Hiding in Plain Sight H. antelucana vs. 'incognita'

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What is a wolf spider (Lycosidae family)?

Wolf spiders are active hunters that pounce on their prey. They are often nocturnal, and their eyes reflect light in the dark. Their four posterior eyes are arranged in a rectangle or trapezoid and angled so they can see in all directions without having to move. Females carry their egg sacs and young spiderlings around with them.

Wolf spiders have spinnerets and make silk for various purposes including egg sacs, but 98% of Texas species don't make webs. Unlike some spider families, males are nearly as large as females.

Some have special skills

- some are adept at running and hopping on water
- some live in burrows which may be lined with silk
- at least one species lives up in trees
- at least some are capable of diapause, a long period of inactivity from which they can recover very quickly

Texas wolf spider statistics

- 86 Lycosid species in Texas according to Dean's 2015 list of Texas spiders
- over 60 Lycosid species observed and identified in Texas on iNaturalist
- over 32,300 Lycosid observations in Texas on iNaturalist representing 20% of United States and 10% of world observations
- over 10,800 Texans making observations
- over 1,700 Texans doing identifications

Wolf spiders obviously love Texas! Texans obviously love their wolf spiders!

size range of spiders included here



Origin of new species

- species evolve over time
- a species may become divided into separate populations
- if populations are subject to different conditions, they may evolve differently
- if the separation lasts long enough, the populations become genetically different enough that they no longer produce fertile offspring when crossbred
- if the populations rejoin before that happens, a second species isn't created although the original species may have evolved significantly

Differences between species

- morphology: genitalia have long been used for identification, but species also differ in many other ways including coloration and pattern which are affected by the underlying structure
- developmental: when various traits are expressed during development can be a powerful indicator
- behavioral: some of the newest wolf spider species were discovered primarily based on different mating displays and morphological differences previously thought to be intraspecies variation were later determined to be interspecies differences
- genetic: genetic analysis is currently the last word in separating species and determining their relationship to each other

In the right place at the right time

- the blackland property I purchased in 2018 was ideal habitat for various arthropods including wolf spiders
- I had just gotten involved in iNaturalist and started looking at the biodiversity on my property
- Hogna was present and particularly noticeable in the late juvenile stages from May to July
- I suspected I was seeing two distinct species but people on iNaturalist identified both as Hogna antelucana

Hogna antelucana history

- 1904: Montgomery described the species as Lycosa antelucana based on specimens from Austin, TX
- 1904: Banks described the same species as Lycosa apicata based on specimens from the Southwest including Brazos County, TX
- 1935: Gertsch & Wallace revisited Lycosa antelucana and expanded its range to the entire southern half of the U.S.
- 1990: Dondale & Redner concluded that North American Lycosa deserved their own genus, Hogna
- Second most commonly observed Texas wolf spider
- No common name but the Latin suggests "Predawn Wolf Spider"

Original H. antelucana field identification

- pale medial band on carapace is narrow at front, wider toward back
- tibia IV has a wide black band at far end
- underside of body entirely black
- H. baltimoriana became known as the "Unbanded Wolf Spider" presumably because it lacked the tibial band of antelucana
- life was simple in the old days when fewer species were known
- today we need to look closer at more details but in doing that we should also be able to identify species, stage of development, and sex of older individuals in the field while looking at live spiders

Revised H. antelucana field identification

- pale medial band on carapace
- pale thin stripes associated with medial band
- submarginal pattern on thorax
- pale patches terminating first 3 chevrons
- black band on tibia IV, dorsal and ventral
- adult females entirely black under body

Several additional traits allow distinguishing older antelucana from similar Hogna and Tigrosa, and especially from new species Hogna 'incognita' which has been confused with it. Abnormal individuals can be ambiguous, but they represent less than 5%. Younger juveniles require a different set of traits for identification.

Hogna antelucana



(adult female)

Differences due to age and sex

- spiders change in appearance during each molt
- changes are more obvious during the earliest and adult molts
- patterns of juveniles similar regardless of sex
- adult females retain more late juvenile traits than males
- development of the cymbium on the male pedipalp begins at least a molt or two before the adult molt
- besides more obvious changes in pattern, adult males have noticeably longer legs and different body proportions

Hogna antelucana



juvenile male adu

adult female

adult male

Hogna 'incognita'



late juvenile male

adult male

Hogna 'incognita' field identification

- delicate pale medial band on carapace; vee shape around thoracic groove relatively wide
- pale thin stripes associated with medial band
- submarginal pattern on thorax
- rather plain looking abdomen pattern
- pale patches terminating first 3 chevrons
- black bands on tibia IV, dorsal and ventral; distal end of femur IV blackened underneath
- entirely black under body including coxae

Hogna 'incognita' is easiest to confuse with H. antelucana and baltimoriana. Younger juveniles require a different set of traits for identification, and adult males can be difficult without a ventral view.

Hogna 'incognita'



(adult female)

Adult males (dorsal)



(H. 'incognita')

(H. antelucana)

Adult males (ventral)



(H. 'incognita')

(H. antelucana)

Juveniles (dorsal) avg. length 0.10"/2.5mm 0.12"/3.0mm 0.14"/3.6mm

'incognita'→

antelucana



Juveniles (dorsal) avg. length 0.16"/4.1mm 0.20"/5.1mm 0.29"/7.4mm



'incognita'

antelucana

Juveniles avg. length 0.36"/9mm (dorsal)



(H. 'incognita')

(H. antelucana)

H. 'incognita' avg. length 0.64"/16mm (dorsal)



(subadult female)

(subadult male)

Hogna antelucana range in Texas



Hogna 'incognita' range in Texas



Hogna 'incognita' outside Texas

- Kansas
- Oklahoma
- Missouri
- Arkansas
- Tennessee (2 observed near Memphis)
- H. incognita is especially common in Texas and Oklahoma
- H. antelucana is common across the entire southern U.S. and in most of Mexico.