

# AN UPDATED CHECKLIST OF INDIANA DRAGONFLIES (ODONATA: ANISOPTERA)

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**ABSTRACT:** Published reports of Indiana Odonata appeared more or less regularly from the turn of the century until 1971. Two workers, E.B. Williamson and B.E. Montgomery, were largely responsible for this work, and between them, they reported 100 species of dragonflies (Anisoptera) for Indiana. Williamson published an annotated list of Indiana Odonata in 1917 in which he gave each species a number from 1 to 125. As new species were reported, they were added to the list at the appropriate taxonomic position by adding an a, b, c, and so on to an existing number. Since 1971, no additional published reports have appeared, and changes in classification and nomenclature make an update of the State list of dragonflies necessary. Williamson's numbering system does not fit well with the changes that have occurred, and the author recommends that it be dropped in favor of a more up-to-date listing. Several species reported for the State are no longer recognized, and one species new to Indiana has recently been recorded. Currently, 98 species of dragonflies are recorded for Indiana.

**KEYWORDS:** Anisoptera, Indiana dragonflies, Indiana records, Odonata.

## INTRODUCTION

Systematic surveys of Indiana Odonata, conducted almost annually from the turn of the century by Williamson, Montgomery, and others, ceased in the late 1960s. The surveys were resumed four years ago by the author with the intent to update State records and to develop a field guide to the common species in the State.

The first comprehensive report on the Odonata of Indiana was published by E.B. Williamson (1900a). The report included keys and short descriptions for 84 species of adult and larval damselflies (Zygoptera) and dragonflies (Anisoptera) which had been recorded in the State up until that time. Williamson (1900b, 1901) added to the list in 1900 and 1901, and he published an annotated list of Indiana's Odonata in 1917. In this latter paper, he listed by number 44 species of damselflies and 81 species of dragonflies. The dragonflies were numbered 45-125 and grouped by suborder, family, genus, and species. In a paper published in 1921, Williamson added one new species of dragonfly to the State list. In order to keep the 1917 numbering system intact, he began the practice of adding new species to the list in the appropriate taxonomic position by adding a lower case letter to a previously existing number. Thus, the first addition to the State list, *Gomphus viridifrons* Hines, became number 66a. Although the list con-

tinued to grow with the passing years, the dragonflies continued to be numbered from 45 to 125, and the species listed in the 1917 paper retained their original numbers.

In the early 1920s, Williamson recruited a young public school teacher named B. Elwood Montgomery to help him with his work. Montgomery's first paper on Indiana dragonflies was published in 1925. Using his own records as well as notes given him by Williamson, he added three species of gomphids to the State list, using the designations 52a, 59a, and 59b. These new records raised the total number of dragonflies (Anisoptera) to 85. Additional papers appeared in 1926, 1928, 1929, 1931, and 1932. These papers discussed the new species that had been collected during those years.

Following Williamson's death in 1933, Montgomery completed a Ph.D. degree and took a position at Purdue University, where he stayed for the remainder of his career. He carried on the work begun by Williamson and continued to publish new records on Indiana Odonata (1934, 1935, 1937, 1941, 1951, 1953, 1955, 1967, 1971). By the time of his death in 1983, Montgomery had increased the list of Indiana species of Anisoptera to 100.

A number of changes have been made in the scientific names and classification of the Anisoptera in recent years, making an update necessary. One species new to Indiana has been recorded since Montgomery's 1971 paper, bringing the updated list of species reported for Indiana to 98. The new species is indicated below with an asterisk. The numbers in parentheses at the left of each species refer to Williamson's old numbering system. Those wishing an updated list of species using the old numbering system need only rearrange the numbers in proper numerical order. The listing used in this paper follows the order of other recently published State lists (Glotzhober, 1995; Tennesen, *et al.*, 1995; Miller and Gustafson, 1996; May and Carle, 1996).

