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ODONATA OF BELIZE

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The 174 spp. presently known from Belize are listed, with notes on some of them. *Epigomphus maya* Donnelly and *Erpetogomphus leptophis* Garrison are the sole endemics. Some records of G.J. MEASEY (1994, *Notul. odonatol.* 4: 40-46) are corrected.

INTRODUCTION

Belize is a small Central American country, situated on the Caribbean coast and bordering both Mexico and Guatemala. Most of the country consists of lowland habitats but it also contains the Maya Mountains (highest point 1124 m) which are isolated from other Central American mountain ranges. Until recently, Belize, formerly known as British Honduras, has been only fragmentarily researched by odonatologists. In the 1930s J.J. White collected in the Toledo district and his collection is stored in the Cowley Collection of the British Museum (Natural History) in London. PAULSON (1982) listed 44 species for Belize, 20 Zygoptera and 24 Anisoptera. In the 1980s, several odonatologists including J.J. Daigle, T.W. Donnelly, S.W. Dunkle, W. Mauffray, M.L. May and D.R. Paulson visited the country. MEASEY (1994) studied the odonates for a longer period (1991-1992) throughout the country, and was one of the first to collect in its northern half. From 1992 to the present, T. Boomsma has been extending G.J. Measey's work, paying special attention to the ecology of the odonates. In 1994 the BMNH conducted a biological survey which included Odonata, in the Smokey Branch (Cayo district) on behalf of BHP Minerals.

A total of 174 species is now known from Belize, 67 Zygoptera and 107 Anisoptera. The presence of most of these could be predicted based on PAULSON's (1982) list; continuing research will no doubt reveal more species, to a final esti-

mate of approximately 230.

PHYSIOGRAPHY OF BELIZE

Belize has a land area of 22,963 km², and stretches from 16° N to 19° N, and from 88° W to 89° 30'W. The northern half of the country is flat to undulating, with some hills in the west that barely reach above 200 m. These hills show great affinity to the Petén area of Guatemala, while north-eastern Belize is very similar to parts of the Yucatán Peninsula, Mexico (MEERMAN & BOOMSMA, 1993). The bedrock of northern Belize consists of alluvial sands and gravel in the center, and limestone deposits on its western, northern and eastern edges. Because of the lack of relief and good underground drainage, this part of the country has few streams and rivers. In the rainy season many tempo-

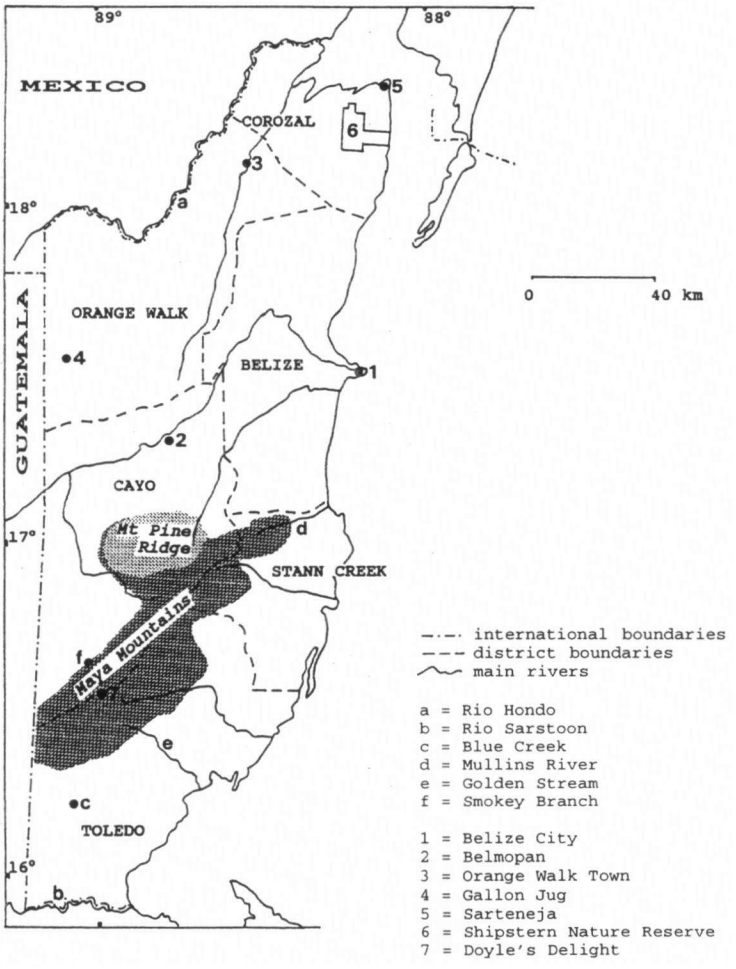

Fig. 1. Map of Belize, showing the districts and localities mentioned in the text.

rary fresh- and brackish-water swamps are present.

