

The Unequal Cellophane Bee, *Colletes inaequalis* (Hymenoptera: Colletidae)



Fig. 1. *Colletes inaequalis* (USGS Native Bee Inventory and Monitoring Lab)

one another because that site has the “goldilocks” soil characteristics (Figs. 2 and 3). The site should also have good drainage so developing larvae and bees do not drown. The surface also needs to be somewhat bare since turfgrass and thatch would inhibit digging. Groups of nesting cellophane bees sometimes number into the tens of thousands. These bees, however, are non-aggressive and it is virtually impossible to get stung by one unless you step on one with your bare foot or grabbed one. They are important pollinators of spring trees, crops, and wildflowers. About 70% of all bees (about 14,000) dig nests in the soil like *C. inaequalis*. Each solitary mother provisions several cells off of the main burrow with pollen and nectar (Figs 4 & 5).



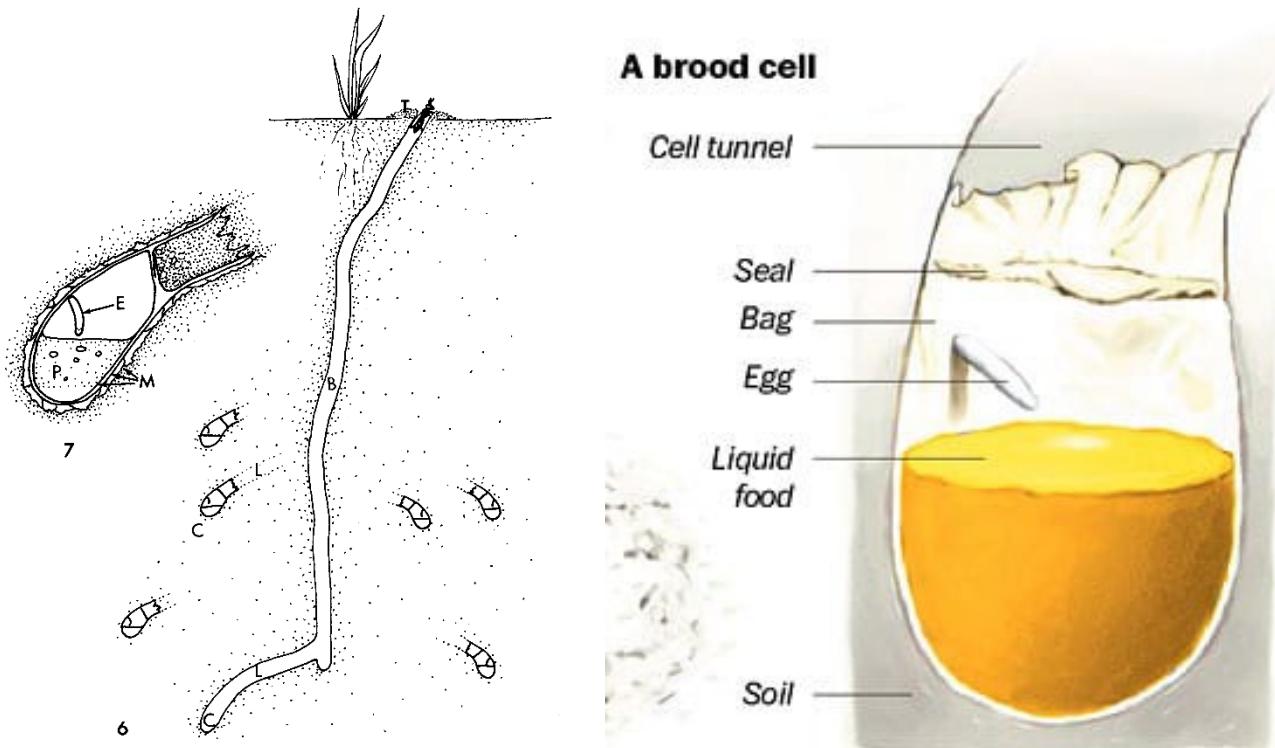
Fig. 2. Aggregation of nests (Photo Heather Grau).

One of the first real signs of spring is the emergence of the unequal cellophane bee, *Colletes inaequalis* (Fig. 1). The species name “*inaequalis*” (means “unequal” in Latin) and refers to the fact that the right and left antennae are of slightly different lengths. The term “cellophane bee” refers to several bees in genus *Colletes* that line their nest cells with a polyester or cellophane-like coating from a gland in their abdomen. Female bees use their tongue to coat the cell in the soil she will provision with liquid nectar and pollen for her larval offspring to feed and develop on.

Cellophane bees are solitary, meaning each female bee is a “single mother” who digs burrows in “goldilocks” soil (i. e. the right proportions of sand and silt such that it is not too difficult for her to dig her burrow, yet stable enough that it will not collapse on her while she is digging). Even though each female bee works alone, the bees tend to build their nests near



Fig. 3. Two *C. inaequalis* nest entrances (Photo Heather Grau).



Figs. 4 and 5. Nest and cells of the unequal cellophane bee: egg (E), polyester membrane (M), nectar and pollen provision for larva (P) (Batra 1980, Clark 2011). *C. inaequalis* has been collected on flowers of 38 species of early blooming trees, shrubs and herbs. Nests are 3 to 15 inches deep with 1-7 cells per nest. Females may provision several nests in their six week lifespan. If you have these bees on your property and can tolerate a non-aggressive bee for six weeks – please do so. They are important pollinators of very early spring blooming plants.

Flower species that support populations of *Colletes inaequalis*: Red maple, common serviceberry (shadbush), pussy willow, cherries, sundial lupine, blueberry, deerberry, Eastern redbud, apples, and crabapples.

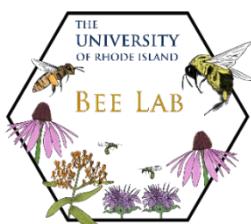
Conservation Actions:

- Restoration, creation, and preservation of native plants and preferred soil nesting sites.
- Restriction of harmful pesticide use on or near suitable habitat.
- Protection of species from diseases introduced by managed bees.

References:

Batra, S. W. T. 1980. Ecology, behavior, pheromones, parasites and management of the sympatric vernal bees *Colletes inaequalis*, *C. thoracicus* and *C. validus*. J. Kansas Entomol. Soc. 509-538.

Clark, P. 2011. Polyester bees: born in a plastic bag. Washington Post March 15, 2011.



For more information, please visit us at <https://web.uri.edu/beelab>
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 Photos by Heather Grau, USGSNBIM
 Illustrations from Batra (1980) and Clark (2011)

