

PREVIOUSLY UNPUBLISHED ODONATA RECORDS FOR ARKANSAS, KENTUCKY AND TEXAS

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Abstract – *Lestes congener*, *Chromagrion conditum*, *Telebasis byersi*, *Macromia alleghaniensis*, *Epitheca costalis*, *E. spinosa*, *Helocordulia selysii*, *Celithemis amanda* and *Dythemis fugax* are newly reported for Arkansas, and *E. costalis* is also reported for Kentucky and Texas. Range extensions, flight dates and habitat preferences are discussed.

Introduction

HARP (1983) and HARP & RICKETT (1985) published preliminary reports on the Odonata of Arkansas listing 124 species (91 Zygoptera, 33 Anisoptera). Endemism among invertebrates, including Odonata, of the Interior Highlands of Arkansas and Missouri is well documented (WESTFALL, 1975; COOK & DAIGLE, 1985). However, heterogeneity of the origins of Arkansas Odonata is indicated by recently discovered species. They represent elements of northern (*Lestes congener*), eastern (*Chromagrion conditum*, *Macromia alleghaniensis*), southeastern (*Epitheca costalis*, *E. spinosus*, *Telebasis byersi*, *Helocordulia selysii*, *Celithemis amanda*) and southwestern (*Dythemis fugax*) fauna.

The primary purpose of this paper is to report new species for Arkansas, flight records, and the Arkansas ecoregions (SHEPHERD et al., 1984) in which these animals were collected; additional records from the Odonata Collection of the Arkansas State University Museum of Zoology are

noted for Kentucky and Texas.

***Lestes congener* Hagen**

Early records for this species listed it as a northern damselfly; however, recent collections indicate a widespread distribution across Canada and the northern two-thirds of the contiguous United States (WALKER, 1953; MACKLIN & COOK, 1967; MONTGOMERY, 1967; WHITE & MORSE, 1973; ROEMHILD, 1975; HUMMEL & HAMAN, 1977; TENNESSEN, 1979; EVANS, 1988; WHITE, 1989; DONNELLY, 1992; GLOTZHOBER, 1995).

Habitats reported include ponds, lakes, semi-permanent ponds or pond-like expansions of slow streams and rivers (WALKER, 1953; CONROY & KUHN, 1977; HUMMEL & HAMAN, 1977; TENNESSEN, 1979; PERRY, 1981; WHITE, 1989; DONNELLY, 1992). Flight dates are listed as 30 May-1 November in Ohio (GLOTZHOBER, 1995), 14 June-20 September in Manitoba (WALKER, 1953), 14 June-November in New York (DONNELLY, 1992), and August-September in Iowa (PERRY, 1981). WHITE (1989) collected the last *L. congener* of the season in New England on 22 October.

In Arkansas a single male was captured by the second author on a low shrub in a sandstone glade, 1 mi NW Calico, Izard County, in the Ozark Ecoregion, on 13 October 1985. This extends its reported occurrence somewhat to the south in the

southern portion of its known range.

***Chromagrion conditum* (Hagen)**

This damselfly has an eastern range in Canada and the United States from Nova Scotia to Manitoba south to Florida and west to Missouri (NEEDHAM & HEYWOOD, 1929; WALKER, 1933; WRIGHT, 1938; MONTGOMERY, 1967; ROBACK & WESTFALL, 1967; WHITE & MORSE, 1973; CONROY & KUHN, 1977; LAGO et al., 1979; BILGER, 1986; DONNELLY, 1992; GLOTZHOBER, 1995).

This damselfly is closely associated with springs, but is usually found about their mouths in more or less shaded areas (WALKER, 1953). Larvae have been collected from wooded swamps, ponds, lakes, creeks and rivers (ROBACK & WESTFALL, 1967; PERRY, 1983; DONNELLY, 1992). Flight season reported for this species is 5 May-16 August (WALKER, 1953; WHITE & MORSE, 1973; DONNELLY, 1992; GLOTZHOBER, 1995).

