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# Dark Ricefield Mosquito, *Psorophora cyanescens* (Coquillett, 1902) (Insecta: Diptera: Culicidae)[1]

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*The Featured Creatures collection provides in-depth profiles of insects, nematodes, arachnids and other organisms relevant to Florida. These profiles are intended for the use of interested laypersons with some knowledge of biology as well as academic audiences*

## Introduction

The genus *Psorophora* is in the subfamily Culicinae and the tribe Aedini. This genus is comprised of relatively ornate mosquitoes, some species of which are quite large. As of 2025 there are 49 species of *Psorophora*, and they are divided into three subgenera: *Grabhamia*, *Janthinosoma*, and *Psorophora* (Harbach 2013). The genus *Psorophora* is most diverse in tropical and temperate regions of the Americas (Wilkerson et al. 2021). This Featured Creature focuses on *Psorophora cyanescens*, a species in the subgenus *Janthinosoma*.

## Synonyms

*Culex cyanescens* (Coquillett 1902)

*Psorophora dyari* (Petrocchi 1927)

*Psorophora purpurascens* (Dyar 1928)

*Psorophora tovari* (Evans 1932)

## *Psorophora cyanescens*

*Psorophora cyanescens* (Figure 1) was first described in 1902 by Donald Coquillett (Coquillet 1902). The genus name, *Psorophora*, is derived from the Greek roots *psoros*, meaning "itchy," and *-phora*, meaning "to bear." Thus, the genus name means "itch-bearing," which is appropriate as the bite of females of *Psorophora* spp., including *Psorophora cyanescens,* is often itchy and painful. *Psorophora cyanescens* females are considered aggressive biters and they do not detach easily once they have started feeding on a host for blood (Snow et al. 1960). While *Psorophora cyanescens* preferentially feed on mammals (Medone et al. 2015), they are not known to transmit any human pathogens. The type locality of *Psorophora cyanescens* is Brownsville, Texas, United States.

Figure 1. Adult female *Psorophora cyanescens* mosquito. Credit: Nathan Burkett-Cadena, UF/IFAS

## Distribution

*Psorophora cyanescens* is found throughout much of the tropical and temperate regions of the Americas (Figure 2). Namely, it is found throughout the eastern half of the continental United States, south of the Great Lakes (Burkett-Cadena 2013). Their distribution continues southward into Argentina, Bolivia, Colombia, Guatemala, Guyana, Honduras, Lesser Antilles (including Aruba, Trinidad, and Tobago), Mexico, Nicaragua, Paraguay, Peru, Uruguay, and Venezuela (van der Kuyp 1954; Darsie 1994; Burkett-Cadena 2013; Diaz-Nieto et al. 2013; Ortega-Morales et al. 2015, 2019; Chan-Chable et al. 2016; Bond et al. 2020; Wilkerson et al. 2021; Navarrete-Carballo et al. 2022; GBIF Secretariat 2023).

Figure 2. Map of states and countries, in red, where *Psorophora cyanescens* has been reported. (The distribution of *Psorophora cyanescens* is not present throughout the entirety of the shaded area).
Credit: Map created using mapchart.net by Miles McCollum, UF/IFAS

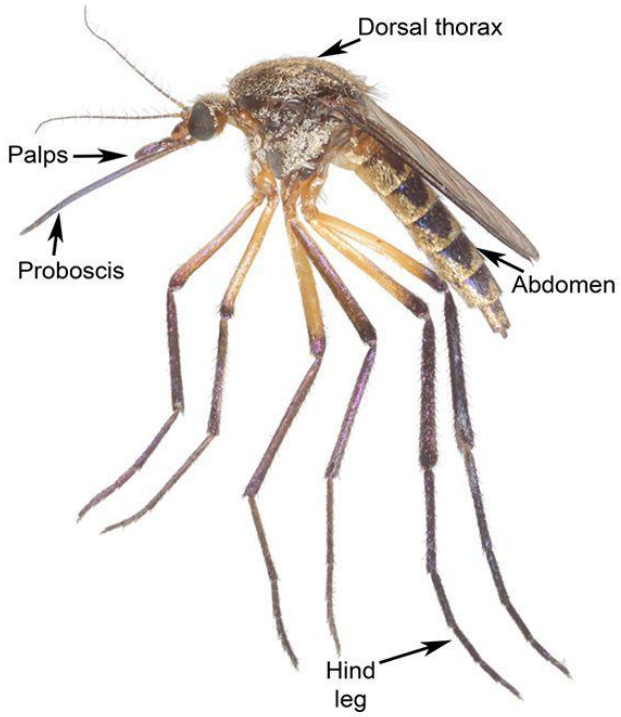


Figure 3. Lateral view of adult female *Psorophora cyanescens* designating anatomical elements important for identification.
Credit: Nathan Burkett-Cadena, UF/IFAS