## DRAGONFLIES (ODONATA:ANISOPTERA) OF INDIANA

### Petaluridae (Petaltails)

- (45) *Tachopteryx thoreyi* (Hagen, 1858)

### Aeshnidae (Darners)

- (73) *Aeshna canadensis* Walker, 1908  
 (74) *Aeshna clepsydra* Say, 1839  
 (75) *Aeshna constricta* Say, 1839  
 (76) *Aeshna mutata* Hagen, 1861  
 (77) *Aeshna tuberculifera* Walker, 1908  
 (78) *Aeshna umbrosa* Walker, 1908  
 (79) *Aeshna verticalis* Hagen, 1861  
 (72) *Anax junius* (Drury, 1770)  
 (72a) *Anax longipes* Hagen, 1861

- (71) *Basiaeschna janata* Say, 1839
- (70) *Boyeria vinosa* (Say, 1839)
- (81) *Epiaeschna heros* (Fabricius, 1798)
- (80) *Nasiaeschna pentacantha* (Rambur, 1842)

### Gomphidae (Clubtails)

- (52b) *Arigomphus cornutus* (Tough, 1900)
- (57) *Arigomphus furcifer* (Hagen, 1878)
- (62a) *Arigomphus lentulus* (Needham, 1902)
- (63) *Arigomphus submedianus* (Williamson, 1914)
- (66) *Arigomphus villosipes* (Selys, 1854)
- (68) *Dromogomphus spinosus* Selys, 1854
- (69) *Dromogomphus spoliatus* (Hagen, 1858)
- (52) *Erpetogomphus designatus* Hagen, 1858
- (53) *Gomphurus crassus* Hagen, 1878
- (55a) *Gomphurus externus* Hagen, 1858
- (56) *Gomphurus fraternus* (Say, 1839)
- (54) *Gomphurus lineatifrons* Calvert, 1921
- (64) *Gomphurus vastus* Walsh, 1862
- (65) *Gomphurus ventricosus* Walsh, 1863
- (55) *Gomphus exilis* Selys, 1854
- (58) *Gomphus graslinellus* Walsh, 1862
- (59) *Gomphus lividus* Selys, 1854
- (60) *Gomphus quadricolor* Walsh, 1863
- (61) *Gomphus spicatus* Hagen, 1854
- (66a) *Gomphus viridifrons* Hine, 1901
- (50) *Hagenius brevistylus* Selys, 1854
- (51) *Ophiogomphus rupinsulensis* (Walsh, 1862)
- (49) *Progomphus obscurus* (Rambur, 1842)
- (52a) *Stylurus amnicola* (Walsh, 1862)
- (58a) *Stylurus laurae* (Williamson, 1932)
- (59a) *Stylurus notatus* (Rambur, 1842)
- (59b) *Stylurus plagiatus* (Selys, 1854)
- \**Stylurus scudderi* (Selys, 1873)
- (62) *Stylurus spiniceps* (Walsh, 1862)

### Cordulegastridae (Spiketails)

- (46) *Cordulegaster diastatops* (Selys, 1854)
- Cordulegaster bilineata* Carle, 1983
- (46a) *Cordulegaster erronea* Hagen, 1878
- (47) *Cordulegaster maculata* Selys, 1854
- (48) *Cordulegaster obliqua* (Say, 1839)

**Macromiidae** (Cruisers)

- (82) *Didymops transversa* (Say, 1839)
- (83) *Macromia illinoiensis* Walsh, 1862
- (84) *Macromia pacifica* Hagen, 1861
- (85) *Macromia taeniolata* Rambur, 1842
- (86) *Macromia wabashensis* Williamson, 1909

**Corduliidae** (Emeralds)

- (92) *Dorocordulia libera* (Selys, 1871)
- (89) *Epiheca cynosura* (Say, 1839)
- (87) *Epiheca princeps* Hagen, 1861
- (91) *Epiheca spinigera* (Selys, 1871)
- (88) *Neurocordulia obsoleta* (Say, 1839)
- (88a) *Neurocordulia yamaskanensis* (Provancher, 1875)
- (93) *Somatochlora ensignera* Martin, 1906
- (93a) *Somatochlora hineana* Williamson, 1931
- (94) *Somatochlora linearis* (Hagen, 1861)
- (95) *Somatochlora tenebrosa* (Say, 1839)

