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Biodiversity of Bees (Hymenoptera: Apoidea: Anthophila) in Connecticut (USA)

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Abstract

In response to calls for national and regional updated inventories of bee species, we present a county-level checklist for 385 confirmed bee (Apoidea: Anthophila) species for Connecticut, USA, highlighting rare and regionally declining species, species that have specific habitat and/or host requirements, and species whose taxonomy and distribution we wish to clarify. We have compiled a comprehensive, digitized database of historic and current bee records from Connecticut to inform this checklist, which includes specimen records from museums, recent collections, and community science observations from iNaturalist.com. All images of bees from Connecticut on iNaturalist (18,471 observations) have been fully vetted by one or more of the authors, which is unprecedented for a state project. We summarize historical bee research in Connecticut and provide current information regarding the distribution of bee species, changes in status, phenology, habitat usage, and floral associations within the state. At least 43 of 385 species represented in collections or literature have not been detected in Connecticut since the year 2000. These and other species of conservation concern are discussed with reference to a quantitative assessment of changes in range within the state. In addition, we have calculated and report state-level ranks for 124 bee species in Connecticut. We corroborate regional loss of species including *Coelioxys funerarius* Smith and *Holcopasites illinoiensis* (Robertson) and clarify and extend the distribution of numerous bee species in the Northeastern United States. Furthermore, we discuss morphospecies, excluded species, and species expected for Connecticut. We also validate synonymies reported previously online based on an unpublished manuscript by Roy Snelling for the following species: *Nomada depressa* Cresson (= *N. hoodiana* Cockerell; = *N. carinicauda* Cockerell; = *N. media* Mitchell); *Nomada obliterata* Cresson (= *N. decepta* Mitchell); *Nomada vicina* Cresson (= *N. beulahensis* Cockerell; = *N. vicina stevensi* Swenk). In addition, we recognize three new synonyms of *Nomada xanthura* Cockerell (= *N. ochlerata* Mitchell; = *N. detrita* Mitchell; = *N. mendica* Mitchell) and report the first *Nomada townesi* Mitchell from outside of Maryland. In addition to *N. townesi*, the following eleven native species are newly reported or recently confirmed for Connecticut: *Andrena* (*Cnemidandrena*) *parnassiae* Cockerell; *Andrena* (*Melandrena*) *sayi* Robertson; *Andrena* (*Trachandrena*) *rehni* Viereck; *Anthophora bomboides* Kirby; *Nomada armatella* Cockerell; *Nomada electella* Cockerell; *Nomada placida* Cresson; *Lasioglossum* (*Dialictus*) *cattellae* (Ellis); *Lasioglossum* (*Dialictus*) *ellisiae* (Sandhouse); *Lasioglossum* (*Dialictus*) *fattigi* (Mitchell); *Lasioglossum* (*Dialictus*) *trigeminum* Gibbs. The following recent arrivals among non-native species are confirmed: *Pseudoanthidium* (*Pseudoanthidium*) *nanum* (Mocsáry); *Coelioxys* (*Allocoelioxys*) *coturnix* Pérez; *Osmia* (*Osmia*) *taurus* Smith. This work is a stepping stone towards a larger, ongoing effort to clarify bee distribution and status in New England. As such, we also report updates for the bee fauna of the following states: Massachusetts—*Melissodes communis communis* Cresson; *Megachile* (*Eutricharaea*) *apicalis* Spinola), Maine—*Chelostoma philadelphi* (Robertson), and New Hampshire—*Lasioglossum nelumbonis* (Robertson).

Key words: checklist, faunal list, native bees, conservation, New England, iNaturalist, community science, phenology, floral associations, Eastern United States

Introduction

State and national checklists combining historical data with contemporary survey data are necessary to understand the distribution and status of wild bees in North America and globally (National Research Council 2007). The conservation status of wild bees regionally and globally is uncertain and complex. While there is general consensus that certain bumble bees (genus *Bombus*) have suffered dramatic declines in North America, Europe, and China (Colla *et al*. 2012a; Grixti *et al*. 2009; Richardson *et al*. 2018; Szabo *et al*. 2012; Williams *et al*. 2009), status assessments for the majority of bee species are not entirely clear due to lack of information, and reports from North America have yielded inconsistent and incomplete results (Bartomeus *et al*. 2013; Burkle *et al*. 2013; Colla *et al*. 2012b; Didham *et al*. 2020; Grixti & Packer 2006). Inventories, validated by taxonomists, are the first step in understanding the biogeography of wild bees and provide essential baseline data to detect future changes in range across regions. National and regional assessments provide information to state governmental agencies to help steer decisions regarding local fauna and habitat conservation, and state assessments provide the "grassroots" information for those national and regional assessments. Connecticut is the third New England state to publish a county-level treatment of wild bees and is the first checklist in the continental United States to make use of a complete review of all statewide community science bee records. This present Connecticut work, along with the checklists from Maine (Dibble *et al*. 2017) and Massachusetts (Veit *et al.* 2022["2021"]), checklists in preparation from Vermont (Hardy *et al*. in prep) shared online as the "State of Vermont's Wild Bees 2022" report (Hardy *et al.* 2022) and Rhode Island (H. Ginsberg & S. Alm pers. comm.; see also Rothwell & Ginsberg 2019), and recent survey work in New Hampshire (Matthiasson & Rehan 2019 [see species accounts for clarification of some of

the identification difficulties therein]; Milam *et al.* 2018; Wagner *et al.* 2019; M. F. Veit unpublished data; M. M. Jacobson unpublished data), will clarify the distribution and status of New England bee species including those of conservation concern. These state treatments will be pertinent for a forthcoming broader northeastern regional analysis. A recently published completeness analysis for United States bee species (Chesshire *et al.* 2023) shows that Southern New England including Connecticut is a region with exceptionally high current and projected data availability and is likely to be of continuing importance for status assessments (e.g., updates to Bartomeus *et al*. 2013).

