan (UMK), Malaysia. E-mail: aweng@umk.edu.my

10486. Bader, T.J.; Bednarz, J.C. (2011): Parental care and diet of Mississippi Kites (*Ictinia mississippiensis*) in eastern Arkansas. *Journal of Raptor Research* 45(2): 109-118. (in English, with Spanish summary) [USA; Odonata were the second most common food item (26.1%) fed to the nestlings.] Address: Bader, T., USDA-Agriculture Research Service, Stuttgart National Aquaculture Research Center, PO Box 1050, Stuttgart, AR 72160, USA. E-mail: troybader@hotmail.com

10487. Bahaar, S.W.N.; Bhat, G.A. (2011): Taxocoenosis and distribution of nektonic fauna in the rice fields of Kashmir (J and K) India. *Pakistan Journal of Biological Sciences* 14(8): 483-489. (in English) [The study includes records of unidentified Odonata larvae.] Address: Bhat, G.A., Terrestrial Ecology Laboratory, Dept of Environmental Science, Univ. of Kashmir, Srinagar-190 006, J and K, India

10488. Ballare, E.F.; Ware, J.L. (2011): Dragons fly, biologists classify: an overview of molecular odonate studies, and our evolutionary understanding of dragonfly and damselfly (Insecta: Odonata) behavior. *International Journal of Odonatology* 14(2): 137-147. (in English) ["Here, we review the history of odonate systematics, with an emphasis on discrepancies among studies. Over the past century, relationships among Odonata have been reinterpreted many times, using a variety of data from wing vein morphology to DNA. Despite years of study, there has been little consensus about odonate taxonomy. In this review, we compare odonate molecular phylogenetic studies with respect to gene and model selection, optimality criterion, and dataset completeness. These differences are discussed in relation to the evolution of dragonfly behaviour." (Authors)] Address: Ware, Jessica L., Rutgers, The State Univ. of New Jersey, Cook College, 93 Lipman Drive, New Brunswick, New Jersey 08901, USA

10489. Bazin, N. (2011): Un point sur la saisie des libellules et des papillons. *Actualités naturalistes de la Drôme Julliet* 2001 - No 3: 8-10. (in French) [This paper lists some books and www-links related to French Odonata.] Address: not stated

10490. Beganyi, S.R.; Batzer, D.P. (2011): Wildfire induced changes in aquatic invertebrate communities and mercury bioaccumulation in the Okefenokee Swamp. *Hydrobiologia* 669(1): 237-247. (in English) ["Fire is an important natural disturbance in the Okefenokee Swamp. From April–June 2007, wildfire burned 75% of the wetland area. With the existence of extensive pre-fire data sets on community structure and total mercury of invertebrates, the fire presented an opportunity to assess impacts of wildfire on invertebrates. Post-fire collection of samples occurred in September, December, and May, 2007–2009. Sample sites included 13 burned and 8 non-burned (reference) sites. Comparisons of data among pre-fire, post-fire reference, and post-fire burned sites revealed that the major difference between pre-fire communities and post-fire communities was a decrease in the number of water mites. We also found a decrease in mercury concentrations in amphipods, odonates, and crayfish post-fire. The differences between pre-fire and post-fire samples may be confounded by drought conditions during the baseline study. NMDS ordinations and ANOSIM tests suggested that habitat was an important factor; communities in burned cypress differed from reference cypress. Unexpectedly, burned sites had lower mercury concentrations in odonates and crayfish, with variation again being greatest in cypress stands. These findings and others suggest mercury levels do not follow a predictable pattern but can vary with pre-fire concentrations, variation in water levels, and burn intensity. We found that wildfire in the Okefenokee had little impact on invertebrates in prairies and scrub-shrub thickets, but can affect indicator organisms (Oecetis, Ischnura, and Sigara) in cypress stands. Our study suggests that vegetation type and burn intensity may have impacts on the invertebrate communities and mercury concentrations of organisms." (Authors)] Address: Bowman, Sarah, Department of Evolution, Ecology, and Organismal Biology, 300 Aronoff Laboratory, 318W. 12th Avenue, Columbus, OH 43210, USA. E-mail: Bowman.1210@osu.edu

10491. Beisel, J.-N.; Peltre, M.-C.; Usseglio-Polatera, P. (2011): Einfluss der Salzbelastung auf die aquatische Biozönose der Mosel. Abschlussbericht. Laboratoire des Interactions Ecotoxicologie, Biodiversité, Ecosystèmes (LIEBE) - CNRS UMR 7146, A272010rev17052011. Im Auftrag der IKSMS, UPV-Metz, CNRS UMR 7146: 62 pp. (in German) [The paper includes a passing note on fluctuating asymmetry by larval *Calopteryx splendens* along a salinity gradient along the river Meurthe, France] Address: <http://www.iksms-cipms.org/servlet/is/391/>

10492. Berck, K.-H.; Stübing, S. (2011): Ein Beleg der Pokaljungfer *Erythromma lindenii* (Sélys, 1840) aus Hessen im Jahr 1954. *Libellen in Hessen* 4: 60-61. (in German) [A small collection of 18 specimens of Odonata collected in the 1950th in Hessen, Germany contained interesting records from the faunistic point of view and gives a little insight in range extension processes. *Erythromma lindenii*, very rare in Germany in the 1950th, was recorded 1954 near Rödelheim. *Lestes barbarus* was found at 26-VIII-1956 near Bad Homburg. *Sympetrum depressiusculum* was recorded in summer 1955 near Rödelheim.] Address: Stübing, S., Am Eichwald 27, 61231 Bad Nauheim. E-mail: stefan.stuebing@gmx.de

10493. Boissinot, A. (2011): Nouvelle station de *Coenagrion pulchellum* pour les Deux-Sèvres. *La Virgule, Bulletin de liaison sur les insectes et autres invertébrés du Poitou-Charentes* 2: 24. (in French) [2-VI-2010, Gourgé, Department Deux-Sèvres, France] Address: not stated

10494. Borisov, S.N. (2011): Migrant dragonflies in Middle Asia. 1. *Anax ephippiger* (Burmeister, 1839) (Odonata, Aeshnidae). *Euroasian Entomological Journal* 10(2): 125-130. (in Russian) ["Data on the distribution, phenology and autumnal migrations of *A. ephippiger* in Middle Asia, Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan and Tajikistan are presented. The period of spring arrivals lasts 2.5 months from April to mid-June and the hatching period lasts from late May to September. Annual (2008–2010) autumnal migrations in a southern direction were established in Chok-Pak mountain range by ornithological traps from 28 August to 13 October. A fast univoltine life-cycle within pre-imaginal development and prolonged pre-reproductive period, including wintering migrations, is probably characteristic for *A. ephippiger* in Middle Asia." (Author)] Address: Borisov, S., Institute of Systematics and Ecology of Animals, Russian Academy of Sciences, Siberian Branch, Frunze str. 11, Novosibirsk 630091 Russia. E-mail: borisov-s-n@yandex.ru

10495. Botero-Botero, A.; Ramírez-Castro, H. (2011): Trophic ecology of *Brycon henni* (Pisces: Characidae) in the Portugal de Piedras river, upper Cauca basin, Colombia. *Rev. MVZ Córdoba* 16(1): 2349-2355. (in Spanish, with English summary) [Trichoptera, Diptera and Odonata contributed significantly to the diet of *B. henni*.] Address: Botero-Botero, A., Unid Nacional Experimental de los Llanos "Ezequiel Zamora" - UNELLEZ (Guanare, Venezuela), Fundación Neotrópica-Colombia, La Tebaida, Quindío, Colombia. E-mail: albotero33@yahoo.com

10496. Bouton, N.; Iserbyt, A.; van Gossum, H. (2011): Thermal plasticity in life-history traits in the polymorphic blue-tailed damselfly, *Ischnura elegans*: No differences between female morphs. *Journal of Insect Science* 11 (112): 11 pp. (in English) ["Female polymorphism is observed in various animal species, but is particularly common in damselflies. The maintenance of this polymorphism has traditionally been explained from frequency and density dependent sexual conflict, however, the role of abiotic factors has recently attracted more interest. Here, the role of ambient temperature in shaping life-history was investigated for the three female morphs of *I. elegans*. Eggs were obtained from the three mature female morphs for two populations in the Netherlands. Using a split-brood design, eggs of both populations were divided between a cold and a warm treatment group in the laboratory, and egg survival and hatching time were measured. Significant thermal plasticity was found in both hatching time and egg survival between both temperature treatments. However, individuals born to mothers belonging to different colour morphs did not differ in their response to temperature treatment. Independent of colour morph, clear differences in both life-history traits between the populations were found, suggesting local adaptation. Specifically, individuals from one population hatched faster but had lower egg survival in both thermal regimes. The selection force establishing fast hatching could be (facultative) bivoltinism in one of the populations compared to univoltinism in the other. This would be in line with the more southern (and more coastal) location of the presumed bivoltine population and the inverse relation between voltinism and latitude known from earlier studies. However, other natural selection forces, e.g. deterioration of the aquatic habitat, may also drive fast hatching." (Authors)] Address: Bouton, N., Evolutionary Ecology Group, Dept of Biology, University of Antwerp, Groenenborgerlaan 171, 2020 Antwerp, Belgium. E-mail: nielsbouton@yahoo.com

10497. Brasil, M.A.; Freitas Horta, G. de.; Fraxe Neto, H.J.; Barros, T.O.; Colli, G.R. (2011): Feeding ecology of *Acanthochelys spixii* (Testudines, Chelidae) in the Cerrado of Central Brazil. *Chelonian Conservation and Biology* 10(1): 91-101. ["We studied the diet of *Acanthochelys spixii* in a wild population in the Cerrado of central Brazil for 19 months, investigating ontogenetic, sexual, and inter-individual variation. The diet consisted mainly of nymphs of Odonata, although other insects, amphibians, and plant material were also present. We observed no ontogenetic shifts in diet composition (e.g., no shift from carnivorous juveniles to herbivorous adults), which can be related to the high abundance of prey at the study site. There was no association between prey size and turtle carapace length, with larger animals still taking small prey. Dietary niche overlap was high, and there was no difference in niche breadth between sexes. However, differences in diet composition suggested differential habitat use, with males using more the periphery and females using more the center of ponds. Diet composition varied more among males than among females, which can result from higher diversity of prey at the pond margins, higher movement rates, or larger home range of males. The high frequency of empty stomachs (41%) reflected life-history characteristics of turtles (e.g., low metabolism, ectothermy, late sexual maturity, and great longevity). The importance of prey categories sensitive to pollution in the diet of *A. spixii* highlights the integrity of the study sites and the vulnerability of these populations to the rapid degradation of Cerrado biome." (Authors)] Address: Fraxe Neto, H.J., Programa de Pós-Graduação em Biologia Animal, Universidade de Brasília, 70910-900 Brasília, DF, Brazil. E-mail: hfraxe@senado.gov.br

10498. Broglio-Micheletti, S.M.F.; Campello Diniz, M.C.; Da Silva-Dias, N.; Nascimento de Araujo, A.M.; Girón-Pérez, K.; Da Silva Madalena, J.A. (2011): Insects associated to *Alpinia purpurata* (Vieill.) K. Schum. (Zingiberaceae) in Maceió and Rio Largo, AL, Brazil. *Revista Caatinga* 24(1): 1-8. (in Portuguese, with English summary) ["Due the fast growing in flowers and ornamental plants production and their high export potential, it is important to identify the insects species associated with *Alpinia purpurata* (Vieill.) K. Schum crops and to establish their role in this agroecosystem/production system The insects were collected from *A. purpurata* cv. Pink Ginger and Red Ginger plants cultivated in two farms with different agroecological characteristics, located in two recognized tropical flower production areas/regions, Maceió and Rio Largo cities/localities, Alagoas state, during one year. They were identified and its frequency analyzed according with a numerical scale. According to the results was collected 790 insects of which 69 were identified to specific level, belonging to 59 families of 9 ordens. Results showed Hymenoptera individuals as the most frequent, mainly predator ants and/or associated with phytophagous insects (sucking), besides natural enemies, followed by Hemiptera and Lepidoptera orders, which involved recognized agricultural pests. Insects belonging to the order Odonata ("Coenagrionidae, Libellulidae") and Orthoptera were found less frequently." (Authors)] Address: Broglio-Micheletti, Sonia, Depto de Fitossanidade, CECA/UFAL, Rod. BR 104, Km 85, 57100-000, Rio Largo - AL, Brazil. E-mail: soniamfbroglio@gmail.com

10499. Broyer, J.; Curtet, L. (2011): The influence of fish farming intensification on taxonomic richness and biomass density of macrophyte-dwelling invertebrates in French fishponds. *Knowledge and Management of Aquatic Eco-*

systems (2011) 400, 10: 12 pp. (in English, with French summary) ["Fishponds are man-made ecosystems where fish farming may strongly interfere with biodiversity. Intensified practices could be suspected to have a negative impact on animal and plant communities. We investigated the hypothesis that, in French fishponds, taxonomic richness and biomass density of macrophyte-dwelling macro-invertebrates could be influenced by fish stock density and pond fertilization. With a sample of 95 water bodies from three of the most important fishpond regions, studied in 2000, 2001 or 2002, we compared a series of models in which macrophyte cover (in three classes), emergent shore vegetation (in % of pond area) and invertebrate biomass in pond sediment were also considered. Among explanatory variables, macrophyte and helophyte abundance were included in the best models explaining variation in invertebrate taxonomic richness and in biomass density. Taxonomic richness was lower when abundance of both macrophytes and emergent shore vegetation was low (< 10% and < 7.5%, respectively). Biomass density was higher when macrophyte cover was >= 10% provided that emergent vegetation was abundant (>=7.5%). We conclude that fish farming intensification in French fishponds may affect aquatic invertebrate communities, mainly through its impact on the development of aquatic vegetation." (Authors) Odonata are treated at the family level.] Address: Broyer, Joel, Office National de la Chasse et de la Faune Sauvage, Direction des études et de la recherche, 01330 Birieux, France. E-mail: joël.broyer@oncfs.gouv.fr

10500. Buden, D.W. (2011): The Odonata of Fais Island and Ulithi and Woleai Atolls, Yap State, Western Caroline Islands, Federated States of Micronesia. *Micronesica* 41(2): 215-222. (in English) ["51 adults of nine species of Odonata were collected by the author on Ulithi Atoll, Fais Island, and Woleai Atoll, Micronesia, between December 2007 and December 2009. Together with a previously Yap and Ulithi, they include 13 first island records and three easternmost records for the Caroline Islands. Breeding on one or more of the islands is confirmed for seven species. Five of the nine species (*Anax guttatus*, *Diplacodes bipunctata*, *Pantala flavescens*, *Tholymis tillarga*, and *Tramea transmarina*) are widespread throughout Micronesia and are the species most likely to be encountered on the smallest and most remote islands, often with very limited available water." (Author) The rest of the nine species are: *Anaciaeschna jaspidea*, *Macrodiplax cora*, *Rhyothemis phyllis*, and *Neurothemis terminata*. *Agriocnemis femina* was collected on Mogmog Island on 25-X-2001.] Address: Buden, D.W.; Division of Natural Sciences and Mathematics, College of Micronesia-FSM, P.O. Box 159, Kolonia, Pohnpei, Federated States of Micronesia 96941. E-mail: donbuden@comfsm.fm

10501. Butler, S.G. (2011): Description of the last instar larva of *Ictinogomphus acutus* (Laidlaw) from Sarawak, with a key to the larvae of the congeneric species (Anisoptera: Gomphidae). *Odonatologica* 40(2): 123-129. (in English) ["A male final instar larva is described, illustrated and compared with the exuviae of congeneric species. The exuviae of *I. decoratus melaenops* (Sel.), which also occurs in Sarawak (Malaysia), differ from *I. acutus* by having apical margin of labium convex to straight, without strong marginal teeth; no processes between eye and antennae; lateral ventral head processes are not visible dorsally; dorsal spines are highly arched; and anal appendages extend beyond spines on segment 9." (Author)] Address: Butler, S.G., Red Willow, All Stretton,

Shropshire SY6 6HN, UK. E-mail: sgbutler15@btopen-world.com

10502. Byers, E.; Norris, S. (2011): Climate change vulnerability assessment of Species of Concern in West Virginia. Project Report. Elizabeth Byers and Sam Norris, West Virginia Division of Natural Resources, P.O. Box 67, Elkins WV 26241, USA. February 14, 2011: 72 pp. (in English) ["This project assessed and ranked the relative climate change vulnerability of 185 animal and plant species in West Virginia. Most species were selected based on their status as Species of Greatest Conservation Need within the West Virginia Wildlife Conservation Action Plan." *Leucorrhinia glacialis* (Index score: Highly vulnerable), *Aeshna mutata*, *Calopteryx amata*, *Telebasis byersi* (Index score: Moderately vulnerable), *Cordulegaster erronea*, *Gomphus fraternus* (Index score: Presumed stable) were assessed for climate change vulnerability, with a wide range of resulting scores. "Some of these species are mobile and already on the southern edge of their range, and are predicted to shift their populations entirely out of West Virginia due to climate change stress. Species associated with ephemeral wetlands and headwater streams tend to have the highest risk, especially where these are tied to cold-temperature habitats. Dietary specialization confers additional risk for half of the species assessed." (Authors)] Address: Elizabeth Byers & Sam Norris, West Virginia Division of Natural Resources, P.O. Box 67, Elkins WV 26241. USA

10503. Carriço, C.; Costa, J.M.; Santos, T.C. (2011): Description of the larva of *Neocordulia machadoi* Santos, Costa & Carriço, 2010 (Odonata: Corduliidae) from Brazil. *Biota Neotropica* 11(2): 71-73. (in English, with Portuguese summary) [The larva of *N. machadoi* is described and illustrated based on an exuvia collected at Cachoeira da Eubiose stream, São Tomé das Letras, Minas Gerais State, Brazil. (21° 43' 0" S 44° 58' 60" W; 15.X.2009, J.M. Costa & C. Carriço leg. (emerged 02.XI.2009).] Address: Carriço, C., Instituto de Biologia, Programa de Pós-graduação em Biologia Animal - PPGBA, Universidade Federal Rural do Rio de Janeiro UFRJ, BR 465, Km 7, CEP 23890 -000, Seropédica, Rio de Janeiro - RJ, Brazil. E-mail: carrico82@hotmail.com

10504. Chetelat, J.; Amyot, M.; Garcia, E. (2011): Habitat-specific bioaccumulation of methylmercury in invertebrates of small mid-latitude lakes in North America. *Environmental Pollution* 159(1): 10-17. (in English) ["We examined habitat-specific bioaccumulation of methylmercury (MeHg) in aquatic food webs by comparing concentrations in pelagic zooplankton to those in littoral macroinvertebrates from 52 midlatitude lakes in North America. Invertebrate MeHg concentrations were primarily correlated with water pH, and after controlling for this influence, pelagic zooplankton had significantly higher MeHg concentrations than littoral primary consumers but lower MeHg than littoral secondary consumers. Littoral primary consumers and pelagic zooplankton are two dominant prey for fish, and greater MeHg in zooplankton is likely sufficient to increase bioaccumulation in pelagic feeders. Intensive sampling of 8 lakes indicated that habitat-specific bioaccumulation in invertebrates (of similar trophic level) may result from spatial variation in aqueous MeHg concentration or from more efficient uptake of aqueous MeHg into the pelagic food web. Our findings demonstrate that littoralepelagic differences in MeHg bioaccumulation are widespread in small mid-latitude lakes." (Authors) Greater MeHg in Odonata compared to all other invertebrates was probably due to their higher trophic

level.] Address: Chételat, J. Groupe de recherche interuniversitaire en limnologie, Département de sciences biologiques, Université de Montréal, Montréal, Québec H3C 3J7, Canada

10505. Cicek, K. (2011): Food composition of Uludag frog, *Rana macrocnemis* Boulenger, 1885 in Uludag (Bursa, Turkey). *Acta Herpetologica* 6(1): 87-99. (in English) ["Feeding habit and food preferences of *R. macrocnemis* were studied in 2006 and 2007 in Uludag (Bursa, Turkey). Stomach contents of 165 (87 males, 58 females, 20 juveniles) individuals were analyzed and a total of 2,129 prey items were determined. It was found that the species fed mainly on a variety of invertebrates and especially on insects (96.5%). The most frequently consumed prey items were Coleoptera (62.8%), Diptera (14.4%), and Hymenoptera (9.8%). There was no significant sex- and age-dependent difference in the feeding regime. It appears that the species is feeding less in the breeding period and more in the post-breeding period. It was also evident that there was an increase in the consumption of Coleoptera depending on the elevation." (Author) Odonata contributed with ca 8% to the insect diet.] Address: Çiçek, K., Ege University, Faculty of Science, Biology Department, Zoology Section, 35100, Bornova, Izmir, Turkey. E-mail: kerim.cicek@ege.edu.tr

10506. Conn, A.T.; Ling, C.S.; Burgess, S.C. (2011): Biomimetic Analysis of Insect Wing Kinematics for Flapping MAVs. *International Journal of Micro Air Vehicles* 3(1): 1-11. (in English) ["Despite significant interest for over a decade in developing micro air vehicles (MAVs) that mimic the flight performance exhibited by insects, no design has achieved this challenge. This has principally been due to limitations in actuation devices, which have resulted in constrained flapping motions that require conventional rudder and aileron control surfaces. Recent advances in "artificial muscle" actuation technologies mean that reproducing the complex wing kinematics of insects with sufficient power density for MAV flight has become feasible. Consequently, there is a need to analyse the wing kinematics of insects and how they are modulated for controlled, manoeuvrable flight. It is also important to understand how wing kinematics affect the unsteady aerodynamic mechanisms that crucially augment lift and thrust force production. In this paper a biomimetic analysis of insect wing kinematics based on established biological literature is presented, that aims to aid the development of agile and controllable flapping MAVs." (Authors) References to Odonata are made] Address: Conn, A.T., Dept of Mechanical Engineering, Univ of Bristol, Bristol, U.K.

10507. Conniff, K.L.; van der Poorten, N.E.; Gunasingha, S. (2011): Description of the female of *Mortonagrion ceylonicum* Lieftinck, 1971 and amended description of the male (Zygoptera, Coenagrionidae) with notes on habitat, distribution and behaviour. *International Journal of Odonatology* 14(1): 49-53. (in English) ["The female of *M. ceylonicum* is described and figured for the first time. The female was described briefly by Laidlaw (1924) but was not assigned to a genus or species. An amended description of the male is also provided. Additional notes on habitat, distribution and behaviour are given." (Author)] Address: Conniff, Karen L., IWMI, PO Box 2075, Colombo 1, Sri Lanka. E-mail: karoconniff@gmail.com

10508. Contreras-Garduno, J.; Cordoba-Aguilar, A.; Martinez-Becerril, R.I. (2011): The relationship between male wing pigmentation and condition in *Erythrodiplax funerea* (Hagen) (Anisoptera: Libellulidae). *Odonatologica* 40(2):

89-94. (in English) ["Theory predicts that sexual traits ought to be related to physiological indicators of condition. In Zygoptera, for example, wing pigmentation expression (i.e. a sexual trait) correlates positively with male immune response, fat reserves and muscle mass. Here, it is for the first time investigated for anisopteran, whether such relationships hold in male *E. funerea*. Males in territorial activity, were collected and challenged to induce a melanization-based immune response. Male wing pigmentation was then correlated with melanin, fat reserves and muscle mass. Unlike previous results in Zygoptera, pigmentation was negatively related with immune response but no significant relation was found with fat and muscle mass. Furthermore, immune response showed no relationship with fat content or muscle mass. Possibly, the extremely high levels of male aggression observed in this species may have caused males to make an unusually high allocation of resources to wing pigmentation which may have impaired immune response." (Authors)] Address: Contreras-Garduno, J., Departamento Biología, División de Ciencias Naturales y Exactas, Universidad de Guanajuato, campus Guanajuato. Noria Alta s/n, Noria Alta, MX-36050 Guanajuato, Guanajuato, Mexico. E-mail: jcont@ecologia.unam.mx

10509. Corbi, J.J.; dos Santos, F.A.; Zerlin, R.; dos Santos, A.; Froehlich, C.G.; Trivinho-Strixino, S. (2011): Assessment of chromium contamination in the Monte Alegre stream: a case study. Brazilian archives of biology and technology 54(3): 613-620. (in English) [São Paulo, Brazil. The aim of this work was to study the contamination by chromium of the sediments of the Monte Alegre stream and of the larvae of Odonata (studied at the family level) as well as the possible impact caused by them on the stream macroinvertebrates community. It was found that chromium contaminated the sediments and the aquatic biota although, the stream macroinvertebrates community structure did not appear to be modified.] Address: Corbi, J.J., Depto de Biologia; Fac. de Filosofia Ciências e Letras; Univde de São Paulo; Ribeirão Preto - SP - Brasil. E-mail: julianocorbi@yahoo.com.br

10510. Corbi, J.J.; Froehlich, C.G.; Trivinho Strixino, S.; dos Santos, A. (2011): Evaluating the use of predatory insects as bioindicators of metals contamination due to sugarcane cultivation in neotropical streams. Environ Monit. Assess. 177(1-4): 545-554. (in English) ["Streams located in areas of sugarcane cultivation receive high concentrations of metal ions from soils of the adjacent areas causing accumulation of metals in the aquatic sediment. This impact results in environmental problems and leads to bioaccumulation of metal ions in aquatic organisms. In the present study, metal concentrations in different predatory insects were studied in streams near sugarcane cultivation and compared to reference sites. Possible utilisation of predatory insects as bioindicators of metal contamination due to sugarcane cultivation from 13 neotropical streams was evaluated. Ion concentrations of Al, Cd, Cr, Cu, Zn, Fe, and Mn in adult Belostomatidae (Hemiptera) and in larvae of Libellulidae (Odonata) were analysed. Nine streams are located in areas with sugarcane cultivation, without riparian vegetation (classified as impacted area) and four streams were located in forested areas (reference sites). Metal concentrations in insects were higher near sugarcane cultivations than in control sites. Cluster analysis, complemented by an ANOSIM test, clearly showed that these insect groups are good potential bioindicators of metal contamination in streams located in areas with sugarcane cultivation and can be

used in monitoring programmes. We also conclude that Libellulidae appeared to accumulate higher concentrations of metals than Belostomatidae." (Authors)] Address: Corbi, J.J., Depto de Biologia, Faculdade de Filosofia Ciências e Letras, Universidade de São Paulo-USP, CEP: 14040-900, Ribeirão Preto, SP, Brazil, julianocorbi@yahoo.com.br

10511. Craves, J.A.; O'Brien, D. (2011): *Tamea calverti* (Odonata: Libellulidae): New for Michigan with notes on other new reports for the Great Lakes region. The Great Lake Entomologist 44(1-2): 78-82. (in English) ["Beginning in late summer 2010, the Neotropical *T. calverti* was observed in a major northward movement in eastern North America. This species appeared for the first time in three Great Lakes states and Canada (Ontario). A specimen from Michigan is the first and only voucher in the Great Lakes, and an observation in Minnesota established a new northernmost report for North America." (Authors)] Address: Craves, Julie, Rouge River Bird Observatory, University of Michigan-Dearborn, Environmental Interpretive Center, Dearborn, MI 48128, USA. E-mail: jcraves@umd.umich.edu

10512. da Silva, F.H.; Favero, S.; Sabino, J.; dos Anjos Garnes, S.J. (2011): Biotic indexes for the evaluation of environmental quality in stretches of the Correntoso river, Pantanal do Negro, Mato Grosso do Sul State, Brazil. Acta Scientiarum. Biological Sciences, Maringá 33(3): 289-299. (in Portuguese, with English summary) ["Six collections were taken in different seasonal periods; ebb, dry and wet. The organisms were collected using a mesh D net sweeping five times through the roots of macrophyte banks at each sample. Three environments were compared (open, intermediary, closed) by adding the information from six collection sites. Family richness, absolute and relative abundance of insect samples and an evaluation of water quality were analyzed by using the BMWP index, BMWP-ASPT index, IBF index and Shannon diversity index, with log₂. A total of 60 families from 12 orders of Insecta Class (including Odonata) were recorded, totalling 19,773 specimens. Among the indexes applied, the BMWP index was the one that best represented the conditions of the studied environment." (Authors)] Address: da Silva, F.H., Programa de Pós-graduação em Meio Ambiente e Desenvolvimento Regional, Universidade para o Desenvolvimento do Estado e da Região do Pantanal, Rua Alexandre Herculano, 1400, 79037-280, Jardim Veraneio, Campo Grande, Mato Grosso do Sul, Brasil. E-mail: ambienteffhs@yahoo.com.br

10513. Dahanukar, N.; Diwekar, M.; Paingankar, M. (2011): Rediscovery of the threatened Western Ghats endemic sisorid catfish *Glyptoherax poonaensis* (Teleostei: Siluriformes: Sisoridae). Journal of Threatened Taxa 3(7): 1885-1898. (in English) [India; The diet of *G. poonaensis* includes a zygopteran larva.] Address: Dahanukar, N., Indian Institute of Science Education and Research, Sai Trinity, Garware Circle, Pune, Maharashtra 411021, India. Email: n.dahanukar@iiserpune.ac.in

10514. De Knijf, G.; Muusse, T. (2011): Predation of *Brachytron pratense* on *Libellula quadrimaculata* and on *Cordulia aenea*. Brachytron 14(1): 54-58. (in Dutch, with English summary) ["During a first visit to the nature reserve De Weerribben (Overijssel, the Netherlands) on 9 May 2009, a female *B. pratense* was observed during a successful kill. Its prey turned out to be a *L. quadrimaculata* which was caught in flight. After having eaten the eyes and weak parts of the head, the female *B. pratense*

flew off. A second visit to the same locality on 20 May 2011 resulted in the observation of a male *B. pratense* which caught a *C. aenea*. Some time later a second male was seen attacking another *C. aenea*. The thorax of the latter was partly eaten by *B. pratense*. After one minute the male *Brachytron* flew away, leaving behind the still living male of *C. aenea*. To our knowledge, these are the first published reports of hunting behaviour by *B. pratense* on other dragonflies." (Authors)] Address: Muusse, T., Billitonstraat 19, 3312SB Dordrecht, The Netherlands. E-mail: theomuusse@chello.nl