**Libellulidae** (Skimmers)

- (118) *Celithemis elisa* (Hagen, 1861)
- (119) *Celithemis eponina* (Drury, 1773)
- (119a) *Celithemis fasciata* Kirby, 1889
- (120a) *Celithemis verna* Pritchard, 1935
- (107) *Erythemis simplicicollis* (Say, 1839)
- (106a) *Erythrodiplax minuscula* (Rambur, 1842)
- (106b) *Erythrodiplax umbrata* (Linnaeus, 1758)
- (116) *Leucorrhinia frigida* Hagen, 1890
- (117) *Leucorrhinia intacta* Hagen, 1861
- (96) *Libellula cyanea* Fabricius, 1775
- (96a) *Libellula deplanata* Rambur, 1842
- (98) *Libellula incesta* Hagen, 1861
- (97) *Libellula julia* (Uhler, 1857)
- (99) *Libellula luctuosa* Burmeister, 1839
- (104) *Libellula lydia* Drury, 1770
- (100) *Libellula pulchella* Drury, 1770
- (101) *Libellula quadrimaculata* Linnaeus, 1758
- (102) *Libellula semifasciata* Burmeister, 1839
- (103) *Libellula vibrans* Fabricius, 1793
- (106) *Nannothemis bella* (Uhler, 1857)
- (115) *Pachydiplax longipennis* (Burmeister, 1839)
- (121) *Pantala flavescens* (Fabricius, 1798)
- (122) *Pantala hymenaea* (Say, 1839)

- (105) *Perithemis tenera* (Say, 1839)
- (108) *Sympetrum ambiguum* (Rambur, 1842)
- (109) *Sympetrum corruptum* (Hagen, 1861)
- (109a) *Sympetrum costiferum* (Hagen, 1861)
- (110) *Sympetrum internum* Montgomery, 1943
- (111) *Sympetrum obtrusum* (Hagen, 1867)
- (112) *Sympetrum rubicundulum* (Say, 1839)
- (113) *Sympetrum semicinctorum* (Say, 1839)
- (114) *Sympetrum vicinum* (Hagen, 1861)
- (123) *Tramea carolina* (Linnaeus, 1763)
- (124) *Tramea lacerata* Hagen, 1861
- (125) *Tramea onusta* Hagen, 1861

### Excluded Species

- (67) *Gomphus williamsoni* Muttkowski. This species was described by Williamson (1903) from a single male specimen collected near Bluffton. Muttkowski (1910) named it and treated it as a distinct species, but no other specimen has ever been found. Needham examined the specimen (Needham and Westfall, 1955) and concluded that it was not a valid species.
- (82a) *Macromia georgina* (Selys). This species has been placed in synonymy with *Macromia illinoiensis* (Donnelly and Tennessen, 1994).
- (90) *Epitheca simulans* (Muttkowski). This species has been placed in synonymy with *Epitheca cynosura* (Garrison, 1991).
- (120) *Celithemis monomelaena* Williamson. This species has been placed in synonymy with *Celithemis fasciata* (Garrison, 1991).

### DISCUSSION

*Somatachlora hineana* is included on the updated list, but the record is suspect in my opinion. A single male specimen was given to Montgomery in the early 1950s by William Kowlek, who said that this dragonfly had been collected at Gary on 22 June 1945 (Montgomery, 1953). No other record for this species exists for Indiana. Williamson (1931) originally described the species from specimens he collected in Ohio, but the species is now believed to be extirpated there (Glotzholber, 1995). Populations have recently been discovered in Illinois and Wisconsin (Vogt and Cashatt, 1994), but the species is one of the rarest in North America. *Somatachlora hineana* is the only Indiana dragonfly on the Federal List of Endangered Species (1995).

*Macromia wabashensis* Williamson is included on the current list, but its status as a species is questionable. Garrison (1995) stated that *M. wabashensis* is either a junior synonym of *M. taeniolata* Rambur or a hybrid between *M. taeniolata* and *M. pacifica* Hagen. Cook (1994), on the other hand, continues to

give *M. wabashensis* full species status. Both authors state that more work is needed to clarify the status of *M. wabashensis*. Discovery of the female and the larva is critical. Lacking a resolution of the matter at this time, the status quo needs to be maintained. Therefore, *M. wabashensis* has been retained on the State list of species.

One new species has been recorded and added to the State list since 1971. David Banks of The Nature Conservancy (pers. comm.) collected a single female specimen of *Stylurus scudderi* on 15 July 1995 in Lagrange County. The identity of this specimen was confirmed by Carl Cook (U.S. Fish and Wildlife Service).

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