

ODONATOLOGICAL ABSTRACTS

1972

- (12191) DAVY, Sir Humphry, 1972 [reprint of the 1840 edn]. *Salmonia, or days of fly-fishing: in a series of conversations, with some account of the habits of fishes belonging to the genus Salmo*. Johnson reprint Corp., New York-London. [Sources of Science, No. 114: The collected works of Sir Humphry Davy, Vol. 9, pp. 1-205].

First published in 1828, this is the last work of the famous British chemist that has appeared during his lifetime. Author's Preface is dated 30 Sept. 1928, in "Laybach, Illyria (= Ljubljana, Slovenia), in which country he did much of his fly-fishing (cf. P. von Radics, 1907, *Wissenschaftliche Erschliessung Krains durch Engländer, Laibacher Zig* (Beil.) 125: 2-41; — and J. Volc, 1938, *Podkóren*, Jugosl. Tisk., Ljubljana). — The book contains several references to the Odon., e.g. as a salmon prey (p. 123), and on their biology and life history (p. 155).

1974

- (12192) FERNANDO, C.H., 1974. A guide to the freshwater fauna of Ceylon (Sri Lanka). Supplement 4. *Bull. Fish. Res. Stn Sri Lanka* 25(1/2): 27-81. — Dept Biol., Univ. Waterloo, Waterloo, ON, N2L 3G1, CA). The original Guide, authored by A.S. Mendis & C.H. Fernando, has appeared (1964) in *Bull. Fish. Res. Stn Ceylon* 12: 1-160. In the present suppl., some odonatol. information is presented from the work of M.A. Liefcinck (1971), as listed in OA 63.
- (12193) PLUIS, J., M. VAN DEN AKKER & H.E. MULLER, 1974. *Dieren op tegels. — Birds and animals on tiles*. Tijdstroom, Lochem. 128 pp. ISBN 90-6087-663-6. (Dutch, with Engl. s.). — Under the same

title published also in *MededBl. Vrienden ned. Ceramiek* 75/76 (1974): 2-128.

This is a monographic attempt to bring together all the different animal types so far known to occur on Dutch tiles of the 16th-18th cent., with tile reproductions, descriptions, information on the depositories, etc. Dragonflies are relatively rarely represented in the tile art, but a considerable number of dragonfly motifs is evidenced and reproduced here. — See also OA 156 and 890.

1980

- (12194) FERNANDO, C.H., 1980. The freshwater invertebrate fauna of Sri Lanka. *Spol. zeylan.* 35(1/2): 15-42. — (Dept Biol., Univ. Waterloo, Waterloo, ON, N2L 3G1, CA). Includes a general reference to the Odon., of which 112 spp. are said to have been recorded from Ceylon. A list is not given.

1984

- (12195) STARMUHLNER, F., 1984. Mountain stream fauna, with special reference to Mollusca. In: C.H. Fernando, [Ed.], *Ecology and biology in Sri Lanka*, pp. 215-255. Junk, The Hague-Boston-Lancaster, ISBN 90-6193-109-6 [*Monogr. Biol.* 57]. — (II Zool. Inst., Univ. Wien, Karl-Lueger-Ring 1, A-1010 Wien). Includes species lists of Odon., occurring in the headwater and middle-course communities, with information on the respective stream velocities; — Ceylon (Sri Lanka).

1985

- (12196) TIKADAR, B.K. & A.K. DAS, 1985. *Glimpses*

of animal life of Andaman & Nicobar Islands. Zool. Surv. India, Calcutta. x+170 pp., col. pls incl. ISBN none. — Price outside India: US\$ 20.- net. — (Orders to: Zool. Surv. India, 24/4 A.J.C. Bose Rd, Nizam Palace, 13th floor, Calcutta-700020, India).

The beautifully made-up book gives very useful general information on the nature of the archipelago, and deals mainly with its vertebrate fauna. The invertebrates are considered briefly, the status of the odon. fauna is stated (34 spp.), but a species list is not provided.

1986

- (12197) RIHA, P., 1986. Faunistic records from Czechoslovakia Odonata. *Acta ent. bohemoslov.* 83(2): 154. (Germ.). — (Soběslavská 66, CZ-13000 Praha-2). *Aeshna isosceles* is for the first time recorded from Bohemia, Czech Republic (Přorov; emerged in the laboratory 20-V-1982).

- (12198) SURI BABU, B., 1986. *Ecological studies on odonate larvae and their role in the biological control*. PhD Diss., Dept Zool., Gour Univ., Sagar. 360 pp., 39 pls excl. — (Author: Forensic Sci. Lab., Police Control Room, Jagdalpur-494001, India). The dissertation is divided into 3 pts, titled: "Aetiological studies", "Taxo-ecological studies", and "Role of odonate larvae in biological control". The first pt deals with life histories of *Ceriagrion coromandelianum* and *Pseudagrion decorum*, incl. the effects of physico-chemical factors, and comprehensive description of reproductive behaviour in the 2 spp. In the second pt, final larval instars are described of 6 Zygopt. and 5 Anisopt. spp., and information is provided on their habitats, oviposition, emergence, flight season and distribution. The third pt deals with predatory behaviour and efficiency in final instar larvae of 4 spp., and with the experimental control of *Culex fatigans* populations by 4 Zygopt. and 8 Anisopt. spp., furnishing detailed statistical data per sp.

1989

- (12199) DIDION, A. & J. GERSTNER, 1989. [Rote Liste] Die Libellen (Odonata). *In*: Minister für Umwelt, [Publ.], Bedrohte Tier- und Pflanzenarten im Saarland, pp. 46-49, Saarbrücken. — (First Author: Marienstr. 23, D-66424 Homburg-Schwarzenacker). This Red List has been replaced by that listed in OA 12229. The booklet also includes the portrait and a

brief biographic note on the first Author.

1990

- (12200) CHOU, I., 1990. *A history of Chinese entomology*. Tianze Publ. House, Shaanxi. 245 pp., 32 col. pls excl. ISBN 7-80559-004-4. (With esperanto s.). A revised Engl. edn of the splendid Chin. work, described in OA 6927.
- (12201) FERNANDO, C.H., [Ed.], 1990. *Freshwater fauna and fisheries of Sri Lanka*. Natural Resources, Energy & Science Authority of Sri Lanka, Colombo. iv+444 pp. — (Publishers: 47/5 Maitland Pl., Colombo-7, Sri Lanka). This is a book edn of a collection of 12 papers, published 1962-1980 by the Editor and his collaborators. Some odonotol. information is presented in a paper published (1964) in *Bull. Fish. Res. Sln Ceylon* 17(2): 177-211, and in those listed in OA 12192 and 12194.

- (12202) GRIBBIN, S.D. & D.J. THOMPSON, 1990. A quantitative study of mortality at emergence in the damselfly *Pyrrhosoma nymphula* (Sulzer) (Zygoptera: Coenagrionidae). *Freshw. Biol.* 24(2): 295-302. — (Second Author: Popul. Biol. Res. Gr., Sch. Biol. Sci., Nicholson Bldg, Univ. Liverpool, P.O. Box 147, Liverpool. L69 3BX, UK). Emergence was studied over 3 seasons in 2 Cheshire ponds, southern England (see OA 7711). Numbers emerging were significantly negatively correlated with temperature and atmospheric pressure. Overall mortality at emergence was 28%, of which predators (largely birds, ants and spiders) accounted for 22% and climatic factors for 6%. Daily mortality estimates were significantly positively correlated with precipitation. There was no evidence of density dependent mortality at emergence.

1991

- (12203) GITT, W. & K.-H. VANHEIDEN, 1991. *Wenn Tiere reden könnten*. Christliche Literatur-Verbreitung, Bielefeld. 122 pp. ISBN 3-89397-133-5. Includes a chapter (pp. 62-77) where the dragonfly is telling the main facts about its history, morphology and biology.
- (12204) HABDIJA, I., 1991. Standing crop and trophic relationships of the macrozoobenthos in a karst river. *Verh. int. Ver. Limnol.* 24(3): 2024-2027. — (Dept Zool.,

Fac. Sci., Univ. Zagreb, Rooseveltov trg 6, CRO-10000 Zagreb).

Basically, this is an "advance" report on the same research project as dealt with in the paper listed in *OA* 12088. Here, the odon. are only briefly mentioned.

ond Author: Dept Biol., Fac. Educ., Mie Univ., Tsu, 514-8507, JA).

[Abstract not available.]

1993

- (12205) SRIVASTAVA, V.K. & B.K. SRIVASTAVA, 1991. Structural and functional details of the female accessory reproductive glands of a zygopteran, *Pseudagrion decorum* (Rambur). *Bull. Ent.* 32(1/2): 13-18. – (First Author: Dept Zool., CMP Coll., 318 Alopi Bagh, Allahabad-211006, India).
In *P. decorum*, accessory reproductive glands are lacking in the ♂, but a pair is located in the 9th abd. segment in the ♀. Each gland consists of a secretory sac and a duct. The secretion facilitates the egg-laying in 2 ways, viz. it serves as a lubricant for smooth sliding passage of the egg through the ovipositor canal during the oviposition process, and it fastens the eggs together or individually to the vegetation.
- (12208) ANDRZEJEWSKI, R. & A. WEIGLE, [Eds], 1993. *Polskie studium różnorodności biologicznej. – [Biodiversity research in Poland]*. Narodowa fundacja ochrony środowiska, Warszawa. 186 pp. ISBN 83-85908-01-3. (Pol.).
The current unsatisfactory state of odon. exploration in Poland is briefly described on p. 58.
- (12209) DUSEJ, G. & H. BOLZERN, 1993. *Untersuchungen über die Fauna des Naturschutzgebietes "Bolle di Magadino", 2: Die Libellenfauna*. Fondazione Bolle di Magadino. 15 pp. – (Authors' addresses unknown).
[Not available for abstracting.]

1992

- (12206) HIGASHI, T. & M. WATANABE, 1992. Population structure of the Japanese skimmer, *Orthetrum albistylum speciosum* Uhler (Odonata: Libellulidae) in paddy fields surrounded by hills. *Rep. envir. Sci. Mie Univ.* 16: 1-11. (Jap., with Engl. s.). – (Second Author: Dept Biol., Fac. Educ., Mie Univ., Tsu, 514-8507, JA).
Population structure and lifetime movements were investigated in adults by means of mark-recapture method; Mie pref. The flight season was from late April to mid Oct. In early July, no emergence was observed, and estimated number of ♂♂ decreased. Estimated ♂ survival rate was constant (ca 0.4/week) throughout their flight season, except in early July. Then, the skimmer seemed to be bivoltine. After emergence, sexually immature individuals left the paddy fields and stayed in the hills. When mature, ♂♂ returned to the paddy fields in order to hold territories. However, mature ♀♀ visited the paddy fields only to mate and to lay eggs. Daily ♀ movements were larger than those of the ♂♂. Both seasonal fluctuation and lifetime movement are likely to be involved in the explanation of the r-strategist among the Japanese *Orthetrum* spp.
- (12207) TAGUCHI, M. & M. WATANABE, 1992. Distribution and movement of the adult damselfly, *Mnais pruinosa costalis* Selys. *Bull. Fac. Educ. Mie Univ.* (Nat. Sci.) 43: 39-46. (Jap., with Engl. title). – (Second Author: Dept Biol., Fac. Educ., Mie Univ., Tsu, 514-8507, JA).
This is an appendix in the paper listed in *OA* 12210. It presents annotated species lists from 9 localities in Valle Maggia (Ticino, Switzerland).
- (12210) JANN, B., 1993. [Studio naturalistico del fondovalle valmaggese]. La fauna di macroinvertebrati acquatici. *Memorie Soc. tic. Sci. nat.* 3: 167-207. – (Via Nolgio 3, CH-6900 Massagno).
11 odon. spp. are listed for Valle Maggia (Ticino, Switzerland), 7 of which were not previously recorded from the valley. – For other odon. records, listed in the Appendix (pp. 206-207), see *OA* 12211.
- (12211) [RAMPAZZI, F.], 1993. [Studio naturalistico del fondovalle valmaggese]. Odonati, adulti: stazioni, date di rilevamento e specie rilevate. *Memorie Soc. tic. Sci. nat.* 3: 206-207. – (Via Muraccio 55, CH-6612 Ascona).
This is an appendix in the paper listed in *OA* 12210. It presents annotated species lists from 9 localities in Valle Maggia (Ticino, Switzerland).

1994

- (12212) BREWIN, P.A. & S.J. ORMEROD, 1994. Microinvertebrate drift in streams of the Nepalese Himalaya. *Freshw. Biol.* 32(3): 573-583. – (Catchment Res. Gr., Sch. Pure & Appl. Biol., Univ. Wales, P.O. Box 915, Cardiff, CF1 3TL, UK).
The drift was investigated in 7 small headwater streams (Langtang, Lokhu Khola; alt. 600-3350 m), central Nepal. For the odon., quantitative data are presented suborder-wise.

