

Records of Indiana Dragonflies, IX,¹ 1935-1936.

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Very little attention was given to dragonfly collecting during 1934 and 1935 except for brief visits to roadside pools, ponds, streams, etc., along or near to principal highways, while making trips for other purposes. However, a total of 1667 specimens representing 64 species were secured and studied in the preparation of this report. Only the more interesting captures and new county records are listed here. Three species new to the state list (* starred in the list of species) are recorded, bringing the number of species of Odonata known from Indiana to 139.

In order to present the data in as concise form as possible, the collection numbers used in field notes are employed in recording the captures. A list of these numbers with complete information is first given and then these numbers are quoted, following the name of the county, instead of complete collection data in the list of species. The two first digits of each number indicate the year in which the collection was made (35—1935, 36—1936). Collections 3520 to 3533 inclusive, were made by A. W. Trippel, 3534 and 3535 by John M. Amos, and 3536 by C. C. Alexander; all other collections unless indicated otherwise were made by the author. Specimens obtained from collections made by Purdue University students as part of their class work are indicated by the initials "P. U."

All specimens, except those belonging to the genus *Amphiagrion*, which were studied by Mrs. Leonora K. Gloyd, were determined by the author.

List of Collection Numbers

355. Pond along state road 41, about one mile north of Rockville, June 5.
356. Small pond along state road 59, about five miles south of Brazil, June 6.
357. Pool along state road 41, about eight miles north of Morocco, June 17.
358. Small stream crossed by state road 15, four miles southeast of Wabash, June 18.
359. Pond along state road 26, about nine miles west of West Lafayette, July 6.
3510. Pond about three miles south of Pimento, July 8.
3511. Swamp-like ditches along roadside, about two miles south of Switz City, July 9.
3512. Small pond in pasture, three miles southeast of Linton, July 9.
3513. Same as 3510, July 9.

¹The last previous paper in this series was published in 1935 (Proc. Ind. Acad. Sci., 44:231-235).

3515. Pond used as water supply reservoir by mine, Pimento, July 9.
3516. Same as 355, July 10.
3517. Small stream crossed by state road 55, about five miles south of Newton-Lake county line, July 11.
3518. Pools along state road 61, one mile east of Oakland City, August 23.
3519. Old water supply lake, Oakland City, August 23.
3520. Along state road 43, five miles south of Lafayette, June 7.
3521. In wheat field, one mile north of Americus, June 12.
3522. Little Wea Creek, about six miles southeast of Lafayette, June 21.
3523. Little Potato Creek, near Manson, June 25.
3524. Little Pine Creek, about one-half mile north of Montmorenci, June 28.
3526. Little Pine Creek at "High Bridge," near Green Hill, June 30.
3527. Eight miles east of Medaryville, July 4.
3528. Five miles north of Wolcott, July 4.
3529. Creek, two to four miles east of Aix, July 4.
3530. Eight miles east of Wabash, July 5.
3531. Same as 3529, July 6.
3532. Ten miles north of Wolcott, July 6.
3533. Same as 3529 and 3531, July 16-19.
3534. Lost River, about three to four miles southeast of Orleans, July 14.
3535. Same as 3534, July 16.
3536. Near Pulaski, June 12.
361. Schlamm Lake, Clark County State Forest near Henryville, June 8. Collected along south shore of lake, west from dam about one-third of circumference of lake.
362. Same as 361, June 9, 5:45-6:15 a. m. Very few Odonata moving at first—*Epicordulia princeps* patrolling the shore and some Zygoptera (*Enallagma* and *Ischnura*) stirring in the grass back from the lake. These latter gradually moved towards the shore line as the sun rose above the trees.
363. Francke Lake, Clark County State Forest near Henryville, June 9. Collected in the morning along the shore line for a few hundred feet in both directions from the pier.
364. Same as 363, June 9, afternoon.
365. Francke Lake, June 10.
366. Schlamm Lake, June 10, afternoon.
367. Schlamm Lake, June 11, morning.
368. Francke Lake, June 11, morning.
369. Francke Lake, June 11, afternoon.

