Agathymus neumoegeni (Orange Giant-skipper)

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Taxonomy

- **Class**: INSECTA
- **Order**: LEPIDOPTERA
- **Family**: HESPERIIDAE
- **Genus**: Agathymus
- **Scientific Name**: *Agathymus neumoegeni* (W. H. Edwards, 1882)
- **Common Name**: Orange Giant-skipper
- **Synonyms**: Megathymus neumoegeni W. H. Edwards, 1882 W. H. Edwards, 1882
- **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**: G4
- **NHNM State**: S2
- **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

This species resides in shrub-grasslands and upper Sonoran open woodlands, at mid-elevations (Scott 1986, Glassberg 2001, Lotts and Naberhaus 2021). It is associated with rocky areas and is usually found in canyons or along rocky hilltops or ridges (Brock and Kaufman 2003, Cary and Toliver 2024). Most sources report only a single host plant for this Giant-skipper, Parry's Agave (*Agave parryi*). However, several different species of *Agave* may be used; occasional use of *Agave lechuguilla* has been reported (Scott 1986, Glassberg 2001, Lotts and Naberhaus 2021, Cary and Toliver 2024).

This species has one 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, this 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 species, especially the females who do not feed, are short lived; adult females generally live less than a week (Scott 1986).

After mating eggs are laid singly on or near the host plant. This species does not glue its' eggs to the host plant, so generally the eggs fall to the base of the plant (Scott 1986, Lotts and Naberhaus 2021). Each female can lay about 80 to 150 eggs during their short life span (Scott 1986). These eggs quickly hatch and the larvae crawl from the base of the plant to a leaf tip where they bore inside and eat pulp before hibernating in the first instar (Scott 1986, Lotts and Naberhaus 2021, Cary and Toliver 2024). This species then awakens in the spring, molts to the second instar. As third instars, larvae make another burrow inside of a leaf base. They depositing dung outside this burrow and cover it in a silk cap while molting (Scott 1986, Lotts and Naberhaus 2021, Cary and Toliver 2024). As fully grown larvae, this species goes through another short diapause during the summer, before reawakening in the late summer. They then enlarge the hole to their burrow and pupate inside (Scott 1986, Cary and Toliver 2024).

Geographic Range:

This species is found in mid-elevation mountains and canyons from central and southeastern Arizona, southern New Mexico and West Texas (Lotts and Naberhaus 2021, Cary and Toliver 2024, GBIF.org 2024). The specie may also occur in northern Mexico, though it has not yet been recorded there (GBIF.org 2024). In New Mexico this species is recorded between 1,250 and 2,135 meters (4,100 to 7,000 feet) in the Gila, Organ and Guadalupe Mountains (Cary and Toliver 2024). In Arizona, records have been taken in the Mogollon Rim and in the Santa Rita Mountains. In Texas, records are known from Hueco and Chisos Mountains. The current range, is not well understood, and the species has

rarely been observed over the last fifty years. In fact, it has only been observed once over the last decade.

Conservation Considerations:

This species is found mostly on federal public lands, which offer some protection to the species as they are generally safe from development. However, no specific actions are being taken to conserve this species. Additional research is needed to better understand the conservation status. With many potential threats and so few recent observations (just one in the last decade), there is ample reason to be concerned about this species (Forister *et al.* 2023, GBIF.org 2024). Efforts are needed to determine the current distribution, population size and trend and the extent and severity of possible threats.

Threats:

While specific threats to this species are not understood, increased incidence and severity of drought due to climate change, is likely the primary threat to the species. 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 species, 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 species, though it has only been recorded once in the last 10 years. Therefore, is quite rare and may have a small population size.

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More Information