

# Species Status Assessment

**Common Name:** Common Loosestrife Oil Bee **Date Updated:** 2/7/2025

**Scientific Name:** *Macropis nuda* **Updated By:** Katie Hietala-Henschell

**Class:** Insecta

**Family:** Melittidae

**Species Synopsis** (a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York):

*Macropis nuda* appears to be a northern North American species. While short-term trends are currently unknown for *M. nuda* it does appear to be declining in the Northeast (van Dyke et al. 2020). Efforts to survey native bee communities have failed to find rare species, including *M. nuda*, in parts of their range that were previously occupied (Evans et al. 2022). In New York, it was historically known from 15 counties; however, recent efforts (2000 and later) were only able to confirm *M. nuda* in just seven counties (White et al. 2022). Even with new county observations, the currently known distribution in New York is roughly half of what it was 40 years ago. In response to climate change, *M. nuda* and its host plant, Fringed Loosestrife (*Lysimachia ciliata*) may track northward; however, approximately a quarter of suitable habitat is likely to be lost (Buckner and Danforth 2022). In the face of climate change and other threats, management and protection of suitable habitat will be essential to support this species.

## I. Status

### a. Current legal protected Status

i. **Federal:** Not listed **Candidate:** No

ii. **New York:** Not listed

### b. Natural Heritage Program

i. **Global:** GNR

ii. **New York:** S2 **Tracked by NYNHP?:** Yes

### Other Ranks:

-IUCN Red List: Not assessed

-Northeast Regional SGCN: Watchlist [Assessment Priority] (Northeast Fish and Wildlife Diversity Technical Committee 2025)

- New York 2025 SGCN status: Species of Greatest Conservation Need

### Status Discussion:

The conservation status for *M. nuda* was assessed after the Empire State Native Pollinator Survey efforts and ranked this species as Imperiled (S2) in New York. The distribution in the state declined from 24% to 11%, based on the number of extant counties declining from 15 to just seven (White et al. 2022). In addition to its rarity, *M. nuda* is considered to have a declining long-term trend and threats to this species are high (White et al. 2022).

## II. Abundance and Distribution Trends

| Region          | Present? | Abundance | Distribution | Time Frame            | Listing status                  | SGCN?           |
|-----------------|----------|-----------|--------------|-----------------------|---------------------------------|-----------------|
| North America   | Yes      | Unknown   | Unknown      |                       | Not listed                      | Choose an item. |
| Northeastern US | Yes      | Declining | Declining    |                       | Watchlist [Assessment Priority] | Choose an item. |
| New York        | Yes      | Declining | Declining    | Pre-2000 vs 2000-2022 | S2                              | No              |
| Connecticut     | Yes      | Declining | Declining    |                       | S1, SAPS                        | No              |
| Massachusetts   | Yes      | Unknown   | Unknown      |                       | SNR                             | Yes             |
| New Jersey      | Yes      | Unknown   | Unknown      |                       | SNR                             | No              |
| Pennsylvania    | Yes      | Unknown   | Unknown      |                       | SNR                             | No              |
| Vermont         | Yes      | Unknown   | Unknown      |                       | S3                              | No              |
| Ontario         | Yes      | Unknown   | Unknown      |                       | S3                              | No              |
| Quebec          | Yes      | Unknown   | Unknown      |                       | SNR                             | No              |

References used in table: North America (NatureServe 2025), Northeastern US (Northeast Fish and Wildlife Diversity 2025), State/Province Ranks (NatureServe 2025, state SWAPs)

**Monitoring in New York** (*specify any monitoring activities or regular surveys that are conducted in New York*):

The Empire State Native Pollinator Survey was a multi-year pollinator survey effort conducted from 2017-2021. The oil bees, species in the genus *Macropis*, were one of the focal groups targeted by this survey. The statewide effort resulted in up-to-date information on the occurrence of native bees across the state (White *et al.* 2022). However, no continued organized, regular monitoring or survey activities are directed toward this species.

