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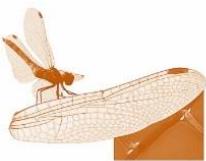
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Volume 159

Esther Appel & Stanislav N. Gorb
Comparative functional morphology of
vein joints in Odonata



Appel, Esther & SN Gorb (2014) Comparative functional morphology of vein joints in Odonata. Reihe: Zoologica Volume 159. 104 Seiten 53 Abb. 1 Tabelle Paperback 119 €

The authors present a thorough study on the distribution of resilin-bearing wing vein joints in wings of Odonata. 22 species of 20 different families of dragonflies and damselflies, showing various wing morphologies and flight kinematics, are examined and reveal interesting evolutionary trends. Dragonflies and damselflies show an exceptional high lift production and are some of the most maneuverable flying insects. The important role of their corrugated wing profile in increasing lift production has been shown in various studies. As odonate wings lack internal muscles, their aerodynamic performance relies on passive deformations, such as pleat angle widening and camber formation.

The rubber-like protein resilin has been shown to play a crucial role in wing joint flexibility. Thus, it may be assumed that the specific distribution of either stiff or flexible, resilin-bearing vein joints may influence the overall wing deformation during flight. Using fluorescence light microscopy and scanning electron microscopy, the dorsal and ventral wing sides of different species are compared with respect to the distribution patterns of four types of vein joints, five types of resilin patches, and joint-associated spines. The results reveal a significant difference between dragonflies and damselflies. Variations of the distribution patterns suggest a classification into five different pattern groups. Their occurrence within the two suborders shows some evolutionary trends and gives insight into the wing functionality. In particular, we discussed how the combination of joint morphology, kinematics, and wing morphology may allow different passive wing deformations during flight. This study, generously illustrated with 53 mostly coloured figures is of great interest to biologists studying insect flight, functional morphology, and evolution of Odonata. Furthermore, the described distribution patterns of different vein joints in combination with wing shape and flight kinematics may possibly inspire their biomimetic imitation in micro air vehicles.

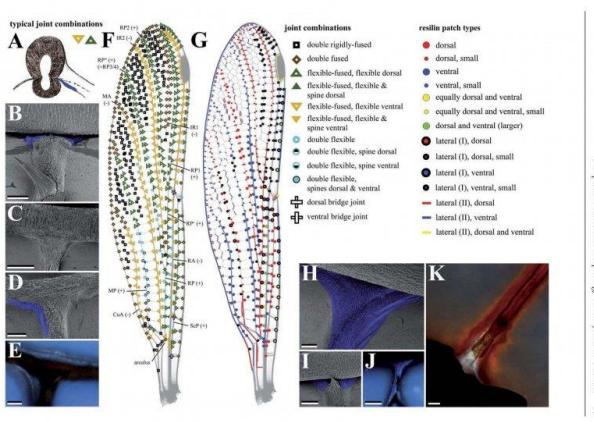


Figure 11: Comparative functional morphology of vein joints in Odonata.

S2 Esther Appel and Stanislav N. Gorb



Figure 12: *Aeschnophlebia superba*. Scale bar = 10 mm. Permission by Takashi Arai.

Figure 13: A, G: *Aeschnophlebia superba*, distribution map of the joint combination types (F) and the resilin patch types (G) in the forewing. Wing are drawn from the ventral side. Boxes are based on the data of SEM (F) and PLM (G). Shaded boxes are placed on the dorsal side of the wing. B, C: *Aeschnophlebia superba*, distribution map of the joint combination types (F) and the resilin patch types (G) in the hindwing. Wing are drawn from the ventral side. Boxes are based on the data of SEM (F) and PLM (G). D, E: *Aeschnophlebia superba*, distribution map of the joint combination types (F) and the resilin patch types (G) in the forewing. Wing are drawn from the dorsal side. Boxes are based on the data of SEM (F) and PLM (G). F: *Aeschnophlebia superba*, distribution map of the joint combination types (F) and the resilin patch types (G) in the forewing. Wing are drawn from the ventral side. Boxes are based on the data of SEM (F) and PLM (G). G: *Aeschnophlebia superba*, distribution map of the joint combination types (F) and the resilin patch types (G) in the forewing. Wing are drawn from the dorsal side. Boxes are based on the data of SEM (F) and PLM (G). H: *Aeschnophlebia superba*, distribution map of the joint combination types (F) and the resilin patch types (G) in the forewing. Wing are drawn from the ventral side. Boxes are based on the data of SEM (F) and PLM (G). I: *Aeschnophlebia superba*, distribution map of the joint combination types (F) and the resilin patch types (G) in the forewing. Wing are drawn from the dorsal side. Boxes are based on the data of SEM (F) and PLM (G). J: *Aeschnophlebia superba*, distribution map of the joint combination types (F) and the resilin patch types (G) in the forewing. Wing are drawn from the ventral side. Boxes are based on the data of SEM (F) and PLM (G). K: *Aeschnophlebia superba*, distribution map of the joint combination types (F) and the resilin patch types (G) in the forewing. Wing are drawn from the dorsal side. Boxes are based on the data of SEM (F) and PLM (G).



Christophe Brochard, Dick Groenendijk, Ewoud van der Ploeg, Tim Termaat (2. Auflage) Fotogids Larvenhuidjes van Libellen – libellenlarven.

320 Seiten Format 17 cm x 21 cm Gebunden 55 €
Compleet voor Noordwest-Europa - ruim 80 soorten - meer dan 2000 unieke foto's.

Huidjes van libellenlarven van Noordwest Europa determineren.

De eerste Nederlandstalige veldgids waarmee alle larvenhuidjes van libellen van Noordwest-Europa kunnen worden gedetermineerd. Beschrijft de huidjes van de 84 soorten libellen en waterjuffers geïllustreerd met meer dan

2000 spectaculaire foto's. Met achtergrondinformatie over de ecologie van libellen, het zoeken, verzamelen en conserveren.

- meer dan 2000 unieke foto's van de larvenhuidjes, de larven, de volwassen libellen en de biotoop
- beschrijft 84 soorten libellen (Anisoptera) en waterjuffers (Zygoptera)
- uitgebreide soortbeschrijvingen en determinatiesleutel voor de huidjes
- vergelijkende platen: larvenhuidjes & belangrijke details zoals vangmaskers
- foto's van de volwassen libel en biotoop met daarin de uitsluipplaatsen aangegeven
- inleiding over de ecologie van libellen en libellenlarven
- achtergrondinformatie over het zoeken, verzamelen, prepareren en aanleggen van een eigen collectie



Brochard, Christophe & Ewoud van der Ploeg (2014) Fotogids Larven van Libellen

272 Seiten 17 cm x 24 cm. Gebunden 55 €

Noordwest Europa - meer dan 80 soorten - uniek beeldmateriaal. Libellenlarven van Noordwest Europa determineren

Libellen brengen het grootste deel van hun leven door als larve. Niet alleen liefhebbers, maar ook onderzoekers willen deze larven graag op naam brengen. De aanwezigheid van libellenlarven zegt namelijk veel over de kwaliteit van het water. De praktische Fotogids Larven van Libellen is een handig hulpmiddel voor determinatie.

- Een logische aanvulling op de succesvolle 'Fotogids Larvenhuidjes van Libellen'
- 800 unieke foto's van de larven en hun leefmilieu
- Meer dan 80 soorten
- Heldere soortbeschrijvingen
- Praktische informatie over het zoeken naar en opkweken van larven
- Handige verwijzingen naar het 'larvenhuidjesboek'

Christophe Brochard is bioloog en gedreven natuurfotograaf. Ewoud van der Ploeg is een veelzijdig ecoloog en preparateur van insecten. Beide auteurs zijn al jarenlang gefascineerd door de vlinder- en libellenwereld.