# Description

## Adults

Adult *Psorophora cyanescens* are medium sized (8.3 mm (0.33 in)) mosquitoes clad in iridescent purple, blue, white and golden scales (Figure 3). Their palpi (paired, club-like appendages of the head) are considerably shorter than the proboscis (long, feeding appendage) (Figure 3). The scutum (dorsal surface of the thorax) (Figure 3) is black and covered with scattered golden to greenish-gold scales. Abdominal segments 2–6 (Figure 3) have horizontal bands of pale scales on the upper, outer portion of each segment (Darsie and Ward 2005; Burkett-Cadena 2013).

Adult females of *Psorophora cyanescens* are distinguishable from the other species of their genus in North America via coloration of their proboscis, palps, thorax, wings, legs, and abdomen. The proboscis is entirely dark scaled while the palp scales are an iridescent purple. Eyes of live adults are dark gray to black in coloration. The dorsal thorax, or scutum, is black with a spattering of gold to greenish-gold scales while the lateral sides of the thorax have white/pale scales.

Their wings are entirely dark scaled. The femora are mostly pale scaled and the hindlegs are without erect scales, i.e., they do not seem "fluffy." A notable characteristic of this species in this region is that it is the only species of *Psorophora* with entirely purple scaled hind tarsi. The other *Psorophora* species present in Florida have at least one segment of the hind leg that is pale scaled. Additionally, they have pale horizontal bands or side patches on the lower portion of their abdominal segments with dorsal patches of golden scales (Figure 3). Like other species of *Psorophora*, *Psorophora cyanescens* has an abdomen that tapers to a point (Figure 3).

## Larvae

The larvae of *Psorophora cyanescens* (Figure 4) are of medium to large size (approaching 10 mm (0.39 in)) with the bristle-like hairs (setae) of the head and antenna being small and unbranched, or with only two to three branches. The antennae are shorter than the head, an uncommon characteristic for other species in the subgenus *Janthinosoma*. The siphon (tube-like breathing appendage) is swollen at the base and bears a long seta at the tip. There are three to five spines (called pecten spines) at the base of the siphon and a single row of four to five serrated spikes (called comb scales) on the 8th abdominal segment. The anal papillae (finger-like protrusions) are long and pointed (Figure 4). Like other species of *Psorophora*, *Psorophora cyanescens* has small clusters of setae along the underside of and protruding from the saddle (dark ring) on the 10th abdominal segment, called the precratal setae (Figure 4).

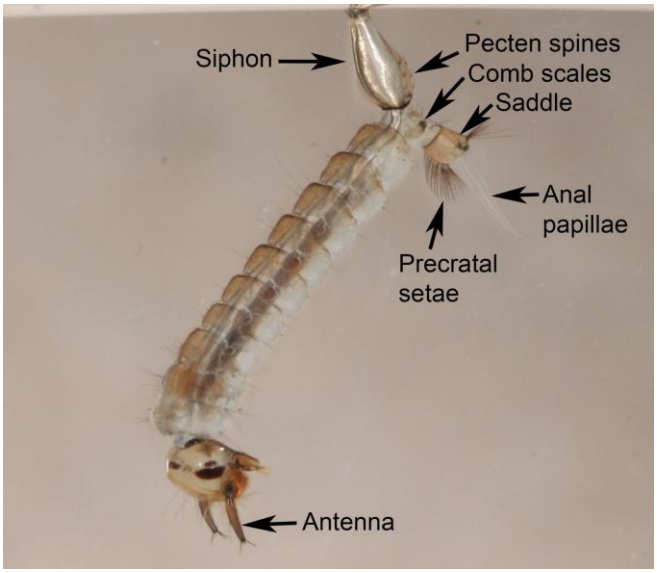


Figure 4. Lateral view of larval Psorophora cyanescens designating anatomical elements important for identification. Credit: Nathan Burkett-Cadena, UF/IFAS

The most notable characteristic of *Psorophora cyanescens* is the swollen siphon (Figure 5A). They can also be identified via their short antennae, which are about as long as the head (Figure 5B).

