

Erythrodiplax umbrata Linnaeus, 1758

Contributors

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Complete Latin Name + Higher Level Classification

Erythrodiplax umbrata Linnaeus, 1758 (Insecta: Odonata: Anisoptera: Libellulidae: *Erythrodiplax*)

1. Geographic Range

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 actual museum specimens. On August 11, 2006, a male of *E. umbrata* was photographed in Cincinnati, Ohio, representing the northernmost record of the species. These northern records of *E. umbrata* constitute a substantial northern range expansion for this species. Occurrence throughout PR as documented in literature and collection??

2. Habitat

Erythrodiplax umbrata inhabits marshy ponds, pools, lakes, and often also temporary waters (Dunkle 2000, Abbott 2005, Garrison et al. 2006).

3. Physical Description => a precise taxonomic diagnosis of the species (as opposed to others)

All members of the genus *Erythrodiplax* share these characteristics:

On the lateral surface of the second abdominal segment, there is a supplementary transverse carina and the membranule is brown or black. The posterior lobe of the prothorax is usually small, flat or only slightly raised, and bordered by an evenly curving posterior edge with a slight indentation at the mid line; in rare cases, it may be somewhat larger, more raised, and divided in the middle. The apical tarsal segments of members of this genus are moderately long and thin and they also have short spines, the spaces between them being clearly longer than one spin, in the hind femora. The second and third abdominal segments each bear a transverse carina.

The sectors of the arculus are petiolate, somewhat less in the fore than the hind wing. The arculus is not enlarged between the first and second antenodals. There are no more than 16 antenodals in the

anterior wing. Cu2 is strongly convex in the fore-wing, and the discoidal space broadens in the middle and is very wide at the edge of the wing. There are not more than three cells bordering on the triangle. The pterostigma is usually very large. The inner branch of the hamule of the male is much smaller than the outer branch; it projects ventromesad and is scarcely visible in lateral view. The vulvar lamina of the female is well developed and scoop-shaped, 1/4 as long as the ninth segment, and projecting ventrad. The tenth segment of the female is not elongated distad on the ventral side Length of hind wing: not more than 35 mm.

Erythrodiplax umbrata can be distinguished from other members of the genus by usually having one cell row between M4 and Mspl and having a vulvar lamina in the female that is very short, less than ¼ as long as the ninth segment. This species reaches a length from 38 to 47 mm, about which 23 to 34 mm is allotted to the abdomen, making it the second largest, after *Erythrodiplax funerea*, of its genus. Its hind wing length is from 25 to 34.5 mm and the length of its pterostigma is from 3.0 to 5.3 mm.

E. umbrata not only shows sexual dimorphism, differences between the appearance of male and females of the species, but also exhibit two different morphologies for the females. The male and homochromatic female both have dark brown or black bands across each wing between the nodus and stigma. The heterochromatic female is dull brown and much more common, with brown wing tips and tan rectangular lateral spots on the middle abdominal segments. Other specimens lack this band but have darkened wing apices. The color is highly variable from dark reddish brown with blackish marks to yellow with dark markings on the dorsum of the thorax and on the abdominal segments. Juveniles of both sexes resemble the brown female form, but have gray lateral abdominal spots. Needs some work to include more non-color characters.

4. Development

All members of the sub order Anisoptera have an incomplete metamorphosis with substantial differences between the aquatic larvae and the adult dragonfly. The actual duration of larval development and the number of instars can vary being subject to water temperature and food availability. Emergence generally takes place after the last instar has crawled from the water to cling to vertical support during the night.

The specimens of *E. umbrata* leave their development waters shortly after the emergence from the larva covering and disappear for maturing further into the surrounding countryside, they only return when they are ready to mate. The current knowledge of the immature stages of the genus *Erythrodiplax* is still scarce, with only a third of its species presently known from the larval stage.

5. Reproduction => mating strategies, how many generations per year, etc. (if known).

As in all members of Anisoptera, before mating the male deposits sperm in secondary genitalia located on the underside of his second and third abdominal segments. The male approaches the female from above and grasps her behind the head with the grasping appendages at the end of his abdomen. Mating takes place when the female, while held, scoops her abdomen down and forward and the male's secondary genitalia. Pairs of *Erythrodiplax umbrata* mate briefly in midair, the mating is carried out very

fast in the flight, then the female dips eggs into the water at scattered locations. Males of this species do not guard the females in ovoposition.

6. Lifespan

The average life expectancy of the adult odonates depends on the part of the world in which they lives. In species common to the tropics and subtropics like *Erythrodiplax umbrata*, larval development may be reduced to a few months and the adult stage may last a full year.

7. Behavior

This dragonfly perches on the tips of twigs, the females high in trees. They often hover for a few seconds about 30 cm away from the perch before accepting it. A common behavioral trait of the males of common skimmers is to come to rest repeatedly on the same branch or twigs between periods of flight.

9. Communication and Perception

Omitted by recommendation.

10. Food Habits

All dragonflies capture their prey in midair by extending the three pair of forward pointing legs and grasping the insects very firmly. Members of Anisoptera are carnivore, they prey on other insects. The nymphs have a more specialized way of capturing its food, en where their lower lip or labium, has a structure known as a mask which is used to devour the prey.

The nymphs spend the early part of their life underwater feeding on tadpoles, small fish, insects and even other nymphs.

11. Predation

Predators of the nymphs include aquatic birds, fish and large predaceous insects. A list of the predator of the adult would include many species of birds, amphibians, bats, spiders, wasps and other dragonflies.

12. Ecosystem Roles

Omitted by recommendation.

13. Economic Importance for Humans: Negative

Omitted by recommendation.

14. Economic Importance for Humans: Positive

Mosquitoes compose a significant part of the diet of both adults and nymphs. *E. umbrata* plays an important part in the control of diseases like malaria and dengue fever, characteristic to the tropics, by controlling the populations of the vector of these diseases, mosquitoes. The adults are agile and

beneficial predators while the nymphs form an important link in food chains for fish and other aquatic vertebrates.

15. Conservation Status

This species is very widespread and common throughout the Neotropics and is not of conservation concern.

17. Contributors => Francez Curbelo, Yehimarie Santiago + Juliana Cardona + Nico Franz

18. References

Borror, D. J. 1945. A key to the New World genera of Libellulidae (Odonata). *Ann. Entomol. Soc. America* 38: 168-194

Corbet, P. 1980. *Biology of Odonata. Annual Review of Entomology*, 25: 189-217

Craves, J. O'Brien, 2007 *Erythrodiplax Umbrata* (Odonata: Libellulidae): New for Michigan; *The Great Lakes Entomologist*, Vol. 40, Nos. 1 & 2 95-97

Dunkle, S. 1989 *Dragonflies of the Florida Peninsula, Bermuda and the Bahamas* Scientific Publishers Gainesville, Florida

Kirschbaum, K. 2007. "Anisoptera" (On-line), *Animal Diversity Web*. Accessed March 26, 2009 at <http://animaldiversity.ummz.umich.edu/site/accounts/information/Anisoptera.html>.

McCafferty W.P. 1981 *Aquatic Entomology* Science Books International Boston Massachusetts Chapter 8 125-147

Muzón und Garré: Description of the last instar of *Erythrodiplax paraguayensis* (Anisoptera: Libellulidae). *Rev. Soc. Entomol. Argent.* 64, 2005, S. 85-91

Wildlife and Plants 3rd edition Vol 5 Marshall Cavendish Reference New York 2007 304-305

An Introduction to Aquatic Insects 2nd edition 1984 Kendall/Hunt Publishing Company Iowa Chapter 11 126-176