Volume 163

Thomas Brockhaus

Die Eiszeitlibellen der Alten Welt

Pleistozäne Biogeographie paläarktischer Libellen



Thomas Brockhaus (2018) Die Eiszeitlibellen der Alten Welt - Pleistozäne Biogeographie paläarktischer Libellen
(Hrsg.: Hannes F. Paulus) (Zoologica, Heft 163)

[Ice-age Odonata of the Old World. The Pleistocene biogeography of Palearctic dragonflies]

145 Seiten, 23 cm x 31 cm, 106 Abbildungen, 18 Tabellen Paperback 109.00 €

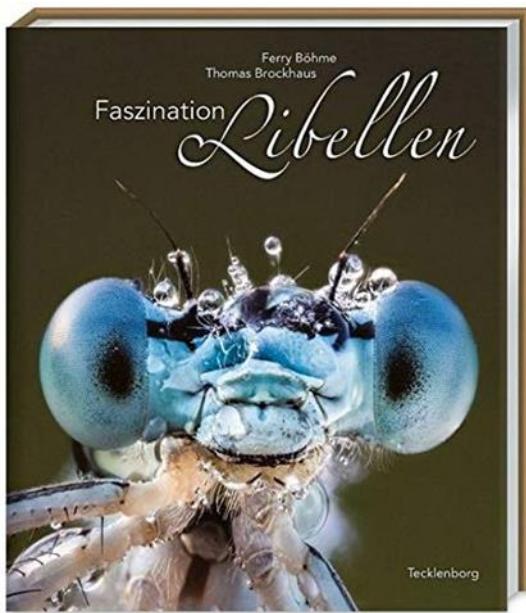
Im vorliegenden Band behandelt der Autor die pleistozäne Verbreitungsdynamik borealer Libellenarten in der Paläarktis. Hierzu werden paläontologische, autökologische und ausbreitungsdynamische Erkenntnisse sowie Ergebnisse der Pleistozänforschung in einer Synthese zu Modellen pleistozäner Arealbildungsprozesse vereinigt. Soweit mit diesen Methoden möglich, werden Artbildungsprozesse der Libellen dargestellt. Der Autor zeigt, dass der Klimawechsel, verbunden mit der Veränderung ganzer Landschaften, wohl ein Auslöser

evolutionärer Prozesse in einigen Libellentaxa gewesen ist.
Bei den aufgeführten Artbeispielen werden zwei Gruppen unterschieden: Arten, die starke Anpassungen an kalte Umweltbedingungen zeigen sowie Arten, die ein breites Temperaturspektrum tolerieren. Innerhalb dieser beiden Gruppen konnte er weitere Unterscheidungen vornehmen:

- Zirkumsubarktische und zirkumboreale Arten „Permafrostbodenarten“
- Rezent boreomontan verbreitete Arten
- Stenotope Arten mit borealer Verbreitung
- Rezent transpaläarktisch-boreomontan verbreitete Arten
- Ostpaläarktische Kaltzeitwanderer, disjunkte Areale sibirischer Arten
- Spätglaziale Gletscherrandwanderer
- Westpaläarktische Arten
- Arten mit west- bis zentralpaläarktischer Verbreitung
- Arten mit transpaläarktischer Verbreitung und ohne Unterarten
- West- und ostpaläarktische Schwesternarten oder Unterarten
- Fließwasserarten

Verbreitungsgebiete und Arealgeschichten für jede dieser Gruppen werden für typische Arten ausführlich beschrieben und anhand von rezenten und in einigen Fällen hypothetischen kaltzeitlichen Arealkarten charakterisiert. Für verschiedene Regionen der Paläarktis werden Faunen vorgestellt, die noch einen mehr oder minder großen Anteil von kaltzeitlichen Faunenelementen beinhalten.

Die Abhandlung richtet sich nicht nur an Entomologen und Odonatologen. Auch für Wissenschaftler, deren besonderes Interesse der jüngeren Paläogeografie, der Zoogeografie oder klimatisch bedingter evolutiver Prozesse gilt, ist dieser Band relevant. Die hier vorgestellten Ergebnisse sind auch für den Artenschutz von erheblicher Bedeutung, befinden wir uns doch gerade in einer Zeit dynamischer Klimaveränderung.

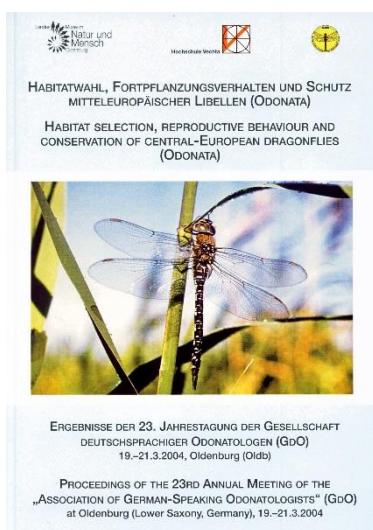


Dr. Thomas Brockhaus & Ferry Böhme (Fotograf) (2018) Faszination Libellen - Eine fotografische Liebeserklärung an die eleganten Räuber der Lüfte

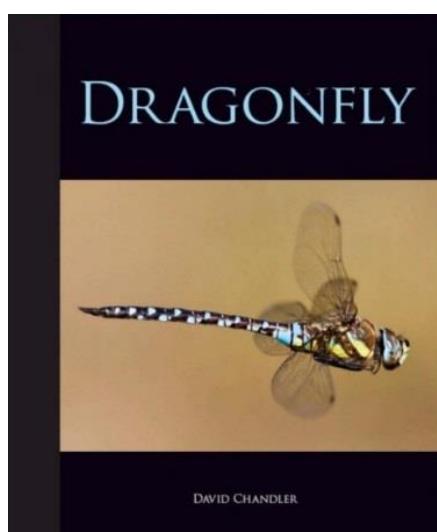
160 Seiten im Format 28 cm x 24 cm, 157 Abbildungen. Hardcover 28,50 €

Libellen zählen zu den größten und für viele auch zu den schönsten Insekten Deutschlands. Und nicht nur das: Die heimlichen "Könige der Lüfte" sind wahre Wundertiere mit außergewöhnlichen Talenten. So können sie beispielsweise als einzige Insekten sogar rückwärts fliegen. Der Fotograf Dr. Ferry Böhme hat die urtümlichen Insekten, die in ähnlicher Form schon zu Zeiten der Dinosaurier flogen, zu seinen Lieblingsmotiven erkoren und bietet mit stimmungsvollen, brillanten Bildern sowie

spannend-wissenswerten Texten einen tiefen Einblick in ihr Leben.

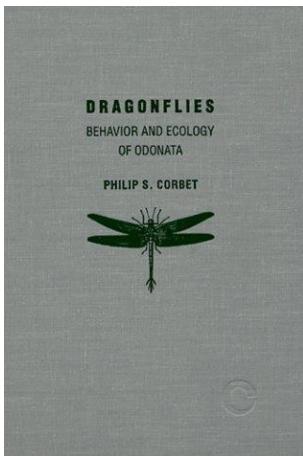


Buchwald, Rainer (Hrsg) (2006) Habitatwahl, Fortpflanzungsverhalten & Schutz mitteleuropäischer Libellen (Odonata) - Ergebnisse der 23. Jahrestagung der Gesellschaft deutschsprachiger Odonatologen (GdO), 19.-21.3.2004, Oldenburg. 128 Seiten, Format 17 cm x 24 cm, zahlreiche sw Abbildungen Paperback 14,80 €