10515. Demayo, C.G.; Harun, S.A.; Torres, M.A.J. (2011): Procrustes analysis of wing shape divergence among sibling species of *Neurothemis* dragonflies. *Australian Journal of Basic and Applied Sciences* 5(6): 748-759. (in English) ["This study was conducted to determine wing shape divergence in several species of *Neurothemis* dragonflies collected from Northern Mindanao, Philippines. These includes the species *N. terminata terminata* (Ris, 1911), *N. fluctuans* (Fabricius, 1793), *N. ramburii ramburii* (Kaup & Brauer, 1866). The identification of these species are sometimes difficult as the males of these species have similarities in their colored wings ranging from red to brown. For the females, *N. terminata terminata* also show extensive female-limited polymorphism expressed as intra-specific color variations. Since the quantitative description, analysis and interpretation of shape and shape variation in biology have become a fundamental area of research; the geometric method of morphometrics was used in this study aimed at comparing the shapes themselves. In this methodology, the generalized least square fitting analysis done via procrustes superimposition of landmarks from the fore- and hind wings was used. The landmark data were converted to shape residuals via Procrustes-fitting and is comprised of three steps: (1) translation to a common centroid, (2) rotation to a common centroid size and (3) rotation to minimize sum of squared differences between landmark sets. To illustrate ordination of the shapes' consensus, the consensus shape data (mean shape) of the separate populations was measured by a relative warp ordinations plot using *tpsRelw* 1.36. Results of the relative warp analysis showed significant variation among the *Neurothemis* species. The first extracted relative warp showed differences in the shape of the pterostigma and disparity in the distance between the distal end of the radial planate supplement and the distal margin of the wings bounded by the end points of the intercalary vein and the radial branch. Differences in the shape of the pterostigma were also observed and accounting for the variations in the shapes of the hind wing. Distance matrices were also constructed for the four data sets: left and right fore-wing; left and right hind wing. Results of the comparison via correlation analyses of the four matrices of distances among the species are indicative of the significant contribution of the shape of the fore-wing as compared to the hind wing in discriminating among species. The results of the present study clearly show the importance of geometric morphometric analysis and the utility of wing morphology in the taxonomy and discrimination of sibling species of *Neurothemis*." (Authors) Reagan Villanueva wrote on 02.08. 2011: The species they labelled as *N. fluctuans* is actually a small *N. ramburii*.] Address: Demayo, C.G., Dept of Biological Sciences, College of Science and Mathematics, MSU-Iligan Institute of Technology, Iligan City, Philippines. E-mail: cgdemayo@gmail.com

10516. Diao, P.-p.; Yu, A.-c. (2011): Odonata in the Siming Mountains, Ningbo. *Chinese Journal of Applied Entomology* 48(2): 435-441. (in Chinese, with English summary) ["Field surveys were conducted on the Odonata in the Siming Mountains of the Ningbo Region from 2009 to 2010. 460 Odonata specimens were collected, and a total of 43 species in 32 genera and 9 families identified. The Libellulidae were the dominant family (17 species, 39.5%) of which *Orthetrum* was the dominant genera (5 species, 15.6%). 25 genera (78.1%) were represented by single species. Oriental and Oriental-Palearctic Realm species were the most common. Water pollution and over-utilization of marshes are the main threats to the Odonata and other local aquatic organisms." (Authors)] Address: Diao, P.-p., College of Modern Science and Technology, China Jiliang University, Hangzhou, China

10517. Dominguez-Granda, L.; Lock, K.; Goethals, P.L.M. (2011): Application of classification trees to determine biological and chemical indicators for river assessment: case study in the Chaguana watershed (Ecuador). *Journal of Hydroinformatics* 13(3): 489-499. (in English) ["Benthic macroinvertebrates were sampled in the Chaguana river basin in SW Ecuador in March (wet season) and September (dry season) of 2005 and 2006. Aquatic insects dominated the macrobenthos, with Trichoptera, Diptera, Ephemeroptera, Hemiptera and Odonata being the orders with the highest diversity and Ephemeroptera and Diptera being most abundant. No systematic differences in richness and abundance were observed between dry and wet seasons, which is in agreement with the literature. It is concluded that, in the neotropics, macroinvertebrates can probably be sampled for water quality assessments during the whole year: however, sampling soon after spates should be avoided. Using multivariate analysis, stations could be clustered into three groups based on their macroinvertebrate community composition: sites with low, intermediate and high human impact. Classification trees indicated that stations with low human impact had low conductivities, while stations with high conductivities were characterised as highly impacted if the dissolved oxygen concentration was low and intermediately impacted if the dissolved oxygen concentration was high. Classification trees also indicated that Leptophlebiidae (Ephemeroptera) were characteristic for sites with low impact; in sites with intermediate impact, this family was absent but Hydropsychidae (Trichoptera) were present; when both families were absent, impact was high." (Authors)] Address: Lock, K., Ghent Univ., Laboratory of Environmental Toxicology and Aquatic Ecology, J. Plateaustraat 22, B-9000 Gent, Belgium. E-mail: Koen.Lock@UGent.be

10518. Dressler, B. (2011): Arktische Smaragdlibelle *Somatochlora arctica*, Wiederfund im Spessart. *Libellen in Hessen* 4: 50-52. (in German) [Documentation of records of *S. arctica* without locality data from the Spessart middle range mountain, Hessen, Germany from 22-VII and 02-IX-2010.] Address: Dressler, B., Samlandweg 75, 61118 Bad Vilbel, Germany

10519. Dronzikova, M.V. (2011): Data on the fauna of Odonata of the Tom' River basin. *Amurian zoological journal* 3(2): 107-123. (in Russian, with English summary) ["Basing on collections mostly from Kuznetskaya Depression and Gornaya Shoria Mts., data on distribution of 48 species of Odonata in the Tom' River basin (West Siberia) are reported, 13 species added to the fauna from literature sources. In additions, collections made at Lake Teletskoe, NE Altai, are reported as well.

Coenagrion lanceolatum is reported for the environs of Guryevsk town (Kuznetskaya depression) and Lake Teletskoe, that considerably extends its known range to the west. *Anax parthenope parthenope*, probably a southern colonist, is reported from Kemerovo Province; its steady population existing within the city of Novokuznetsk. New data on the life history of some species at Novokuznetsk are reported." (Author)] Address: Dronzikova, M.V., Kuzbass State Pedagogical University, Pionersky Ave. 13, Novokuznetsk, 654027, Russia. E-mail: m_dronzikova@mail.ru

10520. Dumont, H.J.; Kiany, M.; Sadeghi, S. (2011): First record of *Rhodischnura nursei* (Morton) from Iran (Zygoptera: Coenagrionidae). *Odonatologica* 40(3): 251-254. (in English) ["*R. nursei* is for the first time reported from the South of Iran, a considerable widening of the range of this rather ill-known species towards the West, and redefining its geographical range as West-Oriental and rather typical of semi-arid climates. The nearest certified record from Pakistan is situated some 1000 km NE of the locations in Iran, but it can be supposed that numerous populations live in the gap. The specimens, collected in Rudan and Ziarat Ali, Hormozgan province, S Iran, lived along the grassy shores of 2 slow-flowing rivers, a habitat that is also typical of the species further East. A female found at Sarbaz, Beluchistan, confirms that this small and inconspicuous species may be widespread in suitable biotopes of southern and eastern Iran, and probably in the West of Pakistan as well." (Authors)] Address: Kiany, M., Department of Plant Protection, College of Agriculture, Shiraz University, Shiraz, I. R. Iran. E-mail: mohsen.kiany1@gmail.com

10521. Facco Jacomassa, F.A. (2011): Observations of a nest of the Plumbeous Kite, *Ictinia plumbea* (Gmelin, 1788) (Falconiformes: Accipitridae) in southern Brazil. *Revista Biotemas* 24(1): 77-82. (in Portuguese, with English summary) ["[...] In early November, the presence of nestlings was confirmed (one in each breeding season), and this time the parents fed the chicks with small insects (Hymenoptera and Coleoptera) and carried out the maintenance of the nest. The nestlings that were developing into young birds were fed with larger insects (Odonata, Lepidoptera – *Myelobia smerintha* and Orthoptera – *Tropidacris collaris*). [...]"] (Author)] Address: Facco Jacomassa, F.A., Laboratório de Ornitologia e Animais Marinhos, Bloco D, Centro 2, Universidade do Vale do Rio dos Sinos, Avenida Unisinos, 950 – B, CEP 93.022-000, São Leopoldo – RS, Brasil. E-mail: fabioafj@gmail.com

10522. Ferraz Luiz, T.; Roquetti Velludo, M.; Carvalho Peret, A.; Luiz Rodrigues, J.; Moldenhauer Peret, A. (2011): Diet, reproduction and population structure of the introduced Amazonian fish *Cichla piquiti* (Perciformes: Cichlidae) in the Cachoeira Dourada reservoir (Paranaíba River, central Brazil). *Rev. Biol. Trop.* 59(2): 727-741. (in English) ["The Blue Peacock Bass (*Cichla piquiti*), native to the Tocantins-Araguaia river basin of the Amazon system, was introduced into the basin of the Paranaíba River, Paraná River system. Cachoeira Dourada reservoir is one of a series of dams on the Paranaíba River in central Brazil, where this fish has become established. A study of its feeding spectrum, combined with information about its reproductive characteristics and population structure, would enable the current state of this species in the reservoir to be assessed and might provide useful data for the management of other species native to this habitat. This study showed that the peacock bass has no predators or natural competitors in the reservoir and that

reproduces continuously, with high reproductive rates, and has a smaller median length at first maturity (L50) than other species of *Cichla*. Its successful establishment in habitats strongly affected by human activity should cause changes in the whole structure of the local fish communities. Nonetheless, in this reservoir, there appears to be some sharing of the functions of this species with native carnivorous fish, a situation that may be sustained by the presence of a wide variety of foraging fish." (Authors) Odonata were found in 0,81% of the stomachs of *C. piquiti*.] Address: Ferraz Luiz, Tatiane, Population Dynamics Laboratory, Department of Hydrobiology, Federal University of São Carlos (UFSCar) Washington Luís Highway (SP-310), km 235. São Carlos, SP, Brazil. Zip Code 13565-905. E-mail: tatianeferrazluiz@hotmail

10523. Fulan, J.A.; Raimundo, R.; Figueiredo, D.; Correia, M. (2011): Abundance and diversity of dragonflies four years after the construction of a reservoir. *Limnetica* 29(2): 279-286. (in English, with Portuguese summary) [Southern Portugal, 38°08'N, 7°35'E. "Few studies have investigated the impacts of river impoundments on reservoir constructions. Reservoir construction deeply changes dragonflies' habitat structures, especially in relation to shoreline vegetation. This study investigated the effects of the impoundment of the Guadiana River and its tributaries on dragonflies four years after the construction of a reservoir. A total of 17 dragonfly species (11 Zygoptera and ten Anisoptera), representing six families, were recorded in 21 sites in the years 1999 and 2003. *Aeshna mixta*, *Coenagrion caeruleum*, *C. scitulum*, *Sympetrum foscolum*, *S. meridionale* and *S. striolatum* were sampled just before the impoundment took place, and *Anax parthenope*, *Onychogomphus forcipatus*, *Orthetrum coerulescens*, *Trithemis annulata*, *Platycnemis acutipennis* and *P. latipes* were recorded only after the construction of the reservoir. We concluded that the construction of the Alqueva Reservoir four years earlier did not change the dragonfly species richness, possibly because of species overlap, but that the species composition was modified. Changes in marginal vegetation may have been important to new species compositions." (Authors)] Address: Fulan, J.A., Unive Federal do Amazonas (UFAM). CEP: 69800-000, Humaitá, AM, Brasil. E-mail: joaofulan@ig.com.br

10524. Fulan, J.A.; Davanso, R.C.S.; Henry, R. (2011): A profundidade como fator determinante na variação anual da densidade dos macroinvertebrados associados à *Salvinia auriculata* Aublet. *Revista Brasileira de Biociências* 9(2): 214-219. (in Portuguese, with English summary) ["(The depth as a factor in determining annual change density of macroinvertebrates associated with *Salvinia auriculata* Aublet). The aim of this work was to study the effects of water annual variation of Paranapanema River and others variables on macroinvertebrates that lives in macrophytes roots, from March 2006 to February 2007. The sampled was realized with a hand-net (mesh size: 0.25 mm) and 0.07 m² circle area. We measured air and water temperature, depth, dissolved oxygen, pH, K25 and suspended matter. The normality was tested and a Canonical Correspondence Analysis (CCA) was realized. Telebasis showed high density in period studied. There was a high variation in depth: 6.07 m in April 2006 to 1.83 m in November 2007. The CCA showed that Culicidae, Ephemeroptera, Ostracoda, Calopterygidae, Coryphaeschna and Cyanallagma were significant correlated with the depth. We concluded that the effect of the depth on larvae Odonata can not have been direct, but indirect by the effect in your substrate as aquatic plant." (Au-

thors)] Address: Fulan, J.A., Universidade Federal do Amazonas (UFAM). CEP: 69800-000, Humaitá, AM, Brasil. E-mail: joaofulan@ig.com.br

10525. Gall, B.G.; Brodie III, E.D. Brodie, Jr. E.D. (2011): Survival and growth of the caddisfly *Limnephilus flavastellus* after predation on toxic eggs of the Rough-skinned Newt (*Taricha granulosa*). *Can. J. Zool.* 89: 483-489. (in English) ["*T. granulosa* possesses a powerful neurotoxin, tetrodotoxin, in the skin that is secondarily deposited in the ova. Although assumed to serve an antipredator function in the eggs, empirical evidence of the toxin's role in preventing egg predation is lacking. In this study, we characterized the aquatic macroinvertebrate community at a location sympatric with extremely toxic newts and estimated the abundance of caddisflies. We tested aquatic macroinvertebrates sympatric with toxic newts for their capacity to consume the toxic eggs, and examined the propensity of egg predation and its effect on growth of the only known predator of newt eggs, caddisfly larvae. *Limnephilid* caddisfly larvae were the only invertebrate observed to consume substantial quantities of toxic newt eggs. Survival and growth of *L. flavastellus* continued when larvae consumed toxic eggs and did not differ from *L. flavastellus* that also had access to an alternative food source (detritus). *L. flavastellus* that had access to eggs + detritus consumed a similar number of eggs compared with those provided with eggs only. These results, combined with the abundance of caddisflies, suggest that caddisflies are important predators of eggs of *T. granulosa*." (Authors) Macroinvertebrates collected at Soap Creek ponds and tested for their propensity to consume toxic eggs of *T. granulosa* included Odonata. Eggs were offered to Libellulidae (n specimens=11), Aeshnidae (n=1) and Coenagrionidae (n=6). In any case the offered eggs were consumed.] Address: Gall, B.G., Dept of Biology, Utah State University, 5305 Old Main Hill, Logan, UT 84322, USA. E-mail: brian.gall@usu.edu

10526. Ganai, A.H.; Parveen, S.; Abdel Mola, H.R., Ahmad, U.; Kabir, H.A. (2011): Diversity and community structure of aquatic insects in some derelict waterbodies of Aligarh, Uttar Pradesh, India. *J. Curr. Sci.* 16(1): 155-163. (in English) [Monthly population densities of the taxa (all at the order level) are presented and discussed. "Odonata formed the fifth (from six) most dominant group of the aquatic insects in the selected ponds. The population density of Odonata ranged from minimum of (3 No./m²) during November. 2009 to a maximum of (63 No./m²) in June, 2009 in pond I, whereas, it varied from Nil during, January. 2010 to (15 No./m²) in April and June 2009 in pond II. Odonate insects were collected mainly during March to October, 2009 with abundance in summer." (Authors)] Address: Ganai, A.H., Limnology Research Laboratory, Department of Zoology, Aligarh Muslim University, Aligarh, (U.P.), India

10527. Gassmann, D. (2011): *Pseudagrion lorenzi* sp. nov., a new damselfly species from New Britain island, Papua New Guinea (Odonata: Coenagrionidae). *International Journal of Odonatology* 14(2): 149-162. (in English) ["*Pseudagrion lorenzi* sp. nov. is described from New Britain island, Papua New Guinea. Male and female characters are illustrated by means of scanning electron microscopy. A differential diagnosis with *Pseudagrion civicum* Lieftinck, 1932 from New Guinea and *Pseudagrion incisurum* Lieftinck, 1949 from the Solomon Archipelago is provided. The female of *P. incisurum* is described for the first time." (Authors)] Address: Gassmann, D., National Centre for Biodiversity (NCB Naturalis), PO Box

9517, NL-2300 RA Leiden, The Netherlands. E-mail: dirk.gassmann@ncbnaturalis.nl

10528. Gergs, A.; Classen, S.; Hommen, U.; Preuss, T.G. (2011): Identification of realistic worst case aquatic macroinvertebrate species for prospective risk assessment using the trait concept. *Environmental Science and Pollution Research* 18(8): 1316-1323. ["Approaches in environmental risk assessment for pesticides are becoming more and more realistic. Thereby, risk assessment has to be protective in a way that no long-lasting (adverse) effects on populations will occur in the environment. Since this imperative includes species generally showing high population vulnerability due to their life history traits, prospective risk assessment should be based on realistic worst cases. Based on life history traits, the purpose of the current study was to verify whether a worst case combination of low potential for intrinsic recovery and low ability for recolonisation can be found in the field. Methods: Combinations of traits related to dispersal ability and reproduction of macroinvertebrates were investigated using monitoring data from edge of field water bodies in Germany. The relative distribution of traits was analyzed across different agricultural regions and across sites of different potential for exposure to pesticides. Species were sorted in a tiered approach in order to gain a list of realistic worst case species. Results: Life history traits were found equally distributed across different regions. Thereby, dispersal ability and voltinism were not randomly combined. Within the data analysed, low dispersal ability was found to be exclusive to semivoltine taxa. Owing to their appearance in reference sites, poor dispersal ability and a long time reproduction, three species were considered potentially worst case. Conclusions: The trait approach was found to be suitable in comparing trait distributions within different regions and in compiling a list of critical taxa for consideration in environmental risk assessment." (Authors) The paper includes a few passing notes on voltinism and dispersal of Odonata.] Address: Gergs, A., Institute for Environmental Research, RWTH Aachen University, Aachen. Germany. E-mail: andre.gergs@bio5.rwth-aachen.de

10529. Goncalves, C.; Pereira Souza, U.; Volcan, M.V. (2011): The opportunistic feeding and reproduction strategies of the annual fish *Cynopocilius melanotaenia* (Cyprinodontiformes: Rivulidae) inhabiting ephemeral habitats on southern Brazil. *Neotropical Ichthyology* 9(1): 191-200. (in English, with Portuguese summary) [Odonata larvae play a minor role as food of *C. melanotaenia*.] Address: Gonçalves, Cristina da Silva, Programa de Pós-Graduação em Ciências Biológicas, Universidade Estadual Paulista "Júlio de Mesquita Filho", Departamento de Zoologia, Av. 24-A, 1515, 13506-900 Rio Claro, SP, Brazil. cristina.silva.goncalves@gmail.com

10530. Gonzales Soriano, E.; Noguera, F.; Onate Ocaña, L. (2011): A biodiversity hotspot for odonates in Mexico: the Huasteca Potosina, San Luis Potosí. *Odonatologica* 40(3): 179-190. (in English) ["The Huasteca Potosina (HP) represents the second hotspot for Odonata diversity in Mexico. A total of 11 families, 49 genera and 126 species for the region are recognized. Estimated richness values using the nonparametric estimators ICE and Chao² were 174.3 and 204.55 species respectively. The Odonata diversity of the HP is surpassed in Mexico only by that of the region of Los Tuxtlas with 139 species" (Authors)] Address: Gonzales Soriano, E., Departamento de Zoología, Instituto de Biología, Universidad Nacional Autónoma de México, Avenida Universidad 3000, MX-

04510 Ciudad Universitaria, D.F., Mexico. E-mail: esoriano@mail.ibiologia.unam.mx

10531. González-Tokman, D.; Córdoba-Aguilar, A.; González-Santoyo, I.; Lanz-Mendoza, H. (2011): Infection effects on feeding and territorial behaviour in a predatory insect in the wild. *Animal Behaviour* 81(6): 1185-1194. (in English) ["Sick animals may change their feeding behaviour to compensate for infections. However, there is little information regarding whether infection affects (1) feeding behaviour of predators, (2) feeding behaviour using an experimental approach in the wild, (3) other costly behaviours and/or (4) physiological components of condition. We experimentally infected males of the predatory damselfly *Hetaerina americana* in a field experiment. We hypothesized that infection would reduce feeding behaviour. We further predicted a reduction in territorial activity, an increase in immune response (measured by the activity of phenoloxidase, PO) and a reduction of fat reserves and flight-associated muscle mass (two traits usually traded off with immune ability and territorial behaviour). We also infected males in a laboratory experiment that controlled for food supply and territorial activity, and measured the same physiological characters. Immune challenges in the field experiment unexpectedly increased feeding rate but did not change territorial activities. Muscle mass was reduced in the field but not in the laboratory, probably because of differences in the presence of energetically expensive territorial activities. In the laboratory, starvation and infection reduced PO activity and fat stores but did not affect muscle mass. Thus, our field and laboratory results support the idea that increased feeding compensates for infections in predators." (Authors)] Address: Córdoba-Aguilar, A., Centro de Investigaciones Biológicas, Univ. Autónoma del Estado de Hidalgo, Apdo. P. 69-1, Plaza Juárez, Pachuca, Hidalgo 42001, Mexico E-mail: acordoba@uaeh.reduaeh.mx

10532. Gosden, T.P.; Stoks, R.; Svensson, E.I. (2011): Range limits, large-scale biogeographic variation, and localized evolutionary dynamics in a polymorphic damselfly. *Biological Journal of the Linnean Society* 102: 775-785. (in English) ["Studies of heritable colour polymorphisms allow investigators to track the genetic dynamics of natural populations. By comparing polymorphic populations over large geographic areas and across generations, issues about both morph stability and evolutionary dynamics can be addressed, increasing our understanding of the potential mechanisms maintaining genetic polymorphisms. In the present study, we investigated population morph frequencies in a sex-limited heritable colour polymorphic damselfly (*Ischnura elegans*), with three discrete female morphs. We compared the frequencies of these three female morphs in 120 different populations from ten European countries at differing latitudes and longitudes. There were pronounced differences in morph frequencies both across the entire European biogeographic range, as well as at a smaller scale within regions. We also found considerable between-population variation at the local scale within regions, particularly at the edges of the range of this species. We discuss these findings in the context of recent models of adaptive population divergence along the range of a species. This polymorphism is thus highly dynamic, with stable morph frequencies at the core of the species range but fluctuating morph dynamics at the range limits. We finish with a discussion of how local interactions and climatic factors can be expected to have a strong influence on the biogeographic patterns in this species and other sexually se-

lected polymorphisms." (Authors)] Address: Gosden, T.P., School of Biological Sciences, Univ. of Queensland, St Lucia 4072 QLD, Australia. E-mail: t.gosden@uq.edu.au

10533. Grant, P.B.C.; Samways, M.J. (2011): Micro-hotspot determination and buffer zone value for Odonata in a globally significant biosphere reserve. *Biological Conservation* 144(2): 772-781. (in English) ["Reserves are frequently constrained in design and size by various financial, social or political factors. Maintenance of existing reserves must therefore rely on strategic management practices, and prioritization of conservation activities within them. Identification of global and regional hotspots have been effective for prioritizing conservation activities. Yet, identification of micro-hotspots, or overlapping areas of endemic and rare species that are under threat at the landscape scale, have largely been ignored. From a reserve management point of view, knowledge of critical micro-hotspots within a reserve, are focal points for directing cost effective, conservation initiatives, especially removal of invasive alien plants which are a major threat to biodiversity. Using diversity patterns of dragonfly assemblages, many endemic and threatened, within a biosphere reserve located in the core of a global biodiversity hotspot, we investigated the concept of micro-hotspots. As biosphere reserves contain zones with varying degrees of anthropogenic impact, we also investigated the value of buffer and transition zones for complementing the dragonfly fauna of the reserve core. We found a distinct micro-hotspot within the protected core zone which shows concordance for both endemism and species richness. We conclude that focused conservation actions to remove invasive alien plants within this micro-hotspot would help insure its continued integrity. Furthermore, while there is greater habitat degradation within the buffer and transition zones, they support many additional species, but not those necessarily endemic or threatened. The complementary value of buffer and transition zones therefore lies in increasing habitat heterogeneity and species richness of the whole reserve." (Authors)] Address: Samways, M.J., Dept Entomol. & Nematol., Univ. Stellenbosch, Private Bag X1, ZA-7602, Matieland, South Africa. E-mail: samways@sun.ac.za

10534. Guillermo-Ferreira, R.; Del-Claro, K. (2011): Resource defense polygyny by *Hetaerina rosea* Selys (Odonata: Calopterygidae): Influence of age and wing pigmentation. *Neotrop. entomol.* 40(1): 78-84. (in English) ["Current evidence suggests that in *Hetaerina* damselflies males exhibit lek mating system. In this study, in order to answer if the same occurs in *H. rosea*, we manipulated vegetation substrates used as territories and quantified the number of visiting females, males defending territories and fight intensity. We also examined whether body size and wing pigmentation are selectable traits in male-male competition, and if age affects male territorial behaviour. Our results showed that males with larger pigmented areas won more contests, independently of body size. Old males changed from territoriality to sneaking strategy. Contrary to other *Hetaerina* species, males of *H. rosea* do not display lek behaviour, but defend resources according to the resource defense polygyny strategy." (Authors)] Address: Del-Claro, K., Instituto de Biologia, LECl, Univ Federal de Uberlândia, CP 593, 38400-902, Uberlândia, MG, Brasil. E-mail: delclaro@ufu.br

10535. Hardiman, N.; Burgin, S. (2011): Effects of trampling on in-stream macroinvertebrate communities from canyoning activity in the Greater Blue Mountains World Heritage Area. *Wetlands Ecology and Management* 19(1):

61-71. (in English) ["Perceived growth in the adventure recreation sport of canyoning in the Greater Blue Mountains World Heritage Area (Australia) has raised concerns with park management that such activity is resulting in unsustainable visitor impacts to canyon ecosystems. Three levels of trampling intensity were applied within an upland section of a canyon stream to assess the impact of trampling on benthic macroinvertebrate communities. After an initial detrimental effect from trampling, there was a rapid recovery of the macroinvertebrate community. Recovery occurred within one day of trampling ceasing, and overall community composition was similar among treatments after 15 days. However, by day 15 the untrampled sites showed a substantial decrease in animal abundance. This indicated that adjacent habitat contributed greatly to the recolonisation of animals into trampled areas." (Authors) The study includes one specimen of Corduliidae.] Address: Burgin, Shelley, College of Wealth and Science, Univ. of Western Sydney, South Penrith Distribution Centre, Locked bag 1797, Sydney, NSW 1797, Australia. E-mail: s.burgin@uws.edu.au

10536. Haritonov, A.; Popova, O. (2011): Spatial displacement of Odonata in south-west Siberia. *International Journal of Odonatology* 14(1): 1-10. (in English) ["A brief account is presented of mass dragonfly migrations observed previously in Russia and West Siberia in particular. A mass migration in *Libellula quadrimaculata* is described in detail. It occurred on 1 July 1981 in the south-western part of the West Siberian Plain in the valley of the Ishym River. From 1968 to 2008 we studied population dynamics, spatial distribution and displacement in dragonflies in the West Siberian forest-steppe. Detailed research was conducted at the biological station of the Russian Academy of Sciences near the Chany Lake. Mass migrations in *L. quadrimaculata* and some *Leucorhinia* spp. followed situations with an extremely high population density and local mass aggregations and occurred with a period of c.10 years, correlated with fluctuation of water level in the region, mainly in the south. It is suggested that dragonfly migration not only optimizes their population size but increases the rate of transport of chemical elements and organic matter to dry land from eutrophic water bodies, which increases the importance of dragonflies to ecosystems at large." (Authors)] Address: Haritonov, A.YU.; Laboratory of Insect Ecology, Biological Institute of the Siberian Branch of the Academy of Sciences, Frunze str. 11, RUS-630091 Novosibirsk, Russia. E-mail: pc@eco.nsc.ru

10537. Haritonov, A.Yu.; Popova, O.N. (2011): [Dragonfly (Odonata) migration in the south west Siberian plain]. *Zoologicheskii zhurnal* 90(3): 302-310. (in Russian) ["Brief information on mass dragonfly migrations observed previously in Russia, and in Western Siberia in particular, is presented. From 1969 to 2009, the authors studied the dynamics of dragonfly population, their spatial distribution and displacements in the West-Siberian forest-steppe. The main studies were conducted in the Chany Lake basin (the Biological Station of the Institute of Animal Systematics and Ecology, Siberian Division, Russian Academy of Sciences). The spatial redistribution of dragonflies is regarded as a balance of homing and wandering activities. Homing results in a relative stability of local dragonfly populations and communities. Wandering is a result of dispersal of dragonflies from their emergence sites and colonization of new habitats that is especially important due to the short time of existing the larval biotopes - shallow water bodies. The formation of more or less constant

migration routes is a peculiar variant of wandering activities. Mass exodus from native habitats at excessive growth of the population density takes special place in dragonfly migrations. Exodus flight leads to death of all or most individuals not only. In addition, it optimizes not only the number of dragonfly populations, but also intensifies the removal of chemical elements and organic matter from eutrophic water bodies. An original generalized classification of special displacement of dragonflies is proposed." (Authors)] Address: Haritonov, A.YU.; Laboratory of Insect Ecology, Biological Institute of the Siberian Branch of the Academy of Sciences, Frunze str. 11, RUS-630091 Novosibirsk, Russia. E-mail: pc@eco.nsc.ru