There have been several recent advances in our understanding of bee taxonomy, distribution, and range limits both locally and regionally. First, recent bee surveys by researchers at the Connecticut Agricultural Experiment Station (CAES) and the University of Connecticut (UCMS) have added new occurrence information, and collaborative databasing and digitization of bee records at CAES and UCMS (Ascher 2016; Connecticut Agricultural Experiment Station Arthropod Collection 2023; Dorey *et al.* 2023; Schuh *et al*. 2010) have mobilized new and historic occurrence records. Second, expanded methods of collecting (Droege *et al.* 2010b; Gibbs *et al*. 2017b; Prendergast *et al.* 2020), revisionary studies of formerly intractable bee genera (Gardner & Gibbs 2022; Gibbs 2010, 2011; Oram 2018) informed by molecular diagnostic tools (Gibbs 2018; Sheffield *et al.* 2009; Sheffield *et al*. 2017), and image-based natural history portals such as iNaturalist.com (Callaghan *et al*. 2022) and BugGuide.net have increased our ability to generate and share reliable bee data. By using these resources, our paper consolidates what is known about the bees of Connecticut. In this publication, we elaborate on our prior work on new and noteworthy taxa for this state (Zarrillo *et al.* 2016) by providing detailed treatments for all bee species. The resulting updated state checklist expands upon the the historical monograph for Connecticut by Viereck *et al.* (1916) and the monograph for the Eastern United States by Mitchell (1960, 1962).

Objectives

The objectives of this publication are to provide a taxonomically current inventory of the bee species detected in Connecticut and to inform wild bee conservation for one of the only regions of the United States with an existing status assessment for wild bees (Bartomeus *et al*. 2013) and extensive current and projected future data availability (Chesshire *et al*. 2023). This first modern statewide assessment of bee diversity in Connecticut includes a checklist of bee species occurrence by county, citation of the first and last year recorded in the state, seasonal span detected in the state, relative change in range size in the state, and state-level conservation status ranks for 124 bee species. We provide a geologic framework for understanding key wild bee habitats in Connecticut and discuss historical bee research to inform the readers' understanding of Connecticut's modern checklist of bee distribution by county. Floral and habitat associations in Connecticut when available are noted in species accounts to assist in better understanding overall trends, especially for specialist bees, and to inform conservation management. The conservation status of bee species in Connecticut is discussed, especially when data from the state corroborate or challenge regional (e.g., Bartomeus *et al.* 2013), national, or state assessments.

Connecticut Landscape and Historical Context

The state of Connecticut is in the Northeastern United States and is bordered by New York State to the west, Massachusetts to the north, Rhode Island to the east, and Long Island Sound, a marine estuary of the Atlantic Ocean, to the south, with the eastern arm of Long Island across the Sound. Although Connecticut is a small state of only 12,887 km^2 (Arnold *et al*. 2020), it encompasses considerable variation in geology, soils, and vegetation, resulting in eight distinctive ecoregions (see **Figure 1**). The major geological regions of Connecticut include the calcareous Marble Valleys along the western edge of the state, the Western Hills and Eastern Hills of crystalline gneiss, schist and granite, and the broad central Connecticut Valley with sedimentary shales and sandstone punctuated by distinct basalt trap rock ridges (Bell 1985; Metzler & Barrett 2006; Stone *et al*. 2005). Connecticut has a series of predominantly north-south ridges that are the result of a series of collisions of tectonic plates, followed by the creation of a central rift basin starting 200 million years ago during the formation of the Atlantic Ocean (Bell 1985; Stone *et al*. 2005). Most of the state is below 150 m in elevation, rising to over 450 m in the northwestern corner of the state, and including a few mountains along the Massachusetts border in the east (Hammerson 2004).