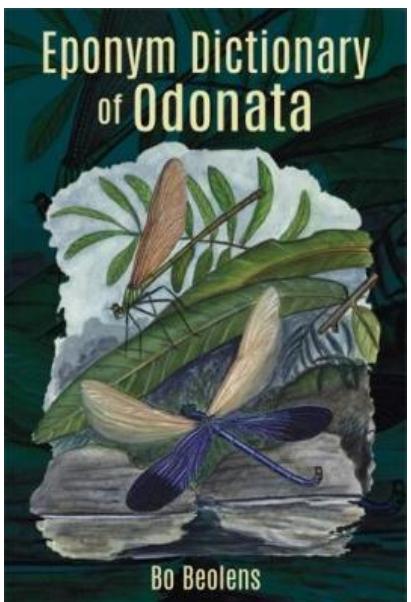


Chandler, David & Steve Cham (2013) Dragonfly.
128 Seiten, 80 Farbfotos. Ca 20 €

Supremely colourful, among the most voracious predators of the insect world & on the wing for more than 300 million years, dragonflies & damselflies capture the imagination in so many ways. Yet many aspects of their fascinating lives are little-known to humans. Dragonfly provides an insight into a hidden world through engaging text and stunning close-up photography. Dragonfly combines insightful writing with rarely seen images of the life and behaviour of the world's dragonfly & damselfly species. There are chapters on subjects such as hunting, courtship and the emergence of the nymphs & their subsequent transformation into adult dragonflies. These insects are further brought to life through the personal experiences of the author & photographers & these are woven into the text.



Philip S. Corbet (1999) Dragonflies - Behavior and Ecology of Odonata. 864 Seiten, 18 cm x 25 cm, 559 Abbildungen
Hardcover ca. 165 €

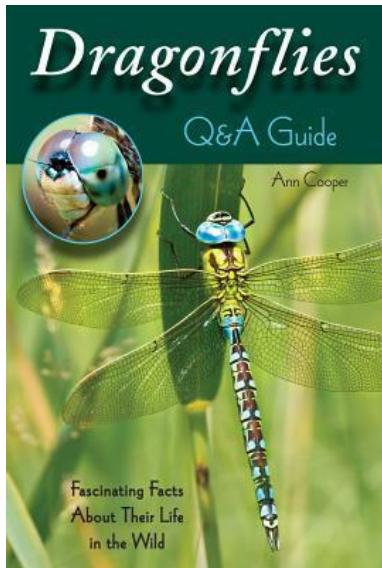


**Richard Crombet-Beolens Eponym (Oktober 2018)
Dictionary of Odonata**

ca. 352 Seiten, Format 24 cm x 17 cm Hardback ca. 55 €

The Eponym Dictionary of Odonata is a comprehensive listing of all people after whom damselflies and dragonflies have been named in scientific or common names. Each entry provides details of the species and a brief biography of the person. It is also cross-referenced so that the relationships between scientific authors, entomologists and others can be followed. Many entries have been contributed by the people so honoured who are not necessarily odonatologists, entomologists, zoologists or even great men of science. Many damselflies and dragonflies are named for the author's family members, friends and those who collected the species holotypes, while others are figures from myth or history. In fact, it could be anything from the author's mother to a favourite musician.

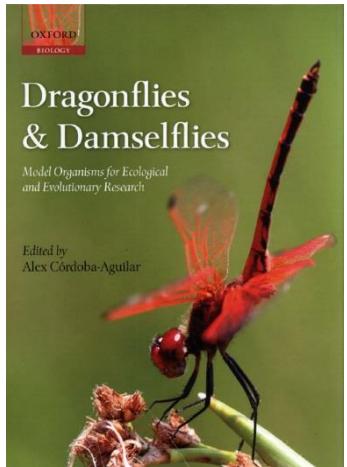
Because entries may include details of dates, places, educational and work institutions, it is possible to discover information about each person and for a picture to be built of how the science sometimes follows groupings of colleagues or those significantly influenced by charismatic teachers. The Dictionary includes other names which might, at a glance, be thought to be eponyms yet are not in the truest sense. These may be species named after characteristics embodied in characters from literature, whole peoples, acronyms or toponyms, etc. To some extent it can read like a canon of the great women and men of science over the last several centuries. Interestingly there are species named after as many as three generations of the same family, veiled references to old lovers, sycophantic homage, financial patronage, etc., as well as all the more 'legitimate' reasons for naming species. Not surprisingly, odonatologists exhibit a range of opinion on the practice, from naming all species after people, to wanting all eponyms banned; they can be totally humourless and pedantic or full of fun and irreverence. Like all of us they have as many reasons for their namings as ordinary folk have for naming their children or pets. Underlying all this, however, is the value of Eponym Dictionary of Odonata in cataloguing this fascinating aspect of science for all users, whether scientists or interested lay readers.



Cooper, Ann (2014) Dragonflies: Q&A Guide : Fascinating Facts about Their Life in the Wild.

102 pages. 15 cm x 22 cm, black & white illustrations, colour illustrations. Paperback ca. 20 €

Got a question about dragonflies? This book has answers. Dragonflies: A Q & A Guide is a lively, illustrated guide for anyone looking to learn more about dragonflies and their lives in the wild. Easy-to-read format for readers looking to dip in or read straight through Hundreds of questions posed and answered about the dragonfly's anatomy, history, and life cycle. Dozens of stunning color photos of dragonflies in their habitats. Special sections on record-breaking dragonflies and the relationship between dragonflies and humans"



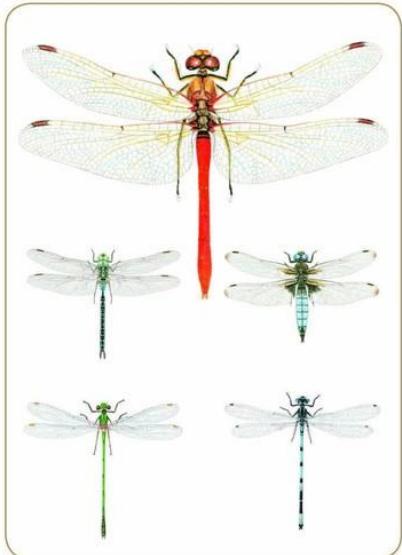
Cordoba-Aguilar, Alex (Hrsg 2008) Dragonflies & Damselflies - Model Organisms for Ecological & Evolutionary Research.

Ca. 260 Seiten Gebunden ca. 120 € paper ca. 52 €

Dragonflies & Damselflies documents the latest advances in odonate biology & relates these to a broader ecological & evolutionary research agenda. Despite being one of the smallest insect orders, dragonflies offer a number of advantages for both laboratory & field studies. In fact, they have been crucial to the advancement of our understanding of insect ecology & evolution. This book provides a critical summary of the major advances in these fields. Contributions from many of the leading researchers in dragonfly biology offer new perspectives & paradigms as well

as additional, unpublished, data. The editor has carefully assembled a mix of theoretical & applied chapters (including those addressing conservation & monitoring) & achieves a balance of emerging & established research topics, providing suggestions for future study in each case. This accessible text is not about dragonflies per se but an essential source of knowledge that describes how different sets of evolutionary & ecological principles/ideas have been tested on a particular taxon. It will therefore be suitable for graduate students & researchers in entomology, evolutionary biology, population & behavioural ecology, & conservation biology. It will of course be of particular interest & use to those working on insects & an indispensable reference text for odonate biologists.

Alain Cugno (2016) Libellules.



Libellules

ALAIN CUGNO

De Natura Rerum
kliniekseek

que parlent couramment ou en râvassant les ruisseaux et les rivières, en dormant les mares et en frémissant les lacs. Les quatre-vingt-douze espèces du territoire métropolitain sont décrites et inscrites dans une grande clé de détermination au fonctionnement inédit, inventé, affiné et perfectionné durant des années d'observations.

Les planches de Vanessa Damianthe sont bien plus que des illustrations, elles donnent une présence réelle par représentation aux libellules.