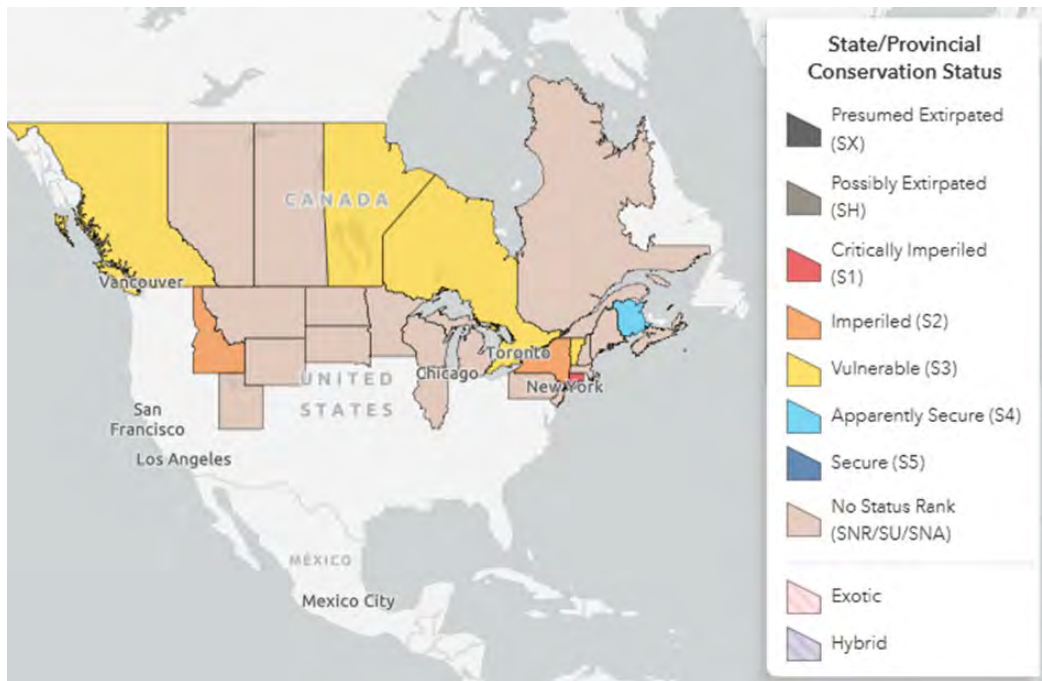
**Trends Discussion** (*insert map of North American/regional distribution and status*):

The range for *M. nuda* includes Connecticut, Idaho, Illinois, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New Jersey, New York, North Dakota, Pennsylvania, South Dakota, Utah, Vermont, Wisconsin, and Wyoming in the U.S. and Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Quebec, and Saskatchewan provinces in Canada (Michez and Patiny 2005, NatureServe 2025).

*M. nuda* appears to be declining in the Northeast (van Dyke *et al.* 2020). Efforts to survey native bee communities have failed to find rare species such as *M. nuda* in parts of its range that were previously occupied (Evans *et al.* 2022). There are historical (1999 and earlier) records from 15 counties; however, recent efforts (2000 and later) were only able to confirm *M. nuda* in four of those counties that were historically known (White *et al.* 2022). Recent survey efforts in New York were able to detect *M. nuda* in an additional three counties, not previously known (White *et al.* 2022). Even with the new county observations, the currently known distribution in New York is roughly half of what it was 40 years ago.

Buckner and Danforth (2022) developed habitat suitability prediction models for 2050 and 2090 and found that suitable habitat for *M. nuda* will be lost in the northeast under multiple climate change scenarios. In response to climate change, *M. nuda* and its host plant, Fringed Loosestrife (*Lysimachia*

*ciliata*), are likely to track northward; however, it appears that 21-25% of suitable habitat will be lost (Buckner and Danforth 2022). Management and protection of suitable habitat in the projected suitable habitat range will be imperative to support this species in the face of climate change. Short-term trends are currently unknown for *M. nuda*.



