Bombus fraternus (Southern Plains Bumble Bee)

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Taxonomy

- **Class**: INSECTA
- **Order**: HYMENOPTERA
- **Family**: APIDAE
- **Genus**: Bombus
- **Scientific Name**: *Bombus fraternus* (Smith, 1854)
- **Common Name**: Southern Plains Bumble Bee
- **Synonyms**: Apathus fraternus Smith, 1854 Smith, 1854
- **Taxonomic Name Source**:Williams, P. H. 2008a. *Bombus*, bumblebees of the world. Web pages based on Williams, P.H. 1998. An annotated checklist of bumblebees with an analysis of patterns of description (Hymenoptera: Apidae, Bombini). Bulletin of the Natural History Museum (Entomology) 67:79-152. Online. Available: http://www.nhm.ac.uk/research-curation/research/projects/bombus/index.html. Accessed 2008-Oct.

Agency Status

- **NMDGF**:
- **Federal Status**:
- **BLM Sensitive**:
- **USFS**:
- **IUCN Red List**: Endangered
- **Nature Serve Global**: G3
- **NHNM State**: S2
- **NM Endemic**:NO

Description

Bombus fraternus is a medium to large-sized bumblebee species distinguished by a single broad black band across its yellow thorax and a thick yellow band across the apex of the abdomen. It has a short to medium-length tongue, which makes it adept at foraging from a range of flower types (Williams *et al.* 2014).

The body of *Bombus fraternus* queens are mostly black, with reddish-brown legs and dark rusty areas on the hind legs. The tegulae are black, and the wings are darker at the base, lightening towards the tips. The body has short, dense

hair, with yellow hair on the pronotum, front half of the scutum, and scutellum, while the back half of the scutum and terga 3–6 have black hair for contrast. The upper half of the clypeus has fine, close punctures, while the lower part is shiny with sparse punctures. The labrum has a slightly interrupted raised ridge, and the mandible tip is slightly notched. The eyes converge slightly above, with low-positioned ocelli and lateral ocelli evenly spaced from the eyes and each other. The antenna's scape is two-thirds as long as the flagellum. The hind basitarsus curves slightly inward at the base, and the sixth abdominal segment is rounded and partly bare (Ascher and Pickering 2023).

Habitat and Ecology

Bombus fraternus is a species of short-tongued bee that commonly inhabits grasslands and urban gardens. This bee typically builds its nests underground, while males are known to perch and pursue moving objects as part of their courtship behavior. It feeds on a variety of flowering plants, including *Asclepias, Cassia, Dalea, Liatris, Melilotus, Ratibida,* and *Solidago* (Williams *et al.* 2014).

In New Mexico, *Bombus fraternus* is primarily associated with dry, open habitats such as prairies, grasslands, and desert fringes, with a few record in lower montane forest and pinyon-juniper woodlands (BISON-M 2025). Vegetative cover is predominantly desert grassland and arid shrubland, except for high elevation islands of oak, juniper, and pinyon pine woodland. These communities form "islands" that are often composed of species endemic to the Chihuahuan desert. Recorded floral associations indicate that this species feeds on flowering plants from at least 20 plant families, but prefers plants in the aster (Asteraceae), pea (Fabaceae), and mint (Lamiaceae) families (Ascher and Pickering 2023). The extent of desert shrubland is increasing across lowlands and mountain foothills due to gradual desertification caused in part by historical grazing pressure. Creosotebush, tarbush, acacia, mesquite, ocotillo, honey mesquite, smooth mesquite, lechuguilla, striated agave, and yuccas are common in the basins. Some desert grassland with black, blue, and sideoats grama, bush muhly, and dropseeds occur (US EPA 2015).

Bumblebees are eusocial insects that form colonies consisting of a queen, workers, and reproductives (males and new queens). Their colonies last one season, with only the new, mated queens surviving the winter. In early spring, these queens emerge from hibernation, begin foraging for pollen and nectar, and search for a nesting site. Nests are often found underground in abandoned rodent burrows or above ground in grass tufts, old bird nests, rock piles, or tree cavities. Initially, the queen alone handles foraging and caring for the colony until the first workers emerge to assist. Bumblebees gather both nectar and pollen from a variety of plants, though species in the same area can differ in plant preferences based on tongue length. They are also known for "buzz pollination," a highly effective technique in which they vibrate flowers to release pollen from the anthers (Michener 2000, Williams *et al.* 2014, Carril and Wilson 2023).

Geographic Range:

Bombus fraternus inhabits the Eastern Temperate Forest region along the southeastern United States' coastal plain, ranging from central Florida northward to New Jersey and west through Ohio across the Great Plains (Williams *et al.* 2014). There are recorded occurrences in 32 different states (Chesshire *et al.* 2023). In New Mexico, the species is primarily found in the southeastern parts of the state, with 137 occurrences, extending into the plains and desert grasslands (Chesshire *et al.* 2023).

Conservation Considerations:

In 2022, the Southern Plains bumble bee was petitioned for listing under the Endangered Species Act (ESA) (Tyler 2022). The 90-day finding suggested the petition presented substantial scientific information indicating action may be

warranted, so a comprehensive status assessment has been initiated to determine if listing is warranted (USFWS 2024).

Threats:

The primary threat to *Bombus fraternus* is habitat loss from converting grasslands into agricultural land, especially in major corn-producing areas like the Midwest USA (Grixti *et al.* 2009). Additionally, pesticide exposure, particularly from neonicotinoids used on corn seeds, may contribute to its decline (Hopwood *et al.* 2012). Habitat loss is another major concern. Suitable open grasslands and tallgrass prairie are scarce, and studies show these high-quality habitats support greater bumblebee diversity, including this species (Hines and Hendrix 2005).

Fire management practices also impact bumblebees. While natural and prescribed fires can benefit open-foraging habitats, fire suppression has led to habitat loss in some areas, whereas intense prescribed fires may reduce pollinator populations, particularly in low-abundance species (Swengel 2001).

Population:

Populations of *Bombus fraternus* have been declining significantly across its range, with a noted reduction of over 27% in certain areas (Colla *et al.* 2012). With early records dating back to 1931 and the most recent in 2019 (Chesshire *et al.* 2023). This species was also found in fewer geographic regions during the current period when compared to historical time periods (Grixti *et al.* 2009). In New Mexico, the species is considered rare, and recent sightings suggest a fragmented and declining population. *Bombus fraternus* has only recently been relocated in San Miguel county, one of the eight previously occupied counties (Tyler 2022).

References:

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More Information