182 pages, 12 cm x 18 cm, 30 Planche(s) couleurs.
Livre broché ca. 18 €

J'ai découvert les libellules un jour très précis à une heure non moins précise. D'où m'est venue cette fascination, je ne saurais le dire, elle est aussi ancienne que moi, je pense bien que nous sommes nés en même temps. La passion est la seule attitude d'esprit, la seule forme d'engagement qui puisse ouvrir à la compréhension de ce qui se montre, dans quelque domaine que ce soit. Mais pourquoi les libellules ? Je renonce à répondre, évidemment, le philosophe que je suis rend les armes, non je ne parviendrai pas à argumenter de telle sorte que je puisse démontrer la supériorité des odonates sur les autres insectes. L'horizon de sens d'un groupe animal est comparable à une langue, qui saisit le monde d'une manière déterminée. Il fallait tenter d'écrire le dictionnaire et la grammaire de cette langue magnifique : le libellulien,

Kleber Del Claro · Rhainer Guillermo
Editors

Aquatic Insects

Behavior and Ecology

Springer

Del-Claro, Kleber & Guillermo, Rhainer (08.07.2019) Aquatic Insects - Behavior and Ecology

442 pages 118 illus., 69 illus. in color Hardcover ca. 195 €

The first book focusing on the behavioral ecology of aquatic insects in their different life cycles.

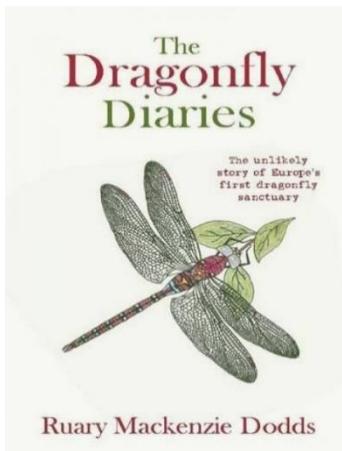
Discusses biotic and abiotic interactions, sexual selection, and evolution of behavioral strategies.

Presents applied case studies where aquatic insects are used as bio indicators of environmental quality and inspire new technologies

This book presents a broad view of the ecology and behavior of aquatic insects, raising awareness of this conspicuous and yet little known fauna that inhabits inland waterbodies such as rivers, lakes and streams, and is

particularly abundant and diverse in tropical ecosystems. The chapters address topics such as distribution, dispersal, territoriality, mating behavior, parental care and the role of sensory systems in the response to external and internal cues. In the context of ecology, it discusses aquatic insects as bio indicators that may be used to assess environmental disturbances,

either in protected or urban areas, and provides insights into how genetic connectivity can support the development of novel conservation strategies. It also explores how aquatic insects can inspire solutions for various problems faced by modern society, presenting examples in the fields of material science, optics, sensorics and robotics.

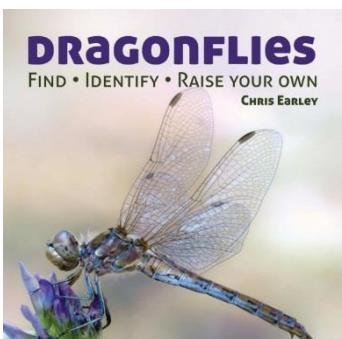


Dodds, RM (April 2014). The Dragonfly Diaries: The Story behind Europe's first Dragonfly & Damselfly Sanctuary.

216 pages, plates with colour photos Paperback ca 15 €

Britain is home to some 40 species of dragonfly, and public interest in their plight is high right now thanks to their primeval beauty, aerobatic grace and a growing realisation of their importance for water ecosystems. In *The Dragonfly Diaries*, Dodds shares his quirky fascination for these remarkable creatures over the 25 years he has been photographing and working with them. Combining fascinating description of the lives of dragonflies, with a diary chronicling the ups and downs of establishing Britain's first public dragonfly sanctuary, *The*

Dragonfly Diaries is a must for nature buffs and for anyone who wants to be inspired by the resolve & dedication of a man on a mission to save these critically important insects



Earley, Chris G (2013) Dragonflies: Hunting - Identifying - How and Where They Live. 32 pages, colour photos. Plastic laminated hardcover ca. 16 € Paperback ca. 10 €

An illustrated guide to observing, catching and releasing dragonflies. Dragonflies are as fascinating as they are beautiful. In *Dragonflies: Hunting - Identifying - How and Where They Live* readers will learn how to observe them in the wild and have them hover as close as their nose! Dragonflies and their close relatives, damselflies, have been around longer than dinosaurs

and can be found on all continents except Antarctica. One dragonfly species makes the longest migration of any insect in the world. *Dragonflies: Hunting - Identifying - How and Where They Live* can be found in wetlands, forests, fields and even back gardens. This illustrated guide to dragonflies and damselflies is packed with all the facts about what they are, what they eat, and what eats them. Their life cycle is explored, beginning from eggs that hatch into wingless nymphs that live underwater and breathe through gills. An identification section allows the reader to quickly and easily identify the most popular species and illustrates how each is unique, from darners to clubtails, spiketails to cruisers, and emeralds to skimmers.

ZOOLOGICA

Originalabhandlungen aus dem Gesamtgebiet der Zoologie
Gegründet 1899 von R. Leuckart, C. Chun, fortgeführt von W. Kükenthal, E. Hesse, W.E. Ansel

Herausgegeben von W. Funke

Heft
153

GÜNTHER FLECK and ANDRÉ NEL

Revision of the Mesozoic family
Aeshnidiidae (Odonata: Anisoptera)

With 148 figures and 3 tables



E. Schweizerbart'sche Verlagsbuchhandlung
(Nägele u. Obermiller) • Stuttgart 2003

Mesozoic group of Odonata are discussed: bird predation versus important changes in the freshwater ecosystem which occurred during the Cenomanian.

Fleck, G. & Nel, A. (2003) Revision of the Mesozoic family Aeshnidiidae.

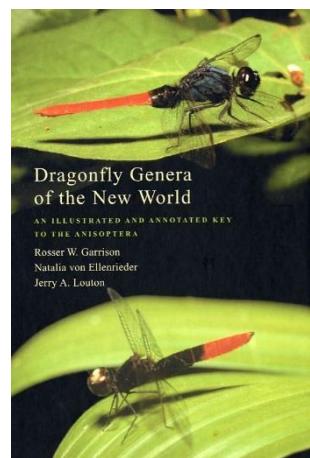
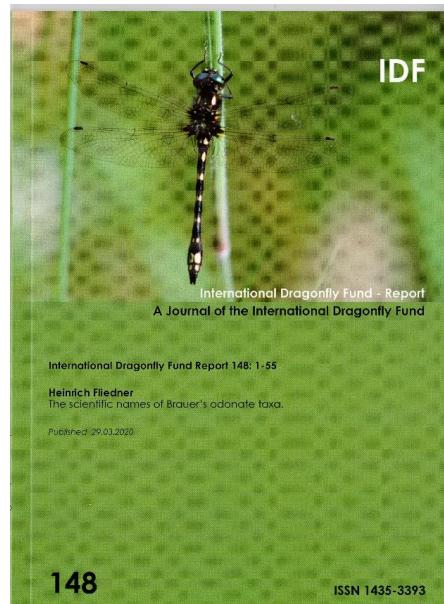
170 Seiten, 148 Abbildungen, 3 Tabellen (in: Zoologica 153)
Paperback 88 €

In this volume Aeshnidiidae are described and species are revised. Also several new Upper Jurassic and Lower Cretaceous genera and species are described. Data on adult and larval aeshnidiid morphology are discussed, several new larval, venational and adult body characters are described. An analysis of the inner phylogeny of the Aeshnidiidae is also performed, suggesting that a tendency towards a decrease of wing size occurred within this group, from very large Upper Jurassic forms to very small Lower Cretaceous taxa. The possible causes of extinction of this highly specialised

Fliedner, Heinrich (2020) IDF-Report 148 - The scientific names of Brauer's odonate taxa

55 Seiten, Format 21 cm x 15 cm, 9 Abbildungen, Paperback
9,90 €

In dieser Arbeit werden 135 wissenschaftliche Namen, die Brauer an Odonaten vergeben hat, einschließlich fossiler Taxa und Synonyme erklärt, darüber hinaus auch die Genera, in die Brauers' Arten jetzt eingeordnet sind. Doch zuvor geht der Autor auf Brauer's Biographie und seine Verdienste um die Taxonomie der Libellen werden herausgestellt. Im Anschluss an die Erklärungen werden seine Präferenzen bei der odonatologischen Namengebung herausgearbeitet und schließlich wird auf die Schwierigkeiten eingegangen, denen sich Brauer bei seiner taxonomischen Arbeit gegenüber sah.



