

New Species Records for Mississippi: An Expected Dragonfly and an Unexpected Damselfly

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The list of Odonata for Mississippi expanded from the first published account of 50 species in 1950 (Bick, 1950) to 83 species over thirty years later (Stanford and Lago, 1981). It continued to grow considerably, from 114 species at the start of 2002 (Donnelly, 2002) to 130 species by the end of 2004 (Abbott, 2005). Some of the most recent additions include *Dromogomphus spoliatus*, *Ischnura prognata*, and *Telebasis byersi*. The Mississippi list surpassed Louisiana's (128 spp., Mauffray, 1998; Abbott, 2005) during the last three years, but it still trails behind the other neighbor states; Alabama (176 spp.), Arkansas (136 spp.), and Tennessee (150 spp.) (Abbott, 2005). In this article we report details surrounding the addition of the dragonfly *Arigomphus lentulus* (Stillwater Clubtail) and damselfly *Lestes forficula* (Rainpool Spreadwing) to the Mississippi fauna, which brings the total Anisoptera (dragonflies) to 94 spp. and total Zygoptera (damselflies) to 38 spp.

Previous records for *A. lentulus* are concentrated mostly west of the Mississippi River in eastern Oklahoma and Texas and in western Arkansas. Additional records exist north of Mississippi and stretch into Illinois and Indiana (Donnelly, 2004a). Like other members of the genus, *A. lentulus* often breeds in ponds, lakes and slow areas of streams, often with mud or clay substrate (Abbott, 2005).

The first author collected *A. lentulus* on farm property off Rt. 389 in northern Oktibbeha Co., east-central Mississippi (N 33° 31.008', W 88° 52.167'). Several pond impoundments dot active or former pastures within a 2.5 km radius on the property. Four of these ponds were surveyed for one hour on each of 8–11 dates between mid May and mid September 2004. The *A. lentulus* was observed at only one of these, a small pond (perimeter = 0.28 km) set in a large hay field and cow pasture. The field is mowed yearly and livestock herds trampled the pond margin for over a month during the survey period. Banks are

steep and in some places nearly 1 m above water. Forty-six vascular plant species were recorded in 50 plots (mean = 4.2 spp per 0.5 m² plot); dominants included *Eleocharis obtusa*, *Hydrolea uniflora*, *Ludwigia peploides*, *Paspalum dilatatum*, and *Polygonum hydropiper*.

Arigomphus lentulus was first seen on 17 May and again on 22 May, 26 May, and 09 June 2004. It was not seen on 04 July. Surveys at the site lasted one hour between 1345–1510 hr on each date. Average air temperature, wind speed, and relative humidity (Kestrel 4000 Pocket Weather Station, Forestry Suppliers Inc., Jackson, Mississippi) were 32.6°C, 1.2 m/s, and 55.2%, respectively, during the four surveys. *Arigomphus lentulus* was rare to moderately abundant (5 to 15 individuals) relative to 24 co-occurring odonate species that were accumulated over ten sample days; the common species included *Enallagma civile*, *E. signatum*, *Erythemis simplicicollis*, *Ischnura posita*, and *Perithemis tenera*. The predominance of these opportunists and agricultural land use around the pond suggest a low quality breeding site for odonates, and may indicate that *A. lentulus* can tolerate such conditions. Six larvae of *A. lentulus* were collected from this pond during two hours of sweep netting on 18 April 2005, confirming residency of the species.

Whereas the dragonfly *A. lentulus* was expected to occur in Mississippi, the damselfly *L. forficula* was not. *L. forficula* was previously documented only in south-central and southeastern Texas (Donnelly, 2004b), and it was not listed in a comprehensive update of Louisiana's Odonata (Mauffray, 1998). As the English name implies, the breeding habitat usually includes pools or small ponds, usually with abundant emergent vegetation (Abbott, 2005).

The first author collected two individuals of *L. forficula* on separate dates in different locations. The first was taken 17 September 2004 on the same farm property but different pond (N 33.5328°, W

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88.8649°) as the *A. lentulus*. This pond was larger (perimeter = 0.64 km) and surrounded by inactive pasture with wooded areas ~100 m from the pond edge. Sixty-three vascular plant species were recorded in 50 plots (mean = 4.3 spp. per 0.5 m² plot); dominants included *Diodia virginiana*, *Hydrolea uniflora*, *Panicum rigidulum*, and *Polygonum hydropiperoides*. The following water quality data are averages of three readings taken on one date in July 2004: pH = 6.3, D.O. = 4.5 mg/L, water temp = 29.4°C, conductivity = 28.7 µS. Weather on 17 Sept was sunny (< 5% of survey time with cloud cover) and warm (29.3°C), with 63.4% average humidity and 3.0 m/s maximum wind speed. Two *L. forficula* were spotted at 1125 hr. Both were perched atop *Hydrolea uniflora*, a succulent low emersed forb. Thirty-four additional odonate species were detected at this site, of which 19 were possible or probable residents based on abundance, presence of teneral, and reproductive behaviors (i.e., tandem flights, guarding behavior oviposition attempts, mating wheels, territoriality); examples include *Celithemis eponina*, *Enallagma traviatum*, *Libellula incesta*, *Tramea carolina*, and those listed above at the *A. lentulus* site.

The second record was taken 24 September 2004 from a beaver wetland complex (N 33°13.814', W 89° 03.726') in the Tombigbee National Forest, Winston Co., east-central Mississippi. This location is about 36 km from the farm site. It was surveyed 20 times during the early (calendar days 1–10), middle (11–20), and late (21–30/31) thirds of each month from late March to early October. Each census lasted 45 min or more. The marsh complex includes a series of impoundments with at least 40 to 50 non-woody vascular species (mean = 4.1 spp per 0.5 m² plot; 50 plots). Dry woodland borders the corridor on both sides. The impoundment with *L. forficula* was created at least 30 years ago based on aerial photographs. This site is now blanketed by the tussock rush, *Juncus effusus*, which over time builds a large, raised substratum for other plants to exploit (Ervin, 2005). Mean depth of surface water varied from 55.2 to 72.4 cm over the flight season. Weather at the time of census on 24 September was mostly sunny and 29.7°C, with 52.9% average humidity and 2.0 m/s maximum wind speed. A single mature *L. forficula* was found perched on *Juncus* culms about half a meter above water at ~1410 hr. Thirty additional odonate species were observed in the beaver marsh complex over the six-month study period

(e.g., *Enallagma daeckii*, *E. dubium*, *E. geminatum*, *Lestes vigilax*, *Nehalennia integricollis*).

The three encountered individuals of *L. forficula* were probably strays rather than constituents of resident populations, although we can not rule out a substantial range expansion that went unnoticed. It is interesting to note that a major tropical storm, Hurricane Ivan, made landfall near Mobile, Alabama, on 16 September 2004. Sustained winds associated with this storm were measured at over 50 mph at Starkville, Mississippi, with gusts well in excess of 60 mph (National Weather Service, 2004). It is certainly conceivable that winds associated with this system resulted in a few individuals of *L. forficula* being transported beyond their usual range.

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