The southern half of the country is characterized by the presence of the Maya Mountains which reach their highest point at Doyle's Delight (1124 m).The mountains consist of Paleozoic sedimentary rock, intruded locally by granite. The Maya Mountains are sharply defined by faults in the north, south and probably east (BATESON & HALL, 1977), and many streams and rivers are present. In the east the Maya Mountains are bordered by alluvial sands and gravels, in the west and south by limestone deposits. Because of these well-drained soils, many smaller streams which originate in the mountains dry up or disappear through sinkholes when they reach the limestone.

Belize has a tropical climate, with rainfall varying from 1100 mm in the north to over 4000 mm in the south, with a very distinct dry season from January to June. Although the dry season in southern Belize is less rigid, smaller streams can dry up during the dry season, especially where the bedrock is limestone. Mean monthly maximum temperatures range from 28° C in winter to 33° C in summer, and of course temperatures are cooler in the mountains, especially at night.

Belize is divided into 6 administrative districts which were chosen as the base for this checklist since these districts to a certain extent also follow ecological divisions. A short summary of each district, listed generally from north to south, is given below.

- COROZAL DISTRICT. – Rather flat, bedrock mainly limestone, some rivers but the number of streams is limited. Most collecting was done in the vicinity of the Shipstern Nature Reserve and at sites along the road from Sarteneja to Orange Walk.
- ORANGE WALK DISTRICT. – Bedrock limestone hills in the west and alluvial sand and gravels in the east. A few streams and rivers are present in the western hills. Many permanent forest pools and temporary swamps are present. Most collecting was done in the western part in the Gallon Jug area.
- BELIZE DISTRICT. – The district with the lowest number of species recorded, most likely because this district was undersampled by odonatologists. Although rather flat it contains a high variety of habitats, from small streams to big rivers, fresh water lagoons, and brackish water swamps.
- CAYO DISTRICT. – The major part of the Maya Mountains is situated in this district. Because of the accessibility of the Mountain Pine Ridge which forms the northern part of the Maya Mountains, this district is well sampled and has the greatest number of species recorded.
- STANN CREEK DISTRICT. – This district contains some large river-basins, most of them with granite underground. This district is also undersampled, partly due to the limited road system which makes inland access difficult.
- TOLEDO DISTRICT. – The south of this district is dominated by steep limestone hills with few streams. Most sampling was carried out in the lowlands at sites where the Southern Highway crosses rivers and streams. From Golden Stream south the rivers are clear and spring-fed.

THE ODONATA FAUNA OF BELIZE AND ITS PLACE IN CENTRAL AMERICA

From PAULSON's (1982) list it was obvious that the Odonata fauna of four Central American countries (El Salvador, Honduras, Nicaragua, Belize) was poorly known. Belize is, after El Salvador, the smallest country in Central America, with a population of close to 200,000. Approximately 60% of Belize is still under forest cover. However, its small population is growing rapidly, partly due to the influx of refugees from neighboring countries. In spite of the small population the pressure on land is not to be underestimated because of the high land consumption per capita. The demand for land is increasing, especially in the lowlands but also in the Maya Mountain foothills.

DUNKLE (1988, 1991) extended the list of Odonata for Honduras to 157, and WESTFALL (1986) increased the list for El Salvador to 81 species. MEASEY (1994) listed over 100 species for Belize, collected from 39 localities. Measey's work contributed to the knowledge of the distribution of the species over the country and gave imporant information about habitats where the species were collected.

In the distribution of the highland Odonata fauna of Central America some substantial breaks are caused by the lowlands of the Isthmus of Tehuantepec and the lowlands of the Nicaragua-Costa Rica border (PAULSON, 1982). The Maya Mountains of Belize are separated from the main Central Mountain Range by the lowland Peten area; this isolated position could explain the under-representation of several families in Belize. The Maya Mountains do not appear to be isolated enough for the development of many endemic species. At present *Epigomphus maya* Donnelly and *Erpetogomphus leptophis* Garrison are only known from Belize. *E. maya* has been found in fast flowing creeks in the Mountain Pine Ridge and the Mullins River basin; *E. leptophis* is only known from 3 specimens, all taken from Blue Creek (Toledo district) in the southern foothills of the Maya Mountains (GARRISON, 1994).