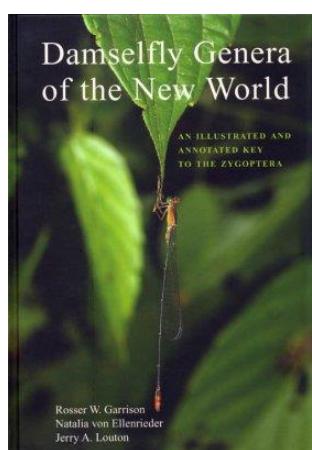
Garrison, RW, N v Ellenrieder & JA Louton (2006) Dragonfly Genera of the New World - An Illustrated & Annotated Key to the Anisoptera.

384 pp. 24 color illustrations, 31 halftones, 1595 line drawings.
Hardcover ca. 90 €

This is a beautifully illustrated & comprehensive guide to the taxonomy & ecology of dragonflies in North, Middle, & South America. A reference of the highest quality, this book reveals the striking beauty & complexity of this diverse order. Although Odonata are among the most studied groups of insects, until now there has been no reliable means to identify the New World genera of either group. This volume provides fully illustrated & up-to-date keys for all

dragonfly genera with descriptive text for each genus, accompanied by distribution maps & 1,595 diagnostic illustrations, including wing patterns & characteristics of the genitalia. For entomologists, limnologists, & ecologists, Dragonfly Genera of the New World is an

indispensable resource for field identification & laboratory research. Reviews: "Dragonflies have been moving up to join butterflies as a model group for natural history & scientific study. This well-organized & readable book will help speed that trend on a hemispheric basis.



Garrison, Rosser W, Natalia von Ellenrieder & Jerry A Louton (2010) Damselfly Genera of the New World: An Illustrated & Annotated Key to the Zygoptera.

490 pages, 24 colour plates, line illustrations, distribution maps.
Hardcover 90 €

This companion to "Dragonfly Genera of the New World" provides a comprehensive, fully illustrated guide to the damselflies of North, Central, & South America. Damselflies are more diverse & harder to identify than dragonflies. This reference contains original, up-to-date keys to the 125 genera of Zygoptera in North, Central, & South America; descriptive text for each genus; distribution maps; and, highly detailed diagnostic illustrations. Each account lists all known

species & generic synonyms, information on the status of classification, & references to larval descriptions. Features more than 2,500 illustrations.



Rosser W. Garrison & Natalia von Ellenrieder (2019) IDF-Report 134: An annotated list of the types of Odonata housed at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, U.S.A.

147 Seiten, Format 21 cm x 15 cm, 9 farbige Abbildungen Paperback 15,90 €

ZOOLOGICA

Originalabhandlungen aus dem Gesamtgebiet der Zoologie
und Biologie mit besonderer Berücksichtigung der Tierwissenschaften

Herausgegeben von W. Funk und P. Schaller

Heft
148

STANISLAV GORB

Functional morphology of
the head-arrester system
in Odonata

Wiss. Abdrucke, 9 Tabellen und Abbildungen

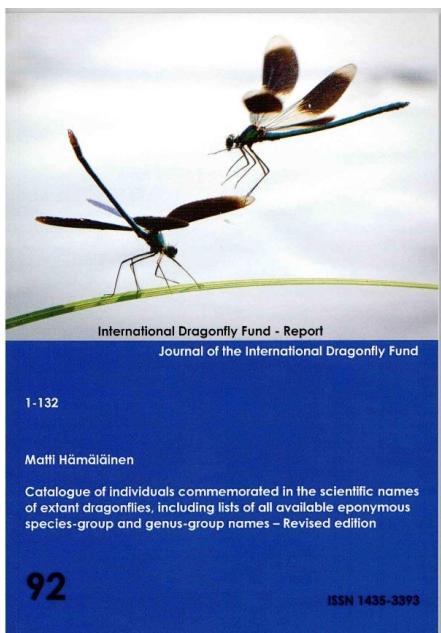


E. Schweizerbart'sche Verlagsbuchhandlung
(Nägele u. Obermüller) • Stuttgart 1998

Gorb, Stanislav: Functional morphology of the head-arrester system in Odonata. 1998. IV, 132 Seiten, 30 cm x 23cm, 92 Abbildungen, 9 Tabellen, 2 Anhänge.
(Zoologica 148) Hardback ca 85 € Paperback ca 74 €

Attachment organs of the Arthropoda are diverse in both structure and function. One such organ system may serve the fixation of structures of the body, an example of which is the head-arrester system which only occurs in adult dragonflies (Odonata). The design of the head-prothorax transition in adult Odonata does not have analogues in the Insecta. The area, which connects the head with the neck, is very small, compared to the size of the head. It is virtually a single point, providing high head mobility in the roll, pitch and yaw planes. The disadvantage of such a design is the weak mechanical strength of this "joint". The arrester has the function to stabilize the head. Arrester

system involves organs of two body segments: the head and the neck. It consists of a skeleton-muscle apparatus that sets the arrester parts in motion. The parts comprise formations covered with complicated microstructures - fields of microtrichia on the rear surface of head (MFH) and postcervical sclerites of the neck (SPC). The arrester immobilises the head during feeding or when the dragonfly is in tandem flight. Thus it may serve as an adaptation to save the head from violent mechanical disturbance and to stabilise gaze in the variety of behavioural situations. Gorb's work summarizes results of his morphological, physiological and ultrastructural studies on the head-arrester system in Odonata, and gives an overview on diverse attachment systems occurring in arthropods. It shows the evolutionary trend of the arrester in the order Odonata by using scanning electron microscopy and measurements of arrester structures in representatives of 26 odonate families. The arrester design occurring in the Epiophlebiidae, Gomphidae, Neopetaliidae, Petaluridae, and Chlorogomphinae is suggested to be the basic one. Two convergent pathways of head-arrester evolution among Zygoptera and Anisoptera are proposed. This work includes 23 plates and 25 photoplates of SEM pictures to give a thorough impression of the design of the arrester system in different odonate taxa. Arrester function is discussed on the basis of the morphology of skeleton-muscle system, cuticle microsculpture, histochemical data, the location of the sensory organs.



Matti Hämäläinen (2015) Catalogue of individuals commemorated in the scientific names of extant dragonflies, including lists of all available eponymous species-group and genus-group names.

International Dragonfly Fund – Report - Journal of the International Dragonfly Fund Volume 80 2015

172 Seiten im DIN A 5 – Format, mit 24 Farabbildungen
Paperback 19,90 €

Abstract: In der wissenschaftlichen Literatur werden Arten mit einem Gattungs- und Artnamen eindeutig identifizierbar beschrieben. Dabei werden Ortsbezeichnungen, Körpermerkmale, aber auch Namen von Personen verwendet. Eonym ist die Bezeichnung (einer Art), die auf einen Personennamen zurückgeht. Matti Hämäläinen, Finnland, hat in monatelanger detektivischer Arbeit versucht, die Libellenarten zu

identifizieren, die nach Personen benannt wurden. Neben der erweiterten Zuarbeit durch viele Libellenkundler, wurden in Gemeindeverwaltungen oder Archiven von Museen und Missionsgesellschaften die Archivare gebeten, Daten von Menschen zu recherchieren, die einer Libelle ihren Namen gegeben haben. Viele bisher unbekannte Lebensdaten wurden so ausfindig gemacht, und trotzdem gelang es nicht, zu allen Namensgebern (vollständige) Lebensdaten zu recherchieren.