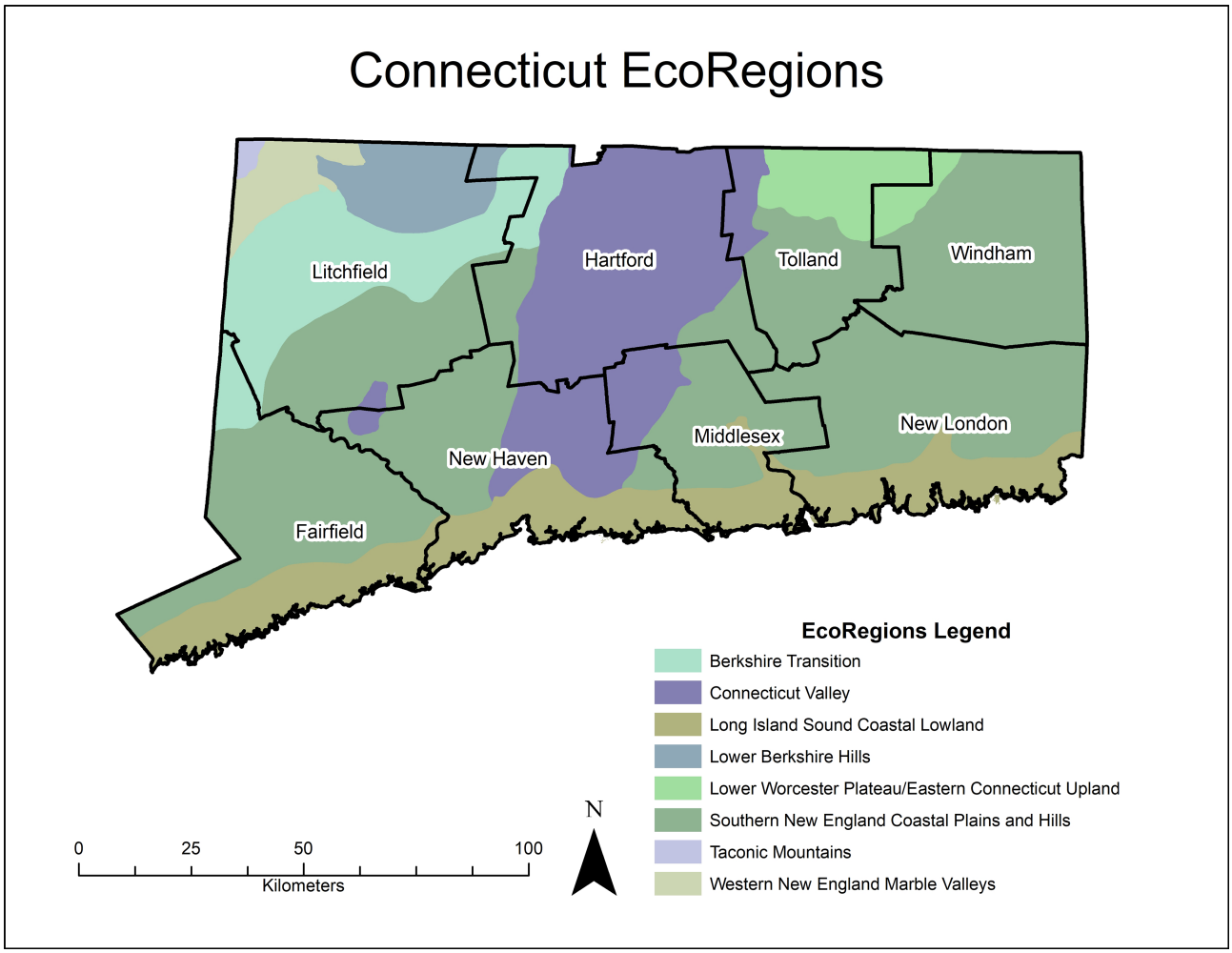

FIGURE 1. Map of the eight counties and the eight ecoregions of Connecticut.

The soils of Connecticut are profoundly influenced by the Wisconsinan glaciation (Stone *et al*. 2005). As this glacier retreated across Connecticut from 17,600 to 15,000 years ago, moraines of stratified drift made up of sand and gravel were deposited by glacial meltwater along the Connecticut coast and the rivers (Bell 1985; Lewis 2001; Metzler & Barrett 2006; Stone *et al*. 2005). In addition, for a period of about 4,000 years, stratified beds of silt, sand, and clay were deposited at the bottom of glacial Lake Hitchcock. These beds were 32 km wide at their broadest point just north of Hartford and covered the present-day central Connecticut River Valley from Rocky Hill, Connecticut north to St. Johnsbury, Vermont. This deposition created the most fertile agricultural soils in New England (Bell 1985; Stone *et al*. 2005) and xeric sand deposits of low fertility (Woodside 2016). Smaller glacial lakes and ponds, dammed by debris or by ice, created pockets of similar deposits around the state (Stone *et al*. 2005). On the uplands, the glaciers deposited till with mixtures of materials from silt and sand to cobbles and boulders, generally related to the composition of adjacent bedrock (Stone *et al*. 2005).

Connecticut's glacial history also resulted in distinctive topography along the coast. Rising sea levels at the end of the Ice Age filled in Long Island Sound behind the terminal moraine that forms the north shore of Long Island, leaving a series of rocky points and harbors, and rocky recessional moraines that form many of the islands in the Sound (Bell 1985; Stone *et al*. 2005). Historically, there were salt marshes and mud flats where the tidal rivers emptied into the sound, but many of these marshes have since been drained and filled for large- and small-scale development (Connecticut Department of Energy and Environmental Protection 2018). Coastal beaches are relatively small areas of sand and pebbles eroded from glacial deposits on the headlands (Bell 1985).

Humans arrived in Connecticut at least 12,500 years ago (Sportman & Leslie 2020). At the time of European contact in 1614 (Bancroft 1886), Connecticut was almost entirely forested, dominated by mixtures of oaks, American

chestnut, hickories, and eastern hemlock in southern and central Connecticut, mixed with white pine to the north and east, and American beech, birch, and sugar maple in the northwestern corner (Metzler & Barrett 2006).

The landscape changed radically after European colonization. As European settlers cleared land for agriculture and grazing, and harvested forests for wood and charcoal, forest cover in Connecticut declined from nearly 100% in 1650 to about 35% in 1850. This was the most extensive deforestation of all the New England states (Foster & Motzkin 2003). At the same time, hundreds of species of new plants were introduced from the Old World, either accidentally, such as in ships ballast or in bedding for livestock; or intentionally, such as crops for humans or livestock, dyes, medicinal uses, or ornamentals (Mehrhoff 2000). Mehrhoff (2000) estimated that 35% of plant species in Connecticut are non-native. Early introductions were predominantly European, but after 1850, more East Asian species came in, along with species from the Midwest and western United States such as *Rudbeckia hirta* (Mehrhoff 2000).

After 1850, Connecticut farms were abandoned on a massive scale (Foster & Motzkin 2003), likely creating much early-successional habitat. Following the peak years for early successional habitats in Connecticut, from 1850 until the early 1900s, forest cover regenerated from 35% to around 65% of land cover in 1952 (Butler 2016; Foster & Motzkin 2003). In recent decades (1985–2015), forest cover declined to 59%, with most of the decline going into developed land (19% of total land cover as of 2015) and associated turf and grass (8%), rather than into agricultural fields (7%) or other grass (2%) (Arnold *et al.* 2020).