3610. Schlamm Lake, June 11, afternoon.

3611. Stream flowing in edge of forest, then through an open area, Clark County State Forest, June 12, in mid-morning. In previous years, at this season the water in this stream has been reduced to frequent, small pools, with no flow (See: Proc. Ind. Acad. Sci. 41:452. 1932).

3612. Schlamm Lake, June 12, morning.

3613. Same as 3611, afternoon.

3614. Francke Lake, June 12, afternoon.

3615. Schlamm Lake, June 12, afternoon.

3616. City lakes, Huntingburg, June 13, 3:00-5:00 p. m.

3617. Pond about two and one-half miles north of Poseyville, June 14, 5:00-6:00 p. m.

3619. New water supply lake, Oakland City, June 15, 10:00 a. m.-12:30 p. m. Made a complete circuit of lake; many Odonata seen.

3620. Old water supply lake, Oakland City, June 15, 2:00-2:30. Too much wind; few Odonata flying.

3621. Freeman Lake, directly west of Patton, June 22. Collected during early afternoon for about a quarter of a mile along the shore line, including wooded hills and broad flat "meadows" just above the water level.

3622. Burnett's Creek and Wabash River, north of Lafayette, July 17. Collected during the morning from a point about a mile above the mouth of Burnett's Creek to the Wabash River, then south along the west bank of the river for about three miles.

3622A. Hoagland Ditch, along state road 43, about three miles south of Monon, July 18.

3623. Mud Creek along state road 25, about five miles south of Rochester, July 18.

3624. Rocky stream along state road 27, about four miles south of Richmond, August 11.

3625. Rocky stream, usually of considerable width and about one to 12 inches deep, but dry in places, along state road 44, about two miles east of Liberty, August 11.

3626. East fork of Whitewater River, just north of Brownsville, August 11. Water of varying depth, from a few inches in rocky rapids to several feet in other places; banks also varying—bluff, rocky, muddy, willow-margined, etc.

3627. Little Blue River, along state road 44, about three miles east of Shelbyville, August 12. Rocky, but with considerable water.

3628. Shawnee Creek (branch of Flat Rock River), about three miles north of Falmouth, August 13. A dredged drainage ditch.

3629. Hill's Branch along state road 9, about five miles south of Fountaintown, August 14. Small stream with mud bottom and grassy banks.

3630. Stoney Creek and adjacent pool along state road 32, near Lapel, August 18.

3631. Big Duck Creek (Small dredged drainage ditch) about five miles northeast of Elwood, August 19.

3631A. Gravel pit, about one and one-half miles southeast of Alexandria, August 19.

3632. Little Eagle Creek along state road 29, August 20. Rocky, but with large, mud-bottomed pools.

3633. West Fork of White River, just below dam, about four miles above Noblesville, August 20.

3634. Ripples in West Fork of White River, about three miles above Noblesville, August 20.

3635. Mud Creek about a mile above its confluence with Tippecanoe River, August 27.

3636. Pigeon River about two miles above Scott, September 4.

3637. Turkey Creek along state road 20, near Bushy Prairie, September 4.

List of Species

3.² *Calopteryx maculatum* Beauvois. **Boone**³ (3632), **Jasper** (3529, 3533), **Madison** (3630), **Orange** (3534, 3535), **Pulaski** (3536), **Union** (3625).

4. *Hetaerina americana* Fabricius. **Fulton** (3635), **Hamilton** (3634), **Jasper** (3529, 3533), **Newton** (3517), **Orange** (3534), **Union** (3626), **White** (3622A).

5. *Hetaerina titia* Drury. **Lagrange** (3636—10♂). This species was associated at this locality with *H. americana* which was much more abundant. The males of *H. titia* (no females were seen) were quite wary, alighting always on the tops of weeds or bushes or the tips of overhanging branches of trees along the river, and taking flight at the first quick move in their direction. In contrast to this the males (and females) of *H. americana* flitted about in the lower vegetation along the water margins, and dozens of them could have been taken with little effort.

15. *Argia apicalis* Say. **Boone** (3632), **Carroll** (3621), **Hamilton** (3633, 3634), **Union** (3626).

16. *Argia moesta* Hagen. **Hamilton** (3633, 3634), **Orange** (3535), **Vigo** (3510).