- (12213) MORIN, A. & P. DUMONT, 1994. A simple model to estimate growth rate of lotic insect larvae and its value for estimating population and community production. *Jl N. Am. benthol. Soc.* 13(3): 357-367. – (Ottawa-Carleton Inst. Biol., Univ. Ottawa, P.O. Box 450, Stn A, Ottawa, ON, K1N 6N5, CA). The empirical model predicting the instantaneous growth rate as a function of individual dry mass and water temperature was here developed on Ephem., Plecop., Dipt. and Trich. It may be used to estimate production for spp. or groups of spp. with indistinguishable cohorts when estimates of growth rates are not available. – In the paper listed in OA 12079, the model was used for life span estimate in *Lieftinckia kimminsi*.

1995

- (12214) KINGSLEY, C., 1995. *Povodni otroci*. – [Water-babies]. Karantanija, Ljubljana. 144 pp. ISBN 961-226-066-4. (Slovene).
A Slovene edn of the famous “*The water-babies: a fairy tale for a land-baby*”, published originally (1862) in *Macmillan's Magazine*. It contains one of the most classical stories on dragonfly life in the world literature.
- (12215) MARKUŠ, R., 1995. *Kamnití most*. – [Stone bridge]. Cankarjeva založba, Ljubljana. 26 pp. ISBN 86-361-0958-2. (Slovene).
A picture book on a day in animal life at a brook, with dragonflies as one of the main subjects. It is directed at very young children.
- (12216) TAGUCHI, M. & M. WATANABE, 1995. Ecological studies of dragonflies in paddy fields surrounded by hills. 6. “Non-contact flying oviposition by tandem” and thoracic temperatures of *Sympetrum darwinianum* Selys. *Bull. Fac. Educ. Mie Univ.* (Nat. Sci.) 46: 25-32. (Jap., with Engl. title). – (Second Author: Dept Biol., Fac. Educ., Mie Univ., Tsu, 514-8507, JA).
[Abstract not available.]
- 51, YU-11000 Beograd, Serbia).
A monographic treatment of the odon. fauna (27 spp.) of the Durmitor range (alt. 433-2523 m), Montenegro, with analyses of odon. communities of various habitats, considerations on biogeographic composition of the fauna, and with a comparison of the Durmitor fauna with those of the Pyrenees, Alps, Carpathians, Balkans and the Caucasus.
- (12218) BISCHOF, A., 1996. Die Teufelsnadel. *Bündner Kalender* 155: 98-100. – (Heckenweg 4, CH-7000 Chur).
General on dragonflies, with a brief reference to the status of their habitats in Grisons, Switzerland.
- (12219) HIGGINSON, W.J., 1996. *Haiku world. An international poetry almanac*. Kodansha International, Tokyo-New York-London. 407 pp. ISBN 4-7700-2090-2.
On pp. 152-153 & 209-210, the symbolism of Anisopt. (often a status of a summer or autumn topic) and Zygopt. (all-summer topic) is outlined, and 3 dragonfly haiku, by L. Gurga, M. Kiauta and A. McKay, are given as examples.
- (12220) LEPORI, F., 1996. Presenza di *Aeschna isosceles* (Müller, 1767) e *Libellula fulva* (Müller, 1764) in Ticino (Svizzera). *Boll. Soc. tic. Sci. nat.* 84(1): 75-76. (With Engl. s.). – (Via Vallone 19, CH-6929 Gravesano).
The 2 spp. were evidenced at a pond in Cugnasco, alt. 206 m. *A. isosceles* has not been previously known from Ticino, Switzerland, while *L. fulva* represents the first regional record since 1944 (Lugano).
- (12221) [SCHRACK, M.], 1996. Moorwälder gehören zu den gefährdesten Lebensräumen. *Sächsische Ztg* (Radeberg) 1996 (19 June): 10. – (c/o M. Schrack, Eugen-Hoffmann-Str. 7, D-01219 Dresden).
A local daily's interview on the subject dealt with in the monograph listed in OA 12097, incl. references to the Odon. *Cordulegaster boltoni* is considered particularly endangered in the Laussnitzer Heide nr Medlingen, Saxony, E Germany.

1996

- (12217) ADAMOVIĆ, Ž., L. ANDJUS & L. MIHAILOVIĆ, 1996. The fauna of Durmitor, 5: Odonata (Insecta). *Fauna Durmitor* 5: 43-80, 3 col. pls excl. (With Serbian s.). – (First Author deceased; – Second Author: Serbian Nat. Hist. Mus., Njegoševa

1997

- (12222) BARANDUN, J., 1997. Zur Fauna des Rotmooses. *Ber. st gall. naturw. Ges.* 88: 149-155. – (Im Ried 8, CH-9034 Eggersriet).
Lists 5 odon. spp. from peat bog Rotmoos (alt. 840

- m), in Toggenburg, Switzerland.
- (12223) BECCALONI, G.W., 1997. Ecology, natural history and behaviour of ithomiine butterflies and their mimics in Ecuador (Lepidoptera: Nymphalidae: Ithomiinae). *Trop. Lepid.* 8(2): 103-124, 5 col. pls incl. — (Dept Ent., Nat. Hist. Mus., Cromwell Rd, London, SW7 5BD, UK).
The Ithomiinae spp. which occur at Jatun Sacha Biol. Stn, Napo prov., Ecuador were found to participate in 8 discrete mimicry complexes. These involve 123 Lepidoptera spp. of various families and *Polythore m. mutata*. Hypotheses to explain polymorphism in Batesian and Müllerian mimics are discussed in view of the finding that 7 ithomiine spp. 5 other Rhopalocera spp. and *P. mutata* were polymorphic at Jatun Sacha.
- (12224) BOLLIGER, P. & J. BURNAND, 1997. Flachmoore der Linthebene: Vegetation, Ökologie, Geschichte, Schutz und Pflege. *Ber. st. gall. naturw. Ges.* 88: 163-239, 8 maps excl. — (First Author: Abt. Landschaftsarchitektur, ITR Ingenieurschule, CH-8640 Rapperswil; — Second Author: Im Schatzacker 5, CH-8600 Dübendorf).
Ten low level bogs are described in the Linth lowlands (cantons St Gall, Schwyz and Glarus; Switzerland). The importance of odon. inventarisation is emphasized, and some characteristic odon. spp. are listed for some moor types and from some specified localities.
- (12225) BULLETIN OF THE HOKKAIDO ODONATOLOGICAL SOCIETY, Vol. 9 (July 1997). (Jap.). — (c/o Prof. Dr H. Ubukata, Dept Sci. Educ., Kushiro Coll., Hokkaido Univ. Educ., Shiroyama 1-15-55, Kushiro, 085-0826, JA).
Hiratuka, K.: Two dragonfly species new to Shiribeshi district (p. 1); — *Anzai, M.*: A record of *Aeshna mixta soneharai* in Kamikawa district (p. 2); — *Akaishi, S.*: Dragonflies of Asahikawa city (pp. 3-6); — *Yokoyama, T.*: Records of *Sympetrum parvulum* in Tomakomai and Chitose cities (p. 7); — *Harauchi, Y. & Y. Joh.*: *Epiophlebia superstes* emergence process in laboratory (pp. 8-9); — *Hirose, Y.*: A record of *Coenagrion ecornutum*, representing the southern range limit of the species (p. 10); — *Yokoyama, T. & Y. Hirose.*: Habitat ecology of *Planaeschna milnei* in Kokonai town (pp. 11-15); — *Sato, M.*: Phenology of *Sympetrum frequens* in Obihiro (pp. 16-19); — *Wataji, M., F. Maruyama, M. Taguchi, M. Kano & T. Yoshinuma.*: Species composition and collection records of Tonneusu Pond dragonflies (pp. 20-23); — *Hori, S.*: *Aeschnophlebia longistigma* recorded at Utona Lake (p. 24); — *Ubukata, H.*: Review of odonatological literature (pp. 25-26); — Internet home pages authored by the H.O.S. members (p. 27).
- (12226) CHIKAKI, H., 1997. Insect fauna in "Shakuno-uchi Park (Hoshizaki Preservation Forest for Insects)" at Kisuki-cho, Shimane prefecture. *Bull. Hoshizaki Green Found.* 1997(1): 43-52. (Jap., with Engl. s.). — (Nat. Conserv. Soc. Shimane, Matsue, 690, JA).
487 spp. of 15 orders, incl. 21 odon. spp., are listed, as recorded during 1993-1996.
- (12227) DE KNIJF, G., A. ANSELIN & H. DEMOLDER, 1997. The odonatofauna of the Damvallei (East-Flandres, Belgium): past glory or still worthwhile? *Biol. Jaarb. Dodonaea* 64: 75-91. — (First Author: Ploegstraat 33, B-9050 Gentbrugge).
39 spp. were known from the Damvallei in the Schelde R. plain nr Gent before the construction of the highway junction in 1967. During the 1992-1995 survey, 26 spp. were evidenced, and an adequate management is urgently required.
- (12228) DE SAVIGNY, M.J.C.L., 1997 [reprint of 1809-1813]. Zoologie, Animaux invertébrés: Névroptères. In: Description de l'Égypte, pp. 876-877, Taschen, Köln-Lisboa-London-New York-Paris-Tokyo. ISBN 3-8228-8964-4.
The book (1006 pp.) is said to represent a complete reproduction of the plates, prepared or based on the material provided by the scientists and artists that have accompanied Napoleon's military expedition to Egypt (1798), published originally (1809-1813) under the title: *Description de l'Égypte, ou recueil des observations et des recherches qui ont été faites en Égypte pendant l'expédition de l'armée française, publié par les ordres de Sa Majesté l'Empereur Napoléon le Grand* (Imprimerie impériale, Paris), in 10 folio vols and 2 anthologies, containing 837 copper-engravings and more than 3000 illustrations, some more than a metre in length. The 2nd edn appeared 1820-1830, in 34 vols, 36 pts; Panckoucke, Paris. De Savigny provided 105 invertebrate pls, incl. 31 insect pls, 2 of which are devoted to the Odon., showing 26 cabinet-set specimens and, additionally, various structural details of some spp. Figures are numbered, but taxonomic names, explanatory captions or any other text and/or comments were not provided in the original edn. Sub-

- sequently, however, the insects of De Savigny's pls were treated by J.V. Audouin (1825-1827, *Explication sommaire des planches d'insectes de l'ouvrage de la Commission d'Egypte*, Paris), but neither this, nor the original edn of the *Description* are available to the Abstractor. — De Savigny's illustrations are excellent and most spp. are readily recognisable. This is the first modern treatment of the odon. fauna of Egypt. — The present "reprint edn" has several editorial shortcomings and gives no technical description of the original work. The reduction of the original folio size down to 13.5×19.5 cm does not appear favourable either.
- (12229) DIDION, A., B. TROCKUR & M. SCHORR, 1997. Rote Liste der im Saarland gefährdeten Libellenarten (2. Fassung: 1997). *Natur Landsch. Saarland* (Sonderb.) 7: 9-36, 2 col. pls incl. (With Fr. s.). — (First Author: Marienstr. 23, D-66424 Homburg-Schwarzenacker).
55 spp. are currently known to occur in Saarland, Germany. The status of 11 spp. is unknown, 22 spp. are considered threatened. — (For the previous Red List see OA 12199).
- (12230) GOMPHUS. Mededelingsblad van de belgische libellenonderzoekers — Bulletin de liaison des odonatologues belges, Vol. 13, No. 4 (dated Dec. 1997, received Nov. 1998). (Dutch & Fr.). — (c/o G. De Knijf, Ploegstraat 33, B-9050 Gentbrugge).
Goffart, P.: Faut-il intervenir en faveur des libellules dans les tourbières ardennaises? (pp. 89-93); — *Tailly, M.*: Editorial (p. 94); — *Goffart, P.*: Recenser les libellules dans le cadre du programme d'Inventaire et Surveillance de la Biodiversité (ISB) en Wallonie (pp. 95-98); — *Stoks, R.*: Report on the field trip to the Groot Schietveld at Brecht, on 25 May 1997 (pp. 99-101); — *Goffart, P.*: Compte-rendu de l'excursion dans la Fagne de Spa-Machamps, 6 septembre 1997 (pp. 102-104). — The issue also contains a book review and several notifications.
- (12231) HEYMER, A., 1997. Réflexions sur la signification phylogénétique des stratégies reproductrices et de l'investissement mâle chez les libellules (hexapodes, paléoptères). *Vie Milieu* 47(3): 229-246. (with Engl. s.). — (Lab. Ecol. Gén., Mus. Natn. Hist. Nat., 4 av. du Petit Château, F-91800 Brunoy).
In odon. the ♂ reproductive strategies follow a behavioural evolution which starts from relatively simple sexual behaviour and develops through various intermediate stages into complex and highly developed territorial behaviour patterns. In the Calopterygidae and Chlorocyphidae this development implies synchronisation between ♂♂ and ♀♀ for mating. These behavioural strategies seem to mirror an evolutionary trend — at least in Zygopt. — which is in accordance with the morpho-phylogenesis. In all spp. researched so far we find before insemination sperm-displacement to remove sperm packages of possible preceding rival ♂♂ from the ♀'s spermatheca or bursa copulatrix; thus, there is strong sperm competition. To ensure optimal reproductive success, ♂♂ guard ♀♀ during egg-laying, hence, egg-laying with ♂ coupled to ♀ in tandem position is the most secure proceeding. This behaviour may lead to non-contact-guarding, a pattern generally found in the Calopterygidae and Chlorocyphidae, and a few territorial Anisopt. The ancestral Lestes-Sympetma-type seems to have developed independently in Zygopt. and Anisopt.; thus, this type must be seen as analogous; it does not allow a cladogenetic interpretation. In most spp. the epigamous behaviour pattern of ♂♂ seems to be oriented toward an "egoistic interest to profit by the fittest", however, collective "♀ rescue behaviour" in *Coenagrion lindenii* ♂♂ seems to mirror certain behaviour patterns in favour of the preservation of the species sensu Lorenz. In the genus *Ischnura* a strongly prolonged copulation allows simultaneous ♀ protection and avoids sperm competition.
- (12232) INBERG, H., [Ed.], 1997. *Slovenië zomerkamp: Velike Bloke 1997*. — [Slovenia Summer Workshop: Velike Bloke 1997]. Jeugdbond voor Natuur- en Milieustudie, Utrecht. 84 pp. (Dutch). — (Available from the publishers: Oude Gracht 42, NL-3511 AR Utrecht).
The odon. report (pp. 14-17) is authored by A. de Vos. It presents records of 28 spp. from 7 localities in Slovenia and 1 in Croatia; — 6-19 July 1997.
- (12233) JACOBSEN, D., R. SCHULTZ & A. ENCALADA, 1997. Structure and diversity of stream invertebrate assemblages: the influence of temperature with altitude and latitude. *Freshw. Biol.* 38(2): 247-261. — (First Author: Freshw. Biol. Lab., Univ. Copenhagen, 51 Helsingørsgade, DK-3400 Hillerød).
5 odon. families are listed in "kick-samples" from the Ecuadorian lowland streams (alt. 100-600 m), while only the Aeshnidae occurred in the Central Valley samples (alt. 2600-3100 m). A species list is not given.
- (12234) KETELAAR, R., 1997. Libellen: darteel vlie-