The Arkansas records are: one male collected by M.L. May from a spring seep on an Ozark Ecoregion stream, Rock Creek, 3 1/2 mi N Sitka, Sharp County, 3 June 1990, field identifications by K.J. Tennessen at a Ouachita Ecoregion spring seep, Montgomery County, 18 May 1992, and one male collected at a temporary woodland pond 8 mi W, 1 mi N Percy, Montgomery County, 7 June 1992 by G.L. Harp. This extends the range somewhat to the southwest.

***Telebasis byersi* Westfall**

Distribution for this species is mostly in the southeast (WESTFALL, 1957; WHITE et al., 1983; DUNKLE, 1992) with a northern and westward extension recorded by VOGT & McPHERSON (1985) in southern Illinois.

This species is known from ponds, creeks and swamps, semi-shaded water covered with duckweed or waterfern (WESTFALL, 1957; WHITE et al., 1983; VOGT & McPHERSON, 1986; DUNKLE, 1992). Published flight dates are 22 June-2 September in South Carolina (WHITE, et al., 1993), 16 July-20 September in Illinois (VOGT & McPHERSON, 1986), and every month except December in Florida (DUNKLE, 1992).

Eight individuals were collected by the senior

author in Drew County, located within the Mississippi Alluvial Plain Ecoregion in Arkansas, 14 June 1983: four males, just east of Seven Devils Swamp; three males and one female, at Seven Devils Swamp Dam. This is the westernmost record for the species and also establishes an earlier flight date.

***Macromia alleghaniensis* Williamson**

Distribution records for this species indicate an eastern range in the United States from New Jersey to Ohio then south to Florida and west to Alabama (NEEDHAM & WESTFALL, 1955; MONTGOMERY, 1967; GOODWIN, 1968; DUNKLE, 1992; GLOTZHOBER, 1995).

Habitats recorded for Alabama are small to medium sized streams (TENNESSEN et al., 1995). NEEDHAM & WESTFALL (1955) recorded flight dates of 23 June-7 September. Records since then list flight dates 10 June-22 August in Alabama (TENNESSEN et al., 1995), 27 June-22 August in Tennessee (GOODWIN, 1968), and 27 July-19 August in Ohio (GLOTZHOBER, 1995).

S.W. Dunkle collected three individuals in Arkansas, along two moderate sized Ouachita Ecoregion streams: two males, along Mazarn Creek, Garland County, 19 June 1984; one male, along Caddo River, Montgomery County, 19 June 1984 (S.W. Dunkle, pers. comm.). These Arkansas records extend the known range considerably to the west, and establish some habitat data.

***Epüheca costalis* (Selys)**

This is essentially a southeastern species reported from North Carolina to Florida and west to Missouri and eastern Louisiana (TENNESSEN, 1977; DUNKLE, 1983, 1992; TENNESSEN et al., 1995).

DUNKLE (1983) collected it from a lake and spring in Missouri and Illinois; it also prefers clear-sandy lakes, small reservoirs and pools in slow, marshy streams (TENNESSEN, 1977; DUNKLE, 1992; TENNESSEN et al., 1995). Flight season recorded is from mid January-late June in the southern regions (TENNESSEN 1977; DUNKLE, 1992; TENNESSEN et al., 1995), and 16 April to 11 June in Illinois (DUNKLE, 1983; VOGT & McPHERSON, 1986).

This dragonfly occurs in four of the six

ecoregions of Arkansas-Crowley's Ridge, West Gulf Coastal Plain, Ouachita Mountains and Ozark Mountains. Records (corresponding to the ecoregions above) are: one male, lake at Crowley's Ridge State Park, Greene County, 14 June 1976, collector, G.L. Harp; one male, oxbow of Red River, Lafayette County, 7 May 1982, collector, G.L. Harp; one male, Mazam Creek, Garland County, 19 June 1984, collector S.W. Dunkle; one male, Horsehead Lake dam, Johnson County, 27 June 1987, collector, M. Pippenger.

Additional records include: Kentucky, Boone County, 25 mi SW Covington, Big Bone Lick St Park, 29 May 1986 by S. Moulton II, two males, one female; Texas, Collin County, 1 mi E Princeton, S side U.S. Hwy 380, 11 April 1990 by G.L. Harp, two males, one female.