The following remarks are arranged by family:

POLYTHORIDAE. – This family has its center of distribution in South America, and its only representative in Belize is the widespread *Cora marina* which is found in small mountain streams.

CALOPTERYGIDAE. – Represented by the genus *Hetaerina* with 6 species, but based on their distribution patterns 3 other species (*H. americana, H. miniata, H. vulnerata*) may be expected to occur in the Maya Mountains.

AMPHIPTERYGIDAE. – No representatives of this family have been recorded for Belize. According to GONZÁLEZ (1991), *Amphipteryx* spp. are confined to the mountains of Central America, and PAULSON (1982) mentions *A. agrioides* as an example of a Chiapas (Mexico)-Guatemala-Honduras highlands endemic. The Maya Mountains in Belize are separated from these highlands by a lowland offshoot of the Petén area with a maximum altitude of 500 m. However, *Amphipteryx* may yet be found in Belize because *A. longicaudatus* was collected in Oaxaca State, Mexico at an altitude of 580 m (GONZÁLEZ, 1991), indicating that *Amphipteryx* spp. may occur at lower altitudes than previously was known.

LESTIDAE. – *Archilestes grandis* and *A. latialatus* have been found in Belize, but never in large numbers. *Lestes forficula, L. tenuatus* and *L. scalaris tikalus* can be very abundant around ponds and swamps all over the country at the beginning of the rainy season. *L. alacer* and *L. sigma* are listed for neighboring countries and their presence in Belize is likely.

PERILESTIDAE. – *Perissolestes magdalenae* is the only representative of this family that has been found in Belize. Its distribution is very patchy and it has not been found in large numbers. The Perilestidae are rainforest inhabitants (GONZÁLEZ & DEL PILAR VILLEDA, 1978).

MEGAPODAGRIONIDAE. –This family is represented by only one species, *Heteragrion alienum*, which has the widest known distribution of any species in its genus in Central America. Other genera of this family, *Paraphlebia* and *Philogenia,* have not yet been recorded for Belize.

The center of the range of *Philogenia* is in Colombia, Ecuador and Peru (BICK & BICK, 1988), with most species reported from a single country. Until the discovery of *P. strigilis* by DONNELLY (1989) in the vicinity of San Pedro Sula in Honduras, the northernmost boundary of the known distribution of the genus was Costa Rica. Donnelly also caught a *Philogenia* sp. female in Puerto Barrios, Guatemala. Both locations are not far from Belize and the chance of finding *Philogenia* in Belize is certainly present.

The genus *Paraphlebia* is restricted to Mexico and Guatemala, and the distribution of the species is very limited, so they may not occur in Belize.

PSEUDOSTIGMATIDAE. – Adults of this family are present in the dry season, although *Pseudostigma accedens* has on rare occasions been seen through November. *Megaloprepus caerulatus* has a dark blue and white pattern on the apical third of the wings, and it is found in the southern part of the country in high forest. In the same habitat *Heliconius sapho* and *H. cydno* (Lepidoptera: Nymphalidae) were found, and these longwing butterflies have a wing coloration that resembles that of *M. caerulatus* in a striking way. Both butterfly species belong to the subfamily Heliconiinae, insects which are poisonous and avoided by predators, so *M. caerulatus* may be a Batesian mimic of these butterflies.

PLATYSTICTIDAE. – The genus *Palaemnema* has its center of distribution in Central America and the northern part of South America. The known distribution of species in the genus is patchy, and many new species await description. CALVERT (1931) found *Palaemnema* spp. in Costa Rica only in the wet season, and the records for Belize also date from the rainy season. Many *Palaemnema* spp. have been recently described (BROOKS, 1989; DONNELLY, 1992). Also PAULSON (1982) mentioned a number of undescribed species for the Mexico-Guatemala region. This indicates that additional survey work in the inner Maya Mountains during the rainy season may reveal more *Palaemnema* spp. for Belize.