The Connecticut Department of Energy and Environmental Protection (2015a) has identified key habitats and sub-habitats of greatest conservation need for wildlife, which is a useful tool for planning bee conservation efforts. Although these habitats were identified primarily based on the conservation of vertebrates and more popularized insects like butterflies, many of them, particularly those with specialized plant communities of flowering shrubs or herbaceous perennials, are of major importance to bee diversity. Shrub inland wetlands, such as bogs, fens, and swamps, are important bee habitat in Connecticut, as are sand plains and areas with sparsely vegetated sand and gravel. Coastal beaches and dunes, agricultural land, cool and warm season grasslands, and early successional shrubland are also important. In this densely populated state (280 people per km^2, United States Census Bureau 2021), residential and commercial development are the primary ecological threats to wildlife habitat. Creating and maintaining early successional habitat for bees and other wildlife has now become a major part of the work of wildlife managers and public utility companies in Connecticut and across the Northeastern United States (Northeast Upland Technical Committee 2006; Connecticut Department of Energy and Environmental Protection 2015a).

History of Wild Bee Research in Connecticut

Connecticut has a rich historical baseline for bee research as reflected in it being the type locality of 19 currently valid bee species. Species descriptions began with Cresson (1863a, b; 1864a, b), followed by Patton (1880), Robertson (1890, 1895), Cockerell (1898a, 1917), Viereck (1907), and Mitchell (1956).

Most early Connecticut bee specimens are housed in the entomology collection of the Connecticut Agricultural Experiment Station and other museums including the University of Connecticut (Storrs, Connecticut), the American Museum of Natural History (New York, New York), and the Peabody Museum at Yale University (New Haven, Connecticut). Primary type specimens of bees collected in Connecticut are deposited at the Smithsonian National Museum of Natural History (Washington, D.C.), the Museum of Comparative Zoology at Harvard (Cambridge, Massachusetts), and the Academy of Natural Sciences of Drexel University (Philadelphia, Pennsylvania).

Connecticut was home to many important insect collectors, such as Edward Norton and William Hampton Patton. Edward Norton (1823–1894) supplied many bee specimens from Connecticut to Ezra Townsend Cresson, the "Father of American Hymenoptera," of the Academy of Natural Sciences of Philadelphia (Britton 1931). William Hampton Patton (1853–1918) studied and worked at Yale University before working in Washington for the United States Entomological Commission and the United States Department of Agriculture, but in 1882 returned to Hartford for the rest of his life. He described 40 species of Hymenoptera, including ten bee taxa, of which four are currently valid, three of the latter from Connecticut type specimens (Britton 1931).

The first checklist of the bees of Connecticut was compiled as part of the "The Hymenoptera or Wasp-like Insects of Connecticut" (referred to hereafter as "The Hymenoptera of Connecticut" (Viereck *et al*. 1916). This comprehensive guide and key listed 231 species of bees, of which 21 had been originally described from Connecticut,

155 had been recorded in the state at the time, and the remaining 76 were "those whose known distribution and habits indicate their probable presence in the state, though not yet collected" (Viereck *et al*. 1916). It also provided information regarding phenology, distribution, and floral visitation in Connecticut, which was largely unknown in that era.

The primary author and editor, Henry Lorenz Viereck (1881–1931), had been hired by Wilton E. Britton (1868–1939), the first State Entomologist at CAES, in 1903 to organize the CAES insect collection and to do mosquito surveys (Turner 1974). Viereck drew heavily on the CAES collection for the bee records in "The Hymenoptera of Connecticut," which included collections made by CAES staff, including W. E. Britton, B. H. Walden, and E. J. S. Moore. Another important contributor was William Morton Wheeler, who was based at Harvard and wrote the section on ants in "The Hymenoptera of Connecticut," but also collected bees at his summer home in Colebrook (Litchfield County) (Viereck *et al*. 1916).

Viereck stayed in Connecticut for only two years, 1904 and 1905 (Rehn 1932). During his stay at CAES, he collaborated with Britton on a remarkably detailed study of insects visiting flowers of fruit trees, including gooseberry, red currant, black currant, Japanese plum, sweet cherry, peach, apple, pear, quince, blackberry, raspberry, and strawberry. The only publication of this work was in the annual report of the State Entomologist (Britton & Viereck 1906). Viereck incorporated many of the associations of bees with flowering fruit trees into "The Hymenoptera of Connecticut."

Viereck described 315 North American bee taxa (71 in genus *Andrena* coauthored by T. D. A. Cockerell) of which 99 are currently valid and an additional 23 are *Andrena* of uncertain status (nomina dubia since not treated in revisionary studies by LaBerge *et al*.). Of this impressive total, four currently valid species and 12 now in synonymy were described by Viereck from New England. The regional specialities, *Andrena braccata* Viereck and *Perdita novaeangliae* Viereck, and three names now in synonymy were described from Connecticut specimens. Through the work of Viereck and his coauthors, "The Hymenoptera of Connecticut" remained the go-to manual for the determination to species of the Hymenoptera of the Northeastern United States for decades beyond Viereck's untimely death in 1931 (Bradley 1959).

In 1920, Britton published the "Check-List of the Insects of Connecticut" (Britton 1920). This checklist provided only the species name of each insect and references to scientific and popular accounts (Britton 1920). For the Hymenoptera, including bees, the references are almost all to "The Hymenoptera of Connecticut," as the 1920 update added only 4 bee species to the state list. In 1938, Britton published a list of additions to the checklist (Britton 1938), which included 22 newly reported bee species for the state and confirmation of 12 species that had been listed as "probable" in "The Hymenoptera of Connecticut."

Other Important Collectors in Connecticut

Marjorie Statham Favreau (1911–2008) worked for decades as a scientific illustrator at the American Museum of Natural History and assisted Dr. Jerome Rozen in locating and excavating bee nests in the southwestern United States (Rozen 1973). She collected 809 bees from 1947 to 1972 in New Canaan (Fairfield County), including many rarely collected species of *Andrena*.