17. *Argia sedula* Hagen. **Boone** (3632), **Fulton** (3623, 3635), **Union** (3626).

18. *Argia tibialis* Rambur. **Shelby** (3627), **White** (3622A).

20. *Argia violacea* Hagen. **Clark** (2610, 2611), **Clinton** (3523), **Jasper** (3529, 3531, 3533), **Madison** (3630, 3631), **Newton** (3517), **Orange** (3534), **Pulaski** (3527), **Shelby** (3627), **Union** (3625), **White** (3622A).

21. *Enallagma antennatum* Say. **Carroll** (3621), **Clay** (356), **Hamilton** (3633), **Jasper** (3529, 3533), **Madison** (3630), **Newton** (3516), **Pulaski** (3527), **Tippecanoe** (3522, 3524).

²The numbers of Williamson's list of 1917 (Univ. of Mich., Mus. of Zool. Misc. Publ. 2) are used in the papers of this series.

³Names in bold face type refer to counties.

22. *Enallagma aspersum* Hagen. Clark (361, 366, 367, 3610, 3615). A total of 14 males were taken.
- 22a. *Enallagma basidens* Calvert. Madison (3631A).
24. *Enallagma carunculatum* Morse. Carroll (3621).
25. *Enallagma civile* Hagen. Carroll (3621), Clark (361, 362, 364, 366, 3610, 3615), Clay (356), Greene (3512), Hamilton (3633), Newton (357), Tippecanoe (359), Vigo (3510). Everywhere abundant.
29. *Enallagma exsulans* Hagen. Carroll (3621), Clark (362), Hamilton (3633), Jasper (3529, 3531, 3533), Newton (3517), Union (3626).
34. *Enallagma signatum* Hagen. Carroll (3621), Fulton (3623).
35. *Enallagma traviatum* Selys. Clark (363, 365). Two males and three females of this rather rare species were captured.
37. *Nehalennia irene* Hagen. Carroll (3621), Fulton (3623).
- *37a. **Amphiagrion abbreviatum* Selys. Jasper (3529—1 ♂), Tippecanoe (3522—3 ♂ 2 ♀); also five males and two females from the Purdue Student Collection, all labelled "Lafayette," and dated as follows: May 4, 1930 (R. R. Heaton), May 5, 1933 (Schopmeyer), May 9, 1930, May 15, 1931, May 20, 1936, May 22, 1934, and May 27, 1933 (J. E. Leeds). Some of these have been recorded previously as *A. saucium*. The Indiana specimens of *A. abbreviatum* belong to a new subspecies soon to be described by Mrs. L. K. Gloyd, who has recently studied all of the material of this genus in the author's collection.
38. *Amphiagrion saucium* Burmeister. Wabash (3530).
41. *Ischnura posita* Hagen. Fulton (3623), Parke (355, 3516), Union (3626), Wabash (358).
43. *Ischnura verticalis* Say. Boone (3632), Carroll (3621), Hamilton (3633), Jasper (3528, 3529, 3531, 3532, 3533), Madison (3630, 3631), Orange (3534), Pulaski (3527), Shelby (3627, 3629), Union (3625, 3626), Wabash (358).
44. *Anomalagrion hastatum* Say. Clark (3610), Fulton (3623), Greene (3511), Kosciusko (Warsaw, Aug. 3, 1932, G. E. Gould).
48. *Cordulegaster obliquus* Say. Clark (3611, 3613). Nine males of this rare species were captured in the same locality where it has been captured in other years (Proc. Ind. Acad. Sci., 41:452; 44:234); a female was captured along the shore of Schlamm Lake, which is about two miles distant from the point where the males were captured, on the same date.
49. *Progomphus obscurus* Rambur. Jasper (3531—1 ♂, 3533—1 ♂ 1 ♀), Warren (3526—1 ♂).
52. *Erpetogomphus designatus* Hagen. Hamilton (3634). This species was rather numerous at ripples in the river, flying just above the surface of the water, and alighting on rocks. However, it was exceedingly difficult to capture, and only one male was taken.
- 52a. *Gomphus amnicola* Walsh. Tippecanoe (3622). A series of two males and three females were secured. These specimens fit perfectly into *G. amnicola*, as this species is characterized in Williamson's key to the species of the *intricatus*-group (Uni. of Mich., Mus. of Zool. Occ. Papers 247:3. 1932) and agrees in color with specimens from Knox

County, Indiana. However, there are slight differences in the form of the male genitalia and appendages and of the female vulvar lamina.