PROTONEURIDAE. – Most species that were recorded for Belize's neighbouring countries, have been recorded for Belize since PAULSON (1982). Thomas Donnelly (pers. comm.) mentioned the presence of a pink-orange *Neoneura "paya"* which he found in the Cayo district in a different habitat than the regular, yellow, *N. paya.*

COENAGRIONIDAE. – Most genera to be expected in Belize are represented, but still conspicuously missing on the list are the genera *Anisagrion, Apanisagrion*, and *Metaleptobasis.*

AESHNIDAE. – PAULSON (1982) listed only 1 representative of this family for Belize, but numbers of several Aeshnidae fluctuate throughout the year and since they can be difficult to catch they are easily missed on a short collecting trip. Some species listed in the present checklist are known in Belize from only one or two

individuals; but 15 of the 19 listed species were recorded by the first author during her 5-years residency at the Shipstern Nature Reserve, showing that continuing attention may add more Aeshnidae to the list.

Anax junius is a North American species that migrates southward during the fall. The few times this species was collected was immediately after strong northerly winds had blown for some days, apparently assisting *A. junius* in crossing the Gulf of Mexico to Central America. In October 1992 a tandem pair of *A. junius* was observed. PAULSON (1984) listed *A. junius* for the Yucatán Peninsula, where he saw several individuals and an ovipositing tandem in November 1983. He suggested that the possible offspring emerge in late winter or in spring and migrate north, but so far no adults have been seen during that time of the year in northern Belize. Possibly *A. junius* is not successful in reproducing in Belize or only in low numbers.

Of the 5 species of *Coryphaeschna* listed for Belize, *C. viriditas, C. apeora* and *C. diapyra* appear to be the most common. *C. secreta* generally occurs in moist forested areas but one individual was caught in a malaise flight trap in the dry north of the country.

Gynacantha and *Triacanthagyna* spp. vary in numbers from place to place and from season to season. Members of these genera are usually dusk fliers. *G. helenga* is never very abundant, but males patrol around shaded forest ponds even in the middle of the day, and a female was caught ovipositing in soft mud at 1100 h. *T. septima* can be very abundant at the end of the rainy season; at sunset in November and December 1993 hundreds were seen swarming over coastal swamps in the Corozal District.

GOMPHIDAE. – Like the Aeshnidae this family was poorly represented in PAULSON's (1982) list. Now 16 species have been recorded for Belize of which 2 appear to be endemic: *Epigomphus maya* and *Erpetogomphus leptophis*.

Most gomphids have been seen flying from the end of May until the beginning of September; that is, in the rainy season. However, last instar larvae of several species caught in the beginning of the year and reared in captivity, started to emerge as early as March.

CORDULIIDAE. – No representatives of this family have yet been confirmed for Belize but relatively few genera and species of corduliids occur anywhere in Central America. *Neocordulia griphus* is found in Costa Rica and Guatemala (at 100 m altitude), and *N. batesi longipollex* has a patchy distribution in Central America. Only small numbers of both species have been caught (MAY, 1991), but they are probably present in Belize.

LIBELLULIDAE. – Like the Coenagrionidae, many of the Libellulidae are widespread over Central America and are comparatively easily sampled. The majority of the species found in Belize could be predicted from PAULSON's (1982) list. At the moment 72 species are recorded for Belize, and an additional 15 species might be expected.

LITERATURE RECORDS OF ODONATA IN BELIZE

The earliest mention of Odonata in Belize was by CALVERT (1901-1908). He listed 25 species, 4 with no definite locality, most from the Rio Sarstoon, Toledo district, on the Honduran border. A few species were listed from the Rio Hondo which borders Corozal and Orange Walk districts, and a few others from Belize, meaning Belize City in Belize District. We have been able to confirm all of Calvert's records except *Tramea insularis* from Belize and *Sympetrum corruptum* from the Rio Hondo. The *T. insularis* was a female which can not usually be distinguished from *T. binotata* females, and the *S. corruptum*, if not mislabeled, was probably a stray or a migrant. Calvert listed *Dythemis multipunctata* and *D. sterilis* as forms of *D. velox* Hagen, and the *sterilis* form, now considered a separate species, was listed from Belize. The true *D. velox* undoubtedly does not occur in Belize. Further records of Belizean odonates were added by BORROR (1942) with 5 species of *Erythrodiplax*, BELLE (1975, 1988) with *Phyllocycla speculatrix* and *P. volsella*, LEONARD (1977) with *Acanthagrion quadratum*, DONNELLY (1989) with *Epigomphus maya*, BICK & BICK (1990) with *Cora marina* and 4 species of *Telebasis* (1995), GARRISON (1994) with *T. boomsmae* and *Erpetogomphus leptophis*. PAULSON (1982) listed 44 odonate species from Belize, but without district records.