10538. Hasumi, M.; Hongorzul, T.; Terbish, K. (2011): Animal species diversity at a land-water ecotone in Mongolia. *Limnology* 12(1): 37-45. (in English) [The biodiversity of wetland ecosystems has received scant attention in Mongolia. We measured amphibian and macroinvertebrate species diversity at a complicated land-water ecotone of a pond within a wetland complex in Shaamar during July 2005. From our study area (0.5-ha grassland and an adjacent pond), we sampled 4,926 animals including 1 mammal, 4 amphibian, and 26 aquatic macroinvertebrate (>2 mm) species with a biomass of 4,444 g. Among these, a backswimmer (*Notonectidae* sp. 1) was a dominant species, representing 65% of the total number of animals collected (3,209) and 22% of the mass (999 g). Our study area was small but contained 4 amphibian species (*Hyla japonica*, *Rana amurensis*, *Bufo raddei*, and *Salamandrella keyserlingii*) in a mixed community with Shannon Diversity Index (H') of 1.678 and Pielou's Evenness Index (J') of 1.211. No larvae or tadpoles of any amphibian species were found in the pond, indicating their early metamorphosis. H' and J' with 26 macroinvertebrate species were estimated to be 1.828 and 0.561, respectively. This suggests that low macroinvertebrate species diversity relative to high species richness is due to low evenness resulting from considerable numbers of a backswimmer. In 6 sites sampled in the pond, mean water pH revealed high alkalinity (range 9.01–10.45). The presence of our taxa in a highly alkaline environment indicates that they may be alkaliphilic." (Authors) The paper includes records of "Aeshnidae sp., Libellulidae sp. 1, Libellulidae sp. 2, *Cercion* sp.".] Address: Hasumi, M., Biological Institute, Faculty of Science, Niigata University, Niigata 950-2181, Japan. E-mail: mhasumi@bio.sc.niigata-u.ac.jp

10539. Henry, J.R. (2011): A comparative study of dragonfly flight in variable oxygen atmospheres. M.Sc. thesis, Arizona State University: V + 39 pp. ["One hypothesis for the small size of insects relative to vertebrates, and the existence of giant fossil insects, is that atmospheric oxygen levels have constrained body sizes because oxygen delivery would be unable to match the needs of metabolically active tissues in larger insects. This study tested whether oxygen delivery becomes more challenging for larger insects by measuring the oxygen-sensitivity of flight metabolic rates and behaviour during hovering for 11 different species of dragonflies that range in mass by an order of magnitude (*Aeshna multicolor*, *Anax junius*, *Libellula comanche*, *L. luctuosa*, *L. saturata*, *Macrodixa balteata*, *Pachydiplax longipennis*, *Pantala flavescens*, *P. hymenaea*, *Tramea lacerata*, *T. onusta*). Animals were flown in 7 different oxygen concentrations ranging from 30% to 2.5% to assess the sensitivity of their behaviour and flight metabolic rates to oxygen. I also assessed the oxygen-sensitivity of flight in low-density air (nitrogen re-

placed with helium), to increase the metabolic demands of hovering flight. Lowered atmosphere densities did induce higher metabolic rates. Flight behaviours but not flight metabolic rates were highly oxygen-sensitive. A significant interaction between oxygen and mass was found for total flight time, with larger dragonflies varying flight time more in response to atmospheric oxygen. This study provides some support for the hypothesis that larger insects are more challenged in oxygen delivery, as predicted by the oxygen limitation hypothesis for insect gigantism in the Paleozoic." (Authors)] Address: not stated

10540. Herzog, S.K.; Martínez, R.; Jørgensen, P.M.; Tiessen, H. (eds) (2011): Climate change and biodiversity in the tropical Andes. Inter-American Institute for Global Change Research (IAI) and Scientific Committee on Problems of the Environment (SCOPE). ISBN: 978-85-99875-05-6: 348 pp. (in English) [The paper includes a passing reference to Odonata: "In rivers of the Ecuadorian páramo, dominant groups include Planariidae (Turbellaria), Oligochaeta, Hyalellidae (Amphipoda), Baetidae (Ephemeroptera), Hydroptilidae, Limnephilidae (Trichoptera), Chironomidae, Simuliidae (Diptera), and Elmidae (Coleoptera) (Jacobsen 2008). In general, diversity decreases with elevation for these orders, and this pattern is particularly pronounced in Hemiptera and Odonata, which do not occur in the high zone of Ecuador (Encalada 1997) despite being very diverse in the lowlands (Jacobsen 2004). Several important families, such as Gripopterygidae (Plecoptera), Anomalosychidae, and Limnephilidae (both Trichoptera), on the other hand are restricted to high-Andean elevations." (Authors)] Address: <http://www.icsu-scope.org/Latest%20News/CCampBiodiversityinTropicalAndes.pdf>

10541. Honkanen, M. (2011): Perspectives on variation in species richness: area, energy and habitat heterogeneity. *Jyväskylä Studies in Biological and Environmental Science* 219: 46 pp. (in English) ["Species richness (i.e. number of species) tends to differ from one area to another. Two major patterns observed in the nature are 1) species-area relationship which states that larger areas contain usually larger species richness, and 2) species-energy relationship which postulates that the amount of energy encompassed in the area determines species richness. Even though both of these relationships may result from multiple mechanisms, which may be also intertwined, for instance through heterogeneity of habitats, they are not often studied simultaneously. In addition to broaden our theoretic knowledge understanding the mechanisms that produce species richness could help us to protect biodiversity. I studied the effects of area, energy, and habitat heterogeneity on species richness and related adjacent mechanisms in three taxa. My results showed that bird species richness was determined mainly by total energy (measured as tree volume and growth) in an area through its effects on the number of individuals. Bird species richness was further limited by the density of energy and its spatial dispersion, most likely because increased habitat heterogeneity benefits specialists. Also aquatic macrophyte species richness was determined by a multiple of factors and one of them was potential productivity (a measure of energy). Whilst potential productivity increased species richness, species turnover showed a unimodal relationship with it. Thus, potential productivity may decrease the regional species diversity as the species turnover between lakes may be reduced. Finally, Odonata species richness was determined by habitat heterogeneity (measured as aquatic macrophyte species

density), and the relationship was shaped by just a handful of common species. My results help to build up the theoretic knowledge about the mechanisms behind species richness patterns and have important implications for species conservation." (Author)] Address: Honkanen, Merja, University of Jyväskylä, Department of Biological and Environmental Science, P.O. Box 35, FI-40014 University of Jyväskylä, Finland

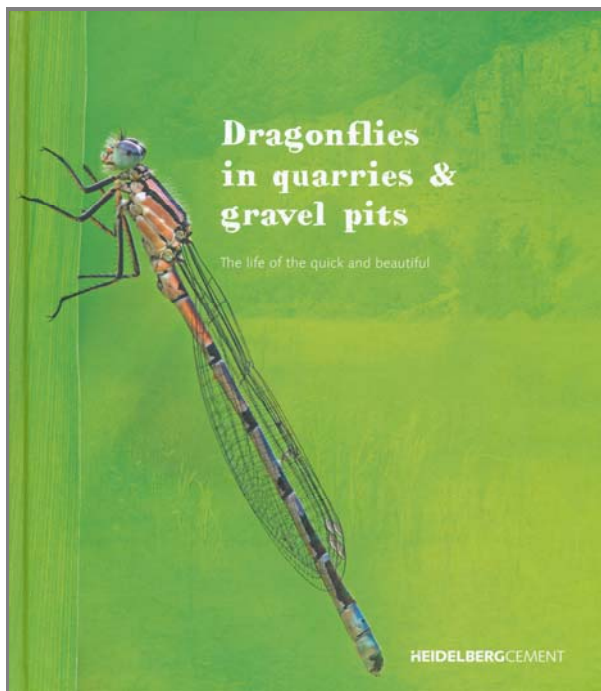
10542. Horn, M.Y.; Rodrigues, K.A.; Anzotegui, L.M. (2011): Primeras evidencias de interacción insecto-planta en el Neógeno del noroeste de la Argentina. *Rev. bras. paleontol.* 14(1): 87-92. (in Portuguese, with English summary) ["This study provides the first evidence for plant-insect associations from fossil leaf impressions of the San José and Palo Pintado formations, dated as middle and upper Miocene age, from northwestern Argentina. The size, shape and arrangement of leaf damage on several plant hosts consists of various chew marks made by mandibulate insects occurring along the leaf blades of *Malvaciphyllum quenquiadensis* Anzotegui and *Cristalli* (Malvaceae), hole feeding along the leaf edge of *Nectandra saltensis* Anzotegui (Lauraceae), mines within the internal tissues of *M. quenquiadensis*, and oviposition scars in *Cedrela* sp. (Meliaceae). Based on specific, identifiable features of the plant damage, the likely producers responsible for this damage include external foliage feeders such as Orthoptera, Phasmoptera and Coleoptera; leaf miners from the Lepidoptera but possibly Hymenoptera and Diptera; and ovipositing insects representing the Odonata. Many of these insect groups were previously known from earlier Paleogene deposits of Argentina, and similar ovipositional damage has been documented from the early Eocene of Rio Negro and middle Eocene of Chubut in Patagonia, indicating geochronological continuity and occurrence in marsh and open woodland plant communities under warm and seasonal climatic conditions." (Authors)] Address: Horn, Marcicel Yanina, Secretaría General de Ciencia y Técnica, Universidad Nacional del Nordeste, Centro de Ecología Aplicada del Litoral, Ruta 5, km 2,5 3400, Corrientes, Argentina. E-mail: yaninahorn@hotmail.com

10543. Horn, R. (2011): Zwei Funde der Südlichen Heide libelle *Sympetrum meridionale* (Sélys 1841) in Nordhessen. *Libellen in Hessen* 4: 48-49. (in German) [24-VIII-2006, NSG near Felsberg-Altenburg, Hessen, Germany; 12-IX-2010, Riedforst near Melsungen, Hessen, Germany] Address: Horn, R., Aussiedlerhof 2, 34212 Melsungen-Kirchhof, Germany. E-mail: Reinhard-Horn@t-online.de

10544. Infante-Rodriguez, D.A.; Novelo-Gutierrez, R.; Mercado, G.; Williams, T. (2011): Spinosad toxicity to *Simulium* spp. larvae and associated aquatic biota in a coffee-growing region of Veracruz State, Mexico. *Journal of Medical Entomology* 48(3): 570-576. (in English) ["Spinosad is a naturally derived insecticide that has shown potential as a mosquito larvicide. To determine the activity of spinosad against blackflies, late-instar larvae from a community comprising *Simulium tritatum* (63.6%) and seven other species, including three known vectors of onchocerciasis in Mexico (*S. metallicum*, *S. ochraceum*, and *S. callidum*), were subjected to concentration-mortality laboratory bioassays following World Health Organization guidelines. Cephalic capsule measurements confirmed the relatively homogeneous distribution of experimental larvae. The 50% lethal concentration of spinosad was estimated at 1.48 ppm spinosad (95% confidence interval: 1.07-2.33) for a 10-min exposure period, whereas

larvae treated with 0.05 ppm of the organophosphate temephos experienced 61% mortality. Immature aquatic insects were identified to genus and tested for their susceptibility to spinosad in the laboratory. After exposure to 12 ppm spinosad for 10 min, ephemeropterans, odonates, trichopterans, and hemipterans did not experience significantly increased mortality over that of untreated controls, whereas a significant increase in mortality was observed in spinosad-treated Plecoptera (P 0.001). Tilapia and trout fry exposed to 12 ppm spinosad for 10 min did not experience increased mortality at 24-h postexposure over that of the controls. We conclude that spinosad is less toxic than temephos to these blackfly species, but is likely to have a low impact on nontarget members of the aquatic community." (Authors)] Address: Williams, T., Instituto de Ecología AC, AP 63, Xalapa, Veracruz 91070, Mexico

10545. INULA (2011): Dragonflies in quarries & gravel pits. The life of the quick and beautiful. Biodiversity in mineral extraction sites 1: 98 pp. (in English) [This splendid illustrated book combines general information on dragonflies exemplified on typical habitats of gravel pits. On page 94/95 a list of 48 species from 16 localities studied in 2010 and scattered over Germany (Niedersachsen, Baden-Württemberg, Nordrhein-Westfalen, Mecklenburg-Vorpommern, Bayern) is presented. A German version of the book is also available.] Address: HeidelbergCement AG, Berliner Straße 6, 69120 Heidelberg, Germany. E-mail: michael.rademacher@htc-gmbH.com

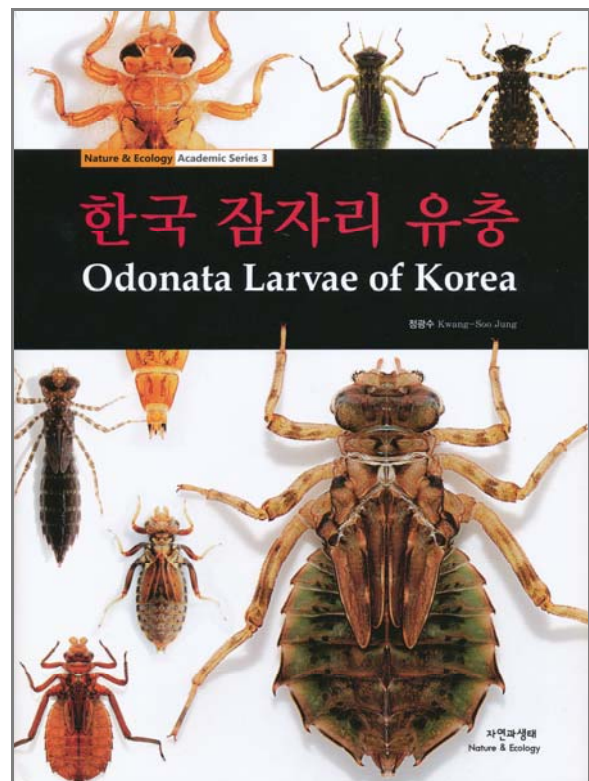


10546. Itoh, S. (2011): A new record of *Sympetrum speciosum speciosum* Oguma, 1915 from Miyagi Prefecture, the northern Honshū, Japan. Tombo 53: 99-100. (in Japanese) [14-X-2010] Address: Itoh, S., Kinoshita 4-9-7-102, Wakabayashi-ku, Sendai-shi, Miyagi, 984-0047 Japan

10547. Janananda, B.G. (2011): Characterization of changes in Megalagrion opsin genes to detect signatures of selection. Open Access Theses. Paper 259: Master of Science thesis, Department of Biology (Arts and Sciences), University of Miami. 59 pp. (in English) ["Megalagrion damselflies have radiated into new breeding habitats in-

dependently at least six times in the Hawaiian archipelago, and have evolved bright body coloration numerous times. We hypothesize that these radiations are correlated with specific changes in the opsin proteins. We isolated and characterized two opsin genes from nine different Megalagrion species. The opsin phylogeny is consistent with the phylogeny based on breeding habitat preference of Megalagrion species supporting the correlation between the evolutionary changes of vision and habitat shifts. dN/dS ratios of opsin sequences show that these genes are evolving under purifying selection, though some sites of the opsin genes might be evolving under positive selection. Two terrestrial-breeding Megalagrion species show higher rates of opsin gene evolution that are correlated with a rapid transformation in their breeding habitats from aquatic to terrestrial. These results support the hypothesis that opsin gene evolution has played a role in Megalagrion radiation in Hawaii." (Author)] Address: E-mail: bhagya@bio.miami.edu

10548. Jung, K.-S. (2011): Odonata Larvae of Korea. Nature & Ecology. Academic Series 3. 400 pp (In Korean). Orders should be directed to: E-mail: econature@econature.co.kr or the author: tootootoo@korea.com



10549. Kalkman, V.J.; Villanueva, R.J.T. (2011): A synopsis of the genus *Rhinagrion* with description of two new species from the Philippines (Odonata: Megapodagrionidae). International Journal of Odonatology 14(1): 11-31. (in English) ["A synopsis is given of the knowledge of the genus *Rhinagrion*. The males of two new species are described from the Philippines: *R. schneideri* sp. nov. (holotype: Samar Island, Hinubangan, San Isidro, 31 March–5 April 1992) and *R. reinhardi* sp. nov. (holotype: Mindanao Island, Surigao del Sur, Carmen, 24-IV-1995). *Rhinagrion yokoi* is synonymized with *R. hainanense* and *R. viridatum* is removed from synonymy with *R. mimma*. A key to the males is given and the distribution of all species is discussed and maps are provided. The scant information available on behaviour and habitat is summarized." (Authors)] Address: Kalkman, V.J., European In-

vertebrate Survey - Nederland, p/a Nationaal Natuurhistorisch Museum - naturalis, Postbus 9517, 2300 RA Leiden, The Netherlands. E-mail: kalkman@naturalis.nl

10550. Kalnins, M.; Bernard, R.; Mikelson, I. (2011): Protected aquatic insects of Latvia – *Nehalennia speciosa* (CHARPENTIER, 1840) (Odonata: Coenagrionidae). *Latvijas entomologs* 50: 41-54. (in English) ["*N. speciosa* "is protected by the Regulations of the Cabinet of Ministers of Latvia. Published and all known unpublished data have been used to present and analyse its distribution, population size, habitat selection and conservation status. The distribution of *N. speciosa* has been mapped using a basic grid of 5x5 km squares in the Baltic grid system. In total, *N. speciosa* has been recorded from 36 squares and 38 localities occurring sparsely or in small concentrations over a large part of the country apart from its western territories. The majority of the recent localities are situated in northeastern and southeastern Latvia. The known pattern of the species' distribution partly results from the abundance and density of appropriate habitats and possibly a climatic influence. However, this also may be a consequence of an insufficient and uneven odonatalogical exploration of the country. The majority of the species' populations seem to be small. *N. speciosa* has mostly been recorded in primary habitats in Latvia, such as complexes of lakes with *Sphagnum* fens, transition mires and bogs, with a diverse, not only small, size of water body. *N. speciosa* inhabits spatially restricted fragments of these habitats, i.e. a transition-mire zone bordering the open water table or fen and boggy patches with a higher water level, both habitats overgrown with a specific vegetation predominated by narrow-leaved sedges. Post-excavation peaty pools in degraded raised bogs with natural regeneration play a major role among rare secondary habitats of the species. The flight season of the *N. speciosa* in Latvia ranges mainly from mid June to late July. The conservation status of the species in Latvia is described and conservation measures are suggested." (Authors)] Address: Kalnins, M., Nature Conservation Agency, Siguldas novads, Baznīcas iela 7, LV-2150, Sigulda, Latvia. E-mail: martins.kalnins@daba.gov.lv

10551. Kawashima, I.; Sasamoto, A.; Phan, Q.T.; Do, M.C. (2011): First discovery and description of female and larva of *Rhinagrion hainanense* Wilson and Reels, 2001 (= *R. yokoi* Sasamoto, 2003) (Zygoptera: Megapodagrionidae) from Vietnam. *Tombo* 53: 93-99. (in English) ["In this paper, we revise *Rhinagrion yokoi* Sasamoto, 2003 as a junior synonym under *R. hainanense* Wilson & Reels, 2001. We describe the female and larval morphology of *R. hainanense* for the first time. The larval characteristics of *R. yokoi* agree with those of the genus *Rhinagrion*, and can be distinguished from the allied species, *R. mima* (Karsch, 1891), by the caudal gills. The male marking variation is also briefly mentioned." (Authors)] Address: Phan Quoc Toan, Vietnam National Museum of Nature, 18 Hoang Quoc Viet, Cau Giay, Hanoi, Vietnam. E-mail: phanquoctoan84@gmail.com

10552. Khan, F.R.; Irving, J.R.; Bury, N.R.; Hogstrand, C. (2011): Differential tolerance of two *Gammarus pulex* populations transplanted from different metallogenic regions to a polymetal gradient. *Aquatic Toxicology* 102(1-2): 95-103. (in English) ["The River Hayle, Cornwall, UK exhibits pronounced Cu and Zn concentration gradients which were used to compare the metal handling abilities of two populations of *Gammarus pulex* (Crustacea: Amphipoda). One population was native to the Hayle region (Drym) and presumably has been historically impacted

by elevated Cu and Zn levels, whilst naïve gammarids were collected from the River Cray, Kent, UK. Both populations were subject to a 32 day in situ exposure at four R. Hayle sites (Drym, Godolphin, Relubbus and St. Erth). Mortality (LT50), Cu and Zn accumulation and sub-cellular distribution, and oxidative stress (malondialdehyde production) increased with the expected Cu and Zn bioavailabilities at the four sites (i.e. Godolphin > Relubbus > St. Erth > Drym). The naïve population experienced greater metal induced effects in terms of Cu and Zn accumulation, oxidative stress responses and lower LT50s. Analysis of Cu and Zn sub-cellular distribution, however, revealed no significant differences in metal handling. In both populations each metal was localised predominantly to the sub-cellular fraction containing metal bound to metallothionein-like proteins (MTLP) or that holding both metal-rich granules (MRG) and exoskeleton, MTLP and MRG binding being indicative of metal detoxification. However, a greater capacity for detoxified metal storage is not a mechanism implicated in the perceived tolerance of the historically impacted gammarids. Instead our results suggest that the historically impacted population was adapted for lower uptake of Cu and Zn leading to lower bioaccumulation, stress response and ultimately mortality. These results demonstrate not only the usefulness of the in situ methodology, but also that differences in population exposure history can cause significant differences in metal responses during exposure at higher concentrations." (Authors) Larvae of *Cordulegaster boltonii* settled at one of the five studied sections the river. Hydrochemical parameters at the section Relubbus of River Hayle are: heavy metals in dissolved water: Cu: 10.7 ± 0.9 Zn: 664.5 ± 43.9 ; heavy metals in sediment: Cu: 1279.6 ± 17.6 Zn: 479.2 ± 68.0 ; Total hardness: 96.6 ± 2.1 ; pH: 6.68 ± 0.03 ; Conductivity: 69.6 ± 0.1] Address: Khan, F.R., Nutritional Sciences Division, King's College London, Franklin-Wilkins Building, 150 Stamford Street, London SE1 9NH, UK.

10553. Kiauta, B. (2011): Obituary: Professor Dr Tone Wraber (1938-2010) in memoriam. *Notulae odonatologicae* 7(7): 67-68. (in English) [T. Wraber, a profiled botanist, also was interested in dragonflies, especially in the associations between plants and ovipositing odonates.] Address: Kiauta, B., P.O. Box 124, NL-5854 ZJ Bergen/LB, The Netherlands. E-mail: mb.kiauta@12move.nl

10554. Kingston, N. (2011): Checklist of protected & rare species in Ireland. Unpublished National Parks & Wildlife Service Report: 16 pp. (in English) [According to the Wildlife Act, 1976 and Wildlife (Amendment) Act, 2000 the following Odonata species are legally protected in Ireland: *Somatochlora arctica*, *Cordulia aenea*, *Coenagrion lunulatum*, *Ischnura pumilio*, and *Lestes dryas*.] Address: not stated

10555. Kiyoshi, T.; Takahashi, J.-I.; Yamanaka, T.; Tanaka, K.; Hamasaki, K.; Tsuchida, K.; Tsubaki, Y. (2011): Taxonomic uncertainty of a highly endangered brook damselfly, *Copera tokyoensis* Asahina, 1948 (Odonata: Platycnemididae), revealed by the mitochondrial gene genealogy. *Conservation Genetics* 12(3): 845-849. (in English) ["In the Japanese main islands, two brook damselfly species are sympatrically distributed. One is highly endangered damselfly, *Copera tokyoensis*, Asahina, 1948, and the other is a congeneric common species, *C. annulata* (Selys, 1863). Mitochondrial gene genealogy reconstructed by the maximum likelihood method showed that they are not reciprocally monophyletic. These two congeneric species might have experienced mitochondrial introgress-

sions possibly through hybridizations. The effect of hybridization against endangered species is generally poorly understood. Taxonomic uncertainty might also explain this situation because extremely dispersed pattern of the haplotype network could not be appeared by once or twice hybridization. Three closely located populations of *C. tokyoensis* in the Kanto district showed significant population differentiation. It might suggest the low dispersal tendency of this endangered species." (Authors)] Address: Yamanaka, T., National Institute for Agro-Environmental Sciences, 3-1-3 Kannondai, Tsukuba, 305-8604, Japan. E-mail: apple@affrc.go.jp

10556. Knijf, G. de; Flenker, U.; Vanappelghem, C.; Mancini, C.O.; Kalkman, V.J.; Demolder, H. (2011): The status of two boreo-alpine species, *Somatochlora alpestris* and *S. arctica*, in Romania and their vulnerability to the impact of climate change (Odonata: Corduliidae). *International Journal of Odonatology* 14(2): 111-126. (in English) ["It is expected that climate change will have a great impact on many species and habitats. This will be greater if populations are found at the edge of their range or are isolated, and could lead to regional extinction. Here we investigate the possible impact on two boreo-alpine dragonfly species, *Somatochlora alpestris* and *S. arctica*, at their range margins. Both species were unknown for most parts of south-eastern Europe. In 2007 we found 15 localities for *S. alpestris* and two for *S. arctica* in the Carpathian Mountains of Romania. Both species are there confined to mountain peat bogs. All localities are situated between 1300 m and 2100 m altitude, with the majority restricted to a small range between 1600 m and 1800 m. Based on the factor altitude we predict a hypothetical distribution map for *S. alpestris*. The underlying models exclusively rely on the ultimate factor "altitude" and explain more than 60% of the deviance. In addition, we assessed the impact of climate change for two scenarios: a 1.5°C temperature increase and a 3°C increase. The first resulted in altitudinal range shifts of +200 m and in a distributional shrinkage of 40%, the latter corresponds to an upward range shift of 600 m and a loss of 90% of the area. Habitat specialists, especially those at their margins of distribution, are hardly able to keep pace with climate change. It seems unlikely that mountain peat bogs will develop at rates comparable to those of current climate change. This may effect regional extinctions of boreo-alpine species." (Authors)] Address: Knijf, G. de, Instituut voor Natuurbehoud, Kliniekstr. 25, B-1070 Brussel, Belgium. E-mail: geert.deknijf@inbo.be

10557. Knijf, G. De (2011): Trip report of the excursion to the National Park Weerribben (The Netherlands) on 7th of May 2011. *Libellenvereniging Vlaanderen - nieuwsbrief* 5(2): 13-15. (in Dutch, with English summary) ["We first visited a the freely accessible part of the Weerribben, called Woldlakebos. Here we found two males of *Sympetma paedisca*, several individuals, most of them tenerals of *Aeshna isocetes*, *Leucorrhinia pectoralis* and *L. rubicunda*. The most common species here were *Coenagrion pulchellum*, *Brachytron pratense* and *Cordulia aenea*. In the afternoon, we had the chance to go to a strictly protected part of the Weerribben where more than 50 adults of *Coenagrion armatum* could be observed. Other interesting species here were *Sympetma paedisca* and *Leucorrhinia pectoralis*." (Author)] Address: Knijf, G. de, Instituut voor Natuurbehoud, Kliniekstraat 25, B-1070 Brussel, Belgium. E-mail: geert.deknijf@inbo.be

10558. Kosterin, O.E.; Skalon, N.V.; Skalon, T.N. (2011): Interesting findings of Odonata in the Kuznetskiy Alatau

Mts. north-eastern foothills. *Amurian zoological journal* III(2): 124-127. (in Russian, with English summary) ["A small collection taken on July 3, 2010 at Lake Ishkol' situated at NE foothills of the Kuznetskiy Alatau Mts., in Sharypovo District of Krasnoyarskiy Krai Province, yielded 8 Odonata species of which 4 were important faunistic findings: the known Siberian ranges of the western species *Coenagrion pulchellum*, *Leucorrhinia albifrons* were extended to the north-east and the earlier presumed Central Siberian range disjunctions were filled for *Coenagrion glaciale* and *Leucorrhinia caudalis*." (Authors) The records also include the following taxa: *Enallagma cyathigerum* risi, *Erythromma najas*, *Leucorrhinia rubicunda*, and *Libellula quadrimaculata*.] Address: Kosterin, O.E., Institute of Cytology and Genetics, Siberian Branch, Russian Academy of Sciences, Lavrentiev Ave 10, RUS-630090 Novosibirsk, Russia. E-mail: kosterin@bionet.nsc.ru

10559. Kosterin, O.E. (2011): Odonata of the Cambodian coastal regions revisited: beginning of dry season in 2010. *International Dragonfly Fund - Report* 40: 1-108. (in English) ["Results of the odonatological survey of the coastal SW regions of Cambodia on November 28 - December 11, 2001, are presented, including field notes, enumeration of all records by locality, discussion of interesting specimens and their taxonomy and of seasonality aspects. Fifteen (14 named) species have been added to the known fauna of Cambodia: *Aristocypha fenestrella* (Rambur, 1842), *Rhinagrion viridatum* Fraser, 1938, *Letes elatus* Hagen in Selys, 1862, *L. platystylus* Rambur, 1842, *Aciagrion tillyardi* Laidlaw, 1919, *Agriocnemis f. femina* (Brauer, 1868), *Archibasis viola* Lieftinck, *Ceragrion calamineum* Laidlaw, 1951, *Mortonagrion aborense* (Laidlaw, 1914), *M. falcatum* Lieftinck, 1934, *Pseudagrion microcephalum* (Rambur, 1842), 1948, *Paragomphus capricornis* (Förster, 1914), *Hemicordulia undescr. spec.*, *Macrodiplax cora* (Brauer, 1867), *Nannophya pygmaea* Rambur, 1842, plus a provisionally identified *Ceragrion indochinense* Asahina, 1976. The country list now achieves 106 named species (not counting *Prodasi-neura verticalis sensu* Asahina, 1983, *C. indochinense* and *Hemicordulia* sp.). *Coeliccia megumii* Asahina, 1984 is synonymised with *C. kazukoae* Asahina, 1984. The differences between *Ceragrion olivaceum* Laidlaw, 1914 and *C. calamineum* Lieftinck, 1951 are discussed." (Author)] Address: Kosterin, O.E., Institute of Cytology and Genetics, Siberian Branch, Russian Academy of Sciences, Lavrentiev Ave 10, RUS-630090 Novosibirsk, Russia. E-mail: kosterin@bionet.nsc.ru