55. *Gomphus exilis* Selys. **Dubois** (3616—30 ♂ 4♀), **Vigo** (3513—1♀). At the Huntingburg lakes this species was very abundant along certain parts of the shore but was not seen at other parts.

58. *Gomphus grasilinellus* Walsh. **Carroll** (3621—3 ♂ 6♀), **Grant** (July, 1935, 1 ♂, P.U.), **Warren** (3526—1 ♂).

59. *Gomphus lividus* Selys. **Orange** (3535—2 ♂ 1♀), **Warren** (3526—2 ♂).

60. *Gomphus quadricolor* Walsh. **Tippecanoe** (3521—1 ♂ 2♀).

62a. *Gomphus subapicalis* Williamson. **Greene** (3512—1 ♂). Special trips were taken to the localities (3510, 3513, 3515) where this species has been taken previously, but it was not found.

66. *Gomphus villosipes* Selys. **Jasper** (3529—1♀).

68. *Dromogomphus spinosus* Selys. **Tippecanoe** (3622—1 ♂).

70. *Boyeria vinosa* Say. **Union** (3626—1 ♂).

71. *Basiaeschna janata* Say. **Marion** (May 20, 1934, 1 ♂, P.U.), **Owen** (May 10, 1936, 1 ♂, P.U.).

72. *Anax junius* Drury. **Carroll** (3621), **Jasper** (3533). On October 2, 1935 H. E. Brown and the author collected about 200 specimens (approximately equally divided between males and females) of this species in the edge of a woodlot just west of West Lafayette. During the morning and early afternoon the temperature had been rather high, and the air was more or less calm. In mid-afternoon the temperature dropped rapidly as a brisk southwest wind began to blow. Our attention was attracted to these insects clinging to the trunks of small trees at the edge of the woods on the north and east sides of a large open field when we entered the woods about 3:30. At this time the insects could be picked from the trees with the hands if the collector were careful, but if disturbed they would fly to another tree. However, within thirty or forty minutes, as the temperature continued to drop, they became unable to use the wing muscles and would fall to the ground if shaken or knocked from the trees. Some were found as much as ten rods or more in from the edge of the woods but they were most abundant on trees about 20 to 50 feet from the edge. These insects had probably been "hawking" over the open field during the warm, calm mid-day and had been driven to shelter suddenly, causing them to be much more concentrated than they would have been if they had taken to cover normally with the approach of dusk.

*72a. **Anax longipes* Hagen. **Clark** (361). Soon after reaching the lake a male of *A. longipes* was seen. It flew parallel with the shore line—about 20 feet above the water and twice that distance from the shore—for a considerable distance, then across the lake and out of sight. Subsequent search for this or another individual of the species during the remainder of a five-day visit at the locality was unrewarded. It has been shown that sight identifications of birds in flight, which have been rather widely quoted as records, are likely to be inaccurate and such records of insects are usually very unreliable. However, the color-

tion of *A. longipes* in life—bright green thorax and brilliant red abdomen—gives it a truly striking and majestic appearance, entirely different from that of any other North American dragonfly. As I have seen the species in flight previously in New Jersey where I collected it, I do not hesitate to record it for the state upon this sight record.

This species is not common even along the coast in its usual range from Massachusetts to Brazil, and the occurrence of individuals inland is very unusual. However, it probably has a more extensive range than the records indicate, as it is very difficult to capture. A male was taken at Lake Erie, near Sandusky, Ohio, in July, 1913, and the species has been observed in two other Ohio localities: over the Ohio River at Cincinnati by Charles Dury in June, 1898, and along a small stream in an open field near Wooster by the author in June, 1930. It was observed at the south end of Pelee Island, Ontario, by F. M. Gaige in June, 1918.