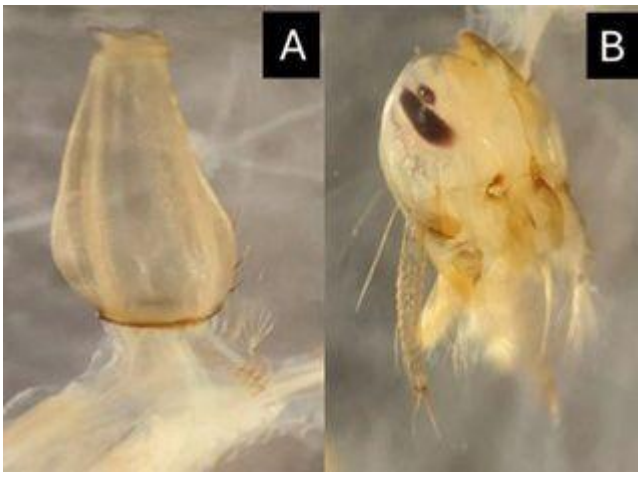


Figure 5. Lateral view of bulbous siphon and elongated antennae of larval *Psorophora cyanescens*. Credit: Miles McCollum, UF/IFAS

## Life Cycle and Biology

*Psorophora cyanescens* has a holometabolous life cycle, which means that it has four distinct life stages: egg, larva, pupa, and adult.

### Egg

The eggs are deposited on soil, cracks, or small holes at the bottom of dried pools. The eggs commonly hatch after harsh rain but do require a prior period of dryness (Carpenter and LaCasse 1955; Debboun et al. 2019). Under lab conditions, a single female can lay on average, 82 eggs per blood meal (García-Rejón et al. 2022). The eggs take approximately 60 hours post-blood meal (or 2.5 days) to mature inside the female body. The eggs of *Psorophora cyanescens* are black and elliptical in shape (Figure 6). The average length of an egg is 734 µm (~0.03 in) in length and 245 µm (~0.01 in) in width. Additionally, the entire exochorion (outer two layers that form the hardened covering of the egg) has a characteristic polygon pattern (García-Rejón et al. 2022).

Figure 6. Eggs of *Psorophora cyanescens*. Credit: Nathan Burkett-Cadena, UF/IFAS

### Larva

The larva of *Psorophora cyanescens* go through four stages, called "instars." Instars are distinct stages of growth of the larva with the larva growing noticeably larger at each instar. *Psorophora cyanescens* larva mature quickly, even for mosquitoes, as they can complete their development in just three to four days (Carpenter and LaCasse 1955). Their abundance is greater in the months of June, July, and August in the south-central United States, especially after heavy rains (Debboun et al. 2019).

### Pupa

The pupal life stage does not feed but is very mobile and swims throughout the water when disturbed. They are commonly seen at the surface of the water breathing through trumpets (paired, funnel like appendages on the top of the pupa). This life stage is short lived, as the adult emerges at approximately 24 hours post pupation (Carpenter and LaCasse 1955). The short duration of the pupal stage of *Psorophora cyanescens* is considered fast, even for mosquitoes.

### Adult

The adult females *of Psorophora cyanescens* are persistent and painful biters and can be active at any time of day. While they can be found in woodland thickets, they will fly into open fields in search of a blood meal. They are livestock pests as they readily feed on large mammals such as horses and cattle but also feed on humans. When blood-

feeding, they can engorge until they are unable to fly (Debboun et al. 2019). It is worth noting that there has been little to no analysis of *Psorophora cyanescens* blood meals.

## Medical Importance

While *Psorophora cyanescens* is considered an aggressive biter and can be a nuisance, it is not known to transmit human pathogens. A study in Mexico that pooled together multiple pools of *Psorophora cyanescens* looking for *Flavivirus*, *Alphavirus*, and *Orthobunyavirus* found no viruses in this mosquito species (Farfan-Ale et al., 2009; 2010). However, other species of *Psorophora* have the capacity to become vectors of both human and animal pathogens. Rocio and West Nile viruses were isolated in Brazil and USA from *Psorophora ferox* (de Souza Lopes et al. 1981; Kulasekera et al. 2001), West Equine Encephalitis virus was isolated in Argentina in *Psorophora pallescens* (Mitchell et al. 1987), and Venezuelan equine encephalitis virus was isolated in *Psorophora confinnis* in Colombia (Hoyos-López et al. 2016).

## Surveillance

Larva of *Psorophora cyanescens* can be collected from shallow pools of temporary water sources (Rozeboom 1939). Adult *Psorophora cyanescens* have been collected using large or small diameter aspirators in large deciduous forests, or near areas that contain a large amount of temporary water sources. They are collected in flight, when they land on shrubs, or on the collecting entomologist (García-Rejón et al. 2022). They are not particularly attracted to the light traps that are typically used for mosquito surveillance.