gers langs de waterkant. – [Dragonflies: playful creatures at the waterside]. *Vlinders* 12(3): 15-18. (Dutch, with Engl. s.). – (Asterstraat 37, NL-6708 DJ Wageningen).

General, directed at the Netherlands butterfly fans, highlighting peculiar features of some of the “national” spp. and situations.

fonscolombii (Selys), im östlichen Deutschland (Odonata, Libellulidae). *Ent. Nachr. Ber.* 41(3): 173-177. (With Engl. s.). – (First Author: Waldstr. 4, D-16278 Steinhöfel).

New records from Thuringia, Saxony and Brandenburg are communicated, and all known records from Mecklenburg, Brandenburg, Thuringia, Saxony and Saxony-Anhalt are summarised.

- (12235) LAND, M.F., 1997. The resolution of insect compound eyes. *Israel J. Plant Sci.* 45(2): 79-91. – (Sussex Cent. Neurosci., Sch. Biol. Sci., Univ. Sussex, Brighton, BN1 9QG, UK).

The spatial resolution of compound eyes is determined by their interommatidial angles, by the optical quality and rhabdom dimensions of the ommatidia, and by illumination level. In insects, interommatidial angles vary from 57° in Collembola, to as little as 0.24° in *Anax junius*, which is the smallest angle recorded in any insect. Resolution better than this is not attainable in compound eyes of realistic size, because of the limit imposed by diffraction. The smaller the interommatidial angle, the greater the distance at which objects (e.g. prey) can be resolved. – Cf. also *OA* 11459.

- (12236) LITSINGER, J.A., A.T. BATRION, V. BUMROONGSRI, W.L. MORRILL & O. SANTHOY, 1997. Natural enemies of the rice greenhorned caterpillar *Melanitis leda ismene* (Lepidoptera: Satyridae) and rice skipper *Pelopidas mathias* (Lepidoptera: Hesperidae) in the Philippines. *Philipp. Ent.* 11(2): 151-181. – (First Author: 1365 Jacobs Place, Dixon, CA 95620, USA; – Second Author: Ent. & Plant Pathol. Div., IRRRI, P.O. Box 933, 1099 Manila, Philippines).

Agriocnemis femina, *Pseudagrion pilidorsum*, *Ischnura senegalensis*, *Orthetrum sabina* and *O. testaceum* are the odon. predators on the 2 most common rice butterflies in the Philippines. Damsel fly adults are effective egg and larval predators as they continuously search within the rice canopy. They hover while searching for prey, which they capture with their legs. Eggs are also detected by Zygopt. which land on the foliage where eggs are deposited. The 2 *Orthetrum* spp. capture butterflies in midair. Dragonflies are particularly abundant over rice fields before a rainstorm or during harvest, when the butterflies are disturbed and take flight.

- (12237) MAUERSBERGER, R. & F. PETZOLD, 1997. Nachweise der Frühen Heidelibelle, *Sympetrum*

- (12238) MITRA, T.R., M.L. DE & I.J. GUPTA, 1997. Ecological reconnaissance of adult Odonata (Insecta) in eastern India. *Rec. zool. Surv. India* 96(1/4): 237-241. – (First Author: 18/1 Dakshin Para Rd, Calcutta-700028, India).

A review of adult ecology observations, gathered mostly in the Calcutta area. The section titles are: “Food habits”, “Breeding activities”, “Emergence of imago”, “Migratory flights”, “Reaction towards mobile objects”, “Thermo-regulation and behaviour during change of weather”, “Vertical ranges of flight”, “Death in adults”, and “Species recorded from houses”.

- (12239) NAPOLEON I [Bonaparte], Emperor, 1997 [reprint of 1809-1813]. See *OA* 12228, for the first pictorial inventory of the odon. fauna of Egypt, prepared upon his initiative and published on his order.

- (12240) PIPER, W., 1997. Compilation of the Aeshnidae of South and Central America, Vols 1-3. iv+252 pp. Preliminary, 2nd edn. Piper, Hamburg. – (Kollenhof 31, D-22527 Hamburg).

The work is intended as a tool to facilitate the handling and study of neotropical Aeshnidae. The present edn is not available for general distribution, but it is used by some regional workers. – Vol. 1 (32 pp.) presents a synonymic list of the neotropical taxa, a country-wise species list of S America, a state-wise species list for Mexico, keys and the regional bibliography. Vol. 2 (185 pp.) consists of structural figs of all taxa, and Vol. 3 (35 pp.) represents an exhaustive collection of (adult) col. portraits. – The work is basically a compilation of relative texts and illustrations scattered in primary literature. As such, it will be of an immense help to the workers not familiar with the latter, and to those having no access to an adequate odonol. library.

- (12241) SAMWAYS, M.J. & D.A.B. STEWART, 1997. An aquatic ecotone and its significance in conservation. *Biodiv. Conserv.* 6: 1429-1444. – (Dept Zool.

- & Ent., Fac. Sci., Univ. Natal, P/Bag X01, Scottsville-3209, Pietermaritzburg, SA).
 Aquatic invertebrates were sampled through an area of transition between a well-established reservoir and a perennial stream, in the KwaZulu-Natal Midlands of South Africa. Information on the abundance of 5 odon. spp. at 15 subsites is also presented.
- (12242) SCHLEGEL, J., U. WEBER, R. GUTTINGER & I. HUGENTOBLER, 1997. Die Torfstichlandschaft Bannriet/Spitzmäder. *Ber. st. gall. naturw. Ges.* 88: 243-308. — (Büro Hugentobler, Schwalbenweg 16, CH-9450 Altstätten).
 32 odon. spp. were recorded from the Bannriet/Spitzmäder Nature Reserve nr Altstätten, canton St Gall, Switzerland; 10 of these are here listed along with annotations on their habitats and redlist status. The record of *Hemianax ephippiger* (spring 1995) is of particular interest.
- (12243) SCHNEIDER, W. & H.J. DUMONT, 1997. The dragonflies and damselflies (Insecta: Odonata) of Oman: an updated and annotated checklist. *Fauna Saudi Arabia* 6: 89-110. (With Arab s.). — (Second Author: Dept Anim. Ecol., Univ. Gent, Ledeganckstraat 35, B-9000 Gent).
 The results of 2 field trips to the Sultanate of Oman are put on record, and all odon. specimens in the holdings of the Oman Nat. Hist. Mus. (Muscat) are listed. *Agriocnemis pygmaea* and *Anax tristis* are new for Oman and the Arabian Peninsula. An annotated checklist is given of the 40 spp. so far recorded from Oman territory.
- (12244) SHIMANE RED DATA BOOK. ANIMALS, 1997. Published by Shimane prefecture. 417 pp. (Jap.).
 15 odon. spp. are treated on pp. 226-255, viz. *Platycnemis foliacea* sasakii, *Symplocma p. paedisca*, *Calopteryx japonica*, *Epiophlebia superstes*, *Tanypteryx pryeri*, *Asiagomphus pryeri*, *Sinogomphus flavolimbatus*, *Oligoaeschna pryeri*, *Aeschnophlebia longistigma*, *A. anisoptera*, *Aeshna juncea*, *A. nigroflava*, *Somatochlora clavata*, *Nannophya pygmaea*, and *Sympetrum kunkeli*. Small, concise and well-balanced species "monographs" include also species-wise regional bibliographies and distribution maps.
- (12245) THAPA, V.K., 1997. *An inventory of Nepal's insects*, Vol. 1: *Protura-Odonata*. IUCN-Nepal, Kathmandu. xii+98 pp. ISBN 92-9144-023-X. —
 Price: US\$ 15.- net. — (Author: Central Dept Zool., Tribhuvan Univ., Kirtipur, Kathmandu, Nepal; — Orders to: IUCN-Nepal, P.O. Box 3923, Kathmandu, Nepal).
 147 odon. spp. are listed on pp. 67-88, with statements on their Nepalese distribution, phenology and status. The bibliography is appreciable, but rather incomplete.
- (12246) TSUCHIE, Y. & K. YODUE, 1997. Seasonal fluctuation in emergence of the dragonfly *Stylurus nagoyanus*, at western lakeside of Shinji-ko in 1996. *Bull. Hoshizaki Green Found.* 1997(1): 39-41. (Jap., with Engl. s.). — (Hoshizaki Green Zaidan, Kisuki, Shimane pref., 699-13, JA).
 The emergence patterns were recorded daily, and 331 exuviae were collected between 1 July and 30 Sept. The emergence peak occurred approx. on 10 July.
- (12247) VAN BUSKIRK, J., S.A. MCCOLLUM & E.E. WERNER, 1997. Natural selection for environmentally induced phenotypes in tadpoles. *Evolution* 51(6): 1983-1992. — (Dept Biol., Univ. Michigan, Ann Arbor, MI 48109, USA).
 Models suggest that phenotypic plasticity is maintained in situations where the optimal phenotype differs through time and space, so that selection acts in different directions in different environments. Some empirical work supports the general premise of this prediction, because phenotypes induced by a particular environment sometimes perform better than other phenotypes, when tested in that environment. These observations were here extended by estimating the targets of selection in *Pseudacris triseriata* tadpoles in environments without predators and in those with larval *Anax junius* and *A. longipes*. Tadpoles displayed significant behavioural and morphological plasticity in the presence and absence of non-lethal dragonflies for 32 days in cattle tanks. Selection was measured in the absence of free predators by regressing growth and survival in the tanks against activity and several measures of tail and body shape. The results suggest that phenotypic plasticity in some morphological traits, such as tail depth and tail muscle width, has evolved under intermittent selection by dragonflies. Other traits that undergo selection by dragonflies, such as body morphology, appear developmentally rigid, perhaps because of historically strong opposing selection in nature or other constraints.
- (12248) VISSER, H., [Ed.], 1997. *Libellenlarven van Nederland*. — *Dragonfly larvae of the Netherlands*.

CD-rom, Windows 1.0. Biodiv. Center, ETI, Amsterdam. Distributed by Springer, Berlin. ISBN 3-540-14639-3. — Price: NLG 275.- net. — (Orders to: Springer-Verlag, Postfach 311340, D-10643 Berlin). It includes an IdentifyIt identification key for all spp. known in the Netherlands, with 1249 photographs, maps and figs (mostly from various publications), etc. — No copy was available for abstracting. Detailed descriptions and critical comments were published by B. Koese (1997, *Brachytron* 1: 60-61) and J. van Tol (1998, *Ent. Ber., Amst.* 58: 231-232).