81. *Epiaeschna heros* Fabricius. Clark (a female clinging to a leaf overhanging a path at Purdue Forestry Camp, June 11, 1936, H. M. Brown), Gibson (3519—a male found, fluttering, on the ground beneath an overhanging bank and brush; apparently disabled or weakened from some cause).

83. *Macromia illinoiensis* Walsh. Fayette (Connersville, August, 1 ♂, P.U.), Tippecanoe (3622—1 ♂; also a male found on a sidewalk in Lafayette, during the summer of 1935, by A. W. Trippel).

87. *Epicordulia princeps* Hagen. Carroll (3621), Dubois (3616), Orange (3534), Vigo (3513, 3515).

89. *Tetragoneuria cynosura* Say. Clark (361—1 ♂, 363—2 ♂, 364—2 ♂), Tippecanoe (Lafayette, May 18 and 25, 1935—2 ♂, P.U.).

99. *Libellula luctuosa* Burmeister. Carroll (3621), Hamilton (3633), Jasper (3528, 3532, 3533), Parke (3516), Pulaski (3527), White (3622A).

100. *Libellula pulchella* Drury. Carroll (3621), Jasper (3529, 3531, 3533), Pulaski (3527), Shelby (3627), Union (3625).

102. *Libellula semifasciata* Burmeister. Clark (367—2 ♂ 1 ♀, 3611—4 ♀).

104. *Plathemis lydia* Drury. Carroll (3621), Clinton (3523), Greene (3512), Jasper (3528, 3531, 3533), Pulaski (3527).

105. *Perithemis tenera* Say. Boone (3632), Hamilton (3633).

106a. *Erythrodiplax minuscula* Rambur. Clark (363—5 ♂, 367—2 ♂ 1 ♀, 368—5 ♂ 1 ♀, 369—5 ♂, 3610—1 ♀, 3612—1 ♂), Gibson (3619—1 ♂). At Francke Lake this species was found in a marshy area of *Sagittaria* sp., along the lake margin; at Schlamm Lake it was discovered at the extreme upper end, in marshy areas along the lake margin and over adjacent water four to 10 inches deep. In the latter locality females were seen ovipositing by striking the tip of the abdomen against the surface of the water. At the Oakland City lake the specimen was taken on a dry slope a few rods from the lake margin.

107. *Erythemis simplicicollis* Say. Carroll (3621), Greene (3511), Jasper (3533), Madison (3630), Newton (3517), Parke (3516).

108. *Sympetrum ambiguum* Rambur. Carroll (3621—1 ♂ 1 ♀), Clark (365—1 ♂), Gibson (3518—6 ♂ 2 ♀). The Clark County specimen taken

June 10 was very teneral, and those from Carroll County taken 12 days later were rather teneral.

115. *Pachydiplax longipennis* Burmeister. **Carroll** (3621), **Jasper** (3528), **Madison** (3630).

*119a. **Celithemis fasciata* Kirby. **Gibson** (3619—1♀). This specimen is teneral and the only specimen of *C. eponina* captured at this time, June 15, is also teneral; however, of 37 males and 3 females of *C. elisa* taken at the same time only four were teneral.

This record extends considerably the recorded range of the species, which has been known previously from the Gulf Coast to Oklahoma and South Carolina, and shows an overlapping of the range of *C. monomelaena*, which has been recorded from Missouri. This specimen is typically *C. fasciata* in all of the seven characters used by Williamson (O. Nat., 10:153-160. 1910) to separate *C. fasciata* and *C. monomelaena*. However, two males of *C. fasciata* from South Carolina in the author's collection are more or less intermediate in some of these characters, and, according to Mrs. Gloyd, this is also true of specimens from Georgia (*C. fasciata*) and Missouri (*C. monomelaena*) in the Williamson Collection. A critical study of these species is apparently needed, especially as much more material is now available than was known at the time Williamson's study was made.

121. *Pantala flavescens* Fabricius. **Rush** (3628).

123. *Tramea carolina* Linne. **Clark** (361, 3611, 3614).

124. *Tramea lacerata* Hagen. **Carroll** (3621), **Clark** (363, 368).