The Arkansas and Kentucky records fill gaps in the known range of this species. The Texas records extend the known range to the west.

***Epiheca spinosa* (Hagen)**

This species has spotty distribution. It has been reported from New Jersey, North and South Carolina, Georgia, Florida, Alabama, Oklahoma and Texas (NEEDHAM & WESTFALL, 1955; BICK & BICK, 1957; MONTGOMERY, 1967; DUNKLE, 1992; TENNESSEN et al., 1995).

TENNESSEN, et al. (1995) reported collections from wooded swamps with very little flow. Flight season is 2 April-6 June in the east (NEEDHAM & WESTFALL, 1955), and 19 March-8 April in Tennessee (TENNESSEN et al., 1995).

The Arkansas record is one male captured in Clark County, along Caddo River, a Ouachita Ecoregion stream, 10 May 1984, by S.W. Dunkle.

This record fills part of the gap existing in the known range for this species.

***Helocordulia selysii* (Hagen)**

This species has an exclusively southeastern range. It has been recorded from Virginia to Florida and from Florida west to Texas (NEEDHAM & WESTFALL, 1955; BICK, 1957; ROBACK & WESTFALL, 1967; DONNELLY, 1978; DUNKLE, 1992; TENNESSEN et al., 1995). Specimens from Texas are in FSCA.

Larvae have been collected from the mouth of a river (ROBACK & WESTFALL, 1967). Other reported habitats include: a creek watershed,

along a highway, sunny glades in woods (NEEDHAM & WESTFALL, 1955; DUNKLE, 1975; LENAT, 1983), and cool sandy woodland streams (TENNESSEN et al., 1995). It has a short flight season, 10 March-8 May (NEEDHAM & WESTFALL, 1955; DUNKLE, 1975, 1992; TENNESSEN et al., 1995).

Two males were collected by the senior author along Salado River, an Ozark Ecoregion stream, Independence County, one on 2 May 1987 and another on 5 April 1992. The Arkansas records extend this species' range to the northwest.

***Celithemis amanda* (Hagen)**

Distribution records for this species show a southeastern range from the Carolinas to Florida and west from Florida to Texas (NEEDHAM & WESTFALL, 1955; ORR, 1993).

BICK (1957) found this species in pinelands along an old heavily vegetated roadside borrow pit containing deeply stained acid water; most individuals perched on low bordering weeds and one was laying eggs; it was collected with *Libellula auripennis*, *Celithemis fasciata* and *C. ornata*. In Florida it is fairly common at infertile ponds (DUNKLE, 1992) and in Alabama it is found near shallow ponds with sparse emergent vegetation (TENNESSEN et al., 1995). Flight season is 2 April-November (NEEDHAM & WESTFALL, 1955; DUNKLE, 1992; TENNESSEN et al., 1995).

Two males were captured in Arkansas, by M. Pippenger, in a field near Calion Lake, Union County, which lies within the West Gulf Coastal Plain, on 23 July 1989. This constitutes a slight range extension to the northwest.

***Dythemis fugax* Hagen**

Early records for this species indicated a western distribution with collections from Oklahoma, Texas and New Mexico (NEEDHAM & WESTFALL, 1955). VOGT & McPHERSON (1985) listed it for Illinois.

DUNKLE (1975) collected this dragonfly in Lady Bird Johnson Park in Texas and reported a new early flight date, 15 April. It has been taken as late as 18 September (VOGT & McPHERSON, 1985).

The senior author collected the Arkansas individuals in the Ozark Ecoregion: two males, Lake

Miranda, rip-rap along dam, Cherokee Village, Sharp County, 24 August 1991; one female, same location, 25 August 1991. This record fills a gap in its known U.S. range.

Conclusion

The addition of these nine species brings the Arkansas list for Odonata to 133 (97 Zygoptera, 36 Anisoptera). Distribution, flight dates and habitat records contribute to the existing knowledge concerning the biology of these species.