## Control

The common control method for mosquitoes is the application of adulticides via Ultra Low Volume (ULV) spraying from air, truck, or backpack mounted sprayers. Larvicide applications from helicopters, planes, and drones can be effective against *Psorophora cyanescens* larvae. The resistance status of *Psorophora cyanescens* is understudied. They have been found to be susceptible to *Leptolegnia chapmanii*, a fungal oomycete pathogen, under laboratory conditions (Gutierrez et al. 2017).

## References


Bond, J. G., Moo-Llanes, D. A., Ortega-Morales, A. I., Marina, C. F., Casas-Martínez, M., and Danis-Lozano, R. 2020. Diversity and potential distribution of culicids of medical importance of the Yucatán Peninsula, Mexico. *Salud Pública de México*, *62*(4), 379–387. https://doi.org/10.21149/11208

Burkett-Cadena, N. D. 2013. *Mosquitoes of the Southeastern United States*. University of Alabama Press. https://doi.org/10.2307/jj.30347333

Carpenter, S. J. and LaCasse, W.J. 1974. *Mosquitoes of North America (North of Mexico)*. University of California Press, Berkeley, CA 360 pp.

Chan-Chable, R. J., Ortega-Morales, A. I., and Martínez-Arce, A. 2016. First record of *Psorophora albipes* in Quintana Roo, Mexico. *Journal of the American Mosquito Control Association*, *32*(3), 237–239. https://doi.org/10.2987/16-6580.1

Coquillett, D. W. 1902. New orthorrhaphous Diptera from Mexico and Texas. *Journal of the New York Entomological Society* 10: 136–141.

Darsie, R. F., Jr. 1994. A revised checklist of the mosquitoes of Guatemala including a new country record, *Psorophora cyanescens*. *Journal of the American Mosquito Control Association-Mosquito News*, *10*(4), 511–514.

Darsie, R., Jr.,and Ward, R. A. 2005. Identification and geographical distribution of the mosquitoes of North America, north of Mexico. University of Florida Press. Pp. 383.

Debboun, M., Nava, M. R., and Rueda, L. 2019. *Mosquitoes, Communities, and Public Health in Texas*. Academic Press.

Diaz-Nieto, L. M., Maciá, A., Parisi, G., Farina, J. L., Vidal-Dominguez, M. E., Perotti, M. A., and Beron, C. M. 2013. Distribution of mosquitoes in the south east of Argentina and first report on the analysis based on 18S rDNA and COI sequences. *PLoS One*, *8*(9), e75516. https://doi.org/10.1371/journal.pone.0075516

Farfan-Ale, J. A., Loroño-Pino, M. A., Garcia-Rejon, J. E., Soto, V., Lin, M., Staley, M., Dorman, K. S., Bartholomay, L. C., Hovav, E., and Blitvich, B. J. 2010. Detection of Flaviviruses and Orthobunyaviruses in mosquitoes in the Yucatán Peninsula of Mexico in 2008. *Vector-Borne Zoonotic Diseases, 10*(8), 777–783. https://doi.org/10.1089/vbz.2009.0196

García-Rejón, J. E., Tzuc-Dzul, J. C., Cigarroa-Toledo, N., Talavera-Aguilar, L. G., Cetina-Trejo, R., and Baak-Baak, C. M. 2022. Fecundity and morphological description of the eggs of *Psorophora cyanescens* (Coquillett, 1902) (Diptera: Culicidae) by scanning electron microscopy. *Acta Zoológica Mexicana*, *38*. https://doi.org/10.21829/azm.2022.3812449

Gutierrez, A. C., Páramo, M. R., Falvo, M. L., Lastra, C. L., and García, J. J. 2017. *Leptolegnia chapmanii* (Straminipila: Peronosporomycetes) as a future biorational tool for the

control of *Aedes aegypti* (L.). *Acta tropica*, *169*, 112–118. https://doi.org/10.1016/j.actatropica.2017.01.021

Harbach, R. E. 2013. *Mosquito Taxonomic Inventory*.