10560. Kouamé, M.K.; Dietoa, M.Y.; Edia, E.O.; Da Costa, S.K.; Ouattara, A.; Gourène, G. (2011): Macroinvertebrate communities associated with macrophyte habitats in a tropical man-made lake (Lake Taabo, Côte d'Ivoire). *Knowledge and Management of Aquatic Ecosystems* 400, 03: 18 pp. (in English, with French summary) ["An ecological study was done on Lake Taabo with the main objective of characterising macroinvertebrate communities associated with the microhabitats created mainly by *Eichhornia crassipes* and other littoral native macrophytes. We sampled organisms in patches of those aquatic macrophytes. Also, some abiotic variables (temperature, transparency, turbidity, pH, TDS, conductivity, dissolved oxygen, NH, NO, NO₂, PO and SiO) were measured. Overall, forty-three taxa of macroinvertebrates were identified. Ten of them were exclusively associated with water hyacinth while five were only associated with littoral macrophytes. Macroinvertebrate taxa with some of the highest family richness were Gastropoda, Coleoptera, He-

teroptera, Odonata and Diptera. The taxon with highest density in both microhabitats was Chironomidae. Although higher values of taxonomic richness (Rs), the Shannon index (H') and evenness (J) were obtained with the water hyacinth habitat, significant differences between the two microhabitats were not observed. Canonical Correspondence Analysis revealed that samples of *E. crassipes* collected in the dry season were characterised by Gastropoda and Odonata, as well as higher values of transparency and ammonia-nitrogen. Baetidae, Hydrophilidae, Chironomidae, Ceratopogonidae, Coenagrionidae, Naucoridae and Ostracoda were most abundant in both *E. crassipes* and littoral macrophyte habitats during the rainy season. This season was characterised by higher levels of nitrates and conductivity." (Author) Taxa are treated at the family level.] Address: Kouamé, M.K., Laboratoire d'Environnement et de Biologie Aquatique (LEBA), UFR – Sciences et Gestion de l'Environnement, Université d'Abobo-Adjamé, Abidjan, Côte d'Ivoire. E-mail: martinkouame@yahoo.fr

10561. Křoupalová, V.; Bojková, J.; Schenková, J.; Pařil, P.; Horsák, M. (2011): Small-scale distribution of aquatic macroinvertebrates in two spring fens with different groundwater chemistry. *International Review of Hydrobiology* 96(3): 235-256. (in English) ["We examined responses of macroinvertebrate assemblages to environmental and temporal variations along spring source-spring brook transects in two fen habitats, sharply differing in groundwater chemistry, and compared the patterns among individual taxonomical groups. We hypothesised a different importance of environmental heterogeneity and seasonal changes primarily linked to strong tufa precipitation, which causes stronger environmental filtering in the calcareous fen. In concordance, we observed that assemblages of the more homogenous calcareous fen primarily changed over time, due to seasonal shifts in source availability and favourable conditions. Their spatial distribution was determined by the amount of CPOM, tufa crusts and temperature variation, but a substantial part of the assemblage exhibited spatial uniformity (Plecoptera, Clitellata, and especially Trichoptera and Diptera). The assemblages of the more heterogeneous Sphagnum-fen were primarily driven by water pH and substrate and the season was a notably weaker predictor. We found that different macroinvertebrate groups can display various responses to the measured variables shaping the overall pattern obtained based on the whole community. Further, greater environmental heterogeneity can result in temporally stable species distribution patterns even at very small spatial scales within a single site." (Authors) The study includes data on *Aeshna cyanea*, *Cordulegaster boltonii*, and *Pyrhosoma nymphula*.] Address: Kroupalová, Vendula, Department of Botany and Zoology, Faculty of Science, Masaryk University, Kotlářská 2, CZ-61137 Brno, Czech Republic. E-mail: kroupalova@seznam.cz

10562. Kuitunen, K.; Gorb, S.N. (2011): Effects of cuticle structure and crystalline wax coverage on the coloration in young and old males of *Calopteryx splendens* and *Calopteryx virgo*. *Zoology* 114(3): 129-139. (in English) ["Male secondary sexual characters, such as colour patterns, are often investigated at the macroscale level. However, micro- and nanoscale levels of morphological investigations may reveal functional features responsible for a particular coloration, thus providing more information, e.g., about the condition dependence of male sexual characters. The aim of this paper was to investigate cuticle colour and its structure in males of two con-

generic damselfly species, *Calopteryx splendens* and *Calopteryx virgo*, and reveal possible colour changes with age. According to spectrometer measurements, *C. splendens* males were bluer and had a greater saturation of blue in their abdomen than *C. virgo* males, which were, in turn, greener and had more green saturation. Although the two species differed in the number of structural layers and the spacing of the layers, it seems that intactness of the wax crystals covering the epicuticle was most often the morphological trait which was related to the colour parameters measured from males' cuticles. The effect of the crystalline wax coverage on cuticle colour was also confirmed by removing the wax using chloroform: after the treatment, the hue was bluer, the cuticle had a greater brightness and greater blue saturation, but less green saturation. Age differences influencing the colour and structure of the cuticle were also observed: older males had more blue and green saturation and had more intact wax coverage than did younger males. Although multilayer reflection should be responsible for the iridescent colour of males, our results suggest that wax coverage plays an important role in the colour tuning of the male cuticle. This may have a considerable signal function, indicating the males' viability to competing males or to females." (Authors)] Address: Kuitunen, Katja, Centre of Excellence in Evolutionary Research, Department of Biological and Environmental Sciences, University of Jyväskylä, P.O. Box 35, FI-40014 Jyväskylä, Finland. E-mail: katja.m.m.kuitunen@jyu.fi

10563. Lacerda, C.H.F.; Hayashi, C.; Galdioli, E.M.; Fernandes, C.E.B. (2011): Predation of *Piaractus mesopotamicus* and *Oreochromis niloticus* larvae by *Pantala flavescens* with different length classes. *Acta Scientiarum. Biological Sciences* 33(4): 377-382. (in English, with Portuguese summary) ["We used 120 larvae of *P. mesopotamicus*, 120 of *O. niloticus*, and also 24 larvae of *P. flavescens*, distributed in 24 aquariums. An aquarium (2 L) containing one larvae of Odonate and 10 larvae of fish were considered an experimental unit. After the beginning, each three hours (18:00, 21:00, ..), the remnant larvae of fish (alive) in each experimental unit was quantified, and we replaced the consumed larvae, so that we always had 10 larvae of fish at each aquarium after each counting. For both fish species, there was a slight increase in consumption by the Odonate with intermediate size, but the values did not differ statistically ($p > 0.05$). Larvae of Odonate in the treatments with greater length presented a lower consumption ($p < 0.05$) than in other treatments." (Authors)] Address: Lacerda, C.H.F., Laboratório de Ecologia e Gerenciamento de Ecossistemas Costeiros e Estuarinos, Depto de Oceanografia, Univde Federal de Pernambuco, Cidade Universitária, 50740-550, Recife, Pernambuco, Brazil. E-mail: lacerdachf@hotmail.com

10564. Lagrue, C.; Azémar, F.; Besson, A.; Lamothe, S.; Lecerf, A. (2011): Novel ligature methods for studying sublethal effects of sit-and-wait predators: test using *Cordulegaster boltonii* (Donovan, 1807) larvae (Anisoptera: Cordulegasteridae). *Odonatologica* 40(2): 95-103. (in English) ["A novel method of labial palp ligature was tested as a substitute for palp ablation for studying sublethal effects of larvae of *C. boltonii* on prey populations and their consequences for ecosystem functioning. Two alternative types of ligature were designed to test for neutral or aggressive, but non-lethal, predator-prey interaction effects. Ligature efficiency in preventing prey capture was very high and the effects on larval survival and

emergence success were negligible. Potential advantages and drawbacks, compared to other methods, are discussed. The results indicate that this fully reversible method should be applied whenever possible, especially for naturally rare or endangered odonate species." (Authors)] Address: Lagrue, C. Université de Toulouse, UPS, INP, EcoLab (Laboratoire d'écologie fonctionnelle), 29 rue Jeanne Marvig, 31055 Toulouse, France. E-mail: clement.lagrue@gmail.com

10565. Lambret, P.H.; Stoquert, A. (2011): Diel pattern of activity of *Lestes macrostigma* at a breeding site (Odonata: Lestidae). *International Journal of Odonatology* 14(2): 175-191. (in English) ["Monitoring methods always recommend gathering data during the maximal activity of adults. Hence monitoring the threatened *Lestes macrostigma* requires knowledge of its activity pattern. Dragonfly "activity" is ambiguous and its intensity can be assessed in different ways, including by the threshold of response to a predator stimulus, i.e. "awareness". We studied the daily pattern of activity of *L. macrostigma* at the breeding site by monitoring the frequencies of behaviours, especially those of different flights, flight duration and speed, and awareness. We also assessed the abundance together with the probability to detect the species. The pattern of behaviour was characterized by reproduction but also feeding and roosting. Flight activity was more intense in early morning for males, around midday for pairs, and in the evening for males and females. Flight speed was highest around midday. These patterns were related to ambient temperatures and to a trade-off between the needs to mate and to feed. Awareness was almost constant all day long, suggesting new insights on daily activity variations in the Odonata, especially when perching. Slight differences between males and females indicated opposite trends. The pattern of abundance was singularly trimodal. This abundance depends on the true presence at the breeding site and to a probability of detection. The timing of monitoring is therefore not to be related to the activity per se, but to the abundance of adults. We recommend gathering data on *L. macrostigma* during early morning." (Authors)] Address: Lambret, P.H., Marais du Vigueirat, 13104 Mas-Thibert, France. E-mail: philambret@hotmail.com

10566. Lamond, B. (2011): Arrow Clubtail in Waterworks Park - Part 2. *The Wood Duck* 64(6): 132. (in English) [*Stylurus spiniceps*; 18-IX-2010, Waterworks Park, Brantford, Ontario, Canada.] Address: Lamond, B. E-mail: bill-lamond@hotmail.com

10567. Lamond, B. (2011): Arrow Clubtail in Waterworks Park Brantford - Part 1. *The Wood Duck* 64(5): 109. (in English) [female *Stylurus spiniceps*; 6-IX-2010, Grand River in Brantford, Ontario Canada.] Address: Lamond, B. E-mail: bill-lamond@hotmail.com

10568. Lamond, B. (2011): Mottled Darner at Point Pelee National Park. *The Wood Duck* 64(7): 154-155. (in English) [*Aeshna clepsydra*; 9-X-2010, Point Pelee National Park, Ontario, Canada.] Address: Lamond, B. E-mail: bill-lamond@hotmail.com

10569. Lamond, B. (2011): Four species of Saddlebags at Point Pelee National Park. *The Wood Duck* 64(9): 206-207. (in English) [8-X-2010, Point Pelee, Ontario, Canada; records of the following species are documented: *Anax junius*, *Libellula pulchella*, *Pachydiplax longipennis*, *Erythemis simplicicollis*, *Sympetrum vicinum*, *S. corruptum*, *Pantala flavescens*, *P. hymenaea*, *Tramea calverti*, *T. lac-*

erata, *T. carolinea*, *Tramea onusta*.] Address: Lamond, B. E-mail: bill-lamond@hotmail.com

10570. Leggett, R.; Kirchoff, B.K. (2011): Image use in field guides and identification keys: review and recommendations. *AoB PLANTS* 2011 plr004 doi:10.1093/aob-pla/plr004: 37 pp. (in English) ["Background and aims: Although illustrations have played an important role in identification keys and guides since the 18th century, their use has varied widely. Some keys lack all illustrations, while others are heavily illustrated. Even within illustrated guides, the way in which images are used varies considerably. Here, we review image use in paper and electronic guides, and establish a set of best practices for image use in illustrated keys and guides. Scope: Our review covers image use in both paper and electronic guides, though we only briefly cover apps for mobile devices. With this one exception, we cover the full range of guides, from those that consist only of species descriptions with no keys, to lavishly illustrated technical keys. Emphasis is placed on how images are used, not on the operation of the guides and key, which has been reviewed by others. We only deal with operation when it impacts image use. Main points: Few illustrated keys or guides use images in optimal ways. Most include too few images to show taxonomic variation or variation in characters and character states. The use of multiple images allows easier taxon identification and facilitates the understanding of characters. Most images are usually not standardized, making comparison between images difficult. Although some electronic guides allow images to be enlarged, many do not. Conclusions: The best keys and guides use standardized images, displayed at sizes that are easy to see and arranged in a standardized manner so that similar images can be compared across species. Illustrated keys and glossaries should contain multiple images for each character state so that the user can judge variation in the state. Photographic backgrounds should not distract from the subject and, where possible, should be of a standard colour. When used, drawings should be prepared by professional botanical illustrators, and clearly labelled. Electronic keys and guides should allow images to be enlarged so that their details can be seen. [...] Fig. 5 Facing pages from *Damselflies of Chicagoland* (Garrison 2010) showing the use of marginal coloured bands (Table 1: Best Practice 2) to indicate seasonal appearance (left margin of left page), species group (lower right corner of right page) and size (upper right corner of right page). The solid rectangle in the size band indicates the minimum body length. The solid and hashed bands, taken together, indicate the maximum length." (Authors)] Address: Kirchoff, B.K., Dept Biology, Univ. of North Carolina at Greensboro, PO Box 26170, Greensboro, NC 27402, USA. E-mail: kirchoff@uncg.edu

10571. Lenkungsgruppe des AK Libellen in Hessen (2011): Aufruf zur Suche nach der Gefleckten und der Schwarzen Heidelibelle (*Sympetrum flaveolum*, *S. danae*). *Libellen in Hessen* 4: 59. (in German) [*Sympetrum danae* and *S. flaveolum* seem to suffer significant depression in regional occurrence. The members of the dragonfly working group in Hessen, Germany are asked to give special emphasis on both species during field studies.] Address: c/o Stübing, S., Am Eichwald 27, 61231 Bad Nauheim. E-mail: stefan.stuebing@gmx.de

10572. Letsch, H.O.; Kjer, K.M. (2011): Potential pitfalls of modelling ribosomal RNA data in phylogenetic tree reconstruction: Evidence from case studies in the Metazoa. *BMC Evolutionary Biology* 2011, 11:146: 12 pp. (in Eng-

lish) ["Background: Failure to account for covariation patterns in helical regions of ribosomal RNA (rRNA) genes has the potential to misdirect the estimation of the phylogenetic signal of the data. Furthermore, the extremes of length variation among taxa, combined with regional substitution rate variation can mislead the alignment of rRNA sequences and thus distort subsequent tree reconstructions. However, recent developments in phylogenetic methodology now allow a comprehensive integration of secondary structures in alignment and tree reconstruction analyses based on rRNA sequences, which has been shown to correct some of these problems. Here, we explore the potentials of RNA substitution models and the interactions of specific model setups with the inherent pattern of covariation in rRNA stems and substitution rate variation among loop regions. Results: We found an explicit impact of RNA substitution models on tree reconstruction analyses. The application of specific RNA models in tree reconstructions is hampered by interaction between the appropriate modelling of covarying sites in stem regions, and excessive homoplasy in some loop regions. RNA models often failed to recover reasonable trees when single-stranded regions are excessively homoplastic, because these regions contribute a greater proportion of the data when covarying sites are essentially downweighted. In this context, the RNA6A model outperformed all other models, including the more parametrized RNA7 and RNA16 models. Conclusions: Our results depict a trade-off between increased accuracy in estimation of interdependencies in helical regions with the risk of magnifying positions lacking phylogenetic signal. We can therefore conclude that caution is warranted when applying rRNA covariation models, and suggest that loop regions be independently screened for phylogenetic signal, and eliminated when they are indistinguishable from random noise. In addition to covariation and homoplasy, other factors, like non-stationarity of substitution rates and base compositional heterogeneity, can disrupt the signal of ribosomal RNA data. All these factors dictate sophisticated estimation of evolutionary pattern in rRNA data, just as other molecular data require similarly complicated (but different) corrections." (Authors)] Address: Letsch, H.O., Zoologisches Forschungsmuseum Alexander Koenig, Zentrum für molekulare Biodiversitätsforschung, Adenauerallee 160, 53113 Bonn, Germany. E-mail: h.letsch.zfmk@uni-bonn.de

10573. Li, Y.-j.; Nel, A.; Ren, D.; Pang, H. (2011): A new genus and species of hawk dragonfly of uncertain affinities from the Middle Jurassic of China (Odonata: Aeshnoptera). *Zootaxa* 2927: 57-62. (in English) ["The new aeshnopteran genus and species *Sinocymatophlebiella hastinercus* is described from the Middle Jurassic Jiulongshan Formation of Inner Mongolia. It shows important similarities with the Jurassic genus *Cymatophlebiella* from Karatau, suggesting they could belong to the same family, but the latter genus is too poorly known to accurately establish its affinities. The present discovery supports the evolutionary scenario of a Jurassic rapid and massive diversification of the Aeshnoptera, followed by important extinctions during the Late Mesozoic." (Authors)] Address: Ren, D., College of Life Sciences, Capital Normal Univ. Beijing 100037, China. E-mail: rendong@mail.cnu.edu.cn

10574. Lin, S.-C.; Huang, C.-C.; Chiu, C.-H.; Yang, P.-S.; Shieh, S.-H. (2011): Relationships between water quality variables and benthic invertebrate assemblages in mountain ponds of northeastern Taiwan. *Taiwan Journal of Biodiversity* 13(1): 37-51. (in Chinese, with English sum-

mary) ["A seasonal survey of water quality and benthic macroinvertebrates was conducted for a mountain lake Chia-Lo and three mountain ponds, Che-Tui, Hao-Mai, and Wei-Tan, in the northeastern Taiwan, 2002 to 2003. A total of 14,719 specimens of benthic macroinvertebrates were collected. They were consisted of 22 taxa, of that seven taxa belonged to Odonata, six taxa to Diptera, three taxa to Tricoptera, two taxa to each of Hemiptera and Coleoptera, and a taxon to each of Oligochaeta and Ephemeroptera. *Notonecta saramao* and *Sympetrum speciosum taiwanum* were found to be the endemic species. Relationships between the water quality and the benthic macroinvertebrate assemblages were assessed with the coinertia analysis. The results showed that turbidity and ammonia were related to water saprobity, and pH and total hardness to water acidification. They were the most important water quality variables that explained the formation and distributional pattern of macroinvertebrate assemblages in the mountain ponds. Oligochaeta was recommended as a bio-indicator for the water saprobity, and *Dicrotendipes* sp. and *Cloeon* sp. for water acidification." (Authors) The following odonate taxa have been sampled: *Ceragrion fallax fallax*, *Lestes cyaneus*, *Aeshna petalura taiyal*, *Anax nigrofasciatus*, *Sympetrum speciosum taiwanum*, *Orthetrum japonicum internum*, and *O. melania*.] Address: Shieh, S.-H., Dept of Ecology, Providence University, Taichung, Taiwan. E-mail: shshieh@pu.edu.tw

10575. Lingenfelder, U. (2011): *Coenagrion scitulum* im südwestdeutschen Raum – eine aktuelle Übersicht (Odonata: Coenagrionidae). *Libellula* 30(1/2): 51-64. (in German, with English summary) ["Recently, *C. scitulum* has been expanding strongly in southwestern Germany and adjacent regions, as evidenced by lots of new records in the last five years (2006-2010). This expansion can be regarded as another example of Mediterranean animals expanding northwards, caused by climatic change. Including the summer of 2010, records of *C. scitulum* are known from 34 localities in Rheinland-Pfalz (2006-2010), eight localities in the Saarland (2008-2010), four localities in Hessen (2008, 2010) and five localities in Alsace, northeastern France (2007-2009). In 2010 the species was also rediscovered in Baden-Württemberg. The flight period of *C. scitulum* in southwestern Germany starts in mid-May and ends in early August. Sites with reproduction are predominantly stillflat and warm standing waters with rich aquatic vegetation.] Address: Lingenfelder, U., Seeburgstr. 1, 67716 Heltersberg, Germany. E-mail: u.lingenfelder@vr-web.de

10576. Lorenzo-Carballa, M.O.; Beatty, C.D.; Haitlinger, R.; Valdecasas, A.G.; Utzeri, C.; Vieira, V.; Cordero-Rivera, A. (2011): Larval aquatic and terrestrial mites infesting parthenogenetic *Ischnura hastata* (Odonata: Coenagrionidae) from the Azores islands. *Experimental and Applied Acarology* 54(3): 225-241. (in English) ["We report here the prevalence of parasitism by water mites (*Arrenurus* sp.) and terrestrial mites (*Leptus killingtoni*) on parthenogenetic *I. hastata* from the Azores islands. *L. killingtoni* was only found on the island of Pico, and the prevalence of infestation was highly variable among the different ponds studied, ranging from 0 to 41%. *L. killingtoni* was observed on three of the four odonate species from the archipelago: *I. hastata*, *I. pumilio*, and *Sympetrum fonscolombii*, all of them new hosts for this species. Aquatic mites have been found parasitizing *I. hastata* females on the island of São Miguel. The prevalence of mite parasitism by *Arrenurus* sp. on *I. hastata* was very low, ranging from 12% (2003) to 1% (2008), and in most

of the studied ponds, no mites were found attached to females. Although *I. hastata* coexists with a sexual congener species in the Azores (*I. pumilio*), they are syntopic in only a small fraction of ponds. Therefore, a comparison between *I. hastata* and *I. pumilio* was insufficient to test the predictions of the Red Queen Hypothesis, and further research on parasitism rates in both species needs to be done. In any case, the low prevalence of mite parasitism found in the Azores, coupled with the fact that most of the populations in the archipelago are almost free from competitors and predators, could explain the persistence of these *I. hastata* parthenogenetic populations, despite their low levels of genetic variation." (Authors)] Address: Cordero Rivera, A., Depto de Ecología e Biología Animal, Univ. de Vigo, E.U.E.T. Forestal, Campus Universitario, 36005 Pontevedra, Spain. E-mail: acordero@uvigo.es

10577. Lotfy, N.M.; Hassanein, M.A.; Abdel-Gawad, F.K.; El-Taweel, G.E.; Basseem, S.M. (2011): Detection of *Salmonella* spp in aquatic Insects, fish and water by MPN-PCR. *World Journal of Fish and Marine Sciences* 3(1): 58-66. (in English) ["Salmonellosis had become an increasing problem in industrialized countries during the last few decades. The natural habitat of *Salmonella* spp. is the gastrointestinal tract of mammals, birds and reptiles. Therefore, *Salmonella* species may reach aquatic environments through faecal contamination and it has been isolated from freshwater fish culture ponds in many countries. This accounts for the occasional detection of *Salmonella* from fish and fishery products. The present study focused on the use of some aquatic insects and fish as bioindicators for transmission of *Salmonella* in the River Nile, Egypt. Six hundred and seventy *Salmonella* isolates were isolated from aquatic insects, fish and water during the year 2009/2010. Seven hundred and ten random isolates of typical colonies of salmonellae were determined by MPN method and then confirmed by PCR and nested PCR. Five hundred and fourteen isolates were *Salmonella* spp. +ve when tested by PCR from which only 144 isolates were +ve when tested by the nested PCR assay. Results also indicated that PCR and the nested PCR assay are rapid and simple assays for sensitive and specific identification of *Salmonella* spp. in water, fish and aquatic insects. It could be concluded that aquatic insects and fish could act as bioindicators of zoonotic diseases. [...] In the control point in the main stream of River Nile before branches 55 isolates were tested for the presence of *Salmonellae*; 78% were *Salmonellae* spp. +ve from which 25.6% were +ve when tested by Nested PCR." (Authors) This sample point resulted also in records of *Enallagma* (*Azuragrion*) *vansomereni*.] Address: Fagr Abdel-Gawad, Department of Water Pollution, National Research Center, Dokki, Giza, Postal code 12622, Egypt. E-mail: fagrabdlgawad@gmail.com

10578. Lozano, F.; Muzón, J.; Palacio, A. del (2011): Description of final stadium larva of *Erythrodiplax connata* and *E. basifusca* and redescription of that of *E. minuscula* (Odonata: Libellulidae). *International Journal of Odonatology* 14(2): 127-135. (in English, with Spanish summary) ["In this contribution the final stadium larvae of *E. connata* and *E. basifusca* are described and that of *E. minuscula* is redescribed. Diagnoses are provided for the larvae of the genus *Erythrodiplax* and for those included in the *connata* group. *E. connata* lacks lateral spines on abdominal segments, a character which has not been observed in any other larvae of the genus. Finally, due to the fact that the larvae of *E. connata* could not be reared successfully until emergence, differences with other sympatric

Patagonic Libellulidae are discussed." (Authors)] Address: Muzón, J., Inst. Limnol. "Dr. R.A. Ringuelet", C.C. 712, AR-1900 La Plata, Argentina. E-mail: muzon@iilpla.edu.ar

10579. Mahmoud, S.; Abbas, J. (2011): Impacts of habitat destruction on wetland biodiversity. *World Applied Sciences Journal* 12(10): 1897-1902. (in English) ["As more human demand on water resources impacts all part of the world, tirese ecosystems have been always being damaged by human. This study was carried out during Aug-2010 between Suloukli and Shormast wetlands in the north of Iran to assess the degree of water pollution via contrasting biodiversity of wetlands. In this study 31 and 16 species macrofauna and species macrophytes were identified in Suloukli and Shormast wetlands respectively. The Shannon-Wiener index ($H = 3.737$ Bit. per ind) calculated for Suloukli that was more than value ($H = 2.773$) of Shormast and rarefaction statistical method estimated in these areas that showed the values of expected number of species of the Shormast was lower than Suloukli wetland. It was concluded that Shormast wetland was stressed with physical pollutions of tourism such as infusion of solid garbages and yachting." (Authors) The list of taxa includes *Ischnura elegans*, *Anax imperator*, *Libellula depressa*, and *Sympetrum* sp.] Address: Mahmoud, S., Dept of Environment & Energy, Islamic Azad Univ. Science and Research Branch, Tehran, Iran

10580. Makbun, N.; Kulsarin, J.; Buranapanichpan, S.; Hämäläinen, Doi Suthep-Pui M. (2011): Additional records of Odonata from National Park, Chiang Mai province, Thailand. *Notulae odonologicae* 7(7): 61-65. (in English) ["A total of 83 species were recorded ... during June 2009 and December 2010. A list of these is presented together with some comments. Three Zygoptera and five Anisoptera species are recorded from the Park for the first time. These additions increase the total number of the known odonate species from Doi Suthep-Pui and its immediate surroundings to 134 species (61 Zygoptera and 73 Anisoptera)." (Authors)] Address: Makbun, N., Entomology Division, Department of Entomology and Plant Pathology, Faculty of Agriculture, Chiang Mai University, 239 Huay Keaw Rd, Suthep, Muang, Chiang Mai, 50200, Thailand. E-mail: duen@hotmail.com

10581. Matushkina, N.A.; Lambret, P. (2011): Ovipositor morphology and egg laying behaviour in the dragonfly *Lestes macrostigma* (Zygoptera: Lestidae). *International Journal of Odonatology* 14(1): 69-82. (in English) ["*L. macrostigma* is a stenotopic dragonfly species of Western Palaearctic distribution that has high conservation status almost throughout its range. It inhabits mainly brackish water with a typical plant species, sea club-rush *Bolboschoenus maritimus*. Due to the absence of special investigations, the nature of this insect-plant association is not clearly understood, but it was supposed that *L. macrostigma* prefers egg laying in *B. maritimus*. In this paper we describe the ovipositor morphology and the egg laying behaviour of *L. macrostigma* in detail. The cutting ovipositor reveals several morphological peculiarities recorded previously in other lestids. The internal surface of the valves reveals rich microsculpture. Numerous single and clustered sensilla of different shape are found on the valves and styli and are probably involved in oviposition-plant recognition by females and/or in production of an egg clutch. Oviposition is carried out in stems of *B. maritimus* and *Juncus maritimus*. An egg clutch consists of a row of single eggs deposited in line along the long axis of a plant. Results are discussed in the light of possible morphological and behavioural adaptation to oviposition

into specific plant substrates." (Authors)] Address: Lambret, P.H., Marais du Vigueirat, 13104 Mas-Thibert, France. E-mail: philambret@hotmail.com

10582. McMurray, P.D.; Simon, T.P. (2011): New county distribution records of dragonflies and damselflies (Odonata) in Florida, Kentucky, and Tennessee. *Journal of the Kentucky Academy of Science* 72(1): 59-62. (in English) ["A total of 30 new odonate county distribution records are presented for counties in Florida, Kentucky, and Tennessee. The known odonate fauna of Madison County, Kentucky, is increased from 16 to 27 species and the fauna of Claiborne County, Tennessee, is increased from 18 to 27 species. Libellulidae and Coenagrionidae species accounted for the majority of the new records, 15 and 7, respectively." (Authors)] Address: McMurray, P.D., Indiana State Univ., Biology Dept., 600 Chestnut Street, Science Building Room 281, Terre Haute, Indiana 47809, USA. E-mail: paul.mcmurray79@gmail.com

10583. McPeck, M.A.; Symes, L.B.; Zong, D.M.; McPeck, C.L. (2011): Species recognition and patterns of population variation in the reproductive structures of a damselfly genus. *Evolution* 65(2): 419-428. (in English) ["The selection pressures imposed by mate choice for species identity should impose strong stabilizing selection on traits that confer species identity to mates. Thus, we expect that such traits should show nonoverlapping distributions among closely related species, but show little to no variance among populations within a species. We tested these predictions by comparing levels of population differentiation in the sizes and shapes of male cerci (i.e., the clasper structures used for species identity during mating) of six *Enallagma* damselfly species. Cerci shapes were nonoverlapping among *Enallagma* species, and five of six *Enallagma* species showed no population variation across their entire species ranges. In contrast, cerci sizes overlapped among species and varied substantially among populations within species. These results, taken with previous studies, suggest that cerci shape is a primary feature used in species recognition used to discriminate conspecific from heterospecifics during mating." (Authors)] Address: McPeck, M., Dept Biol. Sci., Dartmouth College, Hanover, New Hampshire 03755, USA. E-mail: mark.mcpeek@dartmouth.edu

10584. Melo, M.C.; Scheibler, E.E. (2011): Description of the immature stages of *Sigara* (*Tropocorixa*) *jensenhaarupi* (Hemiptera: Heteroptera: Corixidae: Corixini), with ecological notes. *Revista Mexicana de Biodiversidad* 82: 117-130. (in English, with Spanish summary) [Argentina; the authors established a high diversity of macroinvertebrates associated with *S. (T.) jensenhaarupi*. Odonata species sampled in northern Mendoza included adults and larvae of: *Ischnura ultima*, *I. fluviatilis*, *I. cf. fluviatilis*, *Andinagrion peterseni*, *Rhionaeschna variegata*, *R. absoluta*, *Progomphus joergenseni*, *Erythrodiplax connata*, *E. corallina*, and *Dasythemis mincki clara*. The collection at Loicas (a temporary pond) revealed larvae of *R. variegata*, *Cyanallagma interruptum*, and *A. peterseni*.] Address: Melo, María, Depto Sistemática, Instituto de Limnología "R.A. Ringuelet" (ILPLA) (CCT La Plata CONICET- UNLP), C.C. 712, 1900 La Plata, Argentina. E-mail: cecimelo@ilpla.edu.ar

10585. Meyer Guevara, M. (2011): Insectos acuáticos y calidad del agua en la cuenca y embalse del río Peñas Blancas, Costa Rica. *Rev. Biol. Trop.* 59(2): 635-654. (in Spanish, with English summary) ["Aquatic insects and water quality in Peñas Blancas watershed and reservoir. - The aquatic insects have been used to evaluate water

quality of aquatic environments. The population of aquatic insects and the water quality of the area were characterized according to the natural and human alterations present in the study site. During the monthly-survey, pH, DO, temperature, water level, DBO, PO₄ and NO₃ were measured. Biological indexes (abundance, species richness and the BMWP-CR) were used to evaluate the water quality. No relation between environmental and aquatic insects was detected. Temporal and spatial differences attributed to the flow events (temporal) and the presence of Peñas Blancas reservoir (spatial). In the future, the investigations in Peñas Blancas watershed need to be focused on determining the real influence of the flows, sediment release and the possible water quality degradation because of agriculture activities." (Author) Odonata are treated at the genus level: *Hetaerina*, *Cora*, *Argia*, *Heteragrion*, *Palaemnema*, *Phyllogomphoides*, *Brechmorhoga*, *Perithemis*.] Address: Meyer Guevara, Mora, Unidad de Cuenca del río Peñas Blancas, UEN Proyectos y Servicios Asociados, Instituto Costarricense de Electricidad, San José, Costa Rica, Apdo. 10032-1000; entomomeyer@gmail.com

10586. Miriglu, A.; Kartal, V.; Salur, A. (2011): Odonata of the eastern Black Sea region of Turkey, with some taxonomic notes. *Odonatologica* 40(2): 105-122. (in English) ["The work is based on a collection of 2759 specimens, referable to 50 species/subspecies brought together during 2005-2007 from 154 localities. *Sympecma fusca*, *Coenagrion ornatum*, *Erythromma viridulum orientale*, *Anax parthenope*, *Onychogomphus forcipatus albotibialis*, *O. lefebvrei*, *Sympetrum depressiusculum* and *S. meridionale* are new for the region. The *O. lefebvrei* record is the northernmost one within Turkey. Geographic distribution and taxonomic characters of *Calopteryx splendens amasina*, *C. s. waterstoni*, *C. virgo festiva*, *Ischnura elegans ebneri*, *I. e. pontica*, *Onychogomphus lefebvrei* and *Sympetrum haritonovi* are discussed." (Authors)] Address: Miriglu, A., Department of Biology, Faculty of Arts and Sciences, Ondokuz Mayıs University, 55139 Samsun, Turkey. E-mail: alimiroglu@gmail.com

10587. Moreno Pallares, M.I. (2011): Distribución espacio-temporal de náyades de odonatos en los humedales La Vaca y Santa María del Lago, Bogotá, Colombia. M.Sc. thesis. Departamento de Biología, Facultad de Ciencias, Universidad Nacional de Colombia, Sede Bogotá: (in Spanish, with English summary) ["We evaluated the spatial and temporal variation of communities of dragonflies naiads and the association to the habitat rehabilitation status in wetlands la Vaca and Santa María del Lago. There were carried out four samples in each wetland during a year. Using standard techniques for collecting macroinvertebrates, in stations at the entry, exit and water mirrors of the wetlands. We found a gradient in the distribution of the abundance of nymphs observed in both wetlands, where naiads community had the most of number of individuals in the spatial sampling stations that are located at larger distances from the dumping sites. Comparing the composition between wetlands, heterogeneity was found in both wetland communities through assessment of beta diversity. The gradient in the distribution of the abundance of naiads observed in both gradients in both wetlands is more suited to a species response in terms of tolerance to environmental variables. The two wetlands showed aggregate variable decreased to the water outlets in the concentrations of solids, BOD₅, COD, nitrogen, phenols, SAAM, nutrients in the microbiological factors, which matched the increase of

naiads in points distant from the dumping. The spatial distribution of Odonata in terms of biotic and abiotic parameters showed that the composition of nymphs can provide information on the ecological conditions of the system it inhabits." (Author)] Address: not stated

10588. Moya, N.; Domínguez, E.; Goitia, E.; Oberdorff, T. (2011): Desarrollo de un índice multimétrico basado en macroinvertebrados acuáticos para evaluar la integridad biológica en ríos de los valles interandinos de Bolivia. *Ecología Austral* 21: 135-147. (in Spanish, with English summary) ["We developed a multimetric index that could discriminate natural from anthropogenic variability in 91 sites (63 reference sites and 28 disturbed sites) fairly evenly distributed across the upper Grande River Basin (Bolivia). To do so, we examined 12 candidate metrics for their potential to indicate degradation and reflecting different aspects of macroinvertebrate assemblage structure and function. Initially, using the reference sites, we developed statistical models describing the response of the different metrics to the natural environmental variability. In a second step, using sites experiencing three types of anthropogenic disturbances (i.e., agriculture, urban and mining activities), we quantified the deviation in the response of each metric model between reference and disturbed conditions. From the initial 12 metrics, we retained only 5 metrics in the final index (total richness, total abundance, richness of Ephemeroptera, Plecoptera and Trichoptera (EPT), percentage of EPT abundance and percentage of scrapers abundance). These metrics were the most effective ones in responding to anthropogenic disturbances. Our final index performed well in discriminating between reference and disturbed sites, giving a significant negative linear response to a gradient of physical and chemical anthropogenic disturbances. This index can be used as a monitoring tool to evaluate the biological integrity and aquatic biodiversity of the Bolivian inter-Andean valleys streams." (Authors) "Odonata" are treated at the family level: "Coenagrionidae, Aeshnidae, Corydalidae, Arctiidae"] Address: Moya, N., UMR BOREA, IRD 207, Unidad de Limnología y Recursos Acuáticos (ULRA), Universidad Mayor de San Simón, Cochabamba, Bolivia. E-mail: nabor.moya@gmail.com

10589. Murakami, T.; Hodoki, Y. (2011): Comparison of population density and species composition of aquatic insect between the upstream and downstream reaches of a flood control dam without impoundment; a case study of the Masuda-gawa Dam in Shimane Prefecture, Japan. *Kaname Osamu* 57: 75-79. (in Japanese, with English summary) ["We compared the population density and species composition of aquatic insect communities up- and downstream of two types of dams to evaluate the effects of rivercrossing construction on benthic invertebrates. One is the Masuda-gawa Dam, a so called "dry dam" or "uncontrolled dam" because its invariably open gates are set at the bottom of the construction to maintain river continuity, and the other is the Sasaura Dam with a reservoir behind the construction: Both are located on the Masuda River System, Shimane Prefecture. Population densities and species compositions upstream the two dams did not show large difference, and were dominated by several insect species belonging to Heptageniidae (Ephemeroptera). In the downstream reaches of both dams, however, the population density of two net-spinning caddis flies (Hydropsychidae, Trichoptera), which are frequently found in high densities in Japanese dammed rivers, was higher than the up-stream reaches; by 50-fold in the case of Sasaura Dam and by 7-fold in the Masuda-

gawa Dam. The difference in the density increment of net-spinning caddis flies between the two dams may indicate that dry dam poses less influence on lotic environment." (Authors) In the case of the taxon "Gomphidae" at Masuda-gawa Dam the ratio between up- and downstream density was 0,4 (96 : 37), and at Sasakura Dam 1,1 (43 : 48).] Address: not transliterated into English

10590. Murphy, J.F.; Nagorskaya, L.L.; Smith, J.T. (2011): Aquatic macroinvertebrate communities in lakes exposed to Chernobyl-derived ionising radiation. *Journal of Environmental Radioactivity* 102(7): 688-694. (in English) ["Littoral (lake shore) macroinvertebrate communities were studied in eight natural lakes affected by fallout from the Chernobyl accident. The lakes spanned a range in ¹³⁷Cs contamination from 100 -15500 kBq m² and estimated external dose rates ranged from 0.13 - 30.7 nGy h⁻¹. General linear models were used to assess whether abundance of individuals, taxon richness, Berger-Parker dominance and Shannon-Wiener diversity varied across the lakes. Step-wise multiple regressions were used to relate variation in total abundance, taxon richness, Berger-Parker dominance, Shannon-Wiener diversity, taxon richness within major groups of macroinvertebrates and abundance of the more common individual taxa to the measured environmental characteristics (conductivity, pH, total hardness and phosphate; lake area, lake maximum depth and total external dose) of the lakes. No evidence was found in this study that the ecological status of lake communities has been influenced by radioactive contamination from the Chernobyl accident. Indeed, the most contaminated lake, Glubokoye, contained the highest richness of aquatic invertebrates. Taxon richness in the eight study lakes varied from 22 (Svyatskoe #7) to 42 (Glubokoye) which spans a range typical for uncontaminated lakes in the region. Since ⁹⁰Sr is readily-absorbed by Mollusca, estimated dose rates to this group exceeded those for other invertebrate groups in two lakes (Perstok and Glubokoye). However this study found no association between mollusc diversity or abundance of individual snail species and variation between lakes in the external radiation dose. Indeed Glubokoye, the lake most contaminated by ⁹⁰Sr, had the highest richness of freshwater snails per sample (an average of 8.9 taxa per sample)." (Authors) The study includes the following Odonata species: *Coenagrion armatum*, *C. hastulatum*, *Aeshna viridis*, *A. cyanea*.] Address: Smith, J.T., School of Earth & Environmental Sciences, University of Portsmouth, Burnaby Bldg, Burnaby Road, Portsmouth PO1 3QL, UK. E-mail: Jim.Smith@port.ac.uk

10591. Nagy, H.B.; László, Z.; Köver, S.; Szállassy, N.; Dévai, G. (2011): Population size effects on the behaviour of *Libellula fulva* (Odonata: Libellulidae) males, a five year study. *North-western journal of zoology* 7(1): 39-46. (in English) ["We tested the hypothesis that population density alters male territorial and mating behaviour of dragonflies. We predicted that males at higher densities fight more and mate less. During five years we studied two *Libellula fulva* populations along two small lowland creeks in East Hungary. Using mark-resight method we marked a total number of 1454 dragonfly males. Our results show that on the two study sites there were different population densities. At higher population densities the number of matings per male decreased, but population size had no effect on the frequency of intraspecific fights. However, the long run study showed remarkable difference from the outcome of partial analyzes which underlines the importance of studies overtaken through several years."]

(Authors)] Address: Nagy, H. Beáta, Department of Hydrobiology, University of Debrecen, H-4032 Debrecen, Egyetem tér 1, Hungary. E-mail: nagy.beata@gmail.com

10592. Nasadiuk, I. (2011): Structure of larvae communities of some water insects from streams within the city of Uzhgorod. *Sci. Bull. Uzhgorod Univ. (Ser. Biol.)* 30: 113-117. (in Ukrainian, with English summary) [Ukraine; data on the biomass of *Gomphus vulgatissimus* are presented.] Address: Nasadiuk, I., Uzhgorod national university, A. Voloshina St. 32, Uzhgorod 88000, Ukraine, e-mail: Nasadiukilia@mail.ru

10593. Nelson, B.; Ronayne, C.; Thompson, R. (2011): Ireland Red List No.6: Damselflies & Dragonflies (Odonata). National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland: 27 pp. (in English) ["Based on almost 32,000 records for Ireland, the 24 species of resident Odonata are evaluated for their conservation status using International Union for the Conservation of Nature (IUCN) criteria (IUCN, 2001, 2003). Four (17%) of the Irish species are assessed as threatened, and one species as near threatened. The populations of all five species need to be thoroughly surveyed and monitoring programmes for each initiated. Causes of the decline in each species need to be determined, existing and possible threats identified, and protective measures introduced. The remaining species are all assessed as least concern. The Irish odonate fauna is a limited one, reflecting the recent geological history of the island; its location off the western edge of the European continent; the climate, and the range of habitats present. Despite this, the fauna is not without interest and in particular when compared to that of Great Britain. The most interesting species of the Irish fauna is *Coenagrion lunulatum* which is mainly a northern Eurasian species that is absent from Great Britain. The Irish population of *Lestes dryas* is also of interest because of its association with the turloughs of the western limestone. Three of the threatened odonates, *Somatochlora arctica*, *Cordulia aenea* and *C. lunulatum*, are found in low nutrient status wetlands and the change brought about by enrichment of these habitats is regarded as the primary threat to these species. The decline of these should act as a warning of the negative trend in the state of these wetlands which are a distinctive feature of many Irish counties. These three are also predominantly northern species and the Irish populations lie at the southern edge of their ranges. In the long term the impact of climate change may be significant. Climate change may actually benefit the remaining threatened species, *Ischnura pumilio*, and the near threatened *L. dryas*, but the immediate threat to these species is habitat loss. Both these damselflies are dependent on specific hydrological conditions which are easily damaged and altered." (Authors)] Address: Thompson, R., 8 Weaver's Court, Banbridge, Co. Down BT32 4RP, Ireland

10594. Neseemann, H.; Tachamo Shah, R.D.; Shah, D.N.; Sharma, S. (2011): Morphological characters of *Epiophlebia laidlawi* Tillyard larvae, with notes in the habitat and distribution of the species in Nepal (Anisozygoptera: Epiophlebiidae). *Odonatologica* 40(3): 191-202. (in English) ["Based on 78 specimens recorded from 14 forest streams at the elevations between 1800 and 2850 m a.s.l. in central Nepal, nine larval instars are described and illustrated. *E. laidlawi* is for the first time documented from the Sim and Indrawati watersheds. The habitats are described and clearly indicated that the species is widespread but has a restricted range. The protection of the habitats is essential

for its conservation." (Authors)] Address: Neseemann, H., Centre for Environmental Science, Central University of Bihar, BIT Campus, Patna 800 014, Bihar, India. E-mail: hneseemann2000@yahoo.co.in

10595. Nomura, F., do Prado, V.H.M., da Silva, F.R., Borges, R.E., Dias, N.Y.N. and Rossa-Feres, D. d. C. (2011): Are you experienced? Predator type and predator experience trade-offs in relation to tadpole mortality rates. *Journal of Zoology* 284(2): 144-150. (in English) ["Cryptic behavior and unpalatability are common defensive strategies that occur in different taxonomic groups, but the effectiveness of these defensive strategies is context dependent, varying with predator type and co-occurring species. We tested this assumption by measuring the mortality rates of *Eupemphix nattereri* (cryptic behavior) and *Rhinella schneideri* (unpalatable) tadpoles in association with the predatory fish *Oreochromis niloticus* (vertebrate) and the dragonfly larvae of *Aeshna* sp. (invertebrate). We designed a second experiment to evaluate whether fish predators are capable of learning to avoid unpalatable prey once they have encountered it. Our results showed that fish preyed selectively on palatable tadpoles, avoiding unpalatable tadpoles and that the odonate larvae were more efficient in preying on the more active unpalatable tadpoles and less efficient in capturing those tadpoles that presented cryptic behaviors. Additionally, our data suggest that the antipredator traits of tadpoles can interact with each other, with cryptic tadpoles showing lesser mortality when co-occurring with unpalatable tadpoles and odonate predators. Unpalatable tadpoles also increase the mortality of cryptic tadpoles in the presence of experienced fish predators. These prey traits interact in modifying the prey preference of the predator, which constitutes a prey-induced trait-mediated interaction (TMI). This type of TMI is dependent on the system complexity (number of predator and prey species interactions) and could define food web properties, such as the role of predators and the number of competitor species in the system." (Authors)] Address: Nomura, F., Departamento de Ecologia, Universidade Federal de Goiás, Goiânia, GO, Brazil. E-mail: faustonomura@yahoo.com.br

10596. Nordström, K.; Bolzon, D.M.; O'Carroll, D.C. (2011): Spatial facilitation by a high-performance dragonfly target-detecting neuron. *Biology Letters* 7(4): 588-592. (in English) ["Many animals visualize and track small moving targets at long distances—be they prey, approaching predators or conspecifics. Insects are an excellent model system for investigating the neural mechanisms that have evolved for this challenging task. Specialized small target motion detector (STMD) neurons in the optic lobes of the insect brain respond strongly even when the target size is below the resolution limit of the eye. Many STMDs also respond robustly to small targets against complex stationary or moving backgrounds. We hypothesized that this requires a complex mechanism to avoid breakthrough responses by background features, and yet to adequately amplify the weak signal of tiny targets. We compared responses of dragonfly STMD neurons to small targets that begin moving within the receptive field with responses to targets that approach the same location along longer trajectories. We find that responses along longer trajectories are strongly facilitated by a mechanism that builds up slowly over several hundred milliseconds. This allows the neurons to give sustained responses to continuous target motion, thus providing a possible explanation for their extraordinary sensitivity." (Authors)] Address: Nordström, Karin,

Department of Neuroscience, Uppsala University, PO Box 593, 751 24 Uppsala, Sweden. E-mail: karin.nordstrom@neuro.uu.se

10597. Nwani, C.D.; Odoh, G.E.; Ude, E.F.; Okogwu, O.I. (2011): Food and feeding habits of *Gnathonemus petersii* (Osteichthyes: Mormyridae) in Anambra River, Nigeria. *Int. Aquat. Res.* 3: 45-51. (in English) [The most dominant food group - expressed as 'index of food significance' - was Insecta (IFS = 48.23) (IFS of anisopteran larvae: 1,77) followed by detritus (IFS = 31.07) while the least was Arachnida (IFS = 0.20).] Address: Nwani, C.D., Department of Applied Biology, Ebonyi State University, P.M.B. 053, Abakaliki, Nigeria. E-mail: didigwunwani@yahoo.com

10598. Ohtaka, A.; Narita, T.; Kamiya, T.; Katakura, H.; Araki, Y.; Im, S.; Chhay, R.; Tsukawaki, S. (2011): Composition of aquatic invertebrates associated with macrophytes in Lake Tonle Sap, Cambodia. *Limnology* 12(2): 137-144. (in English) ["Faunal composition of aquatic invertebrate communities associated with submerged parts of several species of macrophytes were studied in different areas in littoral Lake Tonle Sap in Cambodia, with special reference to those in root systems (interrhizon) of a free-floating water hyacinth (*Eichhornia crassipes*). Nine phyla of invertebrates were collected, of which oligochaetes, shrimps and *Limnoperna* mussels were abundant along with meiobenthic crustaceans. The macrophyte-associated invertebrates in Lake Tonle Sap might be unique in having abundant sessile animals, such as sponges, bryozoans and *Limnoperna* mussels. The *Limnoperna* mussels attached to macrophytes were more abundant in offshore and inundated forest than in secluded vegetational stands toward the shoreline. It suggests that water movement can be an important factor determining the distribution and abundance of the sessile animals by controlling larval dispersions and might be associated with the hydrological characteristic of the lake, i.e., the lake opens to the large Mekong River with drastic seasonal changes in water level." (Authors) Taxa - including Odonata - are treated at the order level.] Address: Ohtaka, A., Faculty of Education, Hirotsuki University, Hirotsuki, Aomori 036-8560, Japan. E-mail: ohtaka@cc.hirotsuki-u.ac.jp

10599. Oke, O.A. (2011): Inventory of insect species on *Eichhornia crassipes* (Water Hyacinth) on Ogun river, South - Western, Nigeria. *Journal of Emerging Trends in Engineering and Applied Sciences (JETEAS)* 2(3): 379-382. (in English) [Insecta "were surveyed with the objective of determining if any of them could serve as a bio-control agent of water hyacinth. They were collected by means of using insect sweep net, on monthly basis for 18 months. The insect species collected included [...] *Acisoma panorpoides* [...]. Adult insect species performed different kinds of activities on the water hyacinth such as feeding, resting, mating and tunneling into the petiole of water hyacinth. However, all these activities of the insects had no visible damaging effects on the growth and proliferation of water hyacinth on Ogun River, hence they could not be used as bio-control agents for water hyacinth." (Author)] Address: Oke, O.A., Dept of Biological Sciences, Univ. of Agriculture, Abeokuta, Nigeria

10600. Olthoff, M.; Menke, N.; Rodenkirchen, J. (2011): *Leucorrhinia caudalis* in der Ville bei Köln: Wiederfund für Nordrhein-Westfalen (Odonata: Libellulidae). *Libellula* 30(1/2): 1-12. (in German, with English summary) ["Between 2008 and 2011, *L. caudalis* was recorded in the 'Ville' lakeland, an agglomeration of more than 40 anthro-

pogenic lakes situated in a brown coal strip mining reclamation area close to Cologne (North Rhine-Westphalia, Germany). The species had been observed in North Rhine-Westphalia for the last time more than 60 years ago. It has been rediscovered at three of the Ville lakes. In addition, the occurrences of endangered species like *Aeshna isoceles*, *Brachytron pratense* and *Libellula fulva*, which have colonized most of the Ville lakes in the meantime, is remarkable." (Authors)] Address: Olthoff, M., Martin Luther-Str. 1a, 48147 Münster, Germany. E-mail: mattias.olthoff@gmx.de

10601. Orr, A.G.; Ngiam, R.W.J. (2011): A description of the larva of *Heliaeschna uninervulata* Martin (Odonata: Aeshnidae) from Singapore, with notes on its relationships. *International Journal of Odonatology* 14(2): 163-169. (in English) ["The larva of *H. uninervulata* is described and figured for the first time. Its characters mostly fall within the limits of variation of *Gynacantha* species. Comparison of the larval characters of *H. filostyla*, the only other member of the genus for which the larva is known, suggests that it is not congeneric with *H. uninervulata*." (Authors)] Address: Orr, A.G., Cooperative Research Centre for Tropical Rainforest Ecology and Management, Environmental Sciences, Griffith University, Nathan, Q 4111, Australia. E-mail: agorr@universal.net.au

10602. Oscoz, J.; Galicia, D.; Miranda, R. (eds.) (2011): Identification Guide of Freshwater Macroinvertebrates of Spain. Springer: 300 pp. (in English) ["Identification keys of the most important taxonomic groups of benthic invertebrates recorded in Spanish watersheds are displayed. Some non-Iberian taxa are included, with the aim to facilitate correct taxonomic classification. Identification keys are accompanied by a series of plates. These plates include photographs of the most important taxonomic groups, with more or less detail, to facilitate group identification." (Authors) Odonata are treated on pages 33-34 and 87-94. Compilers are Francisco Javier Ocharan, David Outomuro and Antonio Torralba-Burrial, Dept of Biology of Organisms and Systems, University of Oviedo, Catedrático Rodrigo Uría s/n, Oviedo, E-33071 Spain.] Address: Oscoz, J., Dept of Zoology and Ecology, School of Sciences, University of Navarra, Irunlarrea 1, Pamplona 31008, Spain. E-mail: joscoz@alumni.unav.es

10603. Pan, B.-z.; Wang, Z.-Y.; He, X.-B. (2011): Studies on assemblage characteristics of macrozoobenthos in the West River. *Acta hydrobiologica Sinica* 35(5): 1-6. (in Chinese, with English summary) ["To conserve and manage the West River, field investigations of macrozoobenthos were conducted in November 2009 (at low water level) and May 2010 (at high water level). Altogether 70 taxa of macrozoobenthos belonging to 30 families and 59 genera were identified (including *Lamelligomphus* sp., *Leptogomphus* sp., *Megalogomphus* sp.). ... The average density and biomass of total macrozoobenthos were 140 ind/m² and 0.23 g dry weight/m², respectively. Macrozoobenthic density peaked in the cobbles, while biomass reached the maximum in the bedrock. Detrended Correspondence Analysis (DCA) revealed that substrate played an important role in structuring macrozoobenthic assemblages. The higher substrate stability was more favorable to survival of benthic animals. Macrozoobenthic assemblages in soft sediment were characterized by dominance of collector-gatherers (mainly Tubificidae and Chironominae), while macrozoobenthos in stone substrates were dominated by scrapers (e.g. *Semilucospora* spp.) or collector-filterers (e.g. *Limnoperna lacustris*). In recent years, channel regulation projects have

led to reduction of habitat quality and habitat loss, which will have a negative impact on survival of benthic animals." (Authors)] Address: Pan, B.-z., State Key Laboratory of Hydroscience and Engineering, Tsinghua University, Beijing 100084, China

10604. Papazian, M.; Viricel, G. (2011): Anomalie morphologique chez *Calopteryx xanthostoma* (Charpentier, 1840) (Odonata Calopterygidae). *L'entomologiste* 67(3): 113-114. (in French) [A male *Calopteryx xanthostoma* with pseudopterostigmata is documented.] Address: Papazian, M., Le Constellation Bât. A, 72 avenue des Caillols, F-13012 Marseille, France. E-mail: mpapazian@ecologie.re

10605. Parry, G.S.; Burton, S.; Cox, B.; Forman, D.W. (2011): Diet of coastal foraging Eurasian otters (*Lutra lutra* L.) in Pembrokeshire south-west Wales. *European Journal of Wildlife Research* 57(3): 485-494. (in English) ["The importance of the marine environment to Eurasian otters is currently poorly understood. Wales is one of the few countries where coastal activity has been recorded and an increase in marine otter sightings could indicate remarkable developments within Welsh populations. The trophic niche of coastal otter populations around Pembrokeshire was investigated over a 12-month period. Marine activity was more widespread than previously thought and marine prey formed the largest component of otter diet, although, otters also consumed freshwater and terrestrial prey throughout the year. Otter diet was very diverse compared to other European coastal populations and a spring contraction in trophic niche width coincided with the estimated timing of breeding activity. Seasonal variation in prey composition was predominantly due to differences in the consumption of alternate prey types. In areas where wetlands are fragmented and populations of freshwater fish are declining, the marine environment may become an increasingly important habitat for otters. It is necessary to define the historical importance of coastal populations to otter conservation. Coastal areas are often subject to pressure from human activities, so the impact of disturbance needs to be assessed. Importantly, there is no verified otter survey method for coastal areas, so the use of marine habitat is likely to be underestimated." (Authors) Odonata contributed with 0,2% of relative frequency of occurrence to the otter diet on the Pembrokeshire coast between July 2007–June 2008.] Address: Forman, D.W., Dept of Pure and Applied Ecology, Conservation Ecology Research Team, School of the Environment and Society, Swansea Univ., Singleton Park, Swansea SA2 8PP. UK. E-mail: d.w.forman@swansea.ac.uk

10606. Paulson, D.R.; Dunkle, S.W. (2011): A Checklist of North American Odonata. Including English Name, Etymology, Type Locality, and Distribution. Originally published as Occasional Paper No. 56, Slater Museum of Natural History, University of Puget Sound, June 1999; completely revised March 2009; updated February 2011: 86 pp. (in English) ["The checklist includes all 461 species of North American Odonata considered valid at this time. For each species the original citation, English name, type locality, etymology of both scientific and English names, and approximate distribution are given. Literature citations for original descriptions of all species are given in the appended list of references." (Authors)] Address: Paulson, D.R., Slater Museum, Univ. of Puget Sound, Tacoma, WA 98416, USA. E-mail: dpaulson@ups.edu

10607. Payne, J.L.; McClain, C.R.; Boyer, A.G.; Brown, J.H.; Finnegan, S.; Kowalewski, M.; Krause, R.A.; Lyons,

S.K.; McShea, D.W.; Novack-Gottshall, P.M.; Smith, F.A.; Spaeth, P.; Stempien, J.A.; Wang, S.C. (2011): The evolutionary consequences of oxygenic photosynthesis: a body size perspective. *Photosynth. Res.* 107: 37-57. (in English) ["The high concentration of molecular oxygen in Earth's atmosphere is arguably the most conspicuous and geologically important signature of life. Earth's early atmosphere lacked oxygen; accumulation began after the evolution of oxygenic photosynthesis in cyanobacteria around 3.0–2.5 billion years ago (Gya). Concentrations of oxygen have since varied, first reaching near-modern values *600 million years ago (Mya). These fluctuations have been hypothesized to constrain many biological patterns, among them the evolution of body size. Here, we review the state of knowledge relating oxygen availability to body size. Laboratory studies increasingly illuminate the mechanisms by which organisms can adapt physiologically to the variation in oxygen availability, but the extent to which these findings can be extrapolated to evolutionary timescales remains poorly understood. Experiments confirm that animal size is limited by experimental hypoxia, but show that plant vegetative growth is enhanced due to reduced photorespiration at lower O₂:CO₂. Field studies of size distributions across extant higher taxa and individual species in the modern provide qualitative support for a correlation between animal and protist size and oxygen availability, but few allow prediction of maximum or mean size from oxygen concentrations in unstudied regions. There is qualitative support for a link between oxygen availability and body size from the fossil record of protists and animals, but there have been few quantitative analyses confirming or refuting this impression. As oxygen transport limits the thickness or volume-to-surface area ratio — rather than mass or volume — predictions of maximum possible size cannot be constructed simply from metabolic rate and oxygen availability. Thus, it remains difficult to confirm that the largest representatives of fossil or living taxa are limited by oxygen transport rather than other factors. Despite the challenges of integrating findings from experiments on model organisms, comparative observations across living species, and fossil specimens spanning millions to billions of years, numerous tractable avenues of research could greatly improve quantitative constraints on the role of oxygen in the macroevolutionary history of organismal size. [...] Despite widespread awareness of Late Paleozoic gigantism, there have been few attempts to determine whether organisms the size of Carboniferous giants would be prohibited at present-day oxygen levels or whether the magnitude of temporal variation in maximum size within the relevant taxa has been of the magnitude predicted by modeled changes in pO₂. Okajima (2008) (*Lethaia* 41(4): 423-430) was the first to examine the link between insect size and oxygen concentration quantitatively through the Phanerozoic, using newly compiled data on the sizes of fossil dragonflies. She found that the variation in maximum size of dragonflies through time has been much greater than predicted by variation in atmospheric oxygen concentrations, assuming respiration via diffusion through tracheae, and assuming that the sizes of Carboniferous dragonflies represent an oxygen-limited maximum size. If oxygen limited maximum body size in the Carboniferous, it has not consistently done so during other periods. Alternatively, if oxygen is limiting in the modern, then anatomical or physiological differences must exist between the Protodonata and Odonata to explain the inability of the Odonata to achieve similarly large sizes. The latter interpretation is suggested by the fact that all of the largest Paleozoic specimens belong to the Protodonata;

Paleozoic members of the Odonata exhibit sizes comparable to the largest in the Mesozoic and Cenozoic. Alternatively, the simplifying assumption of oxygen diffusion through tracheae may be inaccurate; there is emerging evidence for active tracheal breathing in insects (Socha et al. 2008; Westneat et al. 2003). Okajima (2008) proposed still another alternative: although variation in oxygen may have contributed to size evolution, maximum size of Mesozoic and Cenozoic dragonflies was limited by ecological competition with flying vertebrates. A further possibility, not examined by Okajima (2008), is that the trend in maximum size of fossils is poorly correlated with the true evolutionary pattern. Temporal variation in the quality of the insect fossil record (Labandiera 2005; Smith and Cook 2001) makes it difficult to determine the extent to which variation in maximum size in the fossil record reflects biological reality versus variation in the quality of available material. For example, the Carboniferous contains an unusually extensive record of the coastal marsh environments that may be most likely to house large insects." (Authors)] Address: Payne, J.L., Dept of Geological and Environmental Sciences, Stanford Univ., 450 Serra Mall, Bldg. 320, Stanford, CA 94305, USA. E-mail: jlpayne@stanford.edu

10608. Perez-Gelabert, D.E.; Bastardo, R.H.; Medrano, S. (2011): Entomofauna del Parque Nacional Loma Nalga de Maco y Alrededores, provincia Elías Pina, República Dominicana. *Novitates Caribaea* 4: 80-90. (in Spanish, with English summary) ["Data derived mainly from the published zoological literature are compiled on the diversity of insects known from Parque Nacional Loma Nalga de Maco and surroundings located in northwestern Dominican Republic. A total of 133 species belonging to 9 insect orders were found. We recommend a basic inventory specifically dedicated to the insects of this protected area." (Authors) The following Odonata species are listed from Rio Limpio: *Enallagma coecum*, *Ischnura ramburii*, *Phyllolestes ethelae*, *Dythemis rufinervis*, *Erythemis vesiculosa*, *Macrothemis celeno*, *Orthemis ferruginea*, and from Loma de Las Tayotas: *Scapania frontalis*. The complete data set results from Flint, O. S., Jr., R. H. Bastardo y D. E. Perez-Gelabert. 2006. Distribution of the Odonata of the Dominican Republic. *Bulletin of American Odonatology*, 9: 67-84.] Address: Perez-Gelabert, D.E., Department of Entomology, U. S. National Museum of Natural History, Smithsonian Institution, P. O. Box 37012, Washington, DC 20013-7012, USA. E-mail: perezd@si.edu

10609. Perez-Gutierrez, L.A.; Palacino-Rodriguez, F. (2011): Updated checklist of the Odonata known from Colombia. *Odonatologica* 40(3): 203-225. (in English) ["The checklist includes 335 species, of which 98 species are added to the latest figure published, while 21 previously listed species are removed from the list since they were based on unverifiable records. The number of species hitherto known from Colombia is low if compared to that from some other S American countries, such as Brazil (660 species), Venezuela (487) and Peru (368). A summary of the exploration of Odonata diversity in Colombia is provided." (Authors)] Address: Perez-Gutierrez, L.A., Depto de Biología, Facultad de Ciencias Básicas, Universidad del Atlántico, km 7 antigua vía Puerto Colombia, Barranquilla, Colombia; E-mail: talysker@gmail.com

10610. Perez-Gutierrez, L.A.; Montes-Fontalvo, J.M. (2011): Rediscovery of *Mesagrion leucorrhinum* (Zygoptera: Megapodagrionidae): a "formal" description of female and ultimate stadium of larva with notes on habits. *International Journal of Odonatology* 14(1): 91-100. (in Eng-

lish) ["Adult female and ultimate stadium larva of *Mesagrion leucorrhinum* are formally described and illustrated based on material from three locations in Antioquia, Meta and Cundinamarca Departments, Colombia. The species is sexually dimorphic. The female is distinguishable from other related genera by a pair of notches in the prothoracic anterior lobe and shares with *Heteropodagrion* and *Dimeragrion* females a yellowish, scarcely sclerotized region dorsally between the posterior margin of S7 and anterior border of S8. The larva is very similar to *Heteropodagrion*. Differences for separating them are: the pro-, meso- and metathoracic supracoxal processes are less prominent in *Mesagrion*, and the length of the terminal filament of the middle gill is notably longer in *Mesagrion*. The specimens were also compared with other related genera. Observations on habits are added." (Authors)] Address: Perez-Gutierrez, L.A., Grupo de investigación en Biodiversidad del Caribe colombiano, Depto de Biología, Univ. del Atlántico, km 7 antigua vía Puerto Colombia, Barranquilla, Colombia. E-mail: talysker@gmail.com

10611. Petrulevicius, J.F.; Huang, D.; Nel, A. (2011): A new genus and species of damselfly dragonfly (Odonata: Isophlebioidea: Campterothlebiidae) in the Middle Jurassic of Inner Mongolia, China. *Acta Geologica Sinica* 85(4): 733-738. (in English) ["The campterothlebiid new genus and species *Ctenogampsophlebia reni* is described from the Middle Jurassic of Inner Mongolia, China. It shows close similarities with the Lower to Middle Jurassic genera *Gampsophlebia*, and *Petrophlebia*, with closed and short subdiscoidal cells, confirming the attribution of these two other genera to the Campterothlebiidae." (Authors)] Address: Huang, D.-y., Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, Nanjing 210008, China. E-mail: huangdiyong@sina.com

10612. Phan, Q.T.; Hämäläinen, M. (2011): *Matrona taoi* spec. nov., a new damselfly species from northern Vietnam (Odonata: Calopterygidae). *Zootaxa* 2927: 63-68. (in English) ["*Matrona taoi* Phan & Hämäläinen, spec. nov. (holotype male, from Vietnam, Phu Tho province, Xuan Son National Park, Xom Coi, alt. 442 m, 15 xi 2010, deposited in Vietnam National Museum of Nature, Hanoi) is described from both sexes, illustrated and compared with other species in the genus." (Authors) Erratum: "The figure legend on p. 65 should read: FIGURES 3-4. *Matrona taoi* sp. nov. 3) habitus of paratype male (right hind wing incomplete at base); 4) habitus of paratype female."] Address: Phan, Q.T., Dept of Biology, Vietnam National Museum of Nature, Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet, Cau Giay, Hanoi, Vietnam. E-mail: phanquoctoan84@gmail.com

10613. Qian, C.; Wang, Z.-m.; Zhao, D.-f. (2011): New record of Odonata in the Northeast area and Jilin Province in China. *Journal of Jilin Agricultural University* 2/2011: 1-4. (in Chinese, with English summary) [New records in Northeast area are *Sympetrum ruptum*, *Libellula basilinea* McLachlan, 1894 (= *L. quadrimaculata*), *Somatochlora dido* and *Ischnura elegans*. In addition to these species, *S. croceolum* and *S. imitans* are new for the Jilin province.] Address: Qian, C., College of Agronomy, Jilin Agriculture Univ., Changchun 130118, China

10614. Rajabi, H.; Moghadami, M.; Darvizeh, A. (2011): Investigation of microstructure, natural frequencies and vibration modes of dragonfly wing. *Journal of Bionic Engineering* 8(2): 165-173. (in English) ["Investigation on the microstructural and morphological aspects of dragonfly wings was carried out using scanning electron micro-

scope. Then, based on this study and the previous reports, a precise three-dimensional numerical model was developed and natural frequencies and vibration modes of dragonfly forewing were determined by finite element method. The results shown that dragonfly wings are made of a series of adaptive materials, which form a very complex composite structure. This bio-composite fabrication has some unique features and potential benefits. Furthermore, the numerical results show that the first natural frequency of dragonfly wings is about 168 Hz and bending is the predominant deformation mode in this stage. The accuracy of the present analysis is verified by comparison of calculated results with experimental data. This paper may be helpful for micro aerial vehicle design concerning dynamic response." (Authors)] Address: Rajabi, H., Faculty of Engineering, Islamic Azad Univ., Lahijan Branch, Lahijan, Iran. E-mail: harajabi@hotmail.com

10615. Rak, A.-E.; Said, I.; Mohamed, M.; Abas, A. (2011): Effect of logging activities on water quality and benthic macroinvertebrate assemblages of Madek River Basin, Kluang, Johor, Malaysia. *Journal of Applied Sciences and Environmental Management* 15(2): 337-340. (in English) ["The study was conducted to determine the effect of logging activities on water quality and benthic macroinvertebrate assemblages for the Madek River basin. The study area was situated in Kluang, Johor, Malaysia. Two sampling stations 500 meters apart are upstream and the other, downstream located at Madek River which flows through a logging area in Kluang Forest Reserve were identified. The sampling was conducted four (4) times from November 2008 to August 2009. ... There were only two sensitive taxa namely Ephemeroptera and Trichoptera found in this station. ..." (Authors)] The benthic macro-invertebrate composition for Madek River "includes" the Nearctic genera *Arigomphus* and *Dromogomphus*.] Address: Rak, Aweng-Eh, Faculty of Agro Industry and Natural Resources, Universiti Malaysia Kelantan (UMK), Malaysia. E-mail: aweng@umk.edu.my

10616. Reels, G.T. (2011): Emergence patterns and adult flight season of Anisoptera at a managed wetland site in Hong Kong, southern China. *International Journal of Odonatology* 14(1): 33-48. (in English) ["Anisoptera emergence in the seasonal tropics was monitored at a 35-ha managed wetland site in Hong Kong from February 2004 to November 2007. Exuviae records of 18 species from multiple emergence screens, exuviae traps and transect surveys were combined. The presence of adults during this period was also monitored. The study site comprised a mosaic of ponds separated by narrow bunds. Exuviae of larvae living amongst dense submerged vegetation, and adults of crepuscular species, were probably underrecorded. Anisoptera emergence was strongly seasonal in all four years, commencing in March, with EM50 – the point at which 50% of the annual population has emerged, expressed as number of days since the start of emergence – falling between April and June, for most species; but emergence also showed considerable inter-year variation, particularly after EM50. Emergence of three species continued into December in at least one year. Extended emergence periods were generally ascribed to multivoltinism associated with unregulated life cycles, presumably facultative in the case of tropical-temperate species. The migrant *Pantala flavescens* showed no clear seasonality in emergence patterns. Composite species emergence periods over the four years ranged from two to 11 months, with no clear difference between tropical and tropical-temperate species. No species were

univoltine. Adult flying seasons usually commenced in March or April, and in eight species continued until at least November, although it is unlikely that any adults survived to the following spring. Five species were on the wing for six months or less. There was considerable phenological variation among species, with life histories commonly intermediate between those of equatorial and higher latitude species." (Author)] Address: Reels, G., H-3-30 Fairview Park, Yuen Long, Hong Kong. E-mail: gtreels@gmail.com

10617. Reeves, M.K.; Perdue, M.; Blakemore, G.D.; Rinnella, D.J.; Holyoak, M. (2011): Twice as easy to catch? A toxicant and a predator cue cause additive reductions in larval amphibian activity. *Ecosphere* 2(6) art 72: 20 pp. (in English) ["Toxicants may harm predators or prey differentially, hindering clear determination of multiple stressor effects on predation dynamics in polluted aquatic systems. We built on a prior field study in which we demonstrated that a chemical contaminant, copper (Cu) and odonate predators were correlated with more frequent observations of skeletal abnormalities in Alaskan wood frog (*Rana sylvatica*) tadpoles. Our prior study established a multiple stressor effect linked to an important environmental phenomenon (malformed amphibians) but did not provide clear mechanisms that might guide management. We here investigated behavioral mechanisms because of their potential to produce large changes in predation dynamics, and because in published studies low concentrations of Cu produced behavioral changes in predator-detection in fish. Surprisingly, low but environmentally relevant concentrations of Cu (5 µg/L) combined with chemical cues from a predator (*Aeshna sitchensis*) to produce large changes in the behavior of larval amphibians. Experiments demonstrated that a low concentration of Cu did not inhibit the ability of wood frog tadpoles to detect chemical cues of predators by olfactory means, but produced strong behavioral effects, causing tadpoles to reduce activity and alter microhabitat use. These results occurred with Cu at an exposure level lower than any we could find reported as toxic to amphibians in the literature. When Cu and predator cues were administered together, the activity reduction was additive and stronger at earlier life stages. We suggest that Cu intoxication would be disadvantageous to larval amphibian prey with prolonged exposure to predators during development, and we present field data from 2010 that support this assertion. Our study demonstrates the need to use sensitive behavioral assays and to investigate multiple stressor mechanisms to understand how multiple threats combine to affect organisms in nature." (Authors)] Address: Reeves, Mari K., United States Fish and Wildlife Service, Anchorage Fisheries and Ecological Services Office, 605 West 4th Avenue, Room G-61, Anchorage, Alaska 99501 USA. E-mail: marireeves@fws.gov

10618. Riedel, I.R.; Marinoni, R.C.; Martins-Opohs, N. (2011): Spatio-temporal trends of insect communities in southern Brazil. *Journal of Entomology*, 2008: 1897-1902. (in English) ["In this study, insect seasonality using Malaise traps at eight stations was investigated from abundance collections taken between August 1986 and July 1988 in four climatic regions and one transitional region of Paraná State, Southern Brazil. Temperature and humidity were also measured to represent environmental conditions at the eight stations One station was located in the coastal region, one in the coastal mountain range, one in the first and third plateaus and three stations were located in the second plateau. All insects were counted

aiKl identified to order. Randomization-based techniques were used to assess insect abundance variation by season for the nine most abundant taxa. An Analysis of Similarity (ANOSIM) using stations and seasons as factors and a non-metric multidimensional scaling (NMDS) to assess the 2-D projection of station along axes of abundance were used to assess insect community dissimilarities. A Mantels test assessed correlations between the abundance similarity matrix and the matrix for the environmental factors. Of the most common orders, the most abundant was Diptera, followed by Hymenoptera, Lepidoptera, Collembola, Homoptera, Coleoptera, Psocoptera, Orthoptera and Hemiptera. Insect orders were generally most abundant during the spring and summer, but least abundant during the winter. Following ANOSIM analysis, station location and season best explained variations in abundance. The NMDS analysis found that the coastal station differed most from all the other stations. Humidity was positively correlated with insect abundance." (Authors) Taxa including Odonata are treated at the order level.] Address: Riedel, I.R., Gulf Coast Research Laboratory, University of Southern Mississippi, 703 E. Beach Dr. Ocean Springs, MS 39564, USA

10619. Robson, B.J.; Chester, E.T.; Austin, M. (2011): Why life history information matters: drought refuges and macroinvertebrate persistence in non-perennial streams subject to a drier climate. *Marine and Freshwater Research* 62(7): 801-810. (in English) ["In some arid, semi-arid or Mediterranean climate regions, increased water extraction combined with climate change will prolong periods of drought in non-perennial streams, but the effects on macroinvertebrate populations are poorly understood. Drought refuges allow species to survive drying but their use depends on species' traits, and refuge availability depends on landscape structure. This review evaluates the utility of existing ecological concepts for predicting the role of drought refuges for sustaining biodiversity in non-perennial streams. We also suggest traits that may determine invertebrate species' resistance or resilience to prolonged drying. Parts of the likely responses by populations to increased stream drying are described by existing ecological concepts, such as the biological traits of species and their interaction with the habitat template, barriers to dispersal and metapopulation dynamics, the use of drought refuges, habitat fragmentation and population and landscape genetics. However, the limited knowledge of invertebrate life histories in non-perennial streams restricts our ability to use these concepts in a predictive manner. In particular, reach or pool occupancy by species cannot be accurately predicted, but such predictions are necessary for evaluating potential management actions such as the use of environmental flows to sustain drought refuges during dry periods." (Authors) The paper includes several references to Odonata.] Address: Robson, Belinda, School of Environmental Sciences, Murdoch University, 90 South Street, Murdoch, WA 6150, Australia. E-mail: b.robson@murdoch.edu.au

10620. Rondineli, G.; Gomiero, L.M.; Carmassi, A.L.; Braga, F.M.S. (2011): Diet of fishes in Passa Cinco stream, Corumbataí River sub-basin, São Paulo state, Brazil. *Braz. J. Biol.* 71(1): 157-167. (in English, with Portuguese summary) [576 stomachs of 28 fish species were analysed for diet. They contained "immature" Odonata as well as "immature" additional specimens from different insect orders. Possibly "immature" should be read as "larvae" (pers. comm.).] Address: Rondineli, Giulianna, Departamento de Produção Vegetal, Centro de Ciências Agrár-

ias, Univde Federal do Espírito Santo – UFES, Alto Universitário, s/n, Guararema, CP 16, CEP 29500-000, Alegre, ES, Brazil. E-mail: giulianna.rondineli@gmail.com

10621. Rosa, B.F.J.V.; da Silva, M.V.D.; de Oliveira, V.C.; Martins, R.T.; da G. Alves, R. (2011): Macroinvertebrates associated with bryophyta in a first-order Atlantic forest stream. *Zoologia* 28(3): 351-356. (in English) ["During three months of the dry season of 2007 and three months of the rainy season of 2008, samples of bryophytes attached to stones were collected randomly, along a 100 m stream reach. ... Chironomidae larvae were dominant in the two periods of study, followed by Ceratopogonidae in the rainy season, and Naididae in the dry season. The orders EPT contributed 14 families. ... This habitat provides refuge during spates, and thus minimizes downstream transport of the macroinvertebrate fauna." (Authors) Few specimens of "Calopterygidae and Coenagrionidae" were found during the rainy season; Odonata are classified as "adominant".] Address: Rosa, Beatriz, Laboratório de Invertebrados Bentônicos, Programa de Pós-graduação em Ciências Biológicas, Comportamento e Biologia Animal, Departamento de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Juiz de Fora. 36036-330 Juiz de Fora, Minas Gerais, Brazil. E-mail: beatrizjabour@yahoo.com.br

10622. Rosset, V.; Oertli, B. (2011): Freshwater biodiversity under climate warming pressure: Identifying the winners and losers in temperate standing waterbodies. *Biological Conservation* 144(9): 2311-2319. (in English) ["Climate warming is affecting the biodiversity all around the world, resulting in the expansion or contraction of the geographical range of species, and leading to colonisation (winners) and extinction (losers) events in ecosystems. It is crucial for the conservation of biodiversity to identify these potential winners and losers. We focus here on small standing waterbodies in Switzerland and on five taxonomic groups: vascular plants, snails, beetles, dragonflies and amphibians. We first assessed the sensitivity of each species to climate warming through their thermal preferences, using current altitudinal and latitudinal distribution, as a surrogate for temperature. We then evaluated the resilience of species to perturbations through five ecological and biogeographical criteria applicable to the perturbation "warming": dispersal ability, degree of habitat specialisation, geographical extent in the study area, future trend in geographical extent, and future trend of habitat availability for species. Potential winners and losers of a warming climate could be quantified through their thermal preferences. The proportion of potential losers ranged from zero species for snails to 33% of the regional species pool for dragonflies. The set of potential winners was much larger, ranging from 53% for amphibians to 61% for dragonflies. A multimetric index combining the five resilience criteria enabled the further prioritisation of the species along a gradient of extinction risk. This potential threat from climate warming is not reflected by the current Red Lists of dragonflies and amphibians, suggesting that conservation management could gain from a complementary label indicating the degree of sensitivity to warming. Highlights: › Climate warming will lead to colonisation (winners) and extinction (losers) events. › We quantified the potential winners and losers in Swiss small standing waterbodies. › The proportion of losers was smaller than the proportion of winners. › A resilience index further prioritizes the species along an extinction risk gradient. › The potential threat from climate warming is not reflected by the current Red Lists." (Au-

thors)] Address: Rosset, Véronique, University of Applied Sciences Western Switzerland, Hepia, Geneva Technology, Architecture and Landscape, 1254 Jussy-Geneva, Switzerland. E-mail: veronique@rosset.org

10623. Ruzzante, D.E.; Walde, S.J.; Macchi, P.J.; Alonso, M.; Barriga, J.P. (2011): Phylogeography and phenotypic diversification in the Patagonian fish *Percichthys trucha*: the roles of Quaternary glacial cycles and natural selection. *Biological Journal of the Linnean Society* 103: 514-529. (in English) ["Current patterns of genetic and morphological diversity are the product of historical climatic and geomorphological events, and of contemporary selection processes acting upon this diversity. Here we examine the phylogeographic and phenotypic patterns of diversity within *Percichthys trucha*, a widely distributed Patagonian fish species complex that inhabits Andean and steppe freshwater environments. Molecular analysis (mtDNA control region) of 21 populations distributed throughout its latitudinal range revealed little evidence of phylogeographic structure and no evidence of species-level genetic divergence east of the Andes. The complex, however, exhibits high levels of intra- and interpopulation phenotypic variation. Patterns of among-population divergence in morphology were most easily explained by differences in predation pressure among populations; dorsal fin spines (commonly a defensive characteristic) were longer in environments with greater densities of potentially piscivorous fish. Trophic characters were highly variable within populations, suggesting an important role for resources in generating within-population morphological variation. The very shallow levels of divergence shown by the molecular data most likely reflect the historical mixing of populations as a result of the climatic and landscape changes that affected Patagonia throughout the Quaternary. The phenotypic divergences, in contrast, are probably the result of differing contemporary selection regimes acting on currently disjoint populations. [...] The two diet items with the highest loading on PC1 are Odonata and Chironomid larvae and pupae [...] Some of the variation in diet could be associated with variation in morphology: for instance, populations that relied heavily on Odonata tended to have relatively short gill rakers and jaws compared with those that did not feed on Odonata. We do not know the nature of any links between diet and trophic morphology for *Percichthys*: adult morphology is almost certainly influenced by the diet of early developmental stages, and diet can also be affected by predation regime." (Authors)] Address: Ruzzante, D., Dept of Biology, Dalhousie University, Halifax, Nova Scotia, B3H 4J1, Canada. E-mail: daniel.ruzzante@dal.ca

10624. Rychła, A.; Benndorf, J.; Buczyński, P. (2011): Impact of pH and conductivity on species richness and community structure of dragonflies (Odonata) in small mining lakes. *Fundamental and Applied Limnology / Archiv für Hydrobiologie* 179(1): 41-50. ["Although acidification in freshwaters reduces the richness of aquatic species in general, dragonflies are less affected. However, detailed knowledge regarding the effects of very acidic (pH < 4.0) and highly conductive (> 700 $\mu\text{S cm}^{-1}$) water on dragonfly species richness and composition is still scarce. To assess this, 19 anthropogenically influenced waters with a wide range of pH (2.64 - 6.81) and conductivity (113 - 2620 $\mu\text{S cm}^{-1}$) were investigated in the Muskau Arch area (western Poland, eastern Germany). Of the 41 dragonfly species found, 31 were autochthonous. Both total (St) and autochthonous (Sa) species richness correlated positively with pH and negatively with conductivity. How-

ever, the correlations for autochthonous species were strongly influenced by the samples from the extremely acidic (pH 2.64 - 2.86) and most ion-rich (conductivity > 1200 $\mu\text{S cm}^{-1}$) waters, where no species developed. The Sa values from acidic waters with slightly higher pH values (between 3.0 and 4.0) did not differ significantly from those found in neutral waters. Nevertheless, species preferring acidic or neutral conditions, respectively, were clearly separated, showing a direct or indirect effect of pH on the community structure in the area. We thus conclude that only pH values below 3.0 and conductivity above 1200 $\mu\text{S cm}^{-1}$ have a detrimental effect on dragonflies. Other acidic waters are suitable habitats for specialists, which do not develop in neutral waters. Thus, moderate acidification enhances the dragonfly species richness of a region like the Muskau Arch area." (Authors)] Address: Rychła, Anna, Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Department of Limnology of Stratified Lakes, Alte Fischerhütte 2, 16775 Stechlin, Germany. E-mail: a.rychla@igb-berlin.de

10625. Šacha, D. (2011): How many dragonflies are there in your garden pond? *Notulae odonatologicae* 7(7): 66-67. (in English) ["In an old, small garden pond in the city of Liptovský Mikuláš, N Slovakia (max. depth ca 30 cm, water volume ca 150 l, cleaned and aried-out annually before winter), *Pyrrhosoma nymphula* (26 larvae), *Aeshna cyanea* (7) and *Libellula depressa* (36) were observed in 2009, but in 2010 only *A. cyanea* could be recorded, with an abundance of 190 larval individuals." (Author)] Address: Šacha, D., Podtatranského 31, SK-031-01 Liptovský Mikuláš, Slovakia. E-mail: dusan.sacha@vazky.sk

10626. Samways, M.J.; Sharratt, N.J.; Simaika, J.P. (2011): Effect of alien riparian vegetation and its removal on a highly endemic river macroinvertebrate community. *Biological Invasions* 13(6): 1305-1324. (in English) ["Invasive alien trees along river banks can reduce indigenous biodiversity, while their removal can restore it. We assessed here family- and species level responses of river benthic macroinvertebrate assemblages to three riparian vegetation types (natural, alien trees, cleared of alien trees) in the Cape Floristic Region biodiversity hotspot. High species beta diversity of this highly endemic fauna meant that between-river, as well as seasonal effects, dominated assemblage patterns. SASS5, a qualitative, rapid bioassessment technique, based on the sensitivity of the families present, was used as a measure of river health and, indirectly, of water quality. SASS indicated a decline in water quality conditions after alien clearing, a likely response to the greater insolation and apparent erosion of cleared banks, resulting in elevated temperatures and suspended solids and lowered oxygen levels. Overall, cleared and natural sites were more similar to each other than to alien sites, suggesting some post-clearing recovery. However, many sensitive, endemic taxa survived in alieninvaded sites, and more than in the natural sites. These endemic species made use of shady, cool, high oxygen levels under the alien tree canopy. However, endemics declined in overall abundance in sites cleared of aliens, being replaced by more tolerant, widespread taxa. Clearance of the alien trees opened up the rivers to sunny conditions, which had a major impact on community composition. Vegetation types, oxygen levels and river width were important environmental variables affecting these macroinvertebrate responses. Re-establishment of invertebrate biodiversity matched that of indigenous vegetation, with the most sensitive endemic taxa only recovering after establishment of bushy

indigenous and shade-producing fynbos. Therefore, for biodiversity conservation objectives to be achieved, it is essential that indigenous plants are maintained and encouraged during and after clearing to ensure the recovery of endemic and sensitive taxa." (Authors) All taxa are identified on the species level and include Ephemeroptera, trichoptera, Odonata, and Plecoptera.] Address: Samways, M.J., Dept Entomol. & Nematol., Univ. Stellenbosch, Private Bag X1, ZA-7602, Matieland, South Africa. E-mail: samways@sun.ac.za

10627. Sánchez-Guillén, R.A.; Wellenreuther, M.; Cordero-Rivera, A.; Hansson, B. (2011): Introgression and rapid species turnover in sympatric damselflies. *BMC Evolutionary Biology* 11:210. (in English) ["Background: Studying contemporary hybridization increases our understanding of introgression, adaptation and, ultimately, speciation. The sister species *Ichnura elegans* and *I. graellsii* are ecologically, morphologically and genetically similar and hybridize. Recently, *I. elegans* has colonized northern Spain, creating a broad sympatric region with *I. graellsii*. Here, we review the distribution of both species in Iberia and evaluate the degree of introgression of *I. graellsii* into *I. elegans* using six microsatellite markers (442 individuals from 26 populations) and five mitochondrial genes in sympatric and allopatric localities. Furthermore, we quantify the effect of hybridization on the frequencies of the genetically controlled colour polymorphism in females of both species. Results: In a principal component analysis of the microsatellite data, the first two principal components summarised almost half (41%) of the total genetic variation. The first axis revealed a clear separation of *I. graellsii* and *I. elegans* populations, while the second axis separated *I. elegans* populations. Admixture analyses showed extensive hybridization and introgression in *I. elegans* populations, consistent with *I. elegans* backcrosses and occasional F1-hybrids, suggesting hybridization is on-going. More specifically, approximately 58% of the 166 Spanish *I. elegans* individuals were assigned to the *I. elegans* backcross category, whereas not a single of those individuals was assigned to the backcross with *I. graellsii*. The mitochondrial genes held little genetic variation, and the most common haplotype was shared by the two species. Conclusions: The results suggest rapid species turnover in sympatric regions in favour of *I. elegans*, corroborating previous findings that *I. graellsii* suffers a mating disadvantage in sympatry with *I. elegans*. Examination of morph frequency dynamics indicates that hybridization is likely to have important implications for the maintenance of multiple female morphs, in particular during the initial period of hybridization." (Authors)] Address: Cordero Rivera, A., Depto de Ecología e Biología Animal, Univde de Vigo, E.U.E.T. Forestal, Campus Universitario, 36005 Pontevedra, Spain. E-mail: acordero@uvigo.es

10628. Sasamoto, A.; Yokoi, N.; Teramoto, T. (2011): Description of a new *Sinorogomphus* from Northern Laos (Odonata: Chlorogomphidae). *International Journal of Odonatology* 14(1): 83-89. (in English) ["*Sinorogomphus hiten* sp. nov. is described and illustrated from both sexes (holotype male: Laos, Oudomxay province [20°36'14" N, 102°3'21" E, 1075 m a.s.l.], deposited in the National Science Museum, Tokyo, Japan). This is also a first record of the genus from Laos. The new species is easily differentiated from the other congeners in the male by its characteristic anal appendages, i.e. a moderately obtuse ventral spine on cerci and conspicuous paired bifurcate dorsal spines on epiproct, and by the undeveloped valvulae

lae vulvae in the female. Additionally we briefly mention our observations of the species in the field." (Authors)] Address: Sasamoto, A., 190-4 Yakuoji Tawaramoto, Shiki-gun, Nara prefecture, 636-0341, Japan. E-mail: aksmt@sea.plala.or.jp

10629. Schletterer, M.; Schönhuber, M.; Füreder Sathe, T.V. (2011): Laboratory mass culture technique for *Paramecium caudatum* (Protozoa: Paramecidae). *J. Curr. Sci.* 16(1): 133-135. (in English) ["*P. caudatum* is found in freshwater ponds, pools, ditches, rivers, lakes etc. and useful for rearing of dragonfly naiads *Crocothemis servillia servillia*. Dragonfly naiads are used in biological control of mosquitoes. Early instar naiads preferably feed on *paramecium*. Therefore, mass culture technique for *P. caudatum* has been developed under laboratory conditions (27±1°C, 75±1%R.H., 10 hr photoperiod). The glass aquarium of size 45 x 22 x 28 cm (Length x width x height) was used for mass culture of *P. caudatum*. ½ Lit of *paramecium* initial culture obtained from glass jar method was taken in 5 lit of distilled water in glass aquarium equipped with sliding cap, an aerator, some hydrilla plants and *paramecium* food (500 gm of folks and corn husk with equal proportion, growth medium with 50 drops of skimmed milk to develop bacteria as food for *paramecium*). The *paramecium* can reproduce by simple division 2-3 times per day. Thus, huge number of *paramecium* can be developed. The culture was allowed to reproduce 4 days to one week and then replaced and or used." (Author)] Address: Sathe, T.V., Dept of Zoology, Shivaji Univ., Kolhapur 416 004, Maharashtra, India

10630. , L. (2011): Biodiversity of diatoms and macroinvertebrates in an east European lowland river, the Tudevka River (Tver Region, Russia). *Boreal Environment Research* 16: 79-90. (in English) ["The Middle reaches (3Trubi and Krasny Stan) were characterised by *Paraleptophlebia cf. cincta*, *Sialis morio*, *Erbpobdella octoculata* and a diverse Odonata fauna." (Authors)] Address: Schletterer, M., University of Innsbruck, Institute of Ecology, Dept River Ecology and invertebrate Biology, Technikerstr. 25. A-6020 Innsbruck, Austria. E-mail: schletterer@gmx.at

10631. Schmidt Dalzochio, M.; Costa, J.M.; Uchoa, M.A. (2011): Diversity of Odonata (Insecta) in lotic systems from Serra da Bodoquena, Mato Grosso do Sul State, Brazil. *Rev. Bras. entomol.* 55(1): 88-94. (in English, with Portuguese summary) ["A systematic survey was carried out in four lotic systems from Serra da Bodoquena, the largest natural forests of the State, from August 2007 to November 2008. 548 specimens belonging to 33 species, distributed in 5 families were sampled. Libellulidae was dominant, with 13 species, followed by Gomphidae, Coenagrionidae, Protoneuridae and Calopterygidae." (Authors)] Address: Schmidt Dazochio, Marina, Laboratório de Ecologia e Conservação de Ecossistemas Aquáticos, Universidade do Vale do Rio dos Sinos, Av. Unisinos, 950, Cristo Rei, 93022-000 São Leopoldo-RS, Brazil. E-mail: mahsdalzochio@gmail.com

10632. Schröter, A. (2011): Review of the distribution of *Somatochlora sahlbergi* (Odonata: Corduliidae). *International Dragonfly Fund - Report* 41: 1-27. (in English) ["Based on data collected from literature, museum collections, national databases and personal communications, an up-to-date map of the worldwide distribution of *Somatochlora sahlbergi* is presented. A new hypothesis is presented indicating that occurrences are at least regionally correlated with *palsa mires*. Two examples of larval habitats in Europe are illustrated and described, including the

first observation of reproduction in Norway and the first record of co-occurrence with Zygoptera in Europe. The exuvia of *S. sahlbergi* is illustrated and distinguishing features briefly discussed." (Author) Address: Schröter, A., Rasenweg 10, D-37130 Gleichen, Germany. E-mail: asmustim@gmx.de

10633. Shah, R.D.T.; Shah, D.N.; Neseemann, H. (2011): Development of a macroinvertebrate-based Nepal Lake Biotic Index (NLBI): an applied method for assessing the ecological quality of lakes and reservoirs in Nepal. *Int. J. Hydrology Science and Technology* 1(1/2): 125-146. (in English) ["In Nepal, the impairment status of lakes and reservoirs has generally been measured and classified based on nutrient concentrations and physico-chemical parameters, typically with no direct measurement of biological communities. In response to the recent focus on the bioassessment of lakes and reservoirs, the macroinvertebrate-based Nepal Lake Biotic Index (NLBI) has been developed. Benthic samples were collected from reference and impaired lakes during 2006 and 2009 from two ecological zones: Terai-Siwaliks and Mid-Hills. We used a tolerance score based on a ten-point scoring system ranging from very pollution sensitive to very pollution tolerant taxa to calculate the NLBI. In reference to the transformation scale, the calculated NLBI describes the lake water quality as high, good, fair, poor and bad. Candidate metrics of richness measures and tolerance measures discriminated well between the reference and impaired lakes (Mann-Whitney U test, $p < 0.01$). The relationships between the biological metrics and the environmental variables were also established with the lake water quality class (LWQC). Further, the validation of the NLBI performance was done by assessing nine lakes/reservoirs from both the zones. Thus, the index presented here provides an effective method to measure the ecological condition of lakes and reservoirs in Nepal." (Authors) Taxa - including Odonata - are treated at the order level.] Address: Shah, R.D.T., Hindu Kush Himalayan Benthological Society, Bhaktapur, P.O. Box 20791, Sundhara, Kathmandu, Nepal. E-mail: ramdevishah@hkhbenso.org

10634. Sharma, K.K.; Chowdhary, S. (2011): Macroinvertebrate assemblages as biological indicators of pollution in a Central Himalayan River, Tawi (J&K). *International Journal of Biodiversity and Conservation* 3(5): 167-174. (in English) [Jammu and Kashmir, India; "Benthic macroinvertebrate assemblages at sub-tropical River of Jamu, River Tawi, corresponding to different catchment land uses, were assessed in 2008 to 2009 as indicators of water quality. The relative diversity, species richness, dominance, evenness indices, physico-chemical parameters and percentage of Annelida + Arthropoda + Mollusca (AAM) individuals were determined. Significant spatio-temporal variation was observed in relative diversity, with Diptera dominating the study area instead of Annelida, Odonata, Ephemeroptera, Hemiptera and Gastropoda. Significant relationships were recorded between physico-chemical parameters [...] and the occurrence of specific genera. Significant changes in macroinvertebrate assemblages were primarily due to changes in water quality. As elsewhere, macroinvertebrate communities proved to be good indicators of water quality and should be used as bioindicators in long-term monitoring of this river." (Authors) The taxa list includes "Ophiogomphus sps., Perithemis sps., Progomphus sps." probably identified by use of "Pennak, R.W. (1978). Fresh water invertebrates of United States."] Address: Sharma, K.K., Dept of Zoology,

University of Jammu-180006, Jammu and Kashmir, India. E-mail: prof.ksharma@gmail.com

10635. Sheewai, P.; Tan, J.; Ngiam, R.W.J. (2011): New record of dragonfly, *Zygomma obtusum* Albarada, 1881 in Singapore (Odonata: Anisoptera: Libellulidae). *Nature in Singapore* 4: 241-244. (in English) [30-III-2011, forest edge in Pulau Ubin, Singapore] Address: Ngiam, R.W.J., National Biodiversity Centre, National Parks Board, 1 Cluny Road, Singapore 259569. E-mail: ngiamwenjiang@nparks.gov.sg

10636. Shoukry, N.M.; Morsy, T.A. (2011): Arthropod borne diseases at Toshka, Upper Egypt. *World Journal of Zoology* 6(2): 126-133. (in English) ["The Egyptian Government plan to move in 25 years from an inhabited area of 6-25% of the total Nile land area to a larger one to compensate the huge increase of Egyptian populations. The decision was recently made to begin a development project at Toshka, on the western bank of the River Nile, Upper Egypt. Toshka depression is more or less close to Wadi Halfa of Sudan. Therefore, it was necessary to develop Toshka on the west bank of the River Nile. Consequently, two specialized teams, one is national and the other is from WHO, were interested to study the health risk impact of the project on the vector-borne diseases and pests and to plan recommendations for prevention and feasible control of these diseases. The present study was initiated during spring of 2007 & 2008, as spot light survey, on wild rodents and the arthropods having medical and/or veterinary importance. Whilst *Psammomyes obesus* Cretzschmar, 1828 was the only recognized rodent, the following arthropods were identified: the scorpion, *Buthus quinquestrigatus* Hanté en E., the insects, *Cephus tabidus* (F.), *Ischnura senegalensis* (Rambur, 1842), *Mantis religiosa* Linnaeus, 1758 and *Tabanus taeniola* Palisot de Beauvois, *Culicoides riethi* Kieffer, *Anopheles sergenti* Theobald and *Phlebotomus papatasi* (Scopoli). The medical, veterinary and agriculture importance of each species have been discussed and feasible control measures were suggested." (Authors) In contrast to this statement any medical, veterinary or agricultural importance of *I. senegalensis* is not discussed.] Address: Morsy, T.A., Dept of Parasitology, Faculty of Medicine, Ain Shams University, Cairo, 11566, Egypt. E-mail: morsyegypt2000@yahoo.com.

10637. Silva, F.L.; Oliveira, H.R.N.; Escarpinati, S.C.; Fonseca-Gessner, A.A.; Paula, M.C. (2011): Colonization of leaf litter of two aquatic macrophytes, *Mayaca fluviatilis*, *Aublet* and *Salvinia auriculata*, *Aublet* by aquatic macroinvertebrates in a tropical reservoir. *Ambi-Água, Taubaté* 6(1): 30-39. (in English, with Portuguese summary) ["Decomposition and colonization of *S. auriculata* and *M. fluviatilis* by macroinvertebrates were analyzed during 40 days to determine whether differences existed on colonization by aquatic macroinvertebrates of two macrophytes with distinct habits (submerged versus fluctuant). Leaf litter of *S. auriculata* and *M. fluviatilis* were incubated in 24 litter bags (12 of each species), in a small reservoir surrounded by a cerrado fragment with low level of anthropic impact. After 10, 20, 30 and 40 days, the litter bags were removed and aquatic macroinvertebrates community was analyzed. 220 macroinvertebrates were associated with *S. auriculata* and 261 were associated with *M. fluviatilis*, identified in 24 taxa. Both macrophyte species were colonized mainly by macroinvertebrate predators. *Ablabesmyia* with predator and collector food mechanisms was present in all sampling. The data showed an expressive increase of abundance during the process of decomposi-

tion and a decrease at the end of the experiment, in both macrophytes. Cluster analysis permitted inference that the colonization of the leaf litter by macroinvertebrates was determined by incubation time of leaf litter not by the habit of macrophytes (submerged or fluctuant)." (Authors) A single specimen of "Lestidae" was found among leaf litter of *M. fluviatilis* on the tenth and twentieth days.] Address: da Silva, F.L., Univde Federal de São Carlos - UFSCar, Depart. de Hidrobiologia, Laboratório de Entomologia Aquática, Brasil. E-mail: fabelha@hotmail.com

10638. Soluk, D.A.; Zercher, D.S.; Worthington, A.M. (2011): Influence of roadways on patterns of mortality and flight behavior of adult dragonflies near wetland areas. *Biological Conservation* 144(5): 1638-1643. (in English) ["The relatively low population size and long adult lifespan of dragonflies (Odonata, Anisoptera) makes them one of the few non-vertebrate groups likely to be impacted by direct roadway mortality. We studied adult dragonfly mortality and behaviour associated with roadways for a number of species. Daily mortality rates for dragonflies were estimated from standardized surveys along predetermined lengths of roads. Relative abundance and flight behaviour around and across roadways, a potentially important mortality factor, was determined from timed roadside observations. Observed flight behaviour provided no evidence that roads act as significant barriers to dispersal for adult dragonflies. Estimated mean number killed ranged from 2 to 35 dragonflies/km/day. Species varied greatly in their susceptibility to motor vehicles. Two species (*Plathemis lydia* and *Libellula luctuosa*) made up more than 70% of the dead dragonflies collected, but only represented 14% and 31% of live dragonflies observed, respectively. The relatively low flight heights of these two species over roads (typically under 2 m) may explain their susceptibility; however, another common species (*Tamea lacerata*) also exhibited low flight height but did not experience high mortality, possibly because of its increased flight agility. Large numbers of adult dragonflies were killed over the entire flight season by motor vehicle collisions, exhibiting the need for assessing the long-term impact of roadway mortality on dragonfly population dynamics." (Authors)] Address: Zercher, Deanna, The Nature Conservancy, 11304 North Prairie Road, Lewistown, IL 61542, USA. E-mail: dzercher@tnc.org

10639. Spyra, A. (2011): Autochthonic and allochthonic plant detritus as zoobenthos habitat in anthropogenic woodland ponds. *Oceanological and Hydrobiological Studies* 40(1): 27-35. (in English) ["Regardless of origin, all water bodies situated inside forests form a unique habitat for many freshwater animals due to the allochthonous detritus covering the bottom, composed mostly of leaves from waterside trees. For many years these woodland ponds have been considered to be advantageous to regional biodiversity. Investigations were carried out in eight anthropogenic woodland ponds, formed as a consequence of coal mining activities, situated in forest complexes in Upper Silesia (Southern Poland), to evaluate the impact of allochthonic and autochthonic plant detritus on the formation of zoobenthic communities, together with insolation intensity. In sites covered by a layer of allochthonic plant matter, zoobenthos were more abundant compared to places covered by autochthonic detritus. The density of zoobenthos in sun-exposed sites was two to three times greater than in shaded sites." (Author) Taxa - including *Coenagrionidae*, *Aeschnidae*, *Libellulidae* - are treated at the family level.] Address: Spyra, Aneta, Dept of Hydrobiology Faculty of Biology and Environmental Pro-

tection, The University of Silesia, ul. Bankowa 9, 40-007 Katowice, Poland. E-mail: aneta.spyra@us.edu.pl

10640. Staniczek, A.H.; Bechly, G.; Godunko, R.J. (2011): *Coxoplectoptera*, a new fossil order of Palaeoptera (Arthropoda: Insecta), with comments on the phylogeny of the stem group of mayflies (Ephemeroptera). *Insect Systematics & Evolution* 42(2): 101-138. (in English) ["*Mickoleitia longimanus* gen. et sp.n. is described from the Lower Cretaceous limestone of the Crato Formation in Brazil. It is attributed to a new family *Mickoleitiidae* and a new fossil insect order *Coxoplectoptera* within the palaeopterous Ephemera, based on the presence of an elongated costal brace. This fossil insect exhibits a very peculiar combination of derived characters like specialized forelegs with strongly elongated, free coxae, single-clawed pretarsus, and distinctly skewed pterothorax as in dragonflies. On the other hand, several plesiomorphies are present that exclude this taxon from modern Ephemeroptera, namely large hind wings with widened anal area and numerous cross veins that separate the elongate costal brace from the costal margin. Fossil larvae described by Willmann as larval *Cretereismatidae* are herein attributed to *Mickoleitiidae* fam. n., based on the shared presence of broad hind wing buds with distinctly broadened anal area, wing bud venation similar to the adult holotype, and subchelate forelegs with elongate free coxae. These larvae are also highly autapomorphic in the structure of their abdominal gills and laterally flattened body with vertically oval section that is unique within Ephemera. On the other hand they possess plesiomorphic lateral wing pads with pronounced articulation like Palaeozoic pterygote larvae, while wing pads in modern insects are always secondarily fused to the tergum. A similar fossil larva from the Jurassic of Transbaikals was earlier described as *Mesogenesia petersae* and classified within modern mayflies. It is herein attributed to *Mickoleitiidae* fam.n. *Coxoplectoptera* are recognized as putative sister group of modern Ephemeroptera based on the shared presence of only 7 pairs of abdominal gills, while Permoplectoptera still have retained 9 pairs of gills. The phylogenetic reclassification of the mayfly stem group by Willmann is critically discussed and modified." (Authors) Phylogenetic relationships to dragonflies are discussed.] Address: Bechly, G., Staatliches Museum für Naturkunde, Abt. Paläontologie, Rosenstein 1, D-70191 Stuttgart, Germany. E-mail bechly@gmx.de

10641. Strobbe, F.; McPeck, M.A.; De Block, M.; Stoks, R. (2011): Fish predation selects for reduced foraging activity. *Behavioral Ecology and Sociobiology* 65(2): 241-247. (in English) ["Despite the importance of foraging activity for the growth/predation risk trade-off, studies that demonstrated predator-induced survival selection on foraging activity under semi-natural conditions are relatively rare. Here, we tested for fish-induced selection for reduced foraging activity in two larval *Enallagma* damselflies using a field enclosure experiment. Fish imposed considerable mortality in both damselfly species and survival selection on foraging activity could be detected in *Enallagma geminatum*. We did not detect selection in *E. hageni*, probably because this species already was not eating very much in the absence of fish compared to *E. geminatum*. Both species responded strongly to the presence of predators by reducing their foraging activity. The documented survival selection on foraging activity was detected despite the already low activity levels in fish lake prey species and despite strong predator-induced plasticity in this trait." (Authors)] Address: Stoks, R.,

Laboratorium voor Aquatische Ecologie, K.U.Leuven, De Beriotstraat 32, B-3000 Leuven, Belgium. E-mail: rob.by.stoks@bio.kuleuven.ac.be

10642. Stübing, S. (2011): Hinweise zu Vorkommen und Bestimmung der Gefleckten Smaragdlibelle *Somatochlora flavomaculata* (Vander Linden, 1825) in Hessen. *Libellen in Hessen* 4: 53-58. (in German) [*Somatochlora flavomaculata* is very rare in Hessen, Germany. It was discovered in July 2010 at two localities in the valley of the river Kinzig. The author presents a brief compilation of records in Hessen, and gives notes on the habitat and field characters of *S. flavomaculata*.] Address: Stübing, S., Am Eichwald 27, 61231 Bad Nauheim. E-mail: stefan.stuebing@gmx.de

10643. Suhail, M.A.; Arshad, M.; Arif, J.; Gogi, M.D. (2011): Conservation of beneficial insects for sustainable agriculture. In: H. Gökçekuç et al. (eds.): *Survival and Sustainability, Environmental Earth Sciences, Part 9*. Springer-Verlag Berlin Heidelberg: 1463-1468. (in English) ["Insects are the most diverse group of organisms and are 3/4th of all described forms of life. Potentially they are highly indicative of environmental change through close adaptation to their environment. Migratory insect species are at the verge of extinction owing to increasing trend in global warming. Insect fauna also represent the majority of links in the community food chain and they likely have the largest biomass of the terrestrial animals. While the positive values of the insect fauna is remarkably more than that of their negative values. They act as pollinators and bio-control agents in the agro-ecosystem and have better impact for the development of sustainable agriculture. Thus, knowledge about them is fundamental to study the environment. One to three million insects species are identified worldwide while 2,000 from Pakistan. Out of which more than 954 species from 10 orders are identified/explored by the "Insect Biodiversity and Biosystematics Lab", Department of Agri-Entomology, University of Agriculture, Faisalabad, Pakistan. Of the described species in the order Orthoptera (Grasshoppers, Crickets, 279), Odonata (Dragonflies, 130), Lepidoptera (Moths and Butterflies, 82), Diptera (Syrphids, Fruitflies, Clypterate species 187), Homoptera (Aphids, Whiteflies, 65), Thysanoptera (Thrips, 52), Neuroptera (Antlion, Chrysopids, 42), Dictyoptera (Mantids, 32), Hemiptera (Reduviid & Anthocorid Bugs, 11) and Hymenoptera (Braconids, 17). The abundance of bee forage plants throughout the year determines the growth of honey bee colonies and hence the productivity of bee farming. Pakistan is endowed with more than 700 plant species. Out of which entomophilous crops cover 7.3 million hectares of land and forest more than 10 million hectares which can support 0.4–0.5 million honey bee colonies. Despite fairly abundant floral sources and quite suitable climatic conditions for keeping bees in the country, honey production (1000 tonnes) from 3,00,000 colonies is much below to its exploitable potential. All of this work has been completed by students M.Sc/Ph.D theses research and many students are working on different groups of insect fauna and their biodiversity. Eleven species of scabid beetles (Coleoptera) have been identified recently on molecular level by DNA characterization. Many other identified species specimens, are placed in the departmental insectarium, which are not mentioned in this report." (Authors)] Address: Suhail, M.A., Dept of Agricultural Entomology, Insect Biodiversity and Biosystematics Research Laboratory, University of Agriculture, Faisalabad, Pakistan. E-mail: dranjumsuhailuaf@yahoo.com

10644. Suvorov, A. (2011): Comparative molecular genetics of *Nehalennia speciosa* (Charpentier) from geographically distant populations (Zygoptera: Coenagrionidae). *Odonatologica* 40(2): 131-136. (in English) ["The populations from western Russia, the Russian Far East and Japan are compared using Cytochrome Oxidase I (COI) gene and Internal Transcribed Spacer 1 (ITS1) region of rDNA sequences. The exceptionally low variation is discussed." (Author)] Address: Suvorov, A., Dept of Entomology, Faculty of Biology, Lomonosov Moscow State University, 119992 Moscow, Russia. E-mail: antony.suvorov@gmail.com

10645. Szkokan-Emilson, E.J.; Wesolek, B.E.; Gunn, J.M. (2011): Terrestrial organic matter as subsidies that aid in the recovery of macroinvertebrates in industrially-damaged lakes. *Ecological Applications* 21: 2082-2093. (in English) ["The importance of allochthonous carbon to the productivity of stream ecosystems in temperate eozones is well understood, but this relationship is less established in oligotrophic lakes. The nearshore littoral zones, at the interface of terrestrial and aquatic systems, are areas where the influence of terrestrial subsidies is likely greatest. We investigated the response of nearshore communities to variation in the quantity and composition of allochthonous materials, determined the landscape characteristics that regulate the variation of this subsidy, and explored the potential for terrestrial restoration practices to influence the export of organic matter to lakes. Stepwise multiple regressions revealed that diversity of nearshore macroinvertebrate families increased with the amount of fine particulate organic matter (FPOM) captured in sediment traps. The quantity of FPOM (g) increased with forest cover, and the relative amount of FPOM (percentage of total particulate material) in the traps increased with surface area of wetland in the catchments. These models suggest that terrestrially derived subsidies are important in smelter-impacted watersheds, and that the restoration of forests and wetlands will speed the return of nearshore consumer community diversity in industrially damaged lakes." (Authors) Predators include (at the family level) Aeshnidae, Coenagrionidae, Corduliidae, and Libellulidae.] Address: Szkokan-Emilson, E.J., Cooperative Freshwater Ecology Unit, Biology Dept, Laurentian Univ., 935 Ramsey Lake Road, Sudbury, Ontario P3E 2C6 Canada. E-mail: exszkokanemilson@laurentian.ca

10646. Takhelmayum, K.; Gupta, S. (2011): Distribution of aquatic insects in phumdis (floating island) of Loktak Lake, Manipur, northeastern India. *Journal of Threatened Taxa* 3(6): 1856-1861. (in English) ["A study was made on the temporal fluctuations of distribution of aquatic insects around Phumdi Live (PL), Phumdi Mixed (PM) and Phumdi Dry (PD) areas of Loktak Lake. Phumdis are a heterogeneous mass of soil, vegetation and organic matter. The study revealed the presence of predators, and the absence of herbivores and detritivores in both PL and PM, the PD area was totally devoid of insects. Although both the habitats supported the same predator groups hemiptera and odonata, diversity and density in terms of family and species were higher in PL than in PM. Temporal fluctuations revealed that the Shannon-Weiner's Diversity Index values were highest in June for both PL (0.726) and PM (0.47). In both the sites the highest density was recorded in February. The relative abundance of hemiptera was higher than that of odonata in most of the months in PL. Phumdi Mixed was represented by one species of hemiptera only, in the month of February and dominated by odonates otherwise. Community composi-

tion of Odonata larvae did not show any difference between the two habitats. Although the study revealed low diversity and density of insects in both sites, the PL community provided a better habitat to aquatic insects than that of PM. These are of value as fish food and in turn for fish production." (Authors) (Most probably mis-) Identified taxa are *Tramea* sp., *Leucorrhinia* sp., and *Sympetrum* sp.] Address: Gupta, S., Dept of Ecology & Environmental Science, Assam University, Silchar, Assam 788011, India. E-mail: susmitau@rediffmail.com

10647. Tennessee State Parks Division of Resource Management. All Taxa Biodiversity Inventory (ATBI) (2011): Odonata (Damselflies and Dragonflies) of Tennessee. leaflet: (in English) ["The leaflet gives a checklist of the Tennessee, USA-Odonata currently known. I suppose it is intended for ticking and giving to the authoritatives, while no communication data are included. Curious paper ... It may be useful to visit the following page: <http://tn.gov/environment/parks/atbi/>. On the top there is a picture of a *Gomphus sandrius*, the Tennessee Clubtail, which occurs in only five counties in the Central Basin area of Middle Tennessee, USA." (Author)] Address: see <http>

10648. Terzani, F.; Cianferoni, F.; Giugliano, L.; Mazza, G.; Rocchi, S.; Zinetti, F. (2011): Segnalazioni faunistiche italiane, 503: *Lestes virens virens* (Charpentier, 1825) (Odonata: Lestidae). *Boll. Soc. ent. ital.* 143(1): 40. (in Italian) [Tuscany, Italy, Arcipelago Toscano, Isola di Capraia, Stagnone 14-IX-2007] Address: Terzani, F., Museo di Storia Naturale dell'Università di Firenze, sezione di Zoologia "La Specola", Via Romana 17, I-50125 Firenze, Italy. E-mail: agrion@katamail.com

10649. Theischinger, G.; Richards, S.J. (2011): *Nannophlebia kalkmani* spec. nov., a remarkable new species from Papua New Guinea (Anisoptera: Libellulidae). *Odonatologica* 40(2): 137-142. (in English) ["The new species is described from the foothills of the Muller Range, Western Province, Papua New Guinea. Holotype male: Gugu-su, alt. 515 m a.s.l., 4-IX-2009; deposited at RMNH, Leiden. Diagnostic characters of the adult male are illustrated and the affinities of the species are discussed." (Authors)] Address: Richards, S.J., Herpetology Dept, South Australian Museum, North Terrace, Adelaide, S.A. 5000, Australia. E-mail: steve.richards@samuseum.sa.gov.au

10650. Tomazelli Jr., O.; Franco, G.M.S.; Casaca, J.M.; Munarini, A.C. & Dal Magro, J. (2011): Effect of the *Melia azedarach* L. on the predation of common carp fingerlings (*Cyprinus carpio*) by larvae of *Neuraeschna* (Odonata: Aeshnidae). *Braz. J. Aquat. Sci. Technol.* 15(1): 19-25. (in Portuguese, with English summary) ["The presence of larvae of predator insects in fish farming ponds is one of the factors that contribute to the reduction of the survival of fingerlings and consequently to the decrease of production profits. Dragonflies ... are among the insects that have a harmful effect on fish farming. The larvae are aggressive carnivores and predate post-larvae fish and fingerlings, and thus become economically relevant plagues. The objective of this work is to study the occurrence of Odonata larvae in fish ponds and evaluate the effect of *Melia azedarach* extract adsorbed in silica to control Odonata larvae predation on common carp. ... *Neuraeschna* ... was used in the biological tests. During the predation tests of common carp fingerlings (*C. carpio*) by the *Neuraeschna* larva, the average consumption was of 5,2 and 7,2 fingerlings in the treatments with and without Cinamono Ethanolic extract (EEC), respectively. The

adoption of good practises in Aquaculture and the sustainability of fish farming require the adoption of natural products." (Authors)] Address: Dal Magro, J., Programa de Pós-Graduação em Ciências Ambientais, Universidade Comunitária da Região de Chapecó, Caixa Postal 1141, CEP 89.809-000, Chapecó – SC, Brazil. E-mail: jacir@unochapeco.edu.br

10651. Trapero-Quintana, A.; Reyes-Tur, B.; Mateu-Arebalo, J. (2011): Distancia sobre el agua durante la emergencia en larvas de Odonata para tres cuerpos dulceacuícolas de Cuba Oriental. *Dugesiana* 17(2): 103-111. (in Spanish, with English summary) ["The distance reached over the water surface at the time of emergence by species of Odonata in three ecosystems from the Santiago de Cuba province, was estimated. A positive correlation between height and species size was found in the three localities. The greater heights were registered in Guásima and Arroyo, the best conserved areas and with a few stressing elements. In general, anisopterans reached the superior heights, whereas zygopterans tend to be close to the water surface. Females reached major heights than the males." (Authors)] Address: Reyes-Tur, B., Univ. de Oriente. Depto de Biología. Patricio Lumumba s/n 90500. Santiago de Cuba, Cuba. E-mail: breyes@cnt.uo.edu.cu

10652. Tschanz, B.; Hegglin, D.; Gloor, S.; Bontadina, F. (2011): Hunters and non-hunters: skewed predation rate by domestic cats in a rural village. *Eur. J. Wildl. Res.* 57: 597-602. (in English) [Finstersee (70 households, 0.25 km², 47°10'N 8°37'E), Switzerland; "Domestic cats *Felis catus*, as companion animals provided with supplemental food, are not limited by the availability of wild prey and locally occur at extraordinary high densities. There is growing concern about the potential impact of large cat numbers on native prey populations. In the present study, we quantified the minimum number of animals killed in a rural village in Switzerland by asking owners (1) to estimate the predation rate in advance and (2) to record prey animals returned home by their pets. The frequency distribution of the numbers of prey items was markedly skewed: 16% of the cats accounted for 75% of prey, irrespective of sex, age or breed. A large fraction of owners considerably overestimated their cat's predation, indicating that surveying predation rates by means of a questionnaire alone is not sufficient. The observed average rate of predation within 48 days in spring was 2.29 prey items/cat/month (N=32 cats); major prey types were rodents (76.1%) and birds (11.1%). The absolute number of prey items taken per area is striking and indicates that cat predation represents an important factor in ecosystems. Its role may be momentous in intensively fragmented urban habitats, where cat densities are especially high." (Authors) 25 of the prey items accounted to insects and included four Odonata specimens.] Address: Bontadina, F., SWILD, Urban Ecology and Wildlife Research, Wuhstr. 12, 8003, Zürich, Switzerland. E-mail: fabio.bontadina@swild.ch

10653. Tumilovich, O.N. (2011): Emperor Dragonfly, *Anax imperator* (Leach, 1815). In: W.P. Dedkov, G.W. Grishanov (eds), *Red Data Book of the Kaliningrad Region. Animals, Plants, Funges, Ecosystems.* The Publishing House of the Immanuel Kant State University of Russia, Kaliningrad: 95. (in Russian) [distribution map of *A. imperator* in the Kaliningrad region of Russia (situated between Poland and Lithuania)] Address: Tumilovich, Olga, Kaliningrad State Technical University, 236000 Kaliningrad, Russia. E-mail: Leventetuirambler.ru

10654. Tunmore, M. (2010): Reports from Costal Stations - 2008: Lizard Peninsula. *Atropos* 39: 39-41. (in English) [*Sympetrum fonscolombii*; at light: *Aeshna mixta* and *Sympetrum striolatum*] Address: Tunmore, M., 36 Tinker Lane, Meltham, Huddersfield, West Yorkshire HD7 3ES, UK. E-mail: atropos@atroposed.freeseerve.co.uk

10655. Uieda, V.S.; Pinto, T.L.F. (2011): Feeding selectivity of ichthyofauna in a tropical stream: space-time variations in trophic plasticity. *Community Ecology* 12(1): 31-39. (in English) ["In studies on the partitioning of resources, one issue which has been largely neglected is the change in feeding habits based on the availability of food in the environment, an aspect which is dealt with here with regard to the ichthyofauna of a tropical stream. Feeding preference was analyzed for eight species of fish which consumed high percentages of aquatic insects, based on a collection of fish and invertebrates during both the dry season (June 2006) and the wet season (December 2006) and in two different stretches of the stream, one of which shaded by gallery forest ("closed area") and the other just bordered by herbaceous vegetation ("open area"). Based on a quantitative analysis of the composition of the benthic fauna and the diet of the ichthyofauna, the electivity index was calculated in order to assess potential alterations in the feeding preferences in line with seasonal and spatial modifications to the structure of the habitat and the supply of food. The analysis of the abundance of aquatic insects in the environment showed a predominance of Ephemeroptera in all situations analyzed (areas and seasons), with this insect group being the food item preferred by the majority of fish. However, space-time variations were observed in prey selection by the ichthyofauna. The analysis of supply, consumption and preference demonstrated somewhat varied situations for the majority of species, with both high and low selectivity for items consumed in low and high percentages, with the preferred item varying both spatially and seasonally. The sole exception to this was *Phalloceros harpagos*, choosing Diptera-Chironomidae in all the situations analyzed." (Authors) Odonata are represented at the family level by Aeshnidae, Calopterygidae, Coenagrionidae, and Corduliidae] Address: Uieda, V.S., UNESP — Univ Estadual Paulista Department of Zoology C.P. 510 18618-970 Botucatu, SP Brazil. E-mail: vsuieda@ibb.unesp.br

10656. van Damme, K.; Banfield, L. (2011): Past and present human impacts on the biodiversity of Socotra Island (Yemen): implications for future conservation. *Zoology in the Middle East, Supplementum* 3: 31-88. (in English) ["The Socotra Archipelago (Yemen) is globally recognized for its outstanding biodiversity and endemism, designated on this basis a UNESCO World Heritage Site in 2008. The island underwent long geological and political isolation, ensuring preservation of unique ecosystems until the start of the new millennium. Now, Socotra Island is undergoing rapid development, out of balance with conservation. Major causes for biodiversity loss in other global insular ecosystems such as habitat fragmentation and degradation, pollution, invasive species and the impact of tourism, are becoming pressing issues that deserve close attention. Unsustainable resource use, the loss of traditional land management and illegal trade in biota are worrying phenomena that further increase the pressures on Socotra's ecosystems. We provide the first comprehensive review of potential human impacts on Socotra before the 21st century, an updated discussion of some of the principal threats to its biodiversity in recent

times, discussing local examples within a historical context of known extinction processes on islands, and underline the importance of traditional knowledge in the protection of Socotran ecosystems." (Authors) The paper includes references to the local extinction of *Rhyothemis semihyalina* (Odonata) in the Hadiboh Plain.] Address: Van Damme, K., Department of Biology, Ghent University, K. L. Ledeganckstr. 35, 9000 Ghent, Belgium. E-mail: kay.vandamme@gmail.com.

10657. Van Duzor, R.G. (2011): Community structure and secondary production of aquatic macroinvertebrates in coastal wetland ponds of the west copper river Delta, Alaska, following tectonic uplift. M.Sc. thesis, Dept Biology, Loyola University Chicago: 75 pp. (in English) ["The Great Alaska Earthquake of 1964 (magnitude 9.2) greatly altered the coastal landscape in southcentral Alaska and had particularly dramatic effects on the Copper River Delta (CRD), an ecologically and economically important area within the Chugach National Forest. The earthquake caused tectonic uplift (up to 3.5m) of the CRD coastal tidal marsh and transformed it into a perched freshwater marsh. Copper River Delta ponds, which are crucial habitat to a myriad of migrating songbirds, shorebirds, and waterfowl, are of particular interest to wildlife managers in the CRD and along the Pacific coasts of North, Central and South America. This study was conducted to characterize the general ecology of CRD ponds, with particular focus on aquatic insect communities. Twelve ponds in two geomorphologic zones were studied to compare physicochemical characteristics, aquatic insect community structure and annual secondary production. Six ponds were in the Uplifted Marsh (UM), which was formed as a result of the tectonic uplift, and six ponds were in the Outwash Plain (OP), an area that was present before the earthquake and was relatively unaffected by tectonic activity. Uplifted Marsh and OP ponds were similar with respect to basic physicochemical parameters. *Callicorixa vulnerata* (Uhler 1861) (Hemiptera: Corixidae) was the numerically dominant non-dipteran taxon in 11 of the 12 study ponds and represented 30-81% of all non-dipterans collected. Densities of the numerically dominant predators, *Aeshna* spp. and *Enallagma* spp. were higher in OP ponds (<1-20/m²) compared to UM ponds (<1-4/m²), and production was 5X higher in OP than in UM ponds (507 vs. 97 mg AFDM/m² /yr). In contrast, secondary production of aquatic insect primary consumers such as *Agrypnia* spp. (Trichoptera: Phryganeidae) and *Nemotaulius hostilis* (Hagen 1873) (Trichoptera: Limnephilidae), although found in relatively low densities (<1-3.3/m²), was almost 10X higher in UM ponds than in OP ponds (246 vs. 30 mg AFDM/m² /yr). Overall, annual secondary production of non-dipterans was greater in UM ponds than in OP ponds (3091 vs. 2205 mg AFDM/m² /yr). Results from this study indicate distinct differences in aquatic insect community structure, secondary production, and functional feeding group composition in UM and OP ponds. Creation of the UM ecosystem by tectonic disturbance increased the availability of suitable habitats for aquatic insects, particularly primary consumers, e.g., Trichoptera, and omnivores, e.g., *C. vulnerata*, which subsequently colonized UM ponds to take advantage of the newly abundant primary food resources (aquatic vegetation). In comparison, more mature OP ponds supported higher densities of aquatic insect predators, particularly Odonata, while supporting lower densities of Trichoptera and *C. vulnerata*." (Author)] Address: not stated

10658. van Hardenbroek, M.; Heiri, O.; Wilhelm, M.F.; Lotter, A.F. (2011): How representative are subfossil assemblages of Chironomidae and common benthic invertebrates for the living fauna of Lake De Waay, the Netherlands? *Aquatic Science* 73: 247-259. (in English) ["The distribution of benthic invertebrates and their subfossil remains was examined within the basin of De Waay, a dimictic, eutrophic lake in the Netherlands. We focused on Chironomidae, but also report the abundances of 11 invertebrate groups that potentially produce chitinous remains that are preserved in the fossil record, although their remains could only be identified at a coarser taxonomic resolution. Most living invertebrates sampled in different seasons were constrained to the littoral zone, with the exception of a few taxa (*Ceratopogonidae*, *Chaoborus flavicans*, and *Chironomus*) that are adapted to low oxygen conditions in the seasonally anoxic profundal zone. In contrast, assemblages of invertebrate remains in lake surface sediments were similar in the entire lake basin, suggesting that considerable numbers of invertebrate remains are transported and redeposited off-shore in Lake De Waay, due to its steep bathymetry. These results indicate that a single sediment sample obtained from the centre of this lake contains subfossil invertebrate remains originating from the entire lake basin. In Lake De Waay, the majority of taxa found in the living assemblages were identified as remains in lake surface sediments, at least for the Chironomidae that could be identified at a similar taxonomic level in living and subfossil assemblages. [...] Our results indicate that subfossil assemblages in surface sediment samples provide spatially integrated and representative samples of the living assemblage. However, a combined approach examining both the living benthic invertebrate fauna and invertebrate remains in lake surface sediments will potentially give a more complete and detailed overview of benthic invertebrates in a lake ecosystem than an approach based exclusively on one of these groups." (Author) *Aeshna mixta* and *Ischnura elegans* were representatives of the living assemblage, "Odonata" of the subfossil.] Address: van Hardenbroek, M., Laboratory of Palaeobotany & Palynology, Institute of Environmental Biology, Palaeoecology, Utrecht University, Budapestlaan 4, 3584 CD Utrecht, The Netherlands. E-mail: m.r.vanhardenbroek@uu.nl

10659. Vantieghe, P.; De Groote, D.; Dewolf, J. (2011): Rediscovery of *Leucorrhinia caudalis* (Charpentier, 1840) in Belgium after a century of absence. *Libellenvereniging Vlaanderen - nieuwsbrief* 5(2): 2-3. (in Dutch, with English summary) [21-V-2011; "A population of *L. caudalis* was found at an old sand pit in Fouches, province of Luxembourg, in the very south of Belgium. In the following weeks the species was seen at four other places. These constitute the first sightings and the discovery of a population of *Leucorrhinia caudalis* in Belgium since the records of the 19th century." (Authors)] Address: Vantieghe, P. E-mail: ptr.vantieghe@gmail.be

10660. Varsani, A. (2011): Novel virus from dragonflies. *Microbiology Today* Aug. 2011: 192-193. (in English) [For details see: OAS No. 10298.]

10661. Vilenica, M.; Micetić Stanković, V.; Franković, M. (2011): Dragonfly fauna (Insecta, Odonata) in the Turopolje region (Croatia). *Natura Croatica* 20(1): 141-158. (in English, with Croatian summary) ["This study presents the results of dragonfly fauna research in the Turopolje region of Croatia. Faunal analyses were conducted in the period from 1986–2009, with some interruptions, while an ecological analysis (composition of dragonflies ac-

ording to habitat characteristics such as vegetation structure, air temperature, cloudiness) was conducted in the period 2007–2009. Faunal and ecological analyses were carried out at seventeen and nine localities, respectively. A total of 35 dragonfly species was recorded, indicating high species richness in comparison to the total number of 67 species known in Croatia. Zoogeographic analysis of the recorded dragonfly species showed the domination of the Holo-Mediterranean element which indicates complex glaciation and interglaciation processes during the geological past in Europe, when the Croatian territory served as a refugium. The results show that the distribution and abundance of dragonflies are indicative of habitat characteristics (vegetal structure, cloudiness and air temperature). Dragonflies prefer mosaic habitats (diverse vegetation structure) with average air temperatures ranging from 26–28°C and sunny weather. Since this research was conducted in only a part of the whole Turopolje region, and only adult specimens were sampled, further research should be focused on the life cycles of dragonflies and their distribution throughout the entire Turopolje region." (Authors)] Address: Vilenica, Marina, Faculty of Teacher Education, University of Zagreb, Dept in Petrinja, Trg Matice hrvatske 12, 44250 Petrinja, Croatia. E-mail: marina.vilenica@gmail.com

10662. Villanueva, R.J.T. (2011): Odonata fauna of Diomabok Lake and its surroundings, Davao Oriental, Mindanao Island, Philippines. *International Dragonfly Fund - Report* 38: 1-29. (in English) ["During three visits in October and December 2010 and May 2011, a total of 56 Odonata species was recorded. All species reported here represent first Odonata records in the area. The most noteworthy discoveries were one novelty (*Hydrobasileus vittatus*) to the Philippine fauna and two first records (*Tetracanthagyna brunnea* and *Aethriamanta gracilis*) from Mindanao Island. Seven species represent either new species to science or potentially new species; one *Drepanosticta* and one *Amphicnemis* are new to science, and another *Drepanosticta*, *Amphicnemis*, *Pseudagrion*, *Gomphidia* and *Urothemis* are potentially new to science." (Author)] Address: Villanueva, R.J.T., D3C Gahol Apartment, Lopez Jaena St., Davao City, 8000 Philippines. E-mail: rjtvillanueva@gmail.com

10663. Villanueva, R.J.T.; Gil, J.R.S. (2011): Odonata Fauna of Catanduanes Island, Philippines. *International Dragonfly Fund - Report* 39: 1-38. (in English) ["During a two week survey in April 2011, twenty six sites on Catanduanes Island, Philippines were explored. 42 Odonata species are new island records, raising the known species of the island into 60. Among the new island records are three *Amphicnemis* species new to science." (Authors)] Address: Gil, J.R.S., #310 Rizal Avenue Extension Street, San Vicente, Virac, Catanduanes, 4800 Philippines. E-mail: giljohnronel@yahoo.com

10664. Villanueva, R.J.T.; Schorr, M. (2011): Two new damselfly species from Polillo Island, Philippines (Odonata: Platystictidae). *Zootaxa* 3017: 46-50. (in English) ["*Drepanosticta wildermuthi* spec. nov. and *Sulcosticta vantoli* spec. nov. are described and illustrated. The two species are compared with their nearest relatives, *D. moorei* van Tol & Müller and *S. viticula* van Tol, respectively. *Drepanosticta wildermuthi* spec. nov. has shorter anterior lobe processes compared to *D. moorei*. *Sulcosticta vantoli* spec. nov. has a simpler paraproct structure compared to *S. viticula*." (Authors)] Address: Schorr, M., Schulstr. 7B, 54314 Zerf, Germany. E-mail: bierschorr@online.de

- 10665.** Wan, F.-x.; Jiang, Y.-h.; Wan, J. (2011): Description of *Bayadera bidentata* Needham and *Asiagomphus cuneatus* (Needham) larvae from Huangshan Mountain, China (Zygoptera: Euphaeidae; Anisoptera: Gomphidae). *Odonatologica* 40(2): 143-147. (in English) ["The morphology of the last instar larvae is described and illustrated for the first time, based on specimens from Anhui. Notes on their ecology and habitat are provided." (Authors)] Address: Wan, F.-x., Nanjing Forestry University, Nanjiang, Jiangsu-210037, China
- 10666.** Wang, Q.; Yuan, X.-z.; Liu, H. (2011): Community and biodiversity of aquatic insects attached on the stones in upland headwater stream of southwestern China: A case study of Yudu stream in Chongqing. *Acta Hydrobiologica Sinica* 35(5): 1-6. (in Chinese, with English title) [The taxa list includes "Euphaeidae"; in general the abundance of Odonata at the four sampling sites was very low.] Address: Yuan, X.-z., College of Resource and Environment Science, Chongqing University, Chongqing 400030, China. E-mail: xzyuan63@yahoo.com.cn
- 10667.** Weihrauch, F.; Karle-Fendt, A.; Krach, J.E.; Lohr, M.; Seidenbusch, R. (2011): *Coenagrion scitulum* in Bayern: Richtigstellung und Statusbericht (Odonata: Coenagrionidae). *Libellula* 30(1/2): 33-42. (German, with English summary) ["The published first record of *C. scitulum* in Bavaria (Germany) pertained in fact to misidentified exuviae of *C. puella* or *C. pulchellum*. The reasons for this misidentification are analysed and new features for the discrimination of *C. scitulum* exuviae from other, similar species are presented. In addition, all hitherto known records of *C. scitulum* in Bavaria are listed, including the actual first record. All records but one were hitherto taken in the lowlands of river Danube in the region of Ingolstadt, and a further distribution of *C. scitulum* along the Danube is regarded as most likely." (Authors) Address: Weihrauch, F., Jägerstr. 21A, 85283 Wolnzach, Germany. E-mail: florian.weihrauch@t-online.de
- 10668.** Weinländer, M.; Füreder, L. (2011): Crayfish as trophic agents: Effect of *Austropotamobius torrentium* on zoobenthos structure and function in small forest streams. *Knowledge and Management of Aquatic Ecosystems* (2011) 401, 22: 15 pp. (in English, with French summary) [Austria; "Crayfish are among the largest and most threatened invertebrates in freshwater habitats. Due to their size, behaviour and feeding activity they may affect structure and function of aquatic ecosystems and their organisms. Despite their importance in many freshwaters and available information on their ecology for several species little is known about the European crayfish *A. torrentium*. In order to evaluate the potential effects of indigenous crayfish presence on the structural and functional composition of the zoobenthic community, we measured population size and densities of three *A. torrentium* populations and compared macroinvertebrate assemblages and physicochemical parameters in three streams with and three without crayfish. The experimental setup considered crayfish effects at a large scale in defined reaches of pristine headwaters in association with the whole benthic fauna under natural conditions. Presence of *A. torrentium* significantly affected zoobenthic abundance, diversity and the relative proportions of functional feeding groups. In crayfish streams, especially Trichoptera and collector gatherers were more abundant and diverse, while sites without crayfish had significantly higher abundances and diversities of shredders and wood feeders. Our study provided strong evidence that the presence of the indigenous crayfish *A. torrentium* had important effects on the trophic cascades of headwater stream communities." (Authors) Odonata are only treated at the order level.] Address: Alpine Stream Ecology and Invertebrate Biology, Institute of Ecology, University of Innsbruck, Technikerstr. 25, 6020 Innsbruck, Austria. E-mail: martin.weinlaender@student.uibk.ac.at
- 10669.** Wellenreuther, M.; Sanchez-Guillen, R.A.; Cordeiro-Rivera, A.; Svensson, E.I.; Hansson, B. (2011): Environmental and climatic determinants of molecular diversity and genetic population structure in a coenagrionid damselfly. *PLoS ONE* 6(6): e20440. doi:10.1371/journal.pone.0020440: 16 pp. (in English) ["Identifying environmental factors that structure intraspecific genetic diversity is of interest for both habitat preservation and biodiversity conservation. Recent advances in statistical and geographical genetics make it possible to investigate how environmental factors affect geographic organisation and population structure of molecular genetic diversity within species. Here we present a study on a common and wide ranging insect, the blue tailed damselfly *Ischnura elegans*, which has been the target of many ecological and evolutionary studies. We addressed the following questions: (i) Is the population structure affected by longitudinal or latitudinal gradients? (ii) Do geographic boundaries limit gene flow? (iii) Does geographic distance affect connectivity and is there a signature of past bottlenecks? (iv) Is there evidence of a recent range expansion and (v) what is the effect of geography and climatic factors on population structure? We found low to moderate genetic sub-structuring between populations (mean $F_{ST} = 0.06$, $D_{est} = 0.12$), and an effect of longitude, but not latitude, on genetic diversity. No significant effects of geographic boundaries (e.g. water bodies) were found. F_{ST} - and D_{est} -values increased with geographic distance; however, there was no evidence for recent bottlenecks. Finally, we did not detect any molecular signatures of range expansions or an effect of geographic suitability, although local precipitation had a strong effect on genetic differentiation. The population structure of this small insect has probably been shaped by ecological factors that are correlated with longitudinal gradients, geographic distances, and local precipitation. The relatively weak global population structure and high degree of genetic variation within populations suggest that *I. elegans* has high dispersal ability, which is consistent with this species being an effective and early coloniser of new habitats." (Authors)] Address: Wellenreuther, Maren, Section for Animal Ecology, Ecology Building, Lund University, Sölvegatan 37, SE-223 62 Lund, Sweden. E-mail: maren.wellenreuther@zoekol.lu.se
- 10670.** White, E.; Zaremba, V.; Diehl, S. (2011): Flying jewels of New York. *New York State Conservationist* 65(6): 2-7. (in English) [This general account on the New York, USA-Odonata includes the note from Bill Chase on page 6 "Searching for Dragons -Finding Myself". For details see: <http://www.dec.ny.gov/docs/administrationpdf/0611consmagweb.pdf>.] Address: not stated
- 10671.** Wiesenborn, W.D. (2011): UV-excited fluorescence on riparian insects except Hymenoptera is associated with nitrogen content. *Psyche* Volume 2011, Article ID 875250: 6 pp. (in English) ["I photographed ultraviolet-excited fluorescence of external resilin on insects in 7 orders, 17 families, and 18 genera collected from shrubs and trees alongside the Colorado River in western Arizona, USA. The localized blue-fluorescence characteristic of resilin was emitted by a variety of structures including sutures and wing articulations on Odonata and Diptera and

membranous wings, compound eyes, or ocelli on Hemiptera, Neuroptera, and Hymenoptera. Different widespread, but blotchy, light-blue fluorescence was observed on cuticles of immature Orthoptera and adult Hemiptera. Insects in Hymenoptera and Coleoptera fluoresced least. Ranked amounts of fluorescence, relative to body area, were positively correlated with ranked nitrogen contents (%N of body dry-mass) of insects in genera excluding Hymenoptera. Nitrogen concentrations in insect exoskeletons appear to increase as abundances of resilin and other fluorescent, elastic proteins increase. These structural compounds may be an important nitrogen source for insectivorous vertebrates." [Figure 3 shows the blue fluorescence in UV light on ventrolateral and dorsal views of the thorax of *Pachydiplax longipennis*.] "Most fluorescence ... was produced by translucent white cuticle attached to the axillary and humeral plates below the base of each front and hind wing. The articulations above the wings similarly fluoresced blue. Broad bands of whitish cuticle ventrally joining the thorax and abdomen also fluoresced. Narrow bands of fluorescence were detected between the front coxa and trochanter, at the bases of the middle and hind coxae, and at the margins of the abdominal sternum." (Author) Address: Wiesenborn, W.D., USDI Bureau of Reclamation, Lower Colorado Regional Office, P.O. Box 61470, Boulder City, NV 89006, USA

10672. Winter, A.-E., de (2011): *Somatochlora flavomaculata* in the Eemshaven. *Brachytron* 14(1): 49-53. (Dutch, with English summary) ["This article describes the observation of *Somatochlora flavomaculata* in the Eemshaven harbour area, Groningen, in the Northern part of the Netherlands on 27 June 2008. Other observations in the Northern part of the Netherlands are discussed as well as wandering individuals in the rest of the country. The species is known to wander and has even been found in the Wadden Islands. The nearest populations in the Netherlands are in swamps and peat moor areas of North-west Overijssel / South-east Friesland, 80 km to the South and West of the Eemshaven area. The species also occurs in North-west Germany, where in 2008 a new population was discovered in Ochsenweide, Niedersachsen, a moorland that lays 50 km to the East of the Eemshaven area. Wandering *Somatochlora flavomaculata* individuals observed elsewhere could originate from the nearby Dutch or German populations." (Author) Address: Winter, A.-E., de, Landschapsbeheer Groningen, Talmaweg 23, 9981 CW Uithuizen, The Netherlands. E-mail: a.e.de.winter@Landschapsbeheergroningen.nl

10673. Winterbourn, M.J.; Pohea, S.R.; Ball, O.J.-P. (2011): Establishment of larval populations of the dragonfly *Tramea loewii* Kaup, 1866 (Odonata: Libellulidae) in lakes of northern New Zealand. *New Zealand Journal of Zoology* 38(2): 173-179. (in English) [*T. loewii* "was first seen in New Zealand in 2005, on the Aupouri Peninsula, Northland, and is likely to be self-introduced from Australia. To determine whether the species had become established on the Peninsula, an aquatic survey of 17 lakes was carried out in November 2008. Larvae were found in eight lakes, including six at the southern end of the Peninsula. Most colonised lakes were surrounded by pasture and had dense marginal beds of sedges and rushes where most larvae were collected. Six of an estimated 14 larval instars were found, the penultimate (F-1) and antepenultimate (F-2) instars being most common. The most abundant prey items in the guts of 17 late-instar larvae were Corixidae, chironomid larvae and damselfly larvae. The potential effect of *T. loewii* on resident lake faunas is dis-

cussed briefly." (Authors)] Address: Winterbourn, M.J., School of Biological Sciences, University of Canterbury, Christchurch, New Zealand. Email: michael.winterbourn@canterbury.ac.nz

10674. Yoshida, M. (2011): Odonata in the upper and middle reaches of the Yahagi River, 2nd report. *Yahagi Research* 15: 27-42. (in Japanese, with English translation of title) [A total of 63 Odonata species down- and upstream of a dam in the Yahagi River, Japan were recorded. 62 species were found downstream of the dam, and only 33 species were recorded in the upstream stretch of the river. The running waters dwelling species were lacking from the upstream sections of the river.] Address: not transliterated into English

10675. Yu, X.; Bu, W. (2011): A description of the remarkable larva of *Pseudolestes mirabilis* Kirby (Odonata: Pseudolestidae). *International Journal of Odonatology* 14 (2): 105-110. (in English) ["The larva of the Chinese endemic *Pseudolestes mirabilis* is described and figured for the first time. Specimens were collected from Hainan, the only known locality for this species. The presence of ventral paired gill tufts on S10 and sack-like caudal gills indicate that among other zygopteran families this species may be most closely related to the Amphipterygidae, but other characters, especially those of the adult suggest it may be sufficiently unique to warrant placement in its own family." (Authors)] Address: Yu, X., Institute of Entomology, College of Life Sciences, Nankai University, Tianjin, 300071, PR China. E-mail: nk_yuxin@yahoo.cn

10676. Zaldívar Ezquerro, C.; Rodríguez, P.C.; Latasa Asso, T. (2011): Provisional catalogue and biogeographical analysis of the Odonata of La Rioja (Spain). *Boletín de la S.E.A.* 48(1): 389-393. (in English, with Spanish summary) ["49 species are included (23 Zygoptera and 26 Anisoptera) in the provisional catalogue, of which 22 species are recorded from La Rioja, Spain for the first time. A biogeographical analysis of these taxa is also provided." (Authors)] Address: Zaladrana Odonatology Group and the Institute of La Rioja Studies Research Plan: "Order of Odonata insects in the autonomous region of La Rioja", C/. General Urrutia, 61 F. 26006 Logroño (La Rioja, Spain. E-mail: carlos.zaldivar@larioja.org

10677. Zhang, H.-j.; Sei, L. (2011): Study on *Gynacantha* genus (Odonata: Aeshnidae) from China. *Journal of Anhui Agricultural Sciences* 39(13): 7562-7564, 7566. (in Chinese, with English summary) [Nine *Gynacantha* species are known from China. *G. japonica* Barteneff, 1909 and *G. saltatrix* Martin, 1909 are new records for Shaanxi Province. Information on the distribution of the taxa in China are given. The species are illustrated and keyed.] Address: Zhang, H.-j., Shaanxi Bioresource Key Laboratory, Shaanxi Univ. of Technology, Hanzhong, Shaanxi 723000, China

10678. Zhang, Z.-q. (2011): Describing unexplored biodiversity: Zootaxa in the International Year of Biodiversity. *Zootaxa* 2768: 1-4. (in English) [In the International Year of Biodiversity (2010), Zootaxa published 30 Odonata species new to science including three new genera.] Address: Zhang, Z.-q., Landcare Research, Private Bag 92170, Auckland 1142, New Zealand. E-mail: ZhangZ@landcareresearch.co.nz

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