

Gynacantha helenga (Helen's Darner) and *G. nervosa* (Twilight Darner) in northwest México

By Eric R. Hough, David F. Smith, and David Vander Pluym

Increased exploration of northwest México by naturalists recently has revealed expanded ranges for multiple taxa (Bailowitz *et al.* 2015, Paulson and González-Soriano 2022), including two species of *Gynacantha* (Aeschnidae): *G. helenga* (Helen's Darner) and *nervosa* (Twilight Darner). *Gynacantha* is a tropical and subtropical genus of mostly crepuscular species that inhabit shaded forests near water. Their furtive behavior and microclimate preferences often limit observations of *Gynacantha*. Even within their core ranges, most *Gynacantha* species are sparsely distributed (Williamson 1923), further increasing the difficulty in recording the true extent of their distribution. Here we summarize the known distribution of both *G. helenga* and *nervosa*, and highlight new state records for the states of Sonora and Sinaloa, México.

G. helenga has been observed only in México, Belize, Guatemala, and Honduras (González-Soriano and Guzmán-Ojeda 2021). In a database of current records from México (Paulson and González-Soriano 2022), including the records discussed below, 15 states along the coastal lowlands and foothills of the country are represented. Within this map the previous northernmost records were from Nayarit in the west (not in public databases) and San Luis Potosí to the east. There is one vetted record on Odonata Central (Abbott 2022) for each of the following states: Sonora (E Hough, 2014, OC#488137; Fig. 1a), San Luis Potosí (J Cruzado, 2017, OC#461409), and Sinaloa (DF Smith, 2019, OC#505504; Fig. 1c). Photo-vouchered nominal records from México on iNaturalist.org include 19 observations currently, of which one is from Sonora (D Vander Pluym, 2017, iNaturalist #16103544; Fig. 1b). Thus, the two Sonora records (Figure 1a and b) are the only known records from this Mexican state and represent the species northernmost occurrence; both records are lone females photographed in December—three years apart—at 850 m elevation in the same location: Arroyo Verde, a tropical semi-evergreen deep canyon on the western foothills of the Sierra Madre Occidental east of Álamos, near the state borders with Chihuahua and Sinaloa. This is one of the only locations in Sonora known to contain this specific habitat (Martin *et al.* 1998). The surrounding habitat is tropical deciduous forest just below the elevation of pine-oak forest. The first record of *G. helenga* for Sinaloa (Figure 1c) is from near the town of Copala, 500 km southeast of Arroyo Verde, during mid-dry season in April 2019; the individual photographed was observed in early morning hovering over a small, shaded pool