Hoyos-López, R., Suaza-Vasco, J., Rúa-Uribe, G., Uribe, S., and Gallego-Gómez, J. C. 2016. Molecular detection of Flaviviruses and Alphaviruses in mosquitoes (Diptera: Culicidae) from coastal ecosystems in the Colombian Caribbean. *Memorias do Instituto Oswaldo Cruz*, *111*(10), 625–634. https://doi.org/10.1590/0074-02760160096

Kulasekera, V. L., Kramer, L., Nasci, R. S., Mostashari, F., Cherry, B., Trock, S. C., Glaser, C., and Miller, J. R. 2001. West Nile virus infection in mosquitoes, birds, horses, and humans, Staten Island, New York, 2000. *Emerging Infectious Diseases*, *7*(4), 722–725. https://doi.org/10.3201/eid0704.017421

van der Kuyp, E. 1954. Mosquitoes of the Netherlands Antilles and their hygienic importance. *Studies on the Fauna of Curaçao and other Caribbean Islands*, *5*(1), 37–114.

Medone, P., Balsalobre, A., Rabinovich, J. E., Marti, G. A., and Menu, F. 2015. Life history traits and demographic parameters of *Triatoma infestans* (Hemiptera: Reduviidae) fed on human blood. *Journal of Medical Entomology*, *52*(6), 1282–1290. https://doi.org/10.1093/jme/tjv138

Mitchell, C. J., Monath, T. P., Sabattini, M. S., Daffner, J. F., Cropp, C. B., Calisher, C. H., Darsie, R. F., Jr., and Jakob, W. L. 1987. Arbovirus isolations from mosquitoes collected during and after the 1982–1983 epizootic of Western Equine Encephalitis in Argentina. *The American Journal of Tropical Medicine and Hygiene*, *36*(1), 107–113. https://doi.org/10.4269/ajtmh.1987.36.107

Navarrete-Carballo, J., Bibiano-Marín, W., Palacio-Vargas, J., Huerta-Jiménez, H., Torres-Castro, M., Arisqueta-Chable, C., Medina-Barreiro, A., Puerta-Guardo, H., Che-Mendoza, A., Martin-Park, A., and Manrique-Saide, P. 2022. Mosquito species (Diptera: culicidae) collected after tropical storm cristobal in Merida, Yucatan, South-east Mexico. *International Journal of Tropical Insect Science*, *42*, 2007–2012. https://doi.org/10.1007/s42690-021-00679-1

Ortega-Morales, A. I., Méndez-López, R., Garza-Hernández, J. A., González-Álvarez, V. H., Ruiz-Arrondo, I., Huerta-Jiménez, H., Rodríguez-Martínez, L. M., and Rodríguez-Pérez, M. A. 2019. The mosquitoes (Diptera: Culicidae) of Tabasco, Mexico. *Journal of Vector Ecology*, *44*(1), 57–67. https://doi.org/10.1111/jvec.12329

Ortega-Morales, A. I., Zavortink, T. J., Huerta-Jiménez, H., Sánchez-Rámos, F. J., Valdés-Perezgasga, M. T., Reyes-Villanueva, F., Siller-Rodríguez, Q. K., and Fernandez-Salas, I. 2015. Mosquito records from Mexico: the mosquitoes (Diptera: Culicidae) of Tamaulipas state. *Journal of Medical Entomology*, *52*(2), 171–184. https://doi.org/10.1093/jme/tju008

*Psorophora (Janthinosoma) cyanescens* (Coquillett, 1902) in GBIF Secretariat 2023. *GBIF Backbone Taxonomy*. Checklist dataset. https://doi.org/10.15468/39omei [accessed via GBIF.org on 3 March 2025]

Rozeboom, L. E. 1939. The Larva of *Psorophora (Janthinosoma) horrida* Dyar & Knab (Diptera: Culicidae). *The Journal of Parasitology*, *25*(2), 145–147. https://doi.org/10.2307/3272356

Snow, W. E., Pickard, E., and Hawkins, J. L. 1960. Observations on the biology of *Psorophora cyanescens*. *Journal of Economic Entomology*, *53*(4), 619–621. https://doi.org/10.1093/jee/53.4.619

de Souza Lopes, O. S., de Sacchetta, L. A., Francy, D. B., Jakob, W. L., and Calisher, C. H. 1981. Emergence of a new arbovirus disease in Brazil. III. Isolation of Rocio virus from *Psorophora ferox* (Humboldt, 1819). *American Journal of Epidemiology*, *113*(2), 122–125. https://doi.org/10.1093/oxfordjournals.aje.a113075

Wilkerson, R. C., Linton, Y. M., and Strickman, D. 2021. *Mosquitoes of the World*. Johns Hopkins University Press. Baltimore, Maryland: Johns Hopkins University Press.

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