**Figure 1.** *Macropis nuda* distribution and status (Source: NatureServe 2025)

**III. New York Rarity** (provide map, numbers, and percent of state occupied)

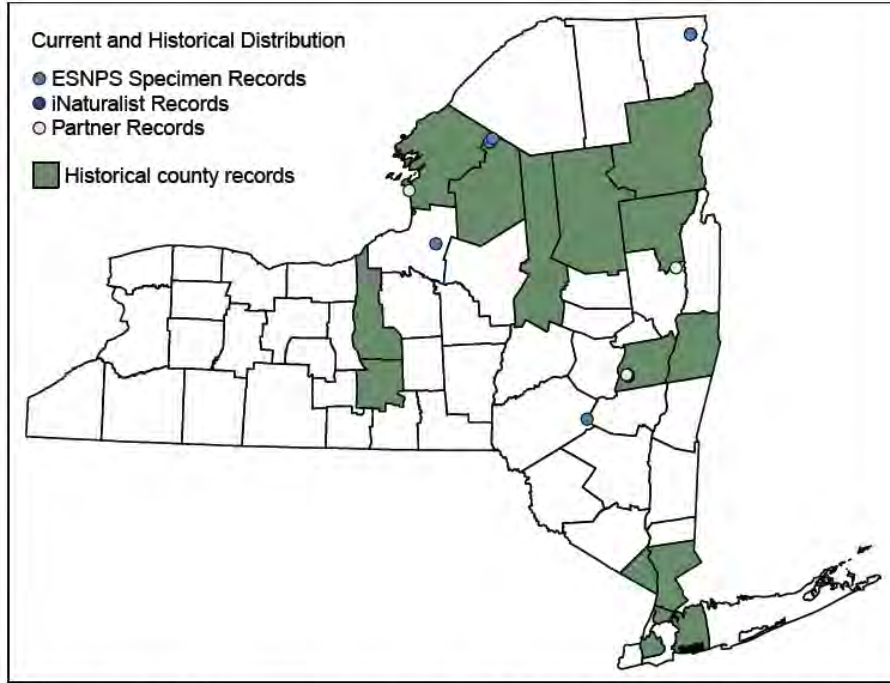


Figure 1: Observations from 2000 to present depicted as dots; those from 1999 and earlier as shaded counties.

**Figure 2.** Records of *Macropis nuda* in New York. Observations from 2000 to present depicted as dots; those from 1999 and earlier as shaded counties (Source: White *et al.* 2022).

| Years     | # of Records | # of Counties | % of State |
|-----------|--------------|---------------|------------|
| Pre-2000  | 98           | 15            | 24%        |
| 2000-2021 | 83           | 7             | 11%        |

**Table 1.** Records of *Macropis nuda* in New York.

**Details of historic and current occurrence:**

*M. nuda* is currently extant in seven counties in New York. The Empire State Native Pollinator Survey effort (2017-2020) detected *M. nuda* in three new counties (Clinton, Oswego, Delaware counties) and verified an additional four counties with partner data (Jefferson, Lewis, Warren, and Albany counties) (White *et al.* 2022). It was historically (1999 and earlier) known from an additional 11 counties in New York (Rockland, Westchester, Bronx, Kings, Nassau, Herkimer, Hamilton, Essex, Rensselaer, Cayuga, and Tompkins counties) but was not observed during the recent multi-year survey effort (White *et al.* 2022). When looking at county level occurrences, this species is absent most noticeably from southeastern New York. Based on recent records, this *M. nuda* appears to be successfully reproducing in the Lake Myosotis area in Albany County.

**New York’s Contribution to Species North American Range:**

| Percent of North American Range in NY | Classification of NY Range | Distance to core population, if not in NY |
|---------------------------------------|----------------------------|---|
| 1-25%                                 | Peripheral                 | Unknown                                   |

The northeast is responsible for 50-75% of *M. nuda*'s range (Northeast Fish and Wildlife Diversity Technical Committee 2025).

#### IV. Primary Habitat or Community Type *(from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):*

Associated ecological communities: Deep emergent marsh, Medium fen, Northern white cedar swamp, Shallow emergent marsh, and Silver maple-ash swamp.

##### Habitat or Community Type Trend in New York

| Habitat Specialist? | Indicator Species? | Pollinator? | Habitat/ Community Trend | Time frame of Decline/ Increase |
|---------------------|--------------------|-------------|--------------------------|---------------------------------|
| Yes                 | No                 | Yes         | Unknown                  | Unknown                         |

##### Habitat Discussion:

In New York, *M. nuda* could potentially occur where its host plant is found in shrublands, woods, and along streambanks (van Dyke et al. 2020). Intact wetland habitat where native loosestrifes occur is critical foraging habitat for this species. *M. nuda* is known from prairie fens, wet-mesic prairies (Rowe et al. 2022), ephemeral wetlands, ditches, and along waterways (van Dyke et al. 2020).