Gerald I. ("Jerry") Stage (1935–2014, see Wagner & Ascher 2014), whose principal research interest was in the western bee genus *Hesperapis*, joined the UCMS faculty in 1970 and made collections and natural history observations of local bees including unpublished studies of bee visitation to *Lyonia* blossoms. Regional vouchers from his personal collection were accessioned by UCMS and have largely been digitized.

Chris T. Maier, an entomologist at CAES, provided at least 1,428 records of individual bees, most with the floral host(s) identified, while sampling many types of wetlands and forests across the state, including northern acidic bogs and calcareous fens. His work tracking exotic insects within the state led to the detection of the exotic bee species *Anthidium manicatum* (Linnaeus), *Anthidium oblongatum* (Illiger), and *Megachile sculpturalis* Smith in Connecticut (Maier 2005, 2009).

David L. Wagner, professor in the Department of Ecology and Evolutionary Biology at the University of Connecticut, led several bee surveys and collected over 8,000 bees in Connecticut, starting in the late 1990s. A large proportion of these bees were collected during projects focusing on the importance of powerline rights-of-way (ROW) as habitats for bees (Hartford and Tolland Counties) (Wagner *et al*. 2014a; Wagner *et al*. 2019) and on the fauna of sand plains in Hartford and New Haven Counties.

Katherine R. Urban-Mead collected 1,297 bees in 2013 as an undergraduate student at Yale University in Eastford and Pomfret (both Windham County) and Wallingford (New Haven County) during her study of old fields and meadows in Connecticut (Urban-Mead 2017).

Michael F. Veit, a retired high school biology teacher and a bee enthusiast from Massachusetts, has been collecting bees, mainly from New England states, for the past 15 years, and is the lead author of a paper on the bees of Massachusetts (Veit *et al*. 2022[“2021”]). His collection includes 2,078 bees from Connecticut, largely from powerline ROW and forest communities (Wagner *et al.* 2019).

In the last five years, photographers sending their bee observations to community science portals such as iNaturalist.com and BugGuide.net and bee experts contributing their identifications of these observations have immensely advanced our knowledge of current distribution, abundance, and phenology of bees. The following people have contributed a substantial number of bee observations in Connecticut: Allison B. Fennelly (iNaturalist id “allisonbf”) (second highest-volume observer of bees on iNaturalist globally), David P. Mantack (iNaturalist id “dmantack”), and Ray Cama (iNaturalist id “raycama”). The following people have contributed a substantial number (>500 each) of expert identifications for Connecticut non-*Apis* bee observations on iNaturalist, including J. S. Ascher (iNaturalist id “johnascher”), Joel Neylon (iNaturalist id “neylon”), Nathaniel Sharp (iNaturalist id “nsharp”), T. A. Zarrillo (iNaturalist id “zarrillot”), Xian Zhou (iNaturalist id “xianzx”), Nina Fogel (iNaturalist id “tockgoestick”), Max W. McCarthy (iNaturalist id “mmccarthy98”), Kyle Price (iNaturalist id “kyleprice1”), and Brian Dagley (iNaturalist id “bdagley”).

The laboratory of Tracy A. Zarrillo and Kimberly A. Stoner, with Morgan F. Lowry, several cooperators in the Connecticut Bee Monitoring Program, and many seasonal assistants, has been responsible for collecting over 15,000 bees, starting in 2009 and continuing to 2022. The Connecticut Bee Monitoring Program involved James Fischer, research director at the White Memorial Conservation Center in Litchfield; Kristina Vagos, wildlife biologist at the Salt Meadow Unit of the Stewart B. McKinney National Wildlife Refuge in Westbrook (Middlesex County); Robert Durgy, farm manager at the Griswold Research Center of CAES in Griswold (New London County); Rose Hiskes and Diane Riddle of the Valley Laboratory of CAES in Windsor (Hartford County); and staff from the laboratory who maintain sites at the New Haven campus and Lockwood Farm of CAES in New Haven and Hamden. Additional collecting projects include a) a survey of wild bees on alternative floral resources on ten diversified vegetable farms in central and western Connecticut (Stoner 2013), b) surveys of pollinator habitat plantings on farms, state land, and private residences across the state (unpublished), c) a survey of bees in marsh, dune, and scrub habitats of Grass Island in Guilford (New Haven County) (Zarrillo & Stoner 2019) d) a survey of bumble bees in northwestern Connecticut (Litchfield County) (unpublished), and e.) a survey of Hymenoptera comparing species found in Connecticut sand plain remnants to those found in Connecticut baseball fields (unpublished). Vouchers from CAES studies and from UCMS have been digitized in the web-based AMNH-led Arthropod Easy Capture (AEC) system along with AMNH material (Schuh *et al*. 2010) and are accessible online (Ascher 2016; Connecticut Agricultural Experiment Station Arthropod Collection 2023).

Methods

Data Mobilization

We have compiled a comprehensive, digitized database of historic and current bee records from Connecticut to inform this checklist, which includes specimen records from museums, recent wild bee surveys, personal collections, and community science observations. Over 40,000 specimen records and 18,471 community science observations were utilized. Table 1 lists the approximate number of records accessed from major data providers (those with 500 or more records). We compiled these bee and county records primarily from the accessioned specimens located in the museum collections of the Connecticut Agricultural Experiment Station (CAES), the Biodiversity Research Collection at the University of Connecticut (UCMS), the American Museum of Natural History (AMNH), and the Yale Peabody Museum (YPM). Digitized specimen records from major collections such as AMNH, CAES, and UCMS were obtained directly from the Arthropod Easy Capture System (https://sourceforge.net/p/arthropodeasy/wiki/Home/) maintained by the AMNH but are also publicly accessible via iDigBio (Ascher 2016), Ecdysis (Connecticut Agricultural Experiment Station Arthropod Collection 2023; UConn Biodiversity Research Collection