The only extensive survey of Odonata in Belize that has been done prior to the present one was done by MEASEY (1994). But his study included a number of tentative identifications. We have examined part of his collection and conclude that some of the species he listed were misidentified, namely: (1) *Lestes alacer* Hagen is *L. forficula*, although *alacer* may yet be found in Belize; – (2) *Lestes henshawi* Calvert is *L. tenuatus*, and has not been found closer to Belize than Costa Rica; – (3) *Micrathyria eximia* Kirby is *M. debilis*; – (4) *Planiplax phoenicura* Ris is *P. sanguiniventris*, and has not been found closer than Panama; – (5) *Palaemnema paulitoyaca* Calvert is *P. desiderata*; – (6) *Triacanthagyna trifida* (Rambur) is *T. satyrus*; – (7) *Idiataphe amazonica* (Kirby) is *I. cubensis*; – (8) *Elasmothemis* sp. (DJ 337) is listed in this article under *Elasmothemis* sp.n., nr *cannacrioides*, and, finally – (9) *Lestes* sp. (DJ 374) is identified as *Lestes scalaris*.

A number of specimens in Measey's collection are waiting final identification, these are *Argia* spp., *Enallagma* sp. (DJ 375), *Coryphaeschna* sp. (DJ 247), *Hesperaeschna* sp. (DJ 663), *Erpetogomphus* sp. (DJ 501), and *Phyllocycla* sp. (DJ 447, 535). The taxonomic status of the species-pair *Anax longipes* Hagen and *A. concolor* is still unclear. The authors have adopted the species name *A. concolor* for the specimens they found in Belize.

Our taxonomic views differ from that of MEASEY (1994) in that we regard *Anatya normalis* (Calvert) a synonym of *A. guttata*; *Erythrodiplax fusca* a species separate from *E. connata* (Burmeister), and *Argiallagma minutum* a synonym of *Nehalennia minuta*.

CHECKLIST OF THE ODONATA OF BELIZE BY DISTRICT

The checklist is mainly based on the observations of Boomsma (1991-1994) and Dunkle (1986, 1993). In case an observation was done by a third person, this is indicated. The present list contains 174 species. Abbreviations used are:

Observers/source:
X = T. Boomsma, S.W. Dunkle
1 = BELLE (1975)
2 = BMNH-BHP expedition 1994
3 = CALVERT (1908)
4 = Cowley coll., BMNH
5 = J.J. Daigle coll., Tallahassee, FL
6 = M.L. May coll., Rutgers Univ.
7 = MEASEY (1994)
8 = D.R. Paulson coll., Univ. Puget Sound
9 = PAULSON (1994)

Districts:
Co = Corozal
OW = Orange Walk
Bz = Belize
Cy = Cayo
SC = Stann Creek
To = Toledo

CHECKLIST

	Co	OW	Bz	Cy	SC	To
Polythoridae						
Cora marina Selys				X		X
Calopterygidae						
Hetaerina capitalis Selys				X	X	
H. cruentata (Rambur)			6	X	X	3
H. occisa Hagen *in* Selys		X	X	X	X	X
H. pilula Calvert		X		X	X	X
H. sempronia Hagen *in* Selys				2		4
H. titia (Drury)	X	X	X	X	X	X
Lestidae						
Archilestes grandis (Rambur)				X		
A. latialatus Donnelly				2		
Lestes forficula Rambur	X	X	X	X	X	X
L. scalaris tikalus Kormondy	X	X		X	X	
L. tenuatus Rambur	X	X		X		
Perilestidae						
Perissolestes magdalenae (Williamson & Williamson)				X	X	X
Megapodagrionidae						
Heteragrion alienum Williamson		X	X	X	X	X
Pseudostigmatidae						
Mecistogaster modesta Selys				X		X
Megaloprepus caerulatus (Drury)				X		X
Pseudostigma aberrans Selys		7		X		X
P. accedens Selys	X	X		X		4
Platystictidae						
Palaemnema angelina Selys				X		X
P. desiderata Selys		7		X	X	X