*Macropis nuda* is a pollen and oil specialist (i.e., monolege) of loosestrifes (Myrsinaceae: *Lysimachia*) (Fowler 2016a, 2016b). Fringed Loosestrife (*Lysimachia ciliata*) produces copious amounts of pollen and secretes floral oils instead of nectar. Females have been observed collecting nectar from two different flower species before provisioning nests with the oil and pollen of Fringed Loosestrife (*L. ciliata*) (Cane et al. 1983). Floral resources *M. nuda* have been observed and include: Spreading dogbane (*Apocynum androsaemifolium*) (Buckner and Danforth 2022), Bristly Sarsaparilla (*Aralia hispida*), Blue Lettuce (*Lactuca pulchella*), blueberry (*Vaccinium* sp.), geranium (*Geranium* sp.), brambles (*Rubus* sp.), New Jersey Tea (*Ceanothus americanus*) (Michez and Patiny 2005), Indian Hemp (*A. cannabinum*) (Wood et al. 2019), buttercup (*Ranunculus* sp.), and Smooth Sumac (*Rhus glabra*) (Cane 1983).

*M. nuda* is a ground nesting bee. Nests are typically aggregated on gently sloping ground and are shallow, typically within 6.5 mm of the surface (Cane et al. 1983, Rozen and Jacobson 1980). Nest sites have been observed in sandy-loam soil in partially shaded areas; however, nest sites appear to be variable (Cane et al. 1983).

## V. Species Demographic, and Life History:

| Breeder in NY? | Non-breeder in NY? | Migratory Only? | Summer Resident? | Winter Resident? | Anadromous/Catadromous? |
|----------------|--------------------|-----------------|------------------|------------------|-------------------------|
| Yes            |                    |                 | Yes              | Yes              |                         |

**Species Demographics and Life History Discussion** (include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):

The *Macropis* genus is comprised of three subgenera (*Macropis*, *Sinomacropis*, and *Paramacropis*) and *M. nuda* is in the *Macropis* subgenus (Michez and Patiny 2005). *M. nuda* is a small dark bee between 7-9 mm (Michez and Patiny 2005). Males have yellow coloration on their face (i.e., clypeus); whereas females have a dark face and have dense hair on their legs (i.e., scopa) (Michez and Patiny 2005). The light-colored hairs (i.e., scopae) present under the females' abdomens and on legs are specially adapted to hold loosestrife pollen and oil (Cane 1983).

The oil bees *Macropis nuda*, *M. ciliata*, and *M. patellata* specialize in collecting oil from native loosestrife (*Lysimachia*). Females collect pollen and oil by patting the underside of their abdomens (i.e., metasoma) on loosestrife flowers (Portman et al. 2019). They use the oils to waterproof nest cell walls and for larval nutrition. Females provision their nests with an oil-pollen loaf and lay their eggs on top of it within the cell (Rozen and Jacobson 1980). Their cells are lined with a greenish-yellow waxy waterproofing material (Cane et al. 1983, Rozen and Jacobson 1980). After the egg hatches, the larvae consume their provisions in just a few weeks and spin a cocoon to pupate and overwinter in.

In the Northeast, adult specialist bees are inactive in the winter months and typically overwinter in nests as pre-pupae (Fowler 2016b). In New York, *M. nuda* is active from June through August and is most common July (White et al. 2022). This species may be active through September in other parts of its range (Discover Life 2023). Both males and females have been observed sleeping on, upside down, and in the flowers near nesting aggregations (Rozen and Jacobson 1980). *Macropis nuda* has an interesting mating biology. Males search for mates in areas around flowers. The male will approach a female but if the female is not interested in mating, she will reject a male with a single kick of her hind legs to dislodge the male and will keep her legs extended for several minutes (Cane et al. 1983).

This oil-collecting bee can be challenging to identify in the field and may require the help of an expert. Specific identifying characteristics and a key can be found in the 2005 paper "World revision of the oil-collecting bee genus *Macropis* Panzer 1809 (Hymenoptera: Apoidea: Melittidae) with a description of a new species from Laos" by Michez and Patiny.