2023), and GBIF (Global Biodiversity Information Facility**)** (see Dorey *et al.* 2023)**.** Records from the YPM are available online via iDigBio, GBIF (Gall 2023), and the YPM Entomology Online Catalog (https://peabody.yale.edu/explore/collections/entomology). Duplicate records (see Dorey *et al.* 2023) were not problematic because most records were directly compiled from the Arthropod Easy Capture System (most archived as Ascher 2016), from an output from the curator of the Yale Peabody Museum Insect Collection, from personal collections of colleagues (C. T. Maier, M. F. Veit, F. Morrison, R. Ferreira, P. Gambino, and J. Durrell), and from iNaturalist. We also queried the US*Bombus* database (Koch *et al*. 2015) and Biodiversity Information Serving Our Nation portal, BISON (2020) for supplemental records from other institutions not included in Ascher (2016), such as the Academy of Natural Sciences of Drexel University (ANSP), the Bee Biology and Systematics Lab (BBSL) (Ikerd 2019), the Illinois Natural History Survey (INHS) (McElrath 2023), Harvard Museum of Natural History (MCZ) (Morris 2023), Snow Entomological Museum Collection (SEMC) (Bentley 2024), the University of Central Florida Collection of Arthropods (UCFC) (Song & Johnson 2018), United States Geological Survey (USGS) (Droege 2020; Droege & Maffei 2023), and the United States National Museum (USNM).

TABLE 1. Approximate number of records accessed from major data providers (>500 records) for this project. * - Available online.

Major Data Providers	No. Records	Citation
American Museum of Natural History, New York, New York, USA (AMNH)*	1859	included in Ascher 2016; see also Schuh *et al.* 2010)
Connecticut Agricultural Experiment Station, New Haven, Connecticut, USA (CAES)*	18,848	included in Ascher 2016 and CAES 2023
Gerald Stage Collection (housed at the University of Connecticut and the American Museum of Natural History) (GSC)*	593	included in Ascher 2016
University of Connecticut Biodiversity Research Collection, Storrs, Connecticut, USA (UCMS)*	13,467	included in Ascher 2016
Peabody Museum of Natural History, Yale University, New Haven, Connecticut, USA (YPM)*	4324	Gall 2023
Personal Collection of Michael F. Veit	980	See Veit *et al*. (2022 [“2021”])
Personal Collection of Raul Ferreiraa	623	-
iNaturalist*	18,471	https://inaturalist.org
Total specimen records	**40,694**	
Total image records	**18,471**	

Literature Review

In addition, we reviewed previous Connecticut checklists and publications (Britton 1920, 1938; Britton & Viereck 1906; Cockerell 1898a, 1898b, 1917; Maier 2005, 2009; Rajotte 1979; Viereck *et al*. 1916; Wagner & Ascher 2008; Wagner *et al*. 2014a, 2014b, 2019; Zarrillo *et al*. 2016; Zarrillo & Stoner 2019), taxonomic revisions (Bouseman & LaBerge 1978; Brumley 1965; Donovan 1977; Gibbs 2010, 2011; Gibbs *et al*. 2013; LaBerge 1956a, 1956b, 1961, 1967, 1969, 1971, 1973, 1977, 1980, 1985, 1986a, 1989; LaBerge & Bouseman 1970; LaBerge & Ribble 1972, 1975; McGinley 1986, 2003; Michener 1947; Michez & Eardley 2007; Mitchell 1935a, 1935b, 1936a, 1936b, 1937a, 1937b, 1956, 1960, 1962; Onuferko 2018; Ribble 1967, 1968, 1974; Shinn 1967; Sinha & Michener 1958; Snelling & Stage 1995; Stephen 1954; Timberlake 1954, 1956, 1958, 1960), catalogs (Hurd 1979; Moure & Hurd 1987; Sheffield & Perron 2014), and other relevant literature including taxonomic descriptions for Connecticut types (see History of Wild Bee Research in Connecticut) to bolster our species list and county occurrences.

Annotated Checklist

A complete list of bee species confirmed for Connecticut and a table of occurrence by county is provided in Table 2. Table 2 and the annotated checklist (Appendix 1) are organized alphabetically by family, subfamily, tribe, genus, subgenus (if relevant), and species.

Vouchers from physical specimens, verified observations from community science portals, or records from literature provided relevant information for Table 2 (county, earliest and latest month detected, and earliest and latest year detected). Literature records are cited for the earliest year category when the earliest physical specimen we could locate had a collection date that is later than the year of publication. In certain cases, such as the older literature records found in Viereck *et al.* (1916) and Britton (1920, 1938), we also provide the year of the earliest physical specimen, as some of the older literature records from early workers are suspect and could not be validated. Year of publication is used as the earliest available record in cases where we do not know the exact date of the specimen in question (which could have been collected earlier). The last year detected in Connecticut is highlighted in bold text for species that have not been seen in this century. To determine phenology for bee bowl collection events, we used the end month for events that occurred in March–June, and the start month for events that occurred in July–October to avoid extreme dates. Records with questionable dates were excluded.

In Appendix 1, we provide taxonomic literature used for species identification and a brief account for each species, highlighting information on known habitats and distribution in Connecticut, taxonomy, conservation status, and floral host records in Connecticut (especially for specialist bees). We provide detailed information for species with five or fewer specimen records not treated in Zarrillo *et al*. (2016) in "Material examined" in the following order (subject to availability of information): County: specific locality, GPS, date, collector, sex#, depository, determiner, year of determination, associated metadata, and unique identifier. Verbatim location information is given in quotation marks where available. When a determination was made by someone other than one of the authors, the specimen was re-examined by T.A. Zarrillo with few exceptions. Although certain records from SEMC were unable to be verified by the time of publication, most were accepted as valid, excluding those whose range or phenology are improbable for this region, as determined by the authors.