1998

- (12249) *ARGIA*. The news journal of the Dragonfly Society of the Americas, Vol. 10, No. 3 (20 Oct. 1998). — (c/o Dr & Mrs T.W. Donnelly, 2091 Partridge Lane, Binghamton, NY 13903, USA). [Signed articles:] *Beckemeyer, R. & S. Hummel*: Could Valentine, Nebraska be Odonata heaven? The 1998 DSA Annual Meeting (pp. 4-6; numerous records); — *Dunkle, S.*: DSA 1998 Business Meeting minutes (pp. 6-8); — *Tingley, S.*: A[tlantic] D[ragonfly] I[nventory] P[roject] meeting in New Brunswick (p. 8; some records); — *Brunelle, P.*: Idyll on Cape Breton Island (pp. 8-10); — *Tingley, S. & P. Brunelle*: *Somatochlora brevicincta* in Anticosti Island, and in mainland Nova Scotia (p. 10); — *Donnelly, N.*: History of Odonata study: E.B. Williamson (pp. 10-13); — Face colors of *Sympetrum internum* and wing colors of *rubicundulum* (pp. 13-14); — *Tennessee, K.*: When is an ovipositor not an ovipositor? (p. 14); — *Paulson, D.*: What a difference a depth makes (pp. 14-15); — *Nelson, S.*: Dragonfly attacks goldfinch! (p. 15); — *Moulton, K.*: Dragonflies observed during hawk watch: kestrels reveal how to catch them! (pp. 15-16); — *Held, J.*: Peregrines eating dragonflies (p. 16); — *Osborn, R.*: Odonata of Arlington, Texas (pp. 16-17); — *Biggs, K.*: More on rearing dragonflies in ponds (p. 17); — *Smentowski, J.*: In response to your question in *Argia*, "Stocking ponds with dragonflies" (p. 17); — *Brunelle, P.*: Odonata seminar at Humboldt Field Research Institute, Steuben, Maine (pp. 18-20); — *Carpenter, G.*: *Nehalennia integricollis* in Rhode Island (p. 20); — *Nikula, B.*: *Sympetrum corruptum* on Cape Cod (p. 20); — *Johnson, J.*: *Stylurus olivaceus* in Washington and Oregon (pp. 20-22); — *Johnson, J. & D. Paulson*: *Enallagma civile* recorded in Oregon (pp. 22-23); — *Czaplak, D.*: *Leucorrhinia glacialis* in West Virginia (p. 23); — *Walter, S.*: *Enallagma weewa* in Long Island (p. 23); — *Czaplak, D.*: *Orthemis ferruginea* in Washington D.C.? (pp. 23-24); — *Mauffray, B.*: Some new Georgia Odonata records (p. 24); — Another new record for the U.S. from Arizona (p. 24; *Brechmorhoga pertinax*). — The concluding pp. are bringing several announcements, notices, etc., and the traditional "Tramea", i.e. a web site review, by *R. Beckemeyer*.
- (12250) *ARNQVIST, G. & F. JOHANSSON*, 1998. Ontogenetic reaction norms of predator-induced defensive morphology in dragonfly larvae. *Ecology* 79(6): 1847-1858. — (Dept Anim. Ecol., Univ. Umea, S-901-87 Umea).
The study of phenotypic plasticity, one of the most important mechanisms of phenotypic adaptation, is by tradition focussed on differences in ontogenetically static phenotypic expression in different environments. Ontogenetic reaction norms, in contrast, describe how phenotypes unfold during growth in different environments. In the present paper, the ontogenetic reaction norms of the morphological shape of a series of defensive abdominal spines in *Leucorrhinia dubia* larvae were studied, both in the laboratory and in a number of natural populations. In a laboratory rearing experiment it was demonstrated that these spines grow more solid and elongated when waterborne environmental cues of fish predators were present; this is evidence of phenotypic plasticity in defensive spine morphology. The ontogenetic reaction norms of defensive spines were also found to differ in natural populations with and without fish. A detailed analysis of the growth trajectories showed that the differentiation was primarily due to ontogenetic acceleration in environments with fish, leading to relatively exaggerated spine shape in these environments. However, while the ontogenetic trajectories of shape in some spines diverged at the onset of ontogeny in the 2 environments, those of others remained parallel until a given phase of ontogeny. Hence, the timing of the developmental divergence of these phenotypically integrated traits differed, suggesting differences in the underlying regulatory mechanisms. The results illustrate that a conceptual integration of environmental and ontogenetic approaches to the study of phenotypic differentiation can significantly promote the understanding of the ecology and evolution of adaptive phenotypic plasticity.
- (12251) *BEENEN, R.*, [Ed.], 1998. *Achtergronddocument Soortenbeleid. Onderdeel Fauna*. Provincie Utrecht, 11 pp. (Dutch). — (Available from: Dienst ruimte en groen, Provincie Utrecht, Postbus 80300,

NL-3508 TH Utrecht).

The document goes with that listed in OA 12252. It includes detailed technical information on legal status and on administrative and scientific requirements relative to the conservation of *Sympetma paedisca*, *Aeshna viridis* and *Anaciaeschna isosceles* in the Province of Utrecht, the Netherlands.

- (12252) BEENEN, R., [Ed.], 1998. *Werkdocument Soortenbeleid. Onderdeel Fauna*. Provincie Utrecht. 46 pp. (Dutch). — (Available from: Dienst ruimte en groen, Provincie Utrecht, Postbus 80300, NL-3508 TH Utrecht).

This is an official document, produced by the Committee for Species Management (= Begeleidingscommissie Soortenbeleid) of the Province of Utrecht, the Netherlands, and sanctioned (Nov. 1997) by the Executive of the Province (= Gedeputeerde Staten). It includes a commented list of 23 odon. spp. that are either extinct, threatened or in need of special attention in the Province.

- (12253) BERNARD, R., 1998. Stan wiedzy o rozmieszczeniu i ekologii *Nehalennia speciosa* (Charpentier, 1840) (Odonata: Coenagrionidae) w Polsce. — The present knowledge about the distribution and ecology of *Nehalennia speciosa* (Charpentier, 1840) (Odonata: Coenagrionidae) in Poland. *Rocz. nauk. pol. Tow. Ochr. Przyr. "Salamandra"* 2: 67-93. (Pol., with Engl. s.). — (Dept Gen. Zool., Mickiewicz Univ., Fredry 10, PO-61-701 Poznan).

The available information on *N. speciosa* in Poland is reviewed, and its habitat requirements in central Europe are analysed. The extreme stenotopy and the sp. dependence on vegetational features are emphasized.

- (12254) BRODERSEN, K.P., P.C. DALL & C. LINDEGAARD, 1998. The fauna in the upper stony littoral of Danish lakes: macroinvertebrates as trophic indicators. *Freshw. Biol.* 39(3): 577-592. — (Freshw. Biol. Lab., Univ. Copenhagen, 51 Helsingørsgade, DK-3400 Hillerød).

The macroinvertebrate fauna living on stones in the exposed stony littoral of 39 lakes was examined by multivariate numerical methods. Some quantitative data are presented for the "Coenagrionidae" and "Zygoptera". The latter were among taxa with the lowest optima, hence the odon. are hardly considered in the paper, and no species list is given.

- (12255) BUCZYŃSKI, P. & B. STANIEC, 1998.

Waloryzacja godnego ochrony torfowiska Krugle Bagno (Pojezierze Łeczyńsko-Włodawskie) w oparciu o wybrane elementy jego fauny. — Environmental evaluation of the conservation worth of the Krugle Bagno peatbog (the Leczynsko-Włodawskie Lake District) based on the selected elements of its fauna. *Rocz. nauk. pol. Tow. Ochr. Przyr. "Salamandra"* 2: 95-105. (Pol., with Engl. s.). — (Dept Zool., Univ. M. Curie-Skladowska, Akademicka 19, PO-20-33 Lublin).

Includes a list of 28 odon. spp.; — SE Poland.

- (12256) *BULLETIN OF THE HOKKAIDO ODONATOLOGICAL SOCIETY*, Vol. 10 (June 1998). (Jap., 1 paper with Engl. s.). — (c/o Prof. Dr H. Ubukata, Dept Sci. Educ., Kushiro Coll., Hokkaido Univ. Educ., Shiroyama 1-15-55, Kushiro, 085-0826, JA).

Hiratuka, K.: Behaviour of some *Sympetrum* species at Lake Harutori (pp. 1-9); — *Fujibayashi, T.*: *Aeshna mixta* soneharai collected at Goryo-ike (Hamamasu-mura, Ishikari distr.) and at the Nishioka reservoir (Sapporo) (p. 10); — *Aeschnophlebia longistigma* collected at Nishinopporo, Ebetsu city (p. 11); — *Yokoyama, T. & T. Fujibayashi*: Dragonflies of Ebetsu city, 1: Mizubashou-en Park at Nishinopporo (pp. 12-15); — *Hirata, M.*: Some dragonflies collected from Hong Kong in the spring of 1997 (pp. 16-17; with Engl. title & s.); — [*Harauchi, Y.*]: Dragonfly distribution table for the Hokkaido districts, 11 (pp. 18-20; vernacular nomenclature); — Dragonfly distribution table for the islets neighbouring Hokkaido (pp. 21-23); vernacular nomenclature); — *Nishu, S.*: Annual Meeting of the Hyogo Odonatological Society (p. 24); — *Yokoyama, T.*: Review of odonatological literature (p. 25).

- (12257) CHARVET, S., A. KOSMALA & B. STATZNER, 1998. Biomonitoring through biological traits of benthic macroinvertebrates: perspectives for a general tool in stream management. *Arch. Hydrobiol.* 142(4): 415-432. — (Third Author: Ecol. Eaux Douces & Grands Fleuves, Univ. Lyon-I, F-69622 Villeurbanne).

The traditional ways of biomonitoring such as diversity, biotic indices and community structure are compared with a new approach, using biological traits such as reproduction, life duration and feeding habits. These approaches were applied to a typical biomonitoring scenario, i.e. 2 sites on the Chalaronne R. nr Lyon, France, upstream and downstream of the effluent from a waste water treatment plant. This functional approach

to indicate pollution effects in streams through biological traits may provide a tool for future stream management, which is robust, general and based on current concepts of ecological theory. — 3 zygopt. taxa are listed from the locality.

(12258) COLLINGE, S.K. & R.T.T. FORMAN, 1998.

A conceptual model of land conversion process: predictions and evidence from a microlandscape experiment with grassland insects. *Oikos* 82(1): 66-84. — (First Author: Landscape Archit. Progr., Dept Environ. Design, Univ. California, Davis, CA 95616, USA). The study was conducted in the plains of the Front Range, ca 12 km SE of Boulder, in north-central Colorado; alt. 1740 m. Only a few spp./individuals of Odon. were represented, therefore the order was not subjected to further analysis. Voucher specimens are deposited in Univ. Colorado Mus., Boulder, CO, and in Mus. Comp. Zool. Harvard Univ., Cambridge, MA.

(12259) CRUDEN, R.W. & O.J. GODE, 1998. Iowa's Odonata: declining and/or changing? *J. Iowa Acad. Sci.* 105(2): 67-81. — (First Author: Dept Biol. Sci., Univ. Iowa, Iowa City, IA 52242, USA).

During a comprehensive survey (over 7900 observations at more than 500 sites, in 94 counties), 93 of the 110 for the state reported spp. were evidenced, and 8 spp. new for the state were recorded. A comparison of the present data with those collected early in the century suggests considerable change in the odon. fauna. The distribution ranges of at least 6 spp. probably expanded westward across Iowa in response to the construction of deeper, permanent lakes and ponds. Changes in river systems probably contributed to the range expansion of 10 spp. and to the extirpation of a few others. The Mississippi R fauna lost spp., lost populations, and populations of several spp. are smaller. The present survey should serve in the identification of imperilled spp. and species-rich habitats.

(12260) CZACHOROWSKI, S. & P. BUCZYNSKI, 1998. Preliminary evaluation of the specificity of aquatic insects of Polesie, based on dragonflies (Odonata) and caddisflies (Trichoptera). *Tez. Dokl. mezhdunarod. Konf. "Sovrem. Probl. Izuch. prir. Kompleks. Poles'ya"*, Minsk, p. 204 [abstract only]. — (Second Author: Dept Zool., Univ. M. Curie-Skladowska, Akademicka 19, PO-20-033 Lublin). 58 odon. spp. are known from the Polish part of Polesie, and 31 spp. from the Ukrainian part, but the odon. fauna of the Byelorussian district is still unex-

plored. The Polesie riverine fauna is relatively poor, most spp. are confined to swamps and peat-bogs. Systematic studies are required, and an appropriate protection of the area is advocated.

(12261) ERJAVECIA. [Newsletter of the Slovene Odonatological Society], Ljubljana, No. 6 (31 Oct. 1998). ISSN 1409-8185. (Slovene). — (c/o M. Bedjanič, Fram 117/a, SI-2313 Fram).

The issue contains a facsimile reproduction of the Odon. section and pls from I.A. Scopoli's 1763 *Entomologia carniolica* (pp. 1-12; cf. *OA* 729), 2 ethnographic notes (*I. Geister, A. Šalamun*), various reports, announcements and detailed descriptions of the 1999 research projects of the Society. Also included are the obituary-cum-bibliography for Dr Ž.R. Adamovič (pp 33-35) and the traditional updating of the Slovene odonatol. bibliography (pp. 35-36; Nos 233-246).