## VI. Threats (from NY 2015 SWAP or newly described):

In the northeast, anthropogenic threats causing habitat loss, degradation, or phenologic mismatch threaten specialist bees and their associations (Fowler 2016b, Fowler and Droege 2020). For *M. nuda* in particular threats include climate change, invasive species and pathogens, habitat degradation, residential and commercial development (Northeast Fish and Wildlife Diversity Technical Committee 2025). Buckner and Danforth (2022) developed habitat suitability prediction models for 2050 and 2090 and found that suitable habitat for *M. nuda* will be lost in the northeast under multiple climate change scenarios.

Land use change in particular has resulted in the loss of *M. nuda* nesting sites. Bartomeus et al. (2013) found that native bee species richness has declined over a 140-year period and relative abundance has significantly declined for some species, including *M. nuda*, likely due to their specialized diet and short activity period. Additionally, climate change related habitat loss and shifting niches will have a negative impact on *M. nuda* populations by reducing the amount of suitable habitat available (Buckner and Danforth 2022). Kammerer et al. (2020) found that solitary bees are more sensitive to drought and warmer winters associated with climate change.

Invasive plant species likely threaten *M. nuda* populations. This specialist bee will nectar on flowering species other than native loosestrifes but may avoid non-native plants. One study near the Huyck Preserve in Rensselaerville, New York observed that *M. nuda* did not visit two invasive flowering plants, Creeping Jenny (*Lysimachia nummularia*) or Moneywort (*L. nummularia*), growing near an active nest site (Cane et al. 1983). Invasive plants can also displace natives and create monocultures reducing the floral resources available, as seen by purple loosestrife (*Lythrum salicaria*) invasions (Buckner and Danforth 2022). The loss of native loosestrife populations will likely result in the loss of *Macropis* populations (van Dyke et al. 2020).

Pesticides, in particular neonicotinoids, present threats to native bee communities (Main et al. 2020). Herbicides and fungicides appear to have a negative impact on bee fitness (Cullen et al. 2019). Pesticide exposure can result in direct mortality or cause sub-lethal effects that reduce a bee's ability to forage or learn and may decrease overall fitness (Schuhmann et al. 2022).

| Threat Level 1                          | Threat Level 2                                       | Threat Level 3   | Scope | Severity | Irreversibility | Trend           | Certainty       |
|---|--|--|-------|----------|-----------------|-----------------|-----------------|
| 1. Residential and Commercial           | 1.1 Housing & Urban Areas                            | -  | W     | L        | H               | Choose an item. | Choose an item. |
| 3. Energy Production & Mining           | 3.2 Mining & Quarrying                               | -  | R     | L        | M               | Choose an item. | Choose an item. |
| 4. Transportation & Service Corridors   | 4.1 Roads & Railroads                                | -  | W     | L        | H               | Choose an item. | Choose an item. |
| 8. Invasive & Other Problematic Species | 8.1 Invasive Non-Native Plants & Animals             | 8.1.2 Terrestrial plants                                   | P     | M        | H               | Choose an item. | Choose an item. |
| 8. Invasive & Other Problematic Species | 8.4 Pathogens  | -  | P     | M        | H               | Choose an item. | Choose an item. |
| 9. Pollution                            | 9.3 Agricultural & Forestry Effluents                | 9.3.3 Herbicides & pesticides                              | R     | L        | H               | Choose an item. | Choose an item. |
| 11. Climate Change                      | 11.1 Habitat Shifting & Alteration                   | (warmer winters result in fewer bees)                      | W     | L        | H               | Choose an item. | Choose an item. |
| 11. Climate Change                      | 11.4 Changes in Precipitation & Hydrological Regimes | 11.4.2 Droughts (solitary bees more sensitive to drought). | R     | L        | H               | Choose an item. | Choose an item. |

**Table 2.** Threats to *Macropis nuda*.

**SCOPE:** Spatial proportion of the distribution that is expected to be affected in the next 10 years (**narrow**= 1-10%; **restricted**=11-30%; **widespread**=31-70%; **pervasive**= 71-100%).

**SEVERITY:** The degree of population reduction in the next 10 years that can be reasonably expected from the threat given the current circumstances and trends (**low**=degrade/reduce population by 1-10%; **medium**=d/r population by 11-30%; **high**=d/r population by 30-70%; **very high**=d/r population by 71-100%).

**IRREVERSIBILITY:** The degree to which the effects can be reduced and the species restored (**low**=easily reversed, at a low cost, and/or within 0-5 years; **medium**=can be reversed with a reasonable commitment of resources and/or within 6-20 years; **high**=can technically be reversed, but not practicably affordable and/or it would take 21-100 years; **very high**=cannot be reversed and species not likely to be restore and/or it would take >100 years).