Endergebnis ist ein Katalog von 1.257 Personen nach denen Libellen benannt wurden. Die Arten werden zusammen mit knapp gehaltenen Informationen zur Person, Vor- und Nachnamen und Geburts- und Todesdaten gelistet. Personenbezogen werden die Arten, Unterarten, Gattungs- und Untergattungsnamen dargestellt. In der Summe wurden 1.928 Arten und 54 Gattungen zu Ehren von Personen benannt. Jedoch sind darin auch die Synonyme und Homonyme enthalten. In der Summe ergibt sich, dass von den rezent vorkommenden Libellenarten 8.400 beschrieben wurden, und 23% dieser Beschreibungen personenbezogen sind. Unter diesen 8.400 Arten verstecken sich jedoch etwa 3.000 Synonyme. Von den 933 seit dem 1. Januar 1995 bis zum 10. März 2015 beschrieben Arten sind 42,9% Eonyme.



Fig. 7. *Protosticta foersteri* Laidlaw, 1902. Named after Johann Friedrich Nepomuk Förster (1865-1918), a German entomologist. After studying natural sciences at Heidelberg University (1886-1890) he worked as teacher in various secondary schools, the longest period being in Bretten (1899-1914) and later in Oberkirch. He was at first interested in botany, but with help and encouragement from Edmond de Selys Longchamps he became an odonate taxonomist. He corresponded regularly with Selys from May 1896, and on 18 August 1899 he visited Liège and spent two hours studying Selys' collections, after which, at 6 PM, Selys took him to dine at the Hôtel Mohren. Förster named 164 species or subspecies of Odonata. Artwork by A.G. Orr (2005).

Für alle, die Interesse an der Geschichte der Libellenkunde haben, wird dieses Buch immer wieder zu Hand genommen werden, um die Geheimnisse hinter den Namen zu lüften.



**Marion Klara Mazzaglia & Tobias Goldschalt (2018)
Eine Königslibelle in Neles Garten**

36 Seiten im Format 20,0 cm x 23,5 cm. 15,00 €

Bilderbuch, für Kinder ab 3 Jahren

An einem
warmen
Sommertag
entdeckt Nele
ein seltsames
kleines Tier im
Garten. „Es ist
die Larve einer

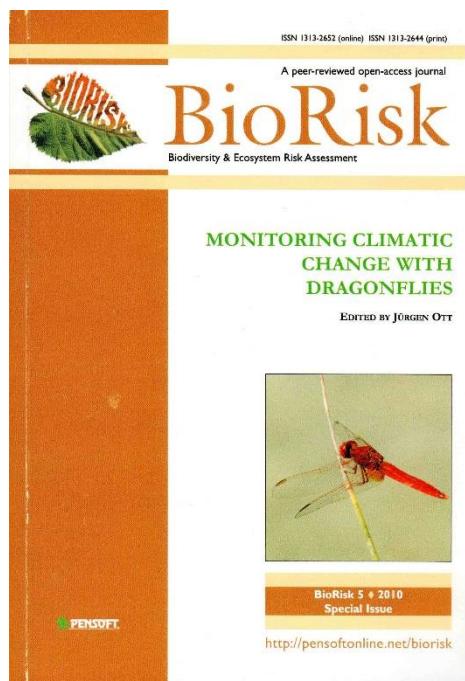
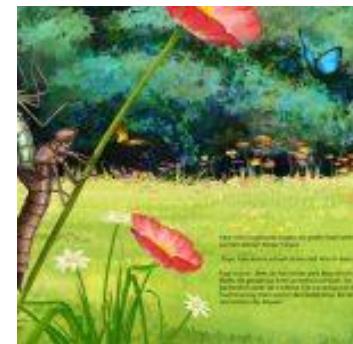
Königslibelle“, erklärt ihr Vater. Gemeinsam
beobachten sie, wie die Libelle erst aus der Larvenhaut
schlüpft, danach ihre Flügel in der Sonne trocknet und
schließlich ihren ersten Flug unternimmt. Eine
Geschichte mit interessanten Sachinformationen über eine
faszinierende Tierart.

Papier aus nachhaltiger Forstwirtschaft

Pflanzenölfarben

Lack auf Wasserbasis

Klimapositiver Druck

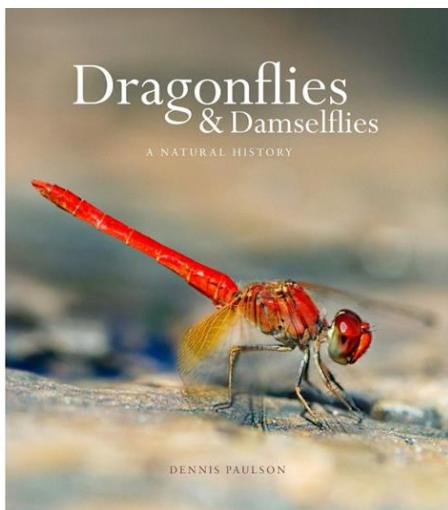


**Ott, Jürgen (Hrsg.) (2010) Monitoring climate
changes using Dragonflies.**

250 pp, 16x24cm, collection of papers, illustrated with
b/w & color figures, photos & graph. Paperback 100 €

Climate change impacts on biodiversity: the ALARM approach for the assessment of multiple risks & the consequences for dragonflies by J Settele et al. - Trends in occurrence of thermophilous dragonfly species in NRW - AK Libellen NRW by KJ Conze ua. - Do climatic changes influence dispersal & population dynamics of dragonflies in the western Peruvian Andes? J Hoffmann - Impacts of extreme weather & climate change on South African dragonflies by M Samways - Climate & evaluational range in a South African dragonfly assemblage M Samways & A Niba - Southern dragonflies expanding in Wallonia (S-Belgium): a consequence of global warming? By P Goffart - Dragonfly & Damselfly Distributions in Ontario, Canada: Investigating the Influence of Climatic Change by CD Beatty ua. - The local species richness of Dragonflies in mountain waterbodies: an indicator of climatic warming? by B Oertli - Monitoring of Odonata in Britain & possible insights into climate change by Ad Parr -

Effects of climatic changes on dragonflies - results & recent trends in Europe by J Ott - When south goes north: Mediterranean dragonflies conquer Flanders (N-Belgium) - G De Knijf & A Anselin - Changes in the range of dragonflies in the Netherlands & the possible role of temperature change by T Termaat ua. - Monitoring the effects of conservation actions in agricultural & urbanized landscapes - the dragonfly example - by H Wildermuth - Anthropogenic climate change impacts on ponds: a thermal mass perspective by J Matthews. The ecological problems of climatic changes have become more & more apparent & obvious, in Europe in particular after the hot summer of 2003. The future of some very attractive & well known species - like the polar bear - entered even the public discussions. Insects play in general a much smaller role, beside the problems caused in forest (e.g. bark beetles - Scolytidae), agriculture (different parasites) & human health. On the other hand Naturalists & Scientists observe changes in the natural fauna since decades, e.g. with an intervention of Mediterranean species in Northern Europe & presently the invasion of African species to southern Europe. This may indicate a general change of the natural ecosystems as the process is ongoing & even increasing. Similar processes are now found in several other parts of the world. Dragonflies are in this context a nearly perfect group, as they are easy to determine & observe, their ecology is mostly well known, they react directly on changes in the climate & they are widespread. As they have aquatic larval stages & the adults are terrestrial, they are also perfect indicators for both worlds. This volume puts together the results of studies which were carried out in Europe, but also in several other countries & continents, as well as some reviews of recent trends. For the first time in the climate change discussion an invertebrate group is documented to this extent. The book is addressed to researchers & lecturers in entomology, nature conservation & ecology, but also to practical conservationists, planners & decision makers



Dennis Paulson (März 2019) Dragonflies & Damselflies: A Natural History

224 pages, colour photos Gebunden ca. 28 €

Richly illustrated, this is a great introductory guide to the biology of dragonflies and damselflies. Dragonflies are often called birdwatchers' insects. They are large, brightly coloured, active in the daytime, and with complex and interesting behaviour. Like butterflies, they appeal even to people who don't think highly of insects in general. They have been with us since the dinosaurs lived, and they continue to flourish. Their ancestors were the biggest insects ever, and they still impress us with their size—the largest is bigger than a small hummingbird.