	Co	OW	Bz	Cy	SC	To
P. nathalia Selys						X
P. paulina (Drury)						X
Protoneuridae						
Neoneura amelia Calvert	X	X	X	X	X	X
N. paya Calvert		X	X	X	X	X
Protoneura amatoria Calvert						X
P. aurantiaca Selys		X		X	X	X
P. corculum Calvert	X	X		X	X	X
P. cupida Calvert		X		X	X	X
P. peramans Calvert						X
Psaironeura remissa (Calvert)	7	X		X	X	X
Coenagrionidae						
Acanthagrion quadratum Selys	X	X		X	X	X
A. inexpectum Leonard				X		
Argia calida (Hagen)		X		X	X	X
A. chelata Calvert				X		
A. cuprea (Hagen)				X		X
A. difficilis Selys				X		
A. eliptica Selys		X		X	X	X
A. extranea (Hagen)				X		
A. nr *fissa* Selys				X		3
A. frequentula Calvert	X	X	X	X	X	X
A. gaumeri Calvert	X	X	X	X	X	X
A. immunda (Hagen)				X		
A. indicatrix Calvert				2,8		
A. lacrimans Hagen				X		
A. oculata Hagen *in* Selys		X		X		X
A. oenea Hagen *in* Selys		X		X	X	X
A. pipila Calvert		X		X	X	X
A. pulla Hagen *in* Selys	X	X	X	X	X	X
A. translata Hagen *in* Selys	X	X	X	X	X	X
A. ulmeca Calvert			X	X	X	X
Chrysobasis lucifer Donnelly	X	X			8	
Enacantha caribbea Donnelly & Alayo	X			X	X	
Enallagma novaehispaniae Calvert		X	X	X	X	X
E. praevarum (Hagen)				X		?3
Ischnura capreola (Hagen)	X	X	3	X	X	X
I. hastata (Say)	X	X	X	X		X
I. posita acicularis (Donnelly)		X		X		X
I. ramburii (Selys)	X	X	X	X	X	X
Leptobasis vacillans Hagen *in* Selys	X	X		X	X	X
Nehalennia minuta (Selys)	X	X	X	X	X	X
Neoerythromma cultellatum (Selys)	X	X	X	X	X	X
Telebasis boomsmae Garrison		X		X		
T. collopistes Calvert	X	X				
T. digiticollis Calvert	X	X		X	X	X
T. filiola (Perty)		X		X		7
T. griffinii (Martin)		X				
T. salva (Hagen)	X	X		X		

	Co	OW	Bz	Cy	SC	To
Aeshnidae						
Aeshna psilus Calvert				X		
A. williamsoniana Calvert				X		
A. (Hesperaeschna) sp.				7		
Anax amazili (Burmeister)	X					
A. concolor Brauer	X			X		
A. junius (Drury)	X	X				
Coryphaeschna adnexa (Hagen)	X	7				
C. apeora Paulson	X					
C. diapyra Paulson	X		9	X		
C. secreta Calvert	X			7		
C. viriditas Calvert	X	7			X	X
Gynacantha auricularis Martin						6
G. helenga Williamson & Williamson	X	X		X		
G. mexicana Selys	X		X	X		
G. nervosa Rambur	X	X	X	X		X
Staurophlebia reticulata (Burmeister)						4
Triacanthagyna caribbea Williamson	X	7		X		
T. satyrus (Martin)		7				7
T. septima (Selys)	X			X	7	X
Gomphidae						
Agriogomphus tumens (Calvert)		X		X	X	
Aphylla angustifolia Garrison	X	X		X	X	X
A. protracta (Hagen *in* Selys)	X	X				
Epigomphus maya Donnelly				X	X	
Erpetogomphus eutainia Calvert						X
E. leptophis Garrison						X
E. ophibolus Calvert		7		X	X	X
Phyllocycla breviphylla Belle			X	X	X	5, 6
P. speculatrix Belle	7			X		1
P. volsella (Calvert)				X		
Phyllogomphoides duodentatus Donnelly		X	X	X	X	X
P. pugnifer Donnelly		X	X	X	X	X
P. suasus (Selys)				X	X	
Progomphus clendoni Calvert				X	X	X
P. mexicanus Belle				X		
P. zonatus Hagen *in* Selys				X		
Libellulidae						
Anatya guttata (Erichson)	X	X		X	X	X
Brachymesia furcata (Hagen)	X			X		
B. herbida (Gundlach)			8			
Brechmorhoga nubecula (Rambur)				7		X
B. praecox (Hagen)		X		X		X
B. rapax Calvert				X		X
B. tepeaca Calvert				X		X
B. vivax Calvert				X		X
Cannaphila insularis Kirby	X		X	X	X	X
C. vibex (Hagen)	X	7		X	7	
Dythemis multipunctata Kirby		X	X	X	X	X