**Are there regulatory mechanisms that protect the species or its habitat in New York?**

Yes:

No:

Unknown:

**If yes, describe mechanism and whether adequate to protect species/habitat:**

Governor Kathy Hochul signed into law Legislation S.1856-A/A.7640, the Birds and Bees Protection Act. This law prohibits the use of certain neonicotinoid pesticide treated corn, soybean, or wheat seeds and neonicotinoid pesticides for outdoor ornamental plants and turfs. Reducing the amount of neonicotinoids used in the landscape in New York will likely benefit *M. nuda*.

**Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:**

In the northeast, there are just four species in the genus *Macropis*, three of which reside in New York, and all are loosestrife (*Lysimachia* spp.) pollen specialists (Fowler and Droege 2020). Management practices should protect intact wetlands and habitat. Most habitat restoration efforts benefit generalist bees; while creating pollinator habitat is beneficial, it is not advantageous to many specialist bees like *M. nuda* because pollen of other species is not nutritionally suitable for their offspring (Fowler 2016a, 2016b).

Invasive species control in wetlands may be necessary to ensure suitable habitat for *M. nuda*. Additional planning and specific permits are likely needed to proceed with invasive species removal and management. Prioritizing the use of native plants and avoiding the use of introduced plants will benefit this species. Including native loosestrifes, like Fringed Loosestrife (*L. ciliata*), in wetland restoration plantings will provide forage for *M. nuda* and other wetland specialists (Fowler 2016a, 2016b). Fringed Loosestrife seeds and transplants are commercially available (van Dyke et al. 2020). This herbaceous plant grows in shrublands, woods, and along streambanks throughout New York and blooms between June through September (van Dyke et al. 2020). Including additional floral resources will also benefit *M. nuda* populations. Even though it is a pollen specialist, both males and females' nectar on a variety of plants. Spreading dogbane (*Apocynum androsaemifolium*) appears to be a major nectar source for *M. nuda* in New York (Buckner and Danforth 2022) and elsewhere within its range (Wood et al. 2019).

Potentially of highest importance when managing for *M. nuda* is to avoid land management that

may reduce nesting habitat for this species. While plants in the *Lysimachia* genus appear to be stable and can adapt to altered environments, suitable nesting sites for *M. nuda* continue to be destroyed (Simpson and Neff 1983). Therefore, protecting against the reduction or removal of riparian habitats from erosion (e.g., recreational use) or compaction (e.g., development) will benefit this species (Buckner and Danforth 2022).

Additional research on habitat requirements, threats, implications of climate change, and the effects of pesticide use is needed for *M. nuda*. Research focused dispersal abilities is especially relevant to better understand if this species can keep up with its expected northern range shift in response to climate change (Buckner and Danforth 2022). Identifying what types of specific management strategies benefit *M. nuda* populations will also be important because populations may respond differently depending on the type of management. One recent trapping effort found *M. nuda* solely in undisturbed areas and absent from burned or grazed areas (Miller 2021).

Additional targeted efforts for bees of the family Melittidae are needed. Few records for *Macropis* were obtained during our effort and additional targeted efforts in wetlands with known locations of native *Lysimachia* species in June-July may be productive for these rare bees. Predictive distribution models developed by Buckner and Danforth (2022) should be consulted for *M. nuda* and other *Macropis* species surveys (White et al. 2022).

| Action Category                                   | Action  | Description                         |
|---|---|-------------------------------------|
| B.3 Outreach                                      | B.3.1.4.0 Public outreach and information   | Awareness & Communications          |
| C.6 Design and Plan Conservation                  | C.6.5.0.0 Conservation planning   | Resource/Habitat Protection         |
| C.6 Design and Plan Conservation                  | C.6.5.1.3 Develop a conservation, management, or restoration plan for protected private lands | Habitat/Natural process restoration |
| C.7 Legislative and Regulatory Framework or Tools | C.7.0.0.0 Legislative and regulatory framework or tools                                       | Policies and regulations            |

**Table 3.** Recommended conservation actions for *Macropis nuda*.

## VII. References

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## Version history

**Originally prepared by:** Katie Hietala-Henschell

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