There are over 6,000 species of Odonata known at present, and you need only to visit any wetland on a warm summer day to be enthralled by their bright colours and fascinating behaviour.



Volume 156

Hans Klaus Pfau
Functional Morphology and Evolution
of the Male Secondary Copulatory Apparatus
of the Anisoptera (Insecta: Odonata)



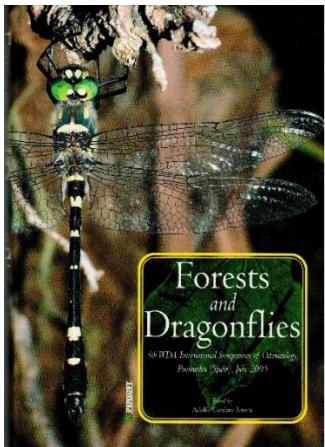
Schweizerbart Science Publishers

Pfau, Hans Klaus (2011) Functional Morphology and Evolution of the Male Secondary Copulatory Apparatus of the Anisoptera (Insecta: Odonata).

103 Seiten, 31cm x 23 cm, 65 Abbildungen Paperback
118,00 €

In this study, the functions and mechanical interactions of different parts of the secondary copulatory apparatus of Anisoptera are reconstructed in detail and possible evolutionary pathways are described. Whereas in Zygoptera and Anisozygoptera the vesica spermatis of the third abdominal segment is a single segmented intermediate sperm-storage, this organ is subdivided into four segments in the Anisoptera. The evolutionary consequences of acquiring new functions as secondary (in reality tertiary) "penis" and sperm-syringe are one focus of this study. The secondary copulatory apparatus of male dragonflies (Odonata), located at the

second and third abdominal segment, consists of a number of sequentially arranged devices. These serve (1) as support of the female ovipositor, (2) for carrying out preparatory actions for filling an intermediate sperm-storage, (3) for levering and inserting a secondary "penis" (in the primitive case the ligula) and (4) as transmitter of sperm to the female vagina. Each subtask affords a sequence of actions of the corresponding sclerites and muscles of this apparatus. An impressive variety of different solutions to perform and secure the filling of the sperm-reservoir of the vesica spermatis in the Anisoptera is described. In the primitive case a laborious and time-consuming procedure - which probably depends on interrelated functions of the ligula and female ovipositor - is carried out. Reduction of the ovipositor in different lines of the Anisoptera apparently initiated evolutionary modifications, which finally led to more sophisticated modes of preparing filling and protection. Another focus are the auxiliary devices and techniques in the Anisoptera for emptying the sperm-reservoir of the vesica spermatis. For instance, two different types of sperm-pumps are incorporated in its distal segment ("glans"). These pumps - which extend the function of a hydraulically working gland-structure, the erectile organ - show an opposite co-ordination of spermsuction and -ejection in connection with compression and decompression movements. It was tried to reconstruct a transitional system to close a serious gap in the phylogenetic interpretation. A comparative investigation of different "glans" led to the discovery of different "ways" of combining the emptying-mechanism of the sperm-reservoir with an intensification of the sperm-jet and a "washing out" of sperm of the male predecessor (sperm displacement). The different stages of evolution of the glans, which reflect phylogenetic splittings, are outlined and discussed. This study is of great interest to biologists interested in the functional morphology of the Odonata. It does not merely rely on painstaking comparisons of morphological details, but integrates functional points of view to use the heuristic power of hypothetical approach.



Rivera, A.C. (2006): Forest and Dragonflies. 4th WDA Symposium of Odonatology, Pontevedra, Spain, July 2005.

300 Seiten Gebunden 78 €

Collection of 14 papers on dragonflies, graphs, tables & colour fotos. Over the world, forests provide diverse habitats for a range of organisms, including dragonflies and other animals, that at a first sight seem not to depend on forests. For instance, *Macromia splendens*, one of Europe's most endangered dragonflies (cover), uses forest roads as hunting places, and larvae are sometimes found amongst tree roots. As the authors of this book show, dragonflies are highly dependent on forest cover and composition, and this is true from the boreal forests to the tropics. The aim of

this book is therefore to explore the ways in which forests affect dragonfly life, and to show that forests are much more than places where timber is produced.

ADOLFO CORDERO RIVERA Introduction: Dragonflies as forest-dependent animals

CORBET, P.S. Forests as habitats for dragonflies (Odonata)

GRAÇA, M. Allochthonous organic matter as a food resource for aquatic invertebrates in forested streams

THE IMPORTANCE OF FORESTS FOR DRAGONFLIES IN DIFFERENT CONTINENTS

ORR, A.G. Odonata in Bornean tropical rain forest formations: diversity, endemism and implications for conservation management

PAULSON, D. The importance of forests to neotropical dragonflies

FINCKE, O.M. Use of forest and tree species, and dispersal by giant damselflies (Pseudostigmatidae): future prospects in fragmented forests

DIJKSTRA, K.-D. & CLAUSNITZER, V. Thoughts from Africa: how can forest influence species composition, diversity and speciation in tropical Odonata?

SAHLÉN, G. Specialists vs. generalists among dragonflies - the importance of forest environments in the formation of diverse species pools

TSUBAKI, Y. & TSUJI, N. Dragonfly habitat maps based on landcover and habitat relation models

CONSERVATION AND BEHAVIORAL ISSUES

SAMWAYS, M. Threat levels to odonate assemblages from invasive alien tree canopies

TAYLOR, PH. Movement behaviours of a forest odonate in two heterogeneous landscapes

THOMPSON, D.J. & WATTS, PH.C. The structure of the *Coenagrion mercuriale* populations in the New Forest, southern England

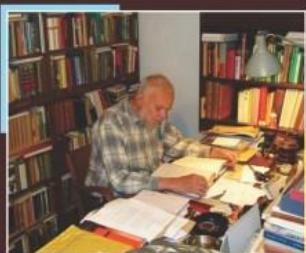
WATANABE, M. Mate location and competition for mates in relation to sunflecks of forest floors

CÓRDOBA-AGUILAR, A. & CONTRERAS-GARDUÑO, J. Differences in immune ability in forest habitats of varying quality: dragonflies as study models

HADRYS, H. The present role and future promise of conservation genetics for forest Odonates .