	Co	OW	Bz	Cy	SC	To
D. sterilis Hagen	X	X	X	X	X	X
Elasmothemis cannacrioides (Calvert)			X	X	X	X
E. sp.n. nr *cannacrioides*				X		X
Erythemis attala (Selys)	X	X		X		
E. credula (Hagen)					X	
E. haematogastra (Burmeister)	X	X		X		X
E. plebeja (Burmeister)	X	7		X		X
E. simplicicollis (Say)	X	X	X	X		
E. vesiculosa (Fabricius)	X	X	X	X	X	X
Erythrodiplax berenice (Drury)	X		X		X	
E. castanea (Burmeister)				X		
E. fervida (Erichson)	X	X	X	X	X	X
E. funerea (Hagen)						X
E. fusca (Rambur)	X	X	X	X	X	X
E. umbrata (Linnaeus)	X	X	X	X	X	X
Idiataphe amazonia (Kirby)						X
I. cubensis (Scudder)	X	X	X	X	X	X
Libellula croceipennis Selys				X		
L. gaigei Gloyd	X	X		X		
L. herculea Karsch		X		X		
Macrodiplax balteata (Hagen)	X		8			
Macrothemis hemichlora (Burmeister)			X	X	X	7
M. imitans Calvert			X	X	X	X
M. inacuta Calvert				X		
M. inequiunguis Calvert		7		X	X	X
M. musiva Calvert		X		X		
M. pseudimitans Calvert				X	X	X
Miathyria marcella (Selys *in* Sagra)	X	X		X		4
M. simplex (Rambur)	X	X		X		X
Micrathyria aequalis (Hagen)		X		X	X	X
M. atra (Martin)	X	X		X		
M. debilis (Hagen)	X	X	X	X	X	X
M. dictynna Ris				X	X	X
M. didyma (Selys *in* Sagra)	X	X	X	X	X	X
M. dissocians Calvert				X		X
M. hagenii Kirby	X		8	X		
M. mengeri watsoni Dunkle					X	X
M. ocellata Martin		X		X	X	X
Nephepeltia chalconota Ris				X	X	X
N. phryne (Perty)				X		
Orthemis biolleyi Calvert						4
O. ferruginea (Fabricius)	X	X	X	X	X	X
O. levis Calvert	X	X	X	X	X	X
Pachydiplax longipennis (Burmeister)			8			
Paltothemis lineatipes Karsch				2		
Pantala flavescens (Fabricius)	X	X	X	X	X	X
P. hymenaea (Say)	X	X		X		4
Perithemis domitia (Drury)	X	X	X	X	X	X
P. mooma Kirby	X	X	X	X	X	7
Planiplax sanguiniventris (Calvert)	X	X	X			

	Co	OW	Bz	Cy	SC	To
Rhodopygia hinei Calvert				X		X
Sympetrum corruptum (Hagen)	?3					
Tauriphila argo (Hagen)		X		X		
T. australis (Hagen)		7				
Tholymis citrina Hagen	X	X		X		
Tramea abdominalis (Rambur)	X			X		X
T. binotata (Rambur)	X		X	X	X	X
T. calverti Muttkowski	X	X	X	X	7	X
T. onusta Hagen	X	X	8	X		
Uracis imbuta (Burmeister)	X	X		X	X	X
U. turrialba Ris						4

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REFERENCES

BATESON, J.H. & I.H.S. HALL, 1977. *The geology of the Maya Mountains, Belize.* Inst. Geol. Sci., London [Overseas Mem. No. 3].

BELLE, J., 1975. Two new species of Phyllocycla Calvert, 1948 from Central America (Anisoptera: Gomphidae). *Odonatologica* 4: 65-71.

BELLE, J., 1988. A synopsis of the species of Phyllocycla Calvert, with descriptions of four new taxa and a key to the genera of neotropical Gomphidae (Odonata, Gomphidae). *Tijdschr. Ent.* 131: 73-102.

BICK, G.H. & J.C. BICK, 1988. A review of males of the genus Philogenia with descriptions of five new species from South America (Zygoptera: Megapodagrionidae). *Odonatologica* 17: 9-32.

BICK, G.H. & J.C. BICK, 1990. A revision of the neotropical genus Cora Selys, 1853 (Zygoptera: Polythoridae). *Odonatologica* 19: 117-143.

