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***ERYTHRODIPLAX UMBRATA* (ODONATA: LIBELLULIDAE):  
NEW FOR MICHIGAN**

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**ABSTRACT**

Two band-winged dragonlets, *Erythrodiplax umbrata* (Linnaeus), collected in Wayne County, Michigan on 6 October 2007 represent the first records for this genus and species in the state, as well as the northernmost record for the species. They were found during a period in which many individuals were seen or photographed in Ohio, which prior to 2006, had only two records.

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*Erythrodiplax* (Brauer) is a primarily Neotropical genus of 56 species (Garrison et al. 2006), six of which occur regularly in North America north of Mexico (Dunkle 2000). *Erythrodiplax umbrata* (Linnaeus), the band-winged dragonlet, is found in South America south to Argentina, Central America, Mexico, the Greater Antilles, and the southern United States. Prior to 2006, there were only four records outside the southern U.S., all represented by specimens. One was taken at Cedar Bog, Champaign County, Ohio on 11 June 1934 (Borror 1935). Two teneral individuals were collected in Indiana by B. E. Montgomery on 1 September 1934, a male in Gibson County, and a female in Pike County (Borror 1935). Kansas has two records, a teneral male collected by G. F. Hevel on 11 July 1964 in Labette County and a female taken on 8 June 1999 in Sedgwick County by R. J. Beckemeyer (Beckemeyer 2004).

On 11 August 2006, a male *E. umbrata* was photographed at Armleder Park, Cincinnati, Hamilton County, Ohio, which remained present until at least 23 August (Abbott 2007, Hull 2007). In 2007, Ohio had a spate of records for this species. One was photographed on 29 August at Headlands Dunes State Nature Preserve, Lake County and two more were seen at this location on 10 September (Rosche 2007). Two adult males were found and photographed on 4 September at Frohring Meadows, Geauga County and another was photographed there on 18 September (Rosche 2007). An adult male was found on 14 September at the Leroy Wetlands, Lake County. Multiple individuals, including juveniles, were observed at this site through 22 October; the peak number was at least 20 juveniles on 26 September (Rosche 2007, J. Pogacnik, pers. comm.). A male was photographed at Cuyahoga Valley National Park, Cuyahoga County on 8 October and two teneral individuals on 17 October (Gardella 2007a, L. Gardella, pers. comm., *contra* Rosche 2007). None of these individuals were collected.

Bearing the recent Ohio findings in mind, on 6 October we took advantage of unseasonably warm (30°C) and sunny weather to do a final survey of adult odonates at the Detroit River International Wildlife Refuge, Humbug Marsh Unit, located along the lower Detroit River, in Wayne County, Michigan. Part of this unit is an 18 ha brownfield owned by Wayne County. The only surface water on the brownfield site were rainwater puddles unintentionally created by construction equipment earlier in the summer. These puddles were restricted to a 3 ha section approximately 300 m from the Detroit River.

Immediately upon entering the site, JAC spotted a male *E. umbrata* at an 8 × 4 m puddle (42°06'53"N, 83°11'38"W). As we attempted to photograph

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it, a second male flew in and the two chased each other. For about 15 min, they alternated between the original puddle and another of similar size approximately 20 m away. Although they were wary and difficult to approach, JAC was eventually able to capture both. Voucher specimens have been deposited into the Univ. Michigan Museum of Zoology, Insect Division, and have been cataloged by the Michigan Odonata Survey.

This location is roughly 40 km farther north than the northernmost record for Ohio (at Headlands Dunes State Nature Preserve) and over 220 km farther north than the previous northernmost specimen, the one taken by Borror in 1934 outside of Columbus (Borror 1935).

## DISCUSSION

*Erythrodiplax umbrata* inhabits marshy ponds, pools, and lakes, often temporary water (Dunkle 2000, Abbott 2005, Garrison et al. 2006). The Michigan dragonlets were in < 3-month-old depressions created by earth-moving equipment. All the 2007 Ohio records were found in similar pools and puddles of recent vintage. The Frohring Meadows park was under construction and the dragonlets there, as well as the one at Headland Dunes, were found in "simple scrapes" (L. Rosche, pers. comm.). Leroy Wetlands is a newly created wetland complex and the site containing the dragonlets had held water for < 2 months (Pogacnik 2007). The Cuyahoga Valley National Park site is a mitigated wetland and the dragonlet was in what was described by the observer as a "mud puddle" (Gardella 2007b).

These northern records of *E. umbrata* constitute a substantial northern range expansion for this species. Hickling et al. (2005) documented a northward shift in the range margins in 34 of 37 species of non-migratory British Odonata between 1960-1970 and 1985-1995. Catling (1996) reported that the range of *Enallagma civile* (Hagen), (Odonata: Libellulidae), had moved north by at least 200 km in southern Ontario between 1959 and 1996. Authors of both these papers noted that these range shifts could be associated with global climate change. More short-term climatic events might also help explain the recent northward movements of *E. umbrata*. For much of 2006, Texas and Oklahoma, core areas of the range of *E. umbrata* in the U.S., experienced severe to extreme drought (NWSCPC 2008) with 2007 the driest year in the 112-year record in the southeastern U.S. (NCDC 2008a). The drought was coupled with above-average temperatures in 2006-2007 over the south and southeast (NCDC 2008b). These conditions may have pushed *E. umbrata* north in search of breeding sites as the shallow ponds and puddles dried up over much of their range or above-average temperatures created unsuitable thermal conditions in surviving aquatic environments.

The presence of teneral *E. umbrata* in northeast Ohio suggests they were able to breed in the temporary ponds near which they were found. The two Michigan males on 6 October were fully pruinoso adults. No *E. umbrata* were present at the Michigan site in over a dozen previous weekly visits or one subsequent visit and no nymphs were found during larval sampling in the puddles on 13 October. These puddles will be checked again in 2008, although they are likely to be destroyed early in the spring season.

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recent Ohio records: Lou Gardella, Bob Glotzhofer, John Pogacnik, and Larry Rosche. Additional photographers that documented the Ohio records include William Hull, Sally Isacco, Linda Gilbert, and Judy Semroc.

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