Record Verification

Identifications of most Connecticut bee specimens in CAES, YPM, AMNH, and UCMS were made or confirmed by J. S. Ascher, S. Droege, J. Gibbs, S. Rehan, M. F. Veit, or T. A. Zarrillo. We have critically reviewed historical material from Connecticut and have updated the records to reflect changes in taxonomic status, synonymy, and nomenclature. Access to vouchers at CAES, UCMS, AMNH, and YPM allowed rechecking of otherwise troublesome identifications by historical workers, especially obscure or cryptic species in the genus *Andrena* and the subgenus *Dialictus*. J. S. Ascher made or validated identifications of all Connecticut bees observed on iNaturalist, including legacy Research Grade records, Casual Grade records, and records of high-volume taxa, such as *Bombus impatiens* and *Apis mellifera.* Furthermore, J. S. Ascher checked all Connecticut Apoidea (including wasps) on iNaturalist to avoid omission of potentially important observations. The validated record set from Connecticut is available at https://www.inaturalist.org/observations?place_id=49&subview=map&taxon_id=630955&view=species.

Nomenclature

Taxonomic nomenclature represents current valid species names (Ascher & Pickering 2022) as reported by 'names in use' or 'in review' on the Integrated Taxonomic Information System (ITIS) website (https://www.itis.gov) (Ruggiero *et al.* 2019). Common names used in Appendix 1 are not official, although they have been endorsed by several regional experts and many are already in use at leading community science portals including Bugguide and iNaturalist. Information (e.g., literature reference, locality, date, collector, depository) for name-bearing type specimens from Connecticut, including holotypes, lectotypes, and selected syntypes, are provided under the common name when available.

TABLE 2. Bee species found in Connecticut by county. County abbreviations: FF—Fairfield; H—Hartford; L—Litchfield; M—Middlesex; NH—New Haven; NL—New London; T—Tolland; W—Windham; [E] non-native species; *record from literature, otherwise specimen record; species that have not been documented in Connecticut since 2000 are in bold. Number of records are reported for species with less than five specimen and/or literature records.

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
ANDRENIDAE												
Andreninae												
Andrenini												
Andrena (*Andrena*) *carolina* Viereck, 1909	F	H	L	M	NH	NL	T	W	Apr–Jul	1957	2023	
Andrena (*Andrena*) *clarkella* (Kirby, 1802)		H	L				T		Mar–May	1931	2018	
Andrena (*Andrena*) *cornelli* Viereck, 1907		H	L	M	NH	NL	T	W	May–Jul	1904	2021	
Andrena (*Andrena*) *frigida* Smith, 1853	F	H	L	M	NH	NL	T	W	Mar–Jun	1919	2023	
Andrena (*Andrena*) *mandibularis* Robertson, 1892	F	H	L		NH	NL	T	W	Apr–Jul	1904	2019	
Andrena (*Andrena*) *milwaukeensis* Graenicher, 1903	F	H	L	M	NH	NL	T	W	Apr–Jul	1914	2023	
Andrena (*Andrena*) *rufosignata* Cockerell, 1902		H	L			NL	T	W	Mar–Jun	1928	2023	
Andrena (*Andrena*) *thaspii* Graenicher, 1903		H	L	M	NH		T	W	May–Sep	1911	2017	
Andrena (*Andrena*) *tridens* Robertson, 1902	F	H	L	M	NH	NL	T	W	Mar–May	1957	2019	
Andrena (*Callandrena*) *duplicata* Mitchell, 1960	F								Sep	1967	**1967**	1
Andrena (*Callandrena* s.l.) *aliciae* Robertson, 1891	F				NH				Aug–Sep	1967	2023	
Andrena (*Callandrena* s.l.) *asteris* Robertson, 1891	F	H	L	M	NH	NL	T	W	Jul–Oct	1904	2022	
Andrena (*Callandrena* s.l.) *braccata* Viereck, 1907	F	H	L	M	NH	NL	T		Aug–Oct	1904	2023	
Andrena (*Callandrena* s.l.) *helianthi* Robertson, 1891	F		L		NH				Aug–Sep	<=1960*/1967	2023	
Andrena (*Callandrena* s.l.) *krigiana* Robertson, 1901					NH				Jun	1902	**1902**	1
Andrena (*Callandrena* s.l.) *placata* Mitchell, 1960	F	H	L	M	NH	NL	T	W	Jun–Oct	1904	2018	
Andrena (*Callandrena* s.l.) *simplex* Smith, 1853	F			M	NH	NL	T		Jun–Oct	<=1904*/1905	2014	
Andrena (*Cnemidandrena*) *canadensis* Dalla Torre, 1896	F		L		NH		T	W	Aug–Oct	1905	2008	
Andrena (*Cnemidandrena*) *hirticincta* Provancher, 1888	F	H	L	M	NH	NL	T	W	Jul–Oct	1904	2023	
Andrena (*Cnemidandrena*) *nubecula* Smith, 1853	F	H	L	M	NH	NL	T		Jun–Oct	1905	2023	
Andrena (*Cnemidandrena*) *parnassiae* Cockerell, 1902			L						Sep	2020	2023	4
Andrena (*Cnemidandrena*) *robervalensis* Mitchell, 1960					NH				Sep	2002	2002	1