BICK, G.H. & J.C. BICK, 1995. A review of the genus Telebasis with descriptions of eight new species (Zygoptera: Coenagrionidae). *Odonatologica* 24: 11-44.

BORROR, D.J., 1942. A revision of the libelluline genus Erythrodiplax (Odonata). *Ohio St. Univ. Contr. Zool. Ent.* 4: 1-286.

BROOKS, S.J., 1989. Odonata collected from Guanacaste National Park, Costa Rica. July 1988. *Notul. odonatol.* 3: 49-52.

CALVERT, P.P., 1908. Odonata. *Biologia cent.-am.* (Neuroptera), pp. 17-420.

CALVERT, P.P., 1931. The generic characters and the species of Palaemnema (Odonata: Agrionidae). *Trans. Am. ent. Soc.* 57: 1-111.

DONNELLY, T.W., 1989a. A new species of Philogenia from Honduras (Odonata: Megapodagrionidae). *Fla. Ent.* 72: 425-428.

DONNELLY, T.W., 1989b. Three new species of Epigomphus from Belize and Mexico (Odonata:

Gomphidae). *Fla Ent.* 72: 428-435.

DONNELLY, T.W., 1992. The Odonata of Central Panama and their position in the Neotropical Odonata fauna, with a checklist, and descriptions of new species. *In*: D. Quintero & A. Aiello, [Eds], Insects of Panama and Mesoamerica, pp. 52-90, Oxford Univ. Press, Oxford.

DUNKLE, S.W., 1988. A list of the Odonata of Honduras. *Ceiba* 29: 41-49.

DUNKLE, S.W., 1991. Additional Odonata records from Honduras. *Notul. odonatol.* 3: 132-133.

DUNKLE, S.W., 1995. Geographical variation in Micrathyria mengeri Ris, with a description of M. mengeri watsoni ssp. nov. (Anisoptera: Libellulidae). *Odonatologica* 24: 45-51.

GARRISON, R.W., 1994a. A revision of the new world genus Erpetogomphus Hagen in Selys (Odonata: Gomphidae). *Tijdschr. Ent.* 137: 31-269.

GARRISON, R.W., 1994b. Telebasis boomsmae spec. nov., a new damselfly from Belize (Zygoptera: Coenagrionidae). *Odonatologica* 23: 277-282.

GONZÁLEZ-S, E., 1991. A new species of Amphipteryx Selys, 1853 from Oaxaca, Mexico (Zygoptera: Amphipterygidae). *Odonatologica* 20: 465-470.

GONZÁLEZ-S., E. & M. DEL PILAR VILLEDA-C., 1978. The first Mexican record of Perissolestes magdalenae (Williamson & Williamson) (Zygoptera: Perilestidae). *Notul. odonatol.* 1: 22-23.

LEONARD, J.W., 1977. A revisionary study of the genus Acanthagrion (Odonata: Zygoptera). *Misc. Publs Mus. Zool. Univ. Mich.* 153: 1-173.

MAY, M.L., 1991. A review of the genus Neocordulia, with a description of Mesocordulia subgen. nov. and of Neocordulia griphus spec. nov. from Central America, and a note on Lauromacromia (Odonata: Corduliidae). *Fol. ent. mex.* 82: 17-67.

MEASEY, G.J., 1994. Some Odonata from Belize. *Notul. odonatol.* 4: 40-46.

MEERMAN, J.C. & T. BOOMSMA, 1993. Biodiversity of the Shipstern Nature Reserve. *Occ. Pap. Belize nat. Hist. Soc.* 2: 1-85.

NOVELO-G., R., 1989. The larva of Agriogomphus tumens Calvert (Anisoptera: Gomphidae). *Odonatologica* 18: 203-207.

PAULSON, D.R., 1982. Odonata. *In*: S.H. Hurlbert & A. Villalobos-Figueroa, [Eds], Aquatic biota of Mexico, Central America, and the West Indies, pp. 249-277, San Diego St. Univ., San Diego.

PAULSON, D.R., 1984. Odonata from the Yucatan Peninsula, Mexico. *Notul. odonatol.* 2: 33-38.

PAULSON, D.R., 1994. Two new species of Coryphaeschna from Middle America, and a discussion of the red species of the genus (Anisoptera: Aeshnidae). *Odonatologica* 23: 379-398.

WESTFALL, M.J., 1986. Additional records of Odonata from El Salvador. *Notul. odonatol.* 2: 115--117.