Agathymus neumoegeni carlsbadensis (Carlsbad Agave-Borer)

Steve Cary,

Taxonomy

- **Class**: INSECTA
- **Order**: LEPIDOPTERA
- **Family**: HESPERIIDAE
- **Genus**: Agathymus
- **Scientific Name**: *Agathymus neumoegeni carlsbadensis* (D. Stallings and Turner, 1957)
- **Common Name**: Carlsbad Agave-Borer
- **Synonyms**: Megathymus carlsbadensis D. Stallings and Turner, 1957 D. Stallings and Turner, 1957
- **Taxonomic Name Source**:Pelham, J. P. 2008. A catalogue of the butterflies of the United States and Canada with a complete bibliography of the descriptive and systematic literature. The Journal of Research on the Lepidoptera. Volume 40. 658 pp. Revised 14 February, 2012.

Agency Status

- **NMDGF**:
- **Federal Status**:
- **BLM Sensitive**:
- **USFS**:
- **IUCN Red List**: Not Evaluated
- **Nature Serve Global**: T2
- **NHNM State**: S1
- **NM Endemic**:NO

Description

Like most Megathymines, Agathymus neumoegeni is large and stout-bodied. Adults are bright orange above with a black wing margin and black patches. Undersides are grizzled gray with vague white bands. This species can be confused with Agathymus aryxna, which is darker and has different adult behaviors. Range and Habitat. Orange Giant-Skipper lives along the Mogollon Rim in central Arizona and southwest New Mexico (subspecies Agathymus neumoegeni neumoegeni), in the mountains of southeast New Mexico and west Texas (various subspecies including Agathymus neumoegeni carlsbadensis (D. Stallings & Turner)) and in the Chisos Mountains of southwest Texas. Colonies occur within stands of the larval hosts in Upper Sonoran Zone canyons and middle elevation mountains, 4100 to 7000? elevation. In New Mexico, this beauty lives only in the south (counties: Ca,Ch,DA,Ed,Gr,Lu,Ot). Life History. Agave parryi is the preferred larval host throughout New Mexico, but Agave lechuguilla is sometimes used (both

Agavaceae). Young larvae bore into leaf tips, feed for a few weeks, then hibernate over winter. Mature larvae bore into upper sides of leaf bases and feed on sap; fecal material accumulates outside the burrow. Pupation is within the burrow, protected by a silk cap over the hole on the upperside of a leaf. Flight. Orange Giant-Skippers are univoltine and fly late in the season. New Mexico records span August 29 to October 11, peaking in late September. Unlike look-alike Arizona Giant-Skippers, male Orange Giant-Skippers patrol rocky hilltops and ridgetops, but also visit canyon mudholes. Comments. As interest in Giant Skippers developed in the 1950s and 1960s, a large number of "subspecies" were described, based on the assumption that populations in desert mountain ranges were isolated from one another. A. neumoegeni was one of the recipients of this interest. Agathymus neumoegeni carlsbadensis was described from specimens collected in Carlsbad Caverns National Park (Ed) in 1957. Agathymus neumoegeni judithae (D. Stallings & Turner 1957) was described from the Hueco Mountains of west Texas, which extend into southern Otero County, New Mexico. If judithae proves to be a valid subspecific name, it undoubtedly occurs in the NM portion of the Huecos. Agathymus neumoegeni diabloensis H. A. Freeman 1962 was described from the Sierra Diablo and Sierra Blanca Mountains just SW of the Guadalupe Mts. in Hudspeth County, TX. It seems likely that diabloensis is poorly distinguished from carlsbadensis.

Description courtesy of Steven J. Cary, Butterflies of New Mexico, 2024

Habitat and Ecology

The ecology and habitat preferences for *A. n. carlsbadensis* have not been studied and research is needed in this area. If the life history for this taxon is similar to the parent species, it likely resides mostly in montane upper Sonoran zone shrublands and open woodlands, especially in rocky areas (Brock and Kaufman 2003, Cary and Toliver 2024). Most sources report only a single host plant for *A. neumoegeni,* Parry's Agave (*Agave parryi*). However, some sources suggest the use of additional host plants, including Lechuguilla (*Agave lechuguilla*) (Scott 1986, Glassberg 2001, Lotts and Naberhaus 2021, Cary and Toliver 2024). The parent species has a single brood from late summer to fall, usually from around late August or September to October (Scott 1986, Glassberg 2001, Lotts and Naberhaus 2021). During flight, the parent species does not take nectar and females do not feed; however, males sip moisture from mud or manure (Scott 1986, Brock and Kaufman 2003, Lotts and Naberhaus 2021). From early morning to around noon males perch on or near host plants waiting for females (Scott 1986, Lotts and Naberhaus 2021). Adults of the parent species, especially the females which do not feed, are short lived; adult females generally living less than a week (Scott 1986).

Geographic Range:

This subspecies is found in several mountain ranges in southeastern New Mexico and West Texas. It has been documented in the Guadalupe Mountains (in New Mexico and Texas), in and around Carlsbad National Park, and in the Sacramento Mountains (Cary and Toliver 2024, Warren *et al.* 2024).

Conservation Considerations:

Most known occurrences of this species are on federal lands, though no specific conservation is being done for this subspecies. Research is needed on current distribution, life history, population size and trends, habitat trends, and threats. Additionally, research on the taxonomic relationships between this and other subspecies is needed.

Threats:

While specific threats to this sub-species are not understood, increased incidence and severity of drought due to climate change is likely the primary threat. The southwestern U.S. saw its driest 22-year period from 2000 to 2021, since at least 800 CE (the time period used in previous climatic reconstructions) (Williams *et al.* 2022). Droughts are

projected to become more prolonged, severe, and common in the region under future climate change scenarios (USGCRP 2018). Drought conditions can limit larval host plant availability (Ehrlich & Murphy 1987) and may reduce the availability of mud puddles, which males are known to feed at.

In addition, characteristics of the parent species that are likely shared by this subspecies, such as the host specificity, limited geographic range, and the fact that it is univoltine, may put it at a much higher risk of extinction (Forister *et al*. 2023). Univoltine species often have reduced dispersal abilities, which limits the areas they can utilize. This renders them less adaptable to stressors and more prone to phenological mismatch (Eskildsen *et al.* 2015, Patterson *et al.* 2019, Forister *et al.* 2023). Having a narrow host breadth, as this species does, puts the species at risk if plant populations decline. While there are few known threats to the host plant species, mortality from Agave Snout Weevils (*Scyphophorus acupunctatus*) has been observed in some cases (Schalau 2016, Hodgson *et al.* 2020).

Population:

The population size and trend are not known for this subspecies, though there are very few records. Determination of population size and monitoring of population trends is necessary to ensure the population is stable.

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More Information