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Andrena (*Conandrena*) *bradleyi* Viereck, 1907	F	H	L	M	NH	NL	T	W	Apr–Jun	1904	2023	
Andrena (*Gonandrena*) *fragilis* Smith, 1853	F	H	L	M	NH	NL	T		May–Aug	1904	2023	
Andrena (*Gonandrena*) *integra* Smith, 1853	F	H							May–Jul	1904	2010	
Andrena (*Gonandrena*) *persimulata* Viereck, 1917					NH					<=1972*	**<=1972***	1
Andrena (*Gonandrena*) *platyparia* Robertson, 1895	F						T		Jun–Jul	1968	**1974**	4
Andrena (*Iomelissa*) *violae* Robertson, 1891		H	L	M	NH	NL			Apr–Jun	2006	2017	
Andrena (*Larandrena*) *miserabilis* Cresson, 1872	F	H	L	M	NH	NL	T	W	Apr–Jul	1904	2023	
Andrena (*Leucandrena*) *barbilabris* (Kirby, 1802)	F	H			NH		T	W	Apr–Jun	1904	2017	
Andrena (*Leucandrena*) *erythronii* Robertson, 1891		H	L		NH		T		May	1986*/2013	2013	4
Andrena (*Melandrena*) *barbara* Bouseman and LaBerge, 1979	F	H		M					Apr–Jun	2005	2017	3
Andrena (*Melandrena*) *carlini* Cockerell, 1901	F	H	L	M	NH	NL	T	W	Mar–Jun	1903	2023	
Andrena (*Melandrena*) *commoda* Smith, 1879	F	H	L	M	NH	NL			May–Jun	1905	2019	
Andrena (*Melandrena*) *confederata* Viereck, 1917	F					NL			May–Jun	1962	2019	3
Andrena (*Melandrena*) *dunningi* Cockerell, 1898	F	H	L		NH	NL	T		Apr–Jun	1895	2023	
Andrena (*Melandrena*) *erythrogaster* (Ashmead, 1890)[1]	F	H	L		NH				Apr–May	1895	2023	
Andrena (*Melandrena*) *hilaris* Smith, 1853	F			M	NH	NL			May–Jun	<=1905*/1962	2012	
Andrena (*Melandrena*) *nivalis* Smith, 1853	F	H	L	M	NH	NL	T	W	May–Jul	<=1904*/1976	2023	
Andrena (*Melandrena*) *perplexa* Smith, 1853[1]	F	H	L	M	NH	NL		W	May–Jun	<=1916*/1962	2019	
Andrena (*Melandrena*) *pruni* Robertson, 1891	F	H		M	NH	NL	T	W	Mar–Jun	<=1920*/1962	2023	
Andrena (*Melandrena*) *regularis* Malloch, 1917		H	L		NH				Apr–May	1904	2013	
Andrena (*Melandrena*) *sayi* Robertson, 1891	F								May	2019	2019	1
Andrena (*Melandrena*) *vicina* Smith, 1853	F	H	L	M	NH	NL	T	W	Apr–Sep	1863	2023	
Andrena (*Micrandrena*) *melanochroa* Cockerell, 1898		H					T		Apr–May	<=1960*/1967	**1973**	
Andrena (*Micrandrena*) *neonana* Viereck, 1917		H							Jun	2005	2005	2
Andrena (*Micrandrena*) *nigrae* Robertson, 1905		H								1894	<=**1967***	2
Andrena (*Micrandrena*) *personata* Robertson, 1897					NH					<=1960*	**1960**	1
Andrena (*Micrandrena*) *salictaria* Robertson, 1905	F	H							Apr–May	<=1896*/1934	2005	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Andrena (*Micrandrena*) *vernalis* Mitchell, 1960			L						May–Jun	1922	**1926**	
Andrena (*Micrandrena*) *ziziae* sensu Portman Robertson, 1891			L						May–Jun	1911	1922	
Andrena (*Opandrena*) *cressonii cressonii* Robertson, 1891[2]	F	H	L	M	NH	NL	T	W	Apr–Jul	1902	2022	
Andrena (*Parandrena*) *nida* Mitchell, 1960							T		Apr	1972	**1972**	2
Andrena (*Parandrena*) *welleslayana* Robertson, 1897					NH		T		Mar–Apr	1915	**1998**	
Andrena (*Plastandrena*) *crataegi* Robertson, 1893	F	H	L	M	NH	NL	T	W	Apr–Jul	1902	2023	
Andrena (*Ptilandrena*) *algida* Smith, 1853[3]	F	H	L		NH		T		Apr–May	<=1960*/1962	2009	
Andrena (*Ptilandrena*) *distans* Provancher, 1888	F	H	L		NH	NL	T	W	May–Jun	1906	2023	
Andrena (*Ptilandrena*) *erigeniae* Robertson, 1891	F	H	L	M					Apr–May	1966	2015	
Andrena (*Ptilandrena*) *nigrihirta* (Ashmead, 1890) [3]			L						May	1960*	**1975***	3
Andrena (*Rhacandrena*) *brevipalpis* Cockerell, 1930	F	H	L	M	NH	NL		W	Jun–Sep	1905	2007	
Andrena (*Rhacandrena*) *robertsonii* Dalla Torre, 1896	F	H	L		NH	NL	T	W	Apr–Jul	1936	2017	
Andrena (*Scaphandrena*) *arabis* Robertson, 1897	F	H	L		NH		T	W	Mar–Jun	<=1916*/1954	2016	
Andrena (*Scrapteropsis* s.l.) *alleghaniensis* Viereck, 1907[4]	F	H	L	M	NH	NL	T	W	May–Jun	1962	2023	
Andrena (*Scrapteropsis*) *ilicis* Mitchell, 1960		H							Jun	2009	2009	1
Andrena (*Scrapteropsis*) *imitatrix* Cresson, 1872	F	H	L	M	NH	NL	T	W	Mar–Jul	1903	2023	
Andrena (*Scrapteropsis*) *kalmiae* Atwood, 1934		H			NH		T		May–Jun	2017	2017	2
Andrena (*Scrapteropsis*) *morrisonella* Viereck, 1917	F	H		M					Jun–Jul	<=1960*/2001	2012	3
Andrena (*Simandrena*) *nasonii* Robertson, 1895	F	H	L	M	NH	NL	T	W	Apr–Jul	1902	2023	
Andrena (*Simandrena*) *wheeleri* Graenicher, 1904			L							<+1989