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References – BICK, G.H., 1957, *Tulane Stud. Zool.* 5(5): 71-135; – BICK, G.H. & J.C. BICK, 1957, *SWest. Nat.* 2(1): 1-18; – BILGER, M.D., 1986, *Preliminary checklist of the aquatic macroinvertebrates of New England, including New York state*, U.S.EPA Environ. Ser., Div. Biol. Sci., Lexington/MA; – CONROY, J.C. & J.L. KUHN, 1977, *Manitoba Ent.* 11: 27-40; – COOK, C. & J.J. DAIGLE, 1985, *Odonatologica* 14(2): 89-99; – DONNELLY, T.W., 1978, *Notul. odonatol.* 1(1): 6-7; – DONNELLY, T.W., 1992, *Bull. Am. Odonatol.* 1(1): 1-27; – DUNKLE, S.W., 1975, *Ent. News* 94(4): 136-138; – DUNKLE, S.W., 1992, *Bull. Am. Odonatol.* 1(2): 29-50; – EVANS, M.S., 1988, *Gt Basin Nat.* 48(1): 96-99; – GLOTZHOBER, R.C., 1995, *Bull. Am. Odonatol.* 3(1): 1-30; – GOODWIN, J.T., 1968, *Proc. Iowa Acad. Sci.* 84: 110-118; – HARP, G.L., 1983, *Proc. Ark. Acad. Sci.* 37: 87-98; – HARP,

G.L. & J.D. RICKETT, 1985, *ibidem* 39: 131-135; – HUMMEL, M.S. & A.C. HAMAN, 1977, *Proc. Iowa Acad. Sci.* 84: 110-118; – LAGO, P.K., D.F. STANDFORD & P.S. HARTFIELD, 1979, *J. Miss. Acad. Sci.* 24: 72-76; – LENAT, D.R., 1983, *Brimleyana* 9: 53-68; – MACKLIN, J.M. & C. COOK, 1967, *Proc. N. cent. Brch Am. ent. Soc. Am.* 22: 120-121; – MONTGOMERY, B.E., 1967, *ibidem* 22: 121-129; – NEEDHAM, J.G. & H.B. HEYWOOD, 1929, *A handbook of the dragonflies of North America*, Thomas, Springfield, IL; – NEEDHAM, J.G. & M.J. WESTFALL, 1955, *A manual of the dragonflies of North America*, Univ. Calif. Press, Berkeley; – ORR, R., 1993, *Argia* 4(4): 11; – PERRY, T.E., 1981, *Ohio J. Sci.* 81(3): 41; – ROBACK, S.S. & M.J. WESTFALL, 1967, *Trans. Am. ent. Soc.* 93: 101-124; – ROEMHILD, G., 1975, *Res. Rep. Montana agric. Exp. Stn* 87: 1-53; – SHEPHERD, B., K.L. SMITH, W.F. PELL, J.H. RETTIG, R.H. DAVIS & H.W. ROBISON, 1984, *Arkansas's natural heritage*, August House, Little Rock/AR; – TENNESSEN, K.J., 1977, *Ann. ent. Soc. Am.* 70(2): 267-273; – TENNESSEN, K.J., J.D. HARPER & R.S. KROTZER, 1995, *Bull. Am. Odonatol.* 3(3): 49-74; – VOGT, T.E. & J.E. McPHERSON, 1985, *Gt Lakes Ent.* 18(1): 7-13; – WALKER, E.M., 1933, *Can. Ent.* 65: 57-72; – 1953, *The Odonata of Canada and Alaska*, Vol. 1, Univ. Toronto Press, Toronto; – WESTFALL, M.J., 1957, *Fla Ent.* 40: 19-27; – 1975, *ibidem* 58: 92-95; – WHITE, H.B., 1989, *Ent. News* 100(3): 89-103; – WHITE, H.B. & W.J. MORSE, 1973, *Res. Rep. Hamps. agric. Exp. Stn* 30: 1-46; – WHITE, T.R., K.J. TENNESSEN, R.C. FOX & P.H. CARLSON, 1983, *Bull. Sth Carol. agric. Exp. Stn* 648: 1-72; – WRIGHT, M., 1938, *J. Tenn. Acad. Sci.* 13(1): 26-33.

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