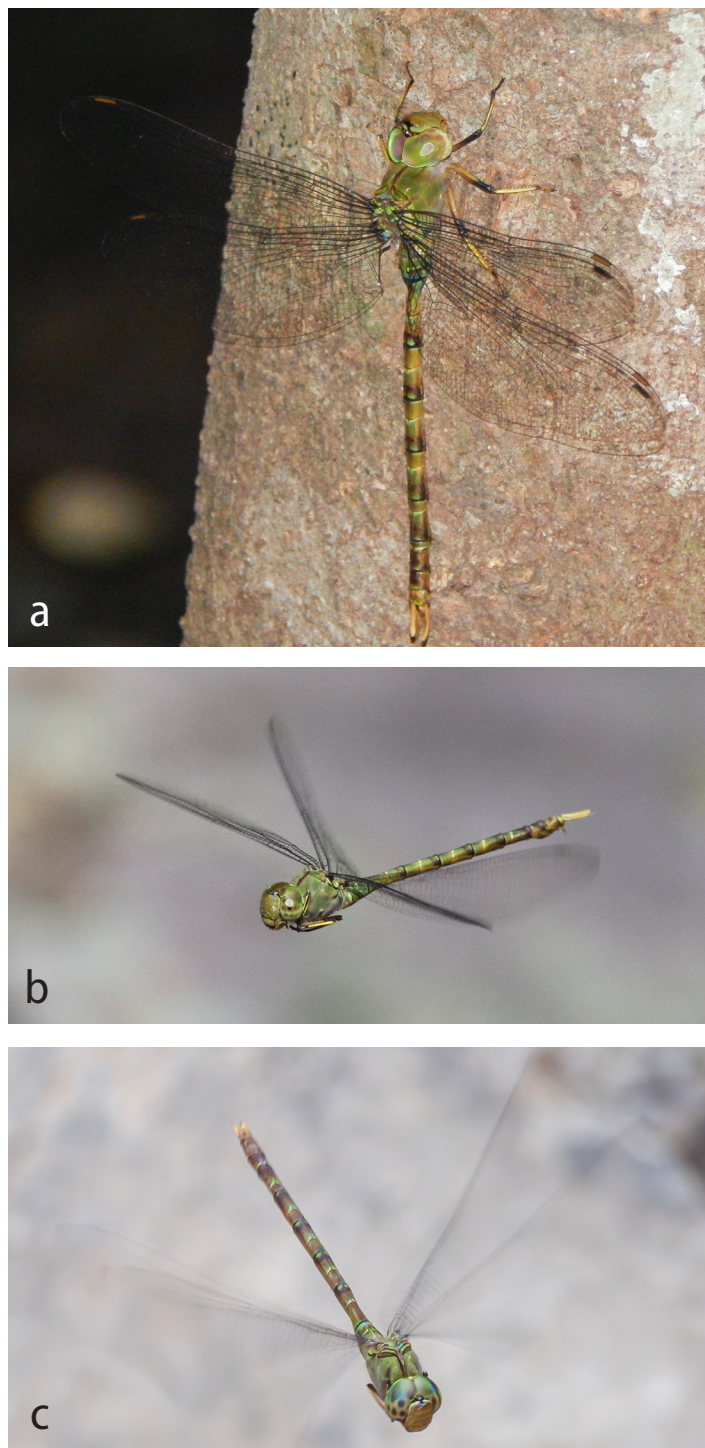


Figure 1. *Gynacantha helenga* (Helen's Darner) photographed in Arroyo Verde near Álamos, Sonora on a) 14 December 2014 by ER Hough and b) 15 December 2017 by D Vander Pluym. c) *G. helenga* photographed near Copala, Sinaloa on 19 April 2019 by DF Smith.

New Records



Figure 2. *Gynacantha nervosa* (Twilight Darner) photographed in Álamos, Sonora on 21 December 2021 by DF Smith.

below the Copala-Pánuco Road at 585 m elevation in the zone of tropical deciduous forest.

In contrast to *G. helenga*, the species *G. nervosa* is widely distributed across the far southeastern United States (mostly Florida with one old, disjunct record from Oklahoma; TH Hubbell, 1935, OC#403468), the Caribbean islands, México, Central America, and South America (Paulson 2017). There are occurrence records for 13 Mexican states, distributed among the coastal lowlands and foothills (Paulson & González-Soriano 2022). There are two published records for northwest México: an individual from Sonora in October 2004 along the Río Cuchujaqui 12 km southeast of Álamos (Upson et al. 2007; Bailowitz et al. 2015), and several individuals, some ovipositing, at the beginning of rainy season in July 1975 near the coastal city of Mazatlán, Sinaloa (Dunkle 1976). Odonata Central has many vetted records of *G. nervosa* for Florida, but only two for México: the current record for Sonora (DF Smith, 2021, OC#1950602; Fig. 2) and another from Jalisco (K Biggs, 2018, OC#479346). iNaturalist has 14 photo-vouchered observations for México, one as far north as Mazatlán, Sinaloa, in April 2019. The recent December 2021 record from Sonora (Fig. 2) is only the second known for this state after that of Upson et al. (2007). The deceased individual was swept up in an open room in the town of Álamos following a period of early evening pesticide applications in a municipal program to reduce mosquitoes harboring the virus for Dengue fever.

Based on the recent and historical observations noted here, the western range limits for both *G. helenga* and *nervosa* now extend to southern Sonora, México, which is also well-north of the previous range limit for *helenga* in Mexico and near the recent northern range limit for *nervosa* in the United States. Whether these observations reflect locally breeding or seasonally dispersed populations is currently unknown.

Citations

- Abbott JC. 2022. *OdonataCentral: An online resource for the distribution and identification of Odonata*. <https://www.odonatacentral.org>
- Bailowitz R, Danforth D, Upson S. 2015. *A Field Guide to the Damselflies & Dragonflies of Arizona and Sonora*. Nova Granada Publications. Tucson, Arizona.
- Dunkle SW. 1976. Notes on the Anisoptera fauna near Mazatlán, México, including dry to wet seasonal changes. *Odonatologica* 5(3): 207–212.
- González-Soriano E, Guzmán Ojeda RJ. 2021. *Gynacantha helenga*. *The IUCN Red List of Threatened Species* 2021: e.T139063801A139118107. <https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T139063801A139118107.en>
- Martin PS, Yetman D, Fishbein M, Jenkins P, Van Devender TR, Wilson RK. 1998. *Gentry's Rio Mayo Plants: the Tropical Deciduous Forest & Environs of Northwest México*. The University of Arizona Press, Tucson, Arizona.
- Paulson DR 2017. *Gynacantha nervosa*. *The IUCN Red List of Threatened Species* 2017: e.T165050A80689618. <https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T165050A80689618.en>
- Paulson DR, González-Soriano E. 2022. <https://www2.pugetsound.edu/academics/academic-resources/slater-museum/biodiversity-resources/dragonflies/mexican-odonata/>
- Upson S, Danforth D, González-Soriano E, Behrstock RA, Bailowitz RA. 2007. A Preliminary Checklist of the Odonata of Sonora, México. *Bulletin of American Odonatology* 10(2, 3): 23–51
- Williamson EB. 1923. Notes on American species of *Tricanthagyna* and *Gynacantha*. Miscellaneous Publications No. 9. University of Michigan Museum of Zoology. <https://deepblue.lib.umich.edu/bitstream/handle/2027.42/56254/MP009.pdf?sequence=1>
- Williamson EB, Williamson JH. 1930. Two new Neotropical Aeshnines (Odonata). *Occasional Papers Museum Zoology Michigan* 218: 1–15. <https://deepblue.lib.umich.edu/bitstream/handle/2027.42/56657/OP218.pdf?sequence=1&isAllowed=y>

Eric is a naturalist serving as Interpretive Ranger for the Maricopa County Parks Department near Wickenburg, Arizona.

David S. is a retired molecular biologist who enjoys observing and photographing all things natural.

David V.P. is a PhD student at Louisiana State University in the Museum of Natural Science where he studies the role of altitudinal migration in tropical diversification.