Dr Bastiaan Kiauta

Odonatologist and Polymath
His Life, Works and Universe



B.K. Tyagi

B. K. Tyagi (Januar 2019) Dr Bastiaan Kiauta: Odonatologist and Polymath His Life, Works and Universe

351 pages, 12 in colour 16 cm x 24 cm Publisher: Scientific Publisher (Indien) Gebunden ca. 90 €

Science provides an inexorable support to both the human and the nations' development. The great scientists have always provided inspiration by their findings, philosophy, and understanding of the world around us. They have inspired generations of young explorers, eager to learn more about the world and motivated toward betterment with constant efforts in the quest for knowledge. The life of Professor Dr B. Kiauta, Emeritus Professor of Invertebrate Cytogenetics and Cytotaxonomy, University of Utrecht, the Netherlands, President of Societas Internationalis Odonatologica (SIO) and the Executive Editor of

Odonatologica, is an open book of assiduous perseverance, focused application and great mentorship. There are indeed many examples of great scientists, or for that matter - odonatologists, in the history of science, but there are certainly absolutely inevitably very few who by their energetic character not only practically educate the budding researchers in habits of industry, but by the example of diligence and perseverance which they set before them, largely influence the scientific activity in all directions and contribute in a great degree to form the national character, or more precisely, the world order! This book, "Dr Bastiaan Kiauta: Odonatologist and Polymath – His Life, Works and Universe", conveys a great lesson that nothing creditable can be accomplished without application and diligence.

SECTION I: ORIENTATION 1. The family history and early childhood 2. The under school-age period and the World War-II time (1941-1945) 3. In the "Entomology School" of uncle Cyril Azman (1943-52) 4. Period of the early friendship with Mathias Gogala (1943-1953) 5. Breakthrough into the community of adult entomologists (1949-1952) 6. Decision on dragonflies (1952) 7. The first steps in odonatology (1953) 8. Bastiaan's first encounter with Professor Jovan Hadzi (1953)

SECTION II: RESEARCH AND ADMINISTRATION MANAGEMENT 9. Beginning of the professional career in odonate cytogenetics and cytotaxonomy (1957) 10. New insights in odonate cytotaxonomy and cytophylogeny 11. Research missions of The Netherlands Centre for Alpine Biological Research (N.C.A.B.R.) to the Nepal Himalaya (1972-1980)

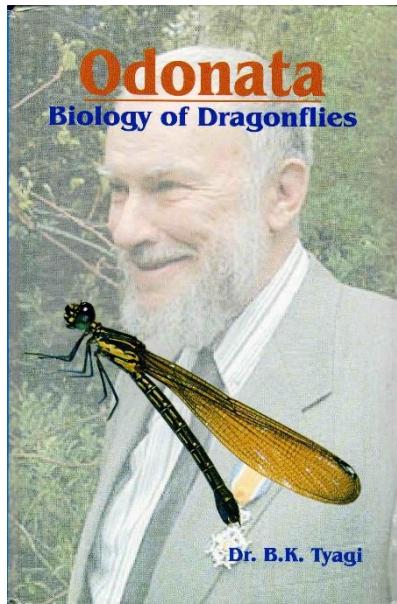
SECTION III: GLOBAL LEADERSHIP AND STATESMANSHIP 12. Origin of Societas Internationalis Odonatologica (S.I.O.) — The 'Family of Friends' 13. The S.I.O. National/Regional Offices worldwide 14. International Symposia of Odonatology 15. Odonatologica—the backbone of the S.I.O. and dawn of a new era 16. Worldwide odonatological periodicals of the S.I.O. and Dr Kiauta's network 17. Some non-odonatological organizations and their periodicals Influenced by (S.I.O.) or Dr B. Kiauta 18. International Odonata Research Institute (I.O.R.I.) 19. A teacher, scientist and philosopher 20. Societas Internationalis Odonatologica (S.I.O.) and International Union for Conservation of Nature & Natural Resources (I.U.C.N.) 21. Global mentorship 22. Extraordinary correspondence between Dr B. Kiauta and odonatologists worldwide

SECTION IV: REAL SOURCE OF STRENGTH 23. "Where is my wife?"

SECTION V: EVOLUTION OF SCIENCE OF ODONATOLOGY 24. Professor Bastiaan Kiauta – the phenomenon 25. S.I.O. dichotomy or ‘speciation’ of a new confrerie, the ‘WDA’? 26. The Kiauta-Corbet Era 27. To India, with love

SECTION VI: IN THE SERVICE OF GOD’S OWN CREATIONS 28. Engagement post-retirement

SECTION VII: SCIENTOMETRY OF PROFESSOR DR B. KIAUTA’S PUBLICATIONS, ODONATOLOGICAL AWARDS, DISTINCTIONS HONOURS AND OTHER MERITS ETC. Epilogue: Sky is the limit to an illustrious career Annex 1. Odonatological bibliography of Professor Dr B. Kiauta (1954-2018, partim) Annex 2. Dr B. Kiauta’s editorial work on odonatological periodicals, 1970-2018 Annex 3. New odonate taxa described by Professor Dr B. Kiauta Annex 4. List of new odonate taxa described in honour of Professor Dr B. Kiauta (1986-2013) Annex 5. Some selected non-odonatological publications by Professor Dr B. Kiauta (1953-2018) Annex 6. Editorial work on selected non-odonatological periodicals (1962-2018) Annex 7. Handwritten (and never published) text of a talk by Dr B. Kiauta



Tyagi, BK (2007) Odonata: Biology of Dragonflies.

366 pages, colour photos, maps. Gebunden 99 €

Dragonflies (Odonata), represented by over 6000 known species, are unique insects. In more than one feature they differ, at the very first glance, from all other insect superorders including their nearest allies, the mayflies (Ephemeropteroidea). They probably evolved as early as in the Lower Devonian. Odonata are characterized by a number of extremely archaic features, have evolved but very little in the course of the past geological epochs, & are, therefore, justly considered as a kind of living fossils. The living dragonflies represent but one order (Odonata), organized in three suborders, viz., Zygoptera, Anisozygoptera & Anisoptera. Anisozygoptera are represented in the present day fauna only by two relic species, one of which is endemic to Japan & the other in India & Nepal. The Zygoptera &

Anisoptera, on the other hand, are the dominant groups. Being voracious predators in both immature (aquatic) & adult (aerial) stages they are important elements of all, except the drier (or high alpine) environments in temperate & tropical regions, occupying a position at the apex of the food chain of invertebrate life. Many dragonfly species are tested biological control agents for several disease-transmitting vector mosquitoes, especially Aedes species. They are also ideal organisms to be used as indicators of water pollution & contamination. Many species serve as intermediate hosts of fluke parasites of birds, & thus are important in the transmission of parasitic diseases, especially of domestic poultry & wild ducks. Because of their unique morphology & physiology, dragonflies are used extensively in the study of many biological phenomena. All these subjects are discussed in this unique book comprising twenty three articles written by expert odontologists from different parts of the world. (auf Lager!! - leider sind die Bücher "Indien bedingt" in recht schlechtem Zustand)



van Dokkum, Pieter (2015) Dragonflies - Magnificent Creatures of Water, Air, and Land.

176 p 172 color illus. Ca 35 €

Almost without our noticing, dragonflies dart through our world, flying, seeing, hunting, mating. Their lives are as mysterious as their gossamer wings are beautiful. In this book Pieter van Dokkum reveals many of the dragonfly's secrets, capturing the stages of this striking insect's life cycle in unprecedented close-up

photographs. He documents scenes of dragonfly activity seldom witnessed & rarely photographed.

The book begins on a moonlit summer night, when an alien-looking larva crawls out of the water and transforms into a fully formed dragonfly. In the following chapters we witness dew-covered dragonflies sparkling in the morning sun, then a pair of mating dragonflies moving through the air in a twelve-legged, eight-winged dance. In the final chapter, one generation dies as the next prepares to leave the water and begin its own winged journey. Each stage is documented through van Dokkum's inquisitive lens & accompanied by information on various species of dragonflies & damselflies, their metamorphosis, & their ecological importance as insect predators. van Dokkum is Sol Goldman Family Professor of Astronomy and chair of the Astronomy Department at Yale University. He is also an expert in insect photography, with a focus on dragonflies.