(12262) [FRANKOVIĆ, M.] RADULIĆ-TOMAN, E., 1998. Odonatološki simpozij u Paklenici: znanstveno o konjskoj smrti. — [Symposium of Odonatology in Paklenica: science about dragonflies]. *Večernji List* 1998 (24 July): 12. (Croatian). — (c/o Dr M. Franković, Barutanski breg 30, CRO-10000 Zagreb). A newspaper article on the 3rd Odonatological Symposium of the Alps-Adriatic Regional Community (17-25 July 1998; Paklenica National Park, Croatia), in one of the leading Croatian dailies, with a group-photograph of the participants from Croatia, Germany, Hungary, Italy, Japan, Slovenia and Switzerland. The Org. Secr. was Dr M. Franković.

(12263) FUTTER, S. & K. FUTTER, 1998. The status of the Highland/Common Darter *Sympetrum nigrescens/striolatum* in Dunbartonshire (VC 99). *Glasgow Nat.* 23(3): 63. — (81 Oxhill Place, Dunbarton, G82 4EX, UK).

On several water bodies, many individuals of this sp. were encountered in 1997, suggesting it is a widespread resident. All specimens examined had the *nigrescens* thorax patterns, but the black facial markings, used as a feature to separate *nigrescens* and *striolatum*, are variable, some showing the *nigrescens* type and others the *striolatum* pattern. This could indicate that Dunbartonshire represents a zone in which intermediates between the 2 taxa occur.

(12264) GERKEN, R., 1998. Reproduktionsnachweise der Grünen Keiljungfer (*Ophiogomphus cecilia*

- Fourcroy, 1785) am Unterlauf der Aller. *Beitr. Naturk. Niedersachs.* 51(3): 155-157. — (Birkenweg 4, D-38678 Clausthal-Zellerfeld).
- 2, for *O. cecilia* unusual breeding sites on the lower Aller R. are described.
- (12265) GORB, S.N., 1998. Origin and pathway of the epidermal secretion in the damselfly head-arresting system (Insecta: Odonata). *J. Ins. Physiol.* 44(11): 1053-1061. — (Max-Planck-Inst. Entwicklungsbiol., Spemannstr. 35, D-72076 Tübingen).
- In Zygopt., the arrester system is responsible for an additional attachment of the head to the neck. It consists of a pair of mobile postcervical sclerites (SPC), covered by microtrichia. In their lateral position, SPCs can fixate the head on fields of microtrichia on the back surface of the head. The intact surface of the SPC microtrichia is usually covered by a lipid-containing secretion. The present study on *Ischnura elegans* and *Pyrrhosoma nymphula* provides ultrastructural data on the secretory epidermis and pore channels adapted to transport the secretion to the cuticle surface.
- (12266) GROENENDIJK, B. [text] & M. VAN KALKEREN-DEN ENGELSMAN [figs], 1998. Scheren over het water — [Skimming over the water]. *Seasons, Naarden* 6(5): 98. (Dutch).
- Impressions on dragonfly life at a backyard pond, with beautiful watercolour illustrations.
- (12267) GUPTA, V., 1998. [Book review]. Insects of the Three George Reservoir area of Yangtze River; edited by Yang Xingke. *Orient. Ins.* 32: 82. — (Dept Ent. & Nematol., Univ. Florida, Gainesville, FL 32611-0620, USA).
- An informative review of the complete work, a part of which is the paper listed in OA 11993.
- (12268) HANAFUSA, H., 1998. Records of the Odonata from Kitadaitojima Island, Okinawa prefecture, Japan (Odonata). *Futao* 28: 1-5, pl. 1 excl. (Jap., with Engl. s.). — (688-2 Tashima, Tottori-shi, Tottori, 680-0804, JA).
- 15 spp. are recorded (summer 1998) from this island in the Daito Archipelago. *Anax guttatus* and *Acisoma p. panorpoides* are new for the island fauna.
- (12269) HANCOCK, E.G., 1998. Scottish insect records for 1996. *Glasgow Nat.* 23(3): 27-30. — (Zool. Mus., Graham Kerr Bldg, Univ. Glasgow, Glasgow, G12 8QQ, UK).
- Includes records of 6 odon. spp., submitted by field workers in Scotland.
- (12270) HARRISON, J.F. & J.R.B. LIGHTON, 1998. Oxygen-sensitive flight metabolism in the dragonfly *Erythemis simplicicollis*. *J. exp. Biol.* 201(11): 1739-1744. — (First Author: Dept Biol., Arizona St. Univ., Tempe, AZ 85287-1501, USA).
- The sensitivity of flight initiation and metabolism to atmospheric oxygen level was tested, using flow-through respirometric measurements of the rate of CO₂ emission (VCO₂). Flight initiations were unimpaired in atmospheric oxygen levels as low as 10%. However, flight metabolic rate was affected by ambient oxygen level. Flight VCO₂ decreased in hypoxic mixtures (5kPa or 10kPa oxygen) and increased in hyperoxic atmospheres (30kPa or 50kPa oxygen), suggesting that ambient oxygen level influences flight muscle oxygen partial pressure (PO₂) and the vigour of flight. These are the first data to show oxygen-limitation of flight metabolism in a free-flying insect. A low safety margin for oxygen delivery during dragonfly flight is consistent with a previous hypothesis that atmospheric hyperoxia facilitated gigantism in Paleozoic protodonates. However, allometric studies of tracheal morphology, and mechanisms and capacity of gas exchange in extant insects are necessary in order to test the hypothesis that the oxygen-sensitivity of aerobic metabolism increases with body size in insects.
- (12271) HELLMUND, W., 1998. Unsere Libellen: Versuch einer Bestandsaufnahme, 5. Prachtlibellen: Schönheitskonkurrenten für Schmetterlinge. *Troisdorf. Jb.* 28: 103-118. — (Von-Loe-Str. 31, D-53840 Troisdorf).
- This is the continuation of the series, the first 4 pts of which are described in OA 11178. The present instalment deals with the Calopterygidae; it is another "masterpiece" in the field of this kind of a narrative. The morphology, biology, ecology, behaviour and life history are dealt with in considerable detail and in a most delightful style. The text is enhanced by photos (incl. SEM) and col. line drawings, all original by the Author. — Considering the coverage and the style of presentation, this series would serve very appropriately as teaching material at the secondary/high school level.
- (12272) HIGASHI, T. & M. WATANABE, 1998. Distribution of the odonate larvae in a typical small pond for irrigation surrounded by secondary forests. *Bull.*

- Fac. Educ. Mie Univ. (Nat. Sci.)* 49: 19-28. (Jap., with Engl. title). – (Second Author: Dept Biol., Fac. Educ., Mie Univ., Tsu, 514-8507, JA).
[Abstract not available.]
- (12273) HILL, B., 1998. *Die Huteweiden der Save-Auen im Naturpark Lonjsko Polje, Kroatien, als Lebensraum für Libellen (Odonata)*. DiplArb. (Fachber. Biol./ Naturschutz) Univ. Marburg, Marburg. vi+126 pp. – (Author's address not stated).
In summer 1997, odon. communities (32 spp.) were studied in the Sava R. backwater pasture grasslands, Lonjsko Polje Nature Reserve, Croatia. The grazing ground communities and their population dynamics are compared with those of the economically non-utilized control habitats. The latter support significantly smaller odon. populations. The intensive, multi-species grazing is holding back the vegetational succession in breeding habitats, favouring therewith the ecological stability of these. – For the odon. fauna of Lonjsko Polje see also OA 7934.
- (12274) JACOBSEN, D., 1998. The effect of organic pollution on the macroinvertebrate fauna of Ecuadorian highland streams. *Arch. Hydrobiol.* 143(2): 179-195. – (Freshw. Biol. Lab., Univ. Copenhagen, 51 Helsingørsgade, DK-3400 Hillerød).
The subject was studied in 5 small streams in the Andes. The "Aeshnidae" are recorded from 2 of these, alt. 2600-2650 m. See also OA 12137.
- (12275) *JOURNAL OF THE BRITISH DRAGONFLY SOCIETY*, Vol. 14, No. 2 (Oct. 1998). – (c/o Dr W.H. Wain, Haywain, Holywater Rd, Borden, Hants, GU35, 0AD, UK).
Gibbins, C.N. & J.B. Moxon: Calopteryx splendens (Harris) at the edge of range sites in North-East England (pp. 33-45); – *Brownett, A.*: Predation of adult Anax imperator Leach by the Hobby (Falco subbuteo L.), how frequently does this occur? (pp. 45-52); – *Parr, A.J.*: Migrant and dispersive dragonflies in Britain during 1997 (pp. 52-58); – *Smith, E.M., R.W.J. Smith & P.M. Batty*: Breeding of the Southern Hawker Aeshna cyanea (Müller) in rock pools (pp. 58-59); – *Sage, B.*: A Hertfordshire record of the Small Red Damselfly Ceriagrion tenellum (Villers) (p. 60); – *Beynon, T.G.*: Leucorrhinia dubia (Vander Linden) at Chartley Moss NNR, Staffordshire, in 1997: a post-script (pp. 61-62); – *Truscott, L.*: Lesser Emperor Dragonfly Anax parthenope (Sélys) in East Cornwall in July 1998 (p. 63); – *Mackenzie-Dodds, R.*: Book review (p. 64; volume described in OA 11681).
- (12276) KETELAAR, R., 1998. De Beekrombout fluit weer langs de beken. – [Gomphus vulgatissimus at the Netherlands streams again]. *Vlinders* 13(3): 12-14; (4): 24 [erratum]. (Dutch, with Engl. s.). – (Asterstraat 37, NL-6708 DJ Wageningen).
During the 1980s the status of G. vulgatissimus in the Netherlands had declined alarmingly. Since 1996, however, the sp. appears suddenly in large numbers again, particularly so in the eastern provinces. The phenomenon is ascribed to the water quality improvement. The biology and Author's personal experience with the sp. are briefly outlined, and the distribution map is provided.
- (12277) KLEINE-BUNING, J., U. SANDER & M. KOCH-SIEPE, 1998. Naturschutzprojekt Hammeniederung, Niedersachsen. *Natur Landsch.* 73(7/8): 312-319. (With Engl. s.). – (Planungs- u. Naturschutzamt, Osterholzer Str. 23, D-27711 Osterholz-Scharmbeck).
As part of the Teufelsmoor, the "Hammeniederung", is one of the last large-scale wetlands in NW Germany. It supports 33 odon. spp., incl. Aeshna viridis. The features of the projected nature reserve are outlined, and some of its flora and fauna is listed.
- (12278) KLEMUN, M., 1998. *Werkstatt Natur. Pioniere der Forschung in Kärnten. Katalog zur Ausstellung anlässlich des 150jährigen Bestehens des Naturwissenschaftlichen Vereins für Kärnten*. Naturw. Ver. Kärnten, Klagenfurt. 300 pp. ISBN 3-85328-013-7. [Carinthia II (Sonderheft) 56]. – Price: öS 120.-net. – (Publishers: Museumgasse 2, A-9021 Klagenfurt).
Includes a concise biography and a portrait of Dr R. Puschnig (1875-1962). – For an exhaustive monograph on this Austrian odonatologist, see OA 6342.
- (12279) KOPERSKI, P., 1998. Co jedna drapieżne owady litoralne? – What do the predatory littoral insects eat? *Wiadom. ekol.* 44(2): 95-130. (Pol., with Engl. s. & Engl. tab. captions). – (Dept Hydrobiol., Univ. Warsaw, Banacha 2, PO-02-097 Warszawa).
The situation in the odon. larvae is reviewed on pp. 111-112.
- (12280) KUŠTOR, V., S. GOMBOC & A. VREZEC, 1998. *Žuželke*. – [Insects]. Prov. Mus. Murska Sobota, Murska Sobota. 14 pp. ISBN 961-90438-3-9.

(Slovene). — (Second Author: Inst. Phytomedicine, Dept Agron., Biotechn. Fac., Univ. Ljubljana, Jamnikarjeva 101, SI-1000 Ljubljana).

Published to go with the incidental insect exhibit at the Prov. Mus. of Murska Sobota, the booklet contains a brief chapter on dragonflies, giving the status of the Slovene fauna at 74 spp.

- (12281) LASSWELL, J.L., F.L. MITCHELL & C. BJORK, 1998. Historical collection of Odonata from the Navasota river drainage in southeast Texas. *Swet. Ent.* 23(2): 189-198. — (First Author: Agric. Res. & Extension Cent., Texas A&M Univ., Rt. 2, Box 00, Stephenville, TX 76402, USA).

A list is given of 68 spp., collected from 65 sites throughout the drainage area. Biological information gathered during the course of collection is also provided.

- (12282) LELAND, H.V. & S.V. FEND, 1998. Benthic invertebrate distributions in the San Joaquin River, California, in relation to physical and chemical factors. *Can. J. Fish aquat. Sci.* 55: 1051-1067. (With Fr. s.). — (Water Resources Div., U.S. Geol. Surv., 3215 Marine St., Boulder, CO 80303, USA).

The invertebrate fauna of nontidal portions of the lower San Joaquin R. and its major tributaries is described in relation to water quality and habitat, using canonical correspondence analysis, autecological metrics and indicator species analysis. For *Argia* sp., median abundance (or frequency of occurrence) in 6 site groups, and dissolved solids optimum and tolerance in the river and its major tributaries are stated.

- (12283) LEPORI, F., T. MADDALENA, M. MORETTI, N. PATOCCHI & A. MAIBACH, 1998. Inventario odonatologico delle zone umide di importanza nazionale del cantone Ticino (Svizzera): stato della banca-dati e primi risultati. *Boll. Soc. tic. Sci. nat.* 86: 43-46. (With Engl. s.). — (Last Author: Etudes en Environnement, La Croix Rte de Moudon, CH-1610 Oron-la-Ville).

A revised and updated checklist of the odon. fauna (57 spp.) of canton Ticino, Switzerland, with annotations on their current status. *Ceriatrigon tenellum* is considered extinct.

- (12284) *La LETTRE DES SOCIETAIRES* Société française d'odonatologie, No. 15 (15 Sept. 1998), No. 16 (15 Dec. 1998). — (c/o J.-L. Dommanget, 7 rue Lamartine, F-75390 Bois-d'Arcy).

[No. 15:] Includes a detailed outline of the data required on odon. migrations, a description of, and blanks for the participants in the odon. mapping scheme, etc. Blanks for collecting permit applications are available from the Ed. — [No. 16:] Numerous management notes and notifications, and a small article, by *B. Gilard*, on the 1998 novelties and interesting records in Auvergne.

- (12285) *MALANGPO*. Newsletter of the Thai National Office of the International Odonatological Society (S.I.O.), No. 15 (Nov. 1998). — (c/o Bro. A. Pinratana, St Gabriel's Coll., 356 Samsen Rd, Bangkok-10300, Thailand).

Pinratana, A.: Editorial (p. 131); — *Hämäläinen, M.*: Rhinocypha pelops and other new gems of the Thai Caloptera fauna (pp. 132-133); — Additions to the Thai gomphid fauna (pp. 133-136); — *Donnelly, N.*: Back to Thailand and Malaysia, *Farangpo* 98 (pp. 137-142; incl. a comprehensive list of records).

- (12286) MARDEN, J.H., G.H. FITZHUGH & M.R. WOLF, 1998. From molecules to mating success: integrative biology of muscle maturation in a dragonfly. *Am. Zool.* 38(3): 528-544. (Dept Biol., 208 Mueller Lab., Pennsylvania St. Univ., University Park, PA 16802, USA).

Dragonflies begin their adult life as comparatively weak fliers, then mature to become one of nature's ultimate flying machines. This ontogenetic transition provides an opportunity to investigate the relationship between life history, phenotypic plasticity, and changing ecological demands on organismal performance. Here, an overview is presented of a wide-ranging study of odon. muscle maturation that reveals: (1) ecological changes in the need for efficient vs high-performance flight, — (2) organism-level changes in performance, thermal physiology, locomotor mechanics, and energy efficiency; — (3) tissue-level changes in muscle ultrastructure and sensitivity to activation by calcium; and — (4) molecular-level changes in the isoform composition of a calcium regulatory protein in flight muscle (troponin-T). It is discussed how these phenomena may be casually related, and thereby begin to show linkages across many levels of biological organization. In particular, it is suggested that alternative splicing of troponin-T mRNA is an important component of the "gearing" of muscle contractile function for developmental changes in wingbeat frequency and ecological demands on flight performance. Age-variable gearing of muscle function allows energeti-

cally economical flight during early adult growth, whereas power output is maximized at maturity, when aerial competition determines success during territoriality and mating.

- (12287) *MATERIAŁY 43 ZJAZD POLSKIEGO TOWARZYSTWA ENTOMOLOGICZNEGO* – [ABSTRACTS OF PAPERS OF THE 43rd MEETING OF POLISH ENTOMOLOGICAL SOCIETY], 1998. *Wiadom. ent.* 17 (Suppl.). (Pol., with Engl. titles). [Odonatological papers:] *Buczyński, P.*: Drying out of Sphagnum fens and the occurrence of dragonfly larvae (Odonata): observations from Lasy Janowskie, SE Poland (pp. 160-161); – *Czepiel, K. & H. Kucharczyk*: Abundance of thysanopterans in relation to other insects caught with Moricke's coloured traps in the Poleski National Park (p. 163); – *Janicky, D.*: Contribution to the knowledge of the entomofauna of "Swidwie" nature reserve (p. 169); – *Łetowski, J. & T. Puszkarski*: Traditions and scope of entomological research at the Maria Curie-Skłodowska University in Lublin (pp. 174-175).
- (12288) MAUERSBERGER, R., 1998. Naturschutzglossprojekt Uckermärkische Seen, Brandenburg. *Natur Landsch.* 73(7/8): 320-326. (With Engl. s.). – (Am Markt 12, D-17268 Templin).
6 in Europe endangered odon. spp. are listed from the area of this conservation project in NE Brandenburg, Germany.
- (12289) MAYHEW, P.J., 1998. Daily activity rhythms in adult Odonata examined with a dynamic programming model. *Neth. J. Zool.* 48(2): 101-119. – (Inst. Evol. & Ecol. Sci., Kaiserstraat 63, P.O. Box 9516, NL-2300 RA Leiden).
For adult ♂ Odon., a published dynamic programming model which solves for optimal diurnal activity rhythms is parameterized. Individuals have the choice of either foraging or reproductive activity during fine weather, whilst between active days they must remain immobile. The decision to mate or forage depends on current energy reserves and the optimal solution is found by maximizing expected lifetime reproductive success. By varying the value of parameters in the model, it is investigated how activity rhythms may be expected to change with different ecological or physiological circumstances. The new formulation produces an output similar to the previous formulation and predicts some notable features of dragonfly activity routines. In particular energy expenditure between active days selects for evening foraging at the expense of reproductive activity, and a diversity of activity rhythms can be generated if activity profitability depends on time of day. The model makes explicit some general principles about the factors governing odon. activities and illustrates how some dynamic models may be applicable to a variety of biological systems.
- (12290) MELCHERS, M., M. SOESBERGEN & G. TIMMERMANS, [Eds], 1998. *Paardenbijters en mensentreiters: de veelpoters van Amsterdam*. – [Horse stingers and people tormentors: the arthropods of Amsterdam]. Schuyt, Haarlem. 176 pp. ISBN 90-6097-484-0. – Price: NLG 40.- net. (Dutch).
This is a refreshing volume on insect life of the city of Amsterdam, in which dragonflies (pp. 55-87) represent one of the main target groups. Each of the 32 Amsterdam odon. spp. is treated by a specified author (*T. de Zeeuw, R. Hoozenhout, M. Melchers, G. Timmermans, M. Tonkes, S. Turnhout* and *W. Wakkie*). Species "monographs" are directed at the general reader, but include also a considerable amount of "technical" information. A city phenology graph and a city distribution map are provided for all spp., and many of the recorded localities are named. The colloquial style of the text is enriched by anecdotal statements and by a few dragonfly poems. – A comprehensive interview with M. Melchers, the organizer of the book and the Ecology Officer of Amsterdam, was published in *De Telegraaf* 106 (34442), p. T-17, issue of 14 Nov. 1998.
- (12291) MERMOD-FRICKER, F., 1998. Bibliographie concernant la faune entomologique suisse, 1996. *Bull. romand Ent.* 16(2): 139-151. – (Centre Suisse Cartogr. Faune, Terreaux 14, CH-2000 Neuchâtel).
Includes 6 odonatol. titles.
- (12292) MIELEWCZYK, S., 1998. Materiały do znajomości entomofauny wodnej (Odonata, Heteroptera, Coleoptera) stawów rybnych pod Siedlcami jako proponowanego rezerwatu "Rybakówka". – Materials to the knowledge of the water entomofauna (Odonata, Heteroptera, Coleoptera) of the fishponds near Siedlce as the proposed nature reserve "Rybakówka" [sic!]. *Rocz. nauk. pol. Tow. Ochr. Przyr.* "Salamandra" 2: 109-118. – (Pol., with Engl. s.). – (Res. Cent. Agric. & Forest Envir., Pol. Acad. Sci., Bukowska 19, PO-60-809 Poznan).
15 odon. spp. are listed from this locality, nr the city of Siedlce, E Poland.

- (12293) MOCEK, B., 1998. Příspěvek k poznání vážek (Odonata) vychodních Čech s uvedením nálezu druhu *Crocothemis erythraea* (Brullé, 1832). – Contribution to the knowledge of the dragonflies (Odonata) in eastern Bohemia with the findings of the species *Crocothemis erythraea* (Brullé, 1832). *Acta Mus. reginaehradecensis* (A) 26: 27-37. (Czech, with Engl. s.). – (Muzeum vych. Čech, Eliščíno nábf. 465, CZ-50001 Hradec Králové).
Commented records of 16 spp., incl. *Hemianax ephippiger* (Hradec Králové distr., 1 ♂, 3 ♀, 21-VI-1995; Špindlerov Mlyn-Sv. Peter, 27-X-1995) and *Crocothemis erythraea* (various localities), 1996, 1997).
- (12294) NAKAZAWA, Y. et al., 1998. *A study of body colour change in Indolestes peregrinus* (Ris). Biol. Club, Mito Municipal Kunita Junior High School, Mito. 12 pp. – (c/o N. Ishizawa, 1644-15, Yamaguchi, Tokorozawa, Saitama, 359-1145, JA).
This is an abridged translation of the report on a research project, submitted in 1978 by a group of high school students for the "Award for scientific studies by Japanese students". In *I. peregrinus* the adult life takes ca 12 months and includes the hibernation. Under natural conditions the damselfly passes through 8 colour phases. These are here described, and the conditions triggering colour change were studied also experimentally.
- (12295) NEWSLETTER OF THE BRITISH DRAGONFLY SOCIETY, No. 34 (Autumn 1998). – (c/o S. Henson, 10 Shotesham Rd, Poringland, Norwich, NR14 7LE, UK).
In addition to 8 field trip reports (all with some records), descriptions of 4 BDS projects, some conservation and business news, etc., the issue contains the Winter 1998 & Spring/Summer 1999 programme. Some of the signed articles: *Baldock, N.*: Survey for scarce damselfly species on Dartmoor, June-August 1998 (pp. 7-8); – *Vick, G.*: Odonatologica (p. 12).
- (12296) NIELSEN, O.F., 1998. *De danske guldsmede*. – [*The dragonflies of Denmark*]. Apollo Books, Stenstrup. 279 pp., 233 col. figs, 258 line drawings. Hardcover, with dust jacket. 24×17 cm. ISBN 87-88757-21-8. (Danish). – Price: DK 300.- net). – (Available from SIO).
The study of Danish Odon. has a long and outstanding tradition. It commenced with O.F. Müller's anonymously published *Fauna insectorum fridrichsdalina* (1764, Gleditsch, Hafniae-Lipsiae), and C. Wesenberg-Lund's "Odonaten-Studien" (1913-1914, *Int. Revue ges. Hydrobiol. Hydrogr.* 6: 155-228, 373-422) triggered the birth of "Biological systematics of central European Odonata" (cf. OA 4141) and had a far-reaching impact on the development of modern odonatology. In the 20th century, several noteworthy books were published on Danish dragonflies. P. Esben-Petersen's *Guldsmede, døgnfluer, slørvinger og copeognather* (*Pseudoneuroptera*) (1910, Danmarks fauna; Gad, København) figures among the earlier national dragonfly field guides (pocket size) in Europe. T.W. Langer's *Biller, guldsmede og graeshopper: indsamling og praeparation, rad og vink for unge samlere* (1961, Clausens Forlag, København) provided instructions and technical hints for Danish dragonfly collectors. A delightful picture of Danish dragonfly world was supplied by G. Hansen's *En bog om guldsmede* (1980; see OA 3023; Swedish edn OA 6786). Danish dragonfly folklore has received attention in J. Riggert's *Fandens ridehest* (1977; see OA 2871). In a sense a forerunner of the present work is the attractive, slim *Danmarks guldsmede*, by the present Author (1995; see OA 10303). – The volume under discussion here is a well-organized and nicely produced national handbook. – General chapters appear on pp. 9-36. The post-1910 history of Danish odonatology is briefly touched upon in the Introduction (pp. 9-10), and a passing reference is made to, and a beautiful col. phot. reproduced of the recently described *Gomphaeschna paleocenica* (cf. OA 11724). No other Danish fossil taxa are mentioned, such as e.g. *Phenacolestes jutlandica* or *Oplonaeschna staurophlebioides*, both described by the Danish paleontologist K.L. Henriksen. The latter author produced also an exhaustive study on Danish Quaternary insects, incl. Odon., which seems to be missing in all odonatol. bibliographies (1933, *Vidensk. Meddr dansk naturh. Foren.* 96: 77-355, pls 6-10 excl.). – The other chapters of the general part are dealing with biology, life history, behaviour, ecology and range extension, and a brief heading is added on dragonfly photography. – The main part of the book (pp. 37-246) consists of 53 well-organised and easy-to-read species "monographs". *Sympetrum fonscolombei* is reported here from Denmark for the first time (p. 277). A morphological description and sections on habitats, biology and range are provided for each sp., and the text is enhanced by inclusion of a habitat phot., several portraits of both sexes, and a map of distribution in Denmark and in the adjacent S Scandinavia. The pre-

- cise localities are neither named nor mapped. — The concluding part (pp. 247-271) presents adult and larval keys, well-styled and excellently illustrated. Neither in species headings, nor in the keys the names of the infraspecific taxa of *Lestes virens* and *Aeshna subarctica* occurring in Denmark are stated. — The reference list includes 47 titles; the compilation of a national odonotol. bibliography was not attempted. — Considering the amount of col. illustrations and the high technical standard of reproduction and binding, the price is rather moderate. The work should not be missed in any serious odonotol. library.
- (12297) *ODONATOLOGICAL ABSTRACT SERVICE*, No. 2 (June 1998). Published by the International Dragonfly Fund (IDF) in cooperation with the Worldwide Dragonfly Association (WDA). Compiled by Dr M. Lindeboom & M. Schorr. Supplied to the WDA members only.
With reference to *OA* 11926, the listing is technically significantly improved. There are 145 numbered entries for 1997 and 1998 (Nos 1-145), some without abstract. Basically, titles are given in the original language, and authors' addresses are provided whenever possible. Brief notes from odonotol. newsletters are treated individually (which is not the case in *OA*), but selection of the coverage is unclear.
- (12298) OTT, J., 1998. Feuerlibelle erobert die Pfalz. Einwanderung wärmeliebender Insekten zeigt Klimaveränderung an. *Rheinpfalz* 1998(218), 1 p. (issue of 19 Sept.). — (Am Moosberg 10, D-67705 Stelzenberg).
A regional daily's article on the current range expansion of *Crocothemis erythraea* in the Palatinate (Germany) and elsewhere in Europe, caused by the recent climate change. The article triggered much response from the general readership, and the Author has received several requests for public talks on the subject. — See also *OA* 10760 and 11015.
- (12299) PAPAŽIAN, M., 1998. Les odonates et les plantes épizoochores. *Entomologiste* 54(5): 193-196. (With Engl. s.). — Le Constellation Bât. A, 72 av. des Caillols, F-13012 Marseille).
In Camargue, France, *Orthetrum cancellatum*, *Crocothemis erythraea* and *Sympetrum fonscolombei* potentially fall victim to *Setaria verticillata*, an epizoochoric plant on which they perch. In strong wind their wings get entangled and immobilized by the plant's numerous hooked hairs.
- (12300) PRINGLE, C.M. & A. RAMIREZ, 1998. Use of both benthic and drift sampling techniques to assess tropical stream invertebrate communities along an altitudinal gradient, Costa Rica. *Freshw. Biol.* 39(2): 359-373. — (Inst. Ecol., Univ. Georgia, Athens, GA 30602, USA).
Heteragrion erythrogastrum and 6 higher odon. taxa are listed from localities at elevations 30-1800 m.
- (12301) PUDWILL, R., 1998. Fluss- und Quelljungfern (Anisoptera: Gomphidae und Cordulegastridae) im Raum Gifhorn (Ost-Niedersachsen). *Braunschweig. naturk. Schr.* 5(3): 541-549. (With Engl. s.). — (Böttcherstr. 3, D-38518 Gifhorn).
The distribution of *Gomphus pulchellus*, *G. ulgatissimus*, *Ophiogomphus cecilia* and *Cordulegaster boltonii* along the streams in the Gifhorn area, Lower Saxony, Germany is mapped. The emergence and the stream management effects are discussed.
- (12302) RAMOVŠ, P., 1998. Krstna izvedba: *Akatombo*, za godalni kvartet. — [First performance: *Akatombo*, for string-quartet]. *Let. slov. Akad. Znan. Umetn.* 48: 110. (Slovene; title only). — (Professor Ramovš deceased 10 Jan. 1999).
In the 1997 bibliography of this composer and Member of the Slovene Academy of Sciences and Arts, his arrangement of *Akatombo* is listed. It has been composed for, and was first performed at the Opening of the 14th Int. Symp. Odonatol., Maribor, Slovenia; July 1997.
- (12303) SCHÖNENBERGER, A., C.M. BRANDSTETTER et al., 1998. *Das Ried – verlorenes Juwel? Ein Naturraum von internationaler Bedeutung (Dornbirner, Schwarzacher, Wolfurter, Lauteracher und Lustenauer Ried [Schweizer Ried])*. Erster Vorarlberger Coleopterologischer Verein, Bürs. 92 pp. ISBN 3-901836-1-2. — Price: öS 100.- net. — (Orders to: EVCV, c/o C.M. Brandstetter, Schesastr. 1, A-6706 Bürs; — or to the Eds of *Odonatologica*).
A beautiful volume on the flora and fauna of 5 moors in the Austrian Rhine Valley, incl. an annotated checklist of 30 odon. spp. from 4 of them. The local status of the spp. is compared with that in Austria, Switzerland and Baden-Württemberg (Germany).
- (12304) SIVA-JOTHY, M.T., Y. TSUBAKI & R.E. HOOPER, 1998. Decreased immune response as a proximate cost of copulation and oviposition in a damselfly. *Physiol. Ent.* 23(3): 274-277. — (First Au-

thor: Dept Anim. & Plant Sci., Univ. Sheffield, Sheffield, S10 2TN, Scotland, UK).

♂♂ and ♀♀ of the Japanese *Matrona basilaris japonica* showed a rapid (within 24 h) and significant reduction in immune system function (encapsulation response) after reproductive activity (copulation or oviposition). A similar, but non-significant, change occurred in ♂♂ that conducted energetically costly behaviour (fighting). These observations suggest that there may be physiological costs other than energy-based trade-offs associated with copulation and oviposition that may have life-history consequences via their effects on immune system function.

- (12305) STERNBERG, K., 1998. Die postglaziale Besiedlung Mitteleuropas durch Libellen, mit besonderer Berücksichtigung Südwestdeutschlands (Insecta, Odonata). *J. Biogeogr.* 25: 319-327. (With Engl. s.). — (Schillerstr. 15, D-76297 Stutensee). The probable postglacial colonization routes are tentatively outlined for 27 central European spp., viz. *Cercion lindeni*, *Ceriagrion tenellum*, *Coenagrion lunulatum*, *C. mercuriale*, *C. ornatum*, *Erythromma viridulum*, *Nehalennia speciosa*, *Lestes barbarus*, *L. virens vestalis*, *Sympetma paedisca*, *Aeshna affinis*, *A. grandis*, *A. isosceles*, *Anax parthenope*, *Gomphus pulchellus*, *G. similis*, *G. vulgatissimus*, *Onychogomphus forcipatus*, *O. uncatas*, *Ophogomphus cecilia*, *Cordulegaster bidentata*, *Crocothemis erythraea*, *Orthetrum albistylum*, *O. brunneum*, *O. coeruleus*, *Sympetrum fonscolombi*, and *S. meridionale*.
- (12306) STEWART, D.A.B. & M.J. SAMWAYS, 1998. Conserving dragonfly (Odonata) assemblages relative to river dynamics in an African savanna game reserve. *Conserv. Biol.* 12(3): 683-692. (With Span. s.). — (Second Author: Dept Zool. & Ent., Fac. Sci., Univ. Natal, Pietermaritzburg, SA). Adult ♂♂ (51 spp., 2671 individuals) were sampled from 42 sites on 4 variously disturbed rivers and 3 reservoirs in Kruger National Park, South Africa. Large flow fluctuations resulted in a high species turnover during sampling. Species richness mostly conformed with the intermediate-disturbance hypothesis, it was high on the rivers with moderate disturbance and low on the most disturbed ones. Ordination of odon. species data separated rivers into clear groups, indicating that the odon. assemblages reflected the distinct plant physiognomic and physical environmental conditions of each river system. Spp. that were abundant on any particular river had biotope preferences that reflected the overall environmental conditions of that river. Aquatic macrophytes, including 2 exotic invasive spp., promoted odon. species richness. These spp., however, were not rare or threatened. Highly disturbed rivers were characterized by spp. that preferred highly exposed situations with broad environmental conditions. In contrast, long grass or shady trees were important for some spp. because they buffered larger-scale, unpredictable environmental changes. Biotic disturbance was also important because trampling by buffalo reduced local species richness and composition. Odon. assemblages were highly visible and sensitive indicators of aspects of long-term environmental conditions of the water body. Management recommendations for dragonflies and other aquatic invertebrates include maintaining water and riparian biotope heterogeneity, maintaining constant flow rates and water levels, and allowing some macrophyte cover. A little natural and anthropogenic disturbance encourages much greater species richness than more extreme disturbance. The Sabie River is a major subject for conservation action in the premier protected area of Kruger National Park.
- (12307) STONE, M.K. & J.B. WALLACE, 1998. Long-term recovery of a mountain stream from clearcut logging: the effects of forest succession on benthic invertebrate community structure. *Freshw. Biol.* 39: 151-169. — (Dept Ent., Univ. Georgia, Athens, GA 30602, USA). Changes in benthic invertebrate community structure following 16 yr of forest succession after logging were examined in the Coweete Basin, Macon Co, North Carolina. For *Cordulegaster* and *Lanthus*, data on annual average abundance, biomass and production are presented for bedrock, riffle and depositional habitats in the reference (Hugh White Creek) and in the disturbed (Big Hurricane Branch) streams (Feb. 1993 – Feb. 1994).
- (12308) SUNADA, S., L. ZENG & K. KAWACHI, 1998. The relationship between dragonfly wing structure and torsional deformation. *J. theor. Biol.* 193(1): 39-45. — (First Author: Mechanical Engin. Lab., Agency Industr. Sci. & Technol., Min. Int. Trade & Indust., Namiki 1-2, Tsukuba, Ibaraki, 305, JA). The effect of wing corrugation on torsional deformation was investigated for dragonfly wings. Wing corrugation dramatically increases the warping rigidity, without significantly increasing the torsional rigidity.

This behaviour implies that the warping moment, which is proportional to the warping rigidity, has a larger resistance against the external moment than does the torsional moment by Saint-Venant's theory, which is proportional to the torsional rigidity. The larger warping rigidity means the wing can be thinner, provided the maximum deformation is restricted. Such a thinner, lighter wing is more suitable for beating flight because such wings have better aerodynamic performance and require lower inertial power. The natural frequencies of the torsional deformation were measured in *Cercion c. calamorum*, *Calopteryx atrata*, *Anax parthenope julius* and *Sympetrum baccha mutatinum*. In all cases, the lowest natural frequency of the torsional deformation was over two times higher than the beating frequency. This means that resonance does not significantly increase the passive torsional deformation caused by the flapping motion. The natural frequencies of the torsional deformation of dragonflies are determined by the warping rigidity, which is increased by the wing corrugation. The corrugation prevents unusually large deformation induced by resonance of the wing.

unaffected by fish presence during both day and night. At low stem density, fish capture more mayfly larvae than expected in the presence of dragonflies than in their absence, while dragonfly consumption is unchanged in the presence of fish. Both the behavioural attributes of predators and prey as well as structural complexity of their habitat affect encounter rates, and thus their net interaction.

- (12309) SURI BABU, B., 1998. Final instar larva of *Ischnura aurora aurora* (Brauer) (Zygoptera: Coenagrionidae). *J. Bombay nat. Hist. Soc.* 95: 354-357. — (Forensic Sci. Lab., Police Control Room, Jagdalpur-494001, M.P., India).
A detailed description, with illustrations and notes on larval habitat in Sagar, M.P., India.
- (12310) SWISHER, B.J., D.A. SOLUK & D.H. WAHL, 1998. Non-additive predation in littoral habitats: influences of habitat complexity. *Oikos* 81(1): 30-37. — (Cent. Aquat. Ecol., Illinois Nat. Hist. Surv., 607 E. Peabody Dr., Champaign, IL 61820, USA).
The combined effects of predators on prey in structurally complex habitats may not always be described by additive models. Changes in habitat complexity can affect consumption rates by individual predators, as well as alter the interactive, combined effects of predators with contrasting foraging styles. In the present paper, the combined consumption of a common prey by 2 predators was examined across a gradient of 3 habitat complexities. In microcosm experiments, consumption of larval mayfly prey, *Cloeon cognatum*, by juvenile bluegill sunfish (*Leptomis macrochirus*) and larval *Erythemis simplicicollis* exceeded additively at low habitat complexity, but were additive at higher levels of complexity. Prey capture by *Erythemis* was
- (12311) TAGLIAPIETRA, V. & D. ZANOCCO, 1998. Il progetto Bioitaly in Trentino: invertebrati. *Rep. Centro Ecol. alpina* 14: 1-83, 7 col. pls incl. (With Engl. s.). — (Centro Ecol. Alpina, I-38040 Viote del Monte Bondone, Trento).
On pp. 20-29, information is provided on the biology, ecology, distribution, status and conservation aspects of 11 odon. spp. in the (alpine) province of Trento, Italy.
- (12312) TANI, K., 1998. [Nature observation guide: aquatic animals (for children)]. Yamato River Construction Office, Kashiwara. 22 pp. ISBN none. (Jap.). — (Publishers: c/o Ministry of Construction, 10-8, Taisho 2-chome, Kushiwara, Osaka, 582-0009, JA).
2nd edn of the volume listed in OA 9527.
- (12313) THEISCHINGER, G., 1998. A new species of *Eusynthemis* Förster from Australia (Odonata: Synthemistidae). *Linz. biol. Beitr.* 30(1): 143-146. — (2A Hammersley Rd, Grays Point, NSW 2232, AU).
E. ursula sp. n. (♂ holotype: Chichester State Forest, springs of Telegghery R., NSW; deposited at ANIC, Canberra) is described, illustrated and compared with the other Australian *Eusynthemis* spp.
- (12314) THEISCHINGER, G., 1998. A new species of *Griseargiolestes* Theischinger from Australia (Odonata: Megapodagrionidae). *Stapfia* 55: 623-627. — (2A Hammersley Rd, Grays Point, NSW 2232, AU).
G. bucki sp. n. is described, illustrated and compared with all its congeners. Holotype ♂: Australia, New South Wales, Chichester St. Forest, XII-1997; deposited in ANIC, Canberra.
- (12315) THEISCHINGER, G., 1998. Supra-specific diversity in Australian "Argiolestes": (Odonata: Zygoptera: Megapodagrionidae). *Stapfia* 55: 613-621. — (2A Hammersley Rd, Grays Point, NSW 2232, AU).
The Australian spp. hitherto placed in *Argiolestes* are not closely allied to the extralimital congeners, and the south-western spp. differ in some aspects from

- those in eastern Australia. Consequently, these taxa are here reclassified into 3 genera, viz. Archiargiolestes Kennedy (formerly considered a junior synonym of Argiolestes Sel.; type sp.: Archiargiolestes pusillissimus Kenn.), Griseargiolestes gen.n. (type sp.: Argiolestes griseus Hag.), and Miniargiolestes gen.n. (type sp.: Argiolestes minimus Till.). Revised diagnoses, including adult and larval characters, are presented for these genera and for Austroargiolestes Kenn., and the Australian megapodagrionid larvae are keyed.
- (12316) THEISCHINGER, G., 1998. The Eusynthemis guttata (Selys) group of species from Australia (Odonata, Synthemistidae), part 2. *Linz. biol. Beitr.* 30(1): 147-153. — (2A Hammersley Rd, Grays Point, NSW 2232, AU).
The series commenced with the paper listed in OA 10612. — Upon a re-examination of *E. aurolineata* material it became apparent that an as yet undescribed sp. had been included in the type series of *Metathemis guttata melanosoma* by R.J. Tillyard (1913, *Proc. Linn. Soc. N.S.W.* 38: 229-241) and accordingly had been listed under *E. aurolineata* by the present author (OA 10612). This is here described as *E. rentziana* sp.n. (holotype ♂: NSW, Chichester State Forest, I-1998; deposited at ANIC, Canberra) and compared with its most similar congeners, with particular emphasis on the larvae.
- (12317) THEISCHINGER, G., 1998. Tonyosynthemis, a new dragonfly genus from Australia (Insecta: Odonata: Synthemistidae). *Linz. biol. Beitr.* 30(1): 139-142. — (2A Hammersley Rd, Grays Point, NSW 2232, AU).
Tonyosynthemis gen.n. is established on adult and larval characters. Type sp.: *Synthemis claviculata* Tillyard.
- (12318) UNWIN, B., 1998. Giant bird-eating dragonflies cross the Atlantic. *Independent* 1998 (Sept. 17): 10.
A newspaper report on the appearance of *Anax junius* in the Isles of Scilly and SW England. It is suggested the North American dragonflies have been blown off course to Britain, while migrating to the North-American South for the winter. This is the first record for Europe, and various localities and circumstantial evidence of British sightings are stated. — (For details, contact: A.J. Parr, 10 Orchard Way, Barrow, Bury St Edmonds, Suffolk, IP29 5BX, UK).
- (12319) VAN SWAAY, C. & R. KETELAAR, 1998. *Monitoring dagvlinders en libellen. Verslag voor de waarnemers 1997.* — [Monitoring butterflies and dragonflies. Report for field workers 1997]. Vlinderstichting, Wageningen [VS98.01]. 26 pp. (Dutch). — (Second Author: Asterstraat 37, NL-6708 DJ Wageningen).
The systematic odon. monitoring commenced in the Netherlands in 1997; the second Author is the organizer & coordinator of the project. Here, the project is briefly outlined and the first results are presented. Notes on *Gomphus vulgatissimus* and *Aeshna viridis* are of particular interest. Unfortunately, only vernacular nomenclature is used throughout.
- (12320) VAN VELZEN, J.-W., A. BOTSCHUYVER & M. WASSCHER, 1998. Libellen in de Amsterdamse Waterleidingduinen. — [Dragonflies in the water supply dunes of Amsterdam]. *Duin* 21(3): 10-11. (Dutch). — (Third Author: Minstraat 15bis, NL-3582 CA Utrecht).
General on the dragonfly world of the area. For a monographic treatment see OA 12183.
- (12321) VOGRIN, M., N. VOGRIN & M. BEDJANIĆ, 1998. Krajinski park Rački ribniki — Požeg. — [Landscape Park Rače Fishponds — Požeg]. DPPVN, Rače. 8 pp. (Slovene). — (Third Author: Fram 117/A, SI-2313 Fram).
A visitor brochure, incl. a chapter on odon. fauna (49 spp.) of this Park (Drava Lowlands, Styria, NE Slovenia). *Ophiogomphus cecilia*, *Leucorrhinia pectoralis* and *Sympetrum depressiusculum* are mentioned. For a work on the odon. fauna of the same area see OA 8094.
- (12322) WASSCHER, M., 1998. De invasie van de Geelvlekehedelibel in 1995. — [The *Sympetrum flaveolum* invasion in 1995]. *Natura, Amst.* 95(6): 179-181. (Dutch). — (Minstraat 15bis, NL-3582 CA Utrecht).
The origin and the route of the migration are described and some general problems of *Sympetrum* migratory flights are detailed. Migration started in NE Germany (ca 20 July), reached Hamburg on 26 July and the Netherlands on 30 July. Here it split off into 2 directions: central England was reached on 31 July, while the other wave followed the seacoast to France. 4 spp. were actually involved (*S. danae*, *flaveolum*, *sanguineum*, *vulgatum*).

- (12323) WILDERMUTH, H., 1998. Dragonflies, by P.L. Miller, 1995. *Mitt. ent. Ges. Basel* 48(1): 39-40. – (Haltbergstr. 43, CH-8630 Rütli).
A comprehensive book review of the volume listed in OA 10585.
- (12324) WILLIAMSONIA, Vol. 2, No. 4 (received Nov. 1998). Published by the Michigan Odonata Survey. – (c/o Dr M.F. O'Brien, Insect Div., Mus. Zool., Univ. Michigan, 1109 Geddes Ave., Ann Arbor, MI 48109-1079, USA).
O'Brien, M.: Another good year! (p. 1); – *Tennessee, K. & E. Bright*: Ophiogomphus aspersus records in Michigan (p. 2); – *Bright, E.*: Distribution of Stylogomphus albistylus in Michigan (pp. 2-3); – *O'Brien, M.F.*: New Odonata records for Washtenaw County, Michigan (pp. 3-4); with an anonymous county checklist on pp. 5-6); – *Clark, J.M.*: Odonata captured and eaten by plover (p. 7); – Notes on Perithemis (p. 7).
- 1999**
- (12325) DIGEST OF JAPANESE ODONATOLOGICAL SHORT COMMUNICATIONS, No. 9 (Jan. 1999). – Translated, edited & produced by N. Ishizawa (1644-15, Yamaguchi, Tokorozawa, Saitama, 359-1145, JA).
Mizuta, K.: Ovipositing strategy in Sympetrum species (pp. 1-3); – *Sumiya, T., A. Sanematsu & N. Osawa*: Migration in Sympetrum frequens (pp. 3-5); – *Hiratsuka, K.*: An ethological study on the genus Sympetrum at Harutori Lake, Kushiro city (pp. 5-7; summary of a Graduation thesis); – *Kanou, K., T. Miyahata, K. Okazaki & F. Kobayashi*: Sperm transference by Chlorogomphus brunneus costalis Asahina before tandem formation (p. 8); – *Ishizawa, N.*: Dragonflies of Sympetrum frequens trapped by larvae of tiger beetle (p. 8).
- (12326) [ISHIZAWA, N.J.], 1999. [Calendar] *Dragonflies of the Sayama Hills, 1999*. 14 pp. Ishizawa, Tokorozawa. – (1644-15, Yamaguchi, Tokorozawa, Saitama, 359-1145, JA).
A beautiful wall calendar, 2 months per page, with a portrait of a sp. For each of the illustrated spp. the description and a comprehensive outline of its biology are provided. The latter includes much of previously unpublished information, e.g. on body temperatures (incl. a graph for Anax guttatus), habitat requirements, behaviour and on regional phenology.
- (12327) KAMBHAMPATI, S. & R.E. CHARLTON, 1999. Phylogenetic relationship among Libellula, Ladona and Plathemis (Odonata: Libellulidae) based on DNA sequence of mitochondrial 16S rRNA gene. *Syst. Ent.* 24(1): 37-49. – (Dept Ent., Kansas St. Univ., Manhattan, KS 66506, USA).
The Libellulidae type genus is Libellula. At present, Libellula s.l. includes 29 spp., whose distribution is largely Nearctic. Whether 2 other libellulid taxa, Ladona and Plathemis, should be considered synonyms of Libellula, subgenera of Libellula, or separate genera, has been a subject of intermittent debate for over a century. Earlier proposals concerning Ladona and Plathemis were based on a limited number of morphological characters and lacked rigorous phylogenetic analyses. Therefore, the present authors used the DNA sequence of a portion of the mitochondrial 16S rRNA gene and parsimony, maximum likelihood and neighbour-joining analyses to explore whether Ladona and Plathemis are monophyletic lineages distinct from Libellula. They obtained » 415 bp of DNA sequence from 23 taxa, including 13 spp. of Libellula s.s., all 3 recognized spp. of Ladona, the 2 spp. of Plathemis and representatives of 4 other libellulid genera. Tetroneuria williamsoni (Corduliidae) was included as the outgroup. Parsimony analysis suggested that Ladona and Plathemis are monophyletic lineages distinct from Libellula s.s. with a sister group relationship between Libellula and Ladona. The monophyly of Ladona, Plathemis and Libellula was supported in > 90% of bootstrap replications and in trees 5 to 10 steps longer than the most parsimonious trees. Relationships inferred from maximum likelihood and neighbour-joining analyses also supported the monophyly of Ladona and Plathemis. The 4 other libellulid genera included in the study formed a monophyletic clade distinct from Libellula, Ladona and Plathemis. Based on this analysis, it is proposed that Ladona and Plathemis be considered either genera or subgenera within Libellulidae.
- (12328) KLEIN, J.-P., 1999. Les odonates des forêts rhénanes de Strasbourg, Bas-Rhin, France. *Opusc. zool. flumin.* 168: 1-28. (With Eng. s.). – (Lab. Aubert, 22 rue des Carmes, B.P. 664, F-54063 Nancy).
During 1995-1996, 34 spp. were evidenced, incl. the locally rare Calopteryx virgo, Coenagrion mercuriale, C. pulchellum, Aeshna grandis, Gomphus pulchellus, G. vulgatissimus and Onychogomphus forcipatus. The habitats are briefly described in terms of their respective vegetation, and the odon. applicability in terms

of their respective vegetation, and the odon. applicability in the wetland biological assessment is demonstrated. A comparison of the current status with the records of the early 1960s indicates the vulnerability of various spp. The present work renders a contribution towards the setting up of guidelines for the conservation and ecological management of aquatic habitats of the Strasbourg alluvial forests.

- (12329) WILDERMUTH, H., 1999. Verbreitung und Habitate von *Aeshna caerulea* (Ström, 1783) in den schweizer Alpen (Odonata, Anisoptera: Aeshnidae). *Opusc. zool. flumin.* 166: 1-18. (With Engl. s.). – (Haltbergstr. 43, CH-8630 Rüti).
44 localities with occurrence of *A. caerulea* were surveyed in the alpine region of Switzerland and new records integrated in an actualized distribution map. Imaginal and larval habitats of the sp. are described

incl. structural, phytosociological and hydrochemical characteristics of the breeding sites. The ecological factors limiting the upper and lower vertical distribution are discussed and conservation measures for the endangered sp. are suggested.

- (12330) *WILLIAMSONIA*, Vol. 3, No. 1 (Feb. 1999). Published by the Michigan Odonata Survey. – (c/o Dr M.F. O'Brien, Insect Div., Mus. Zool., Univ. Michigan, 1109 Gaddes Ave, Ann Arbor, MI 48109-1079, USA).
O'Brien, M.: 1998 season summary (pp. 1-2); – New data format (pp. 2-3); – *Ross, S.E.*: "Winter" collecting of Odonata larvae in Mecosta county, late November-early December 1998 (pp. 3-4); – *Westover, D.*: *Anax junius* overwintering project (p. 4); – *Clark, J.*: Can an odonate loop? (p. 7). – The issue also includes various announcements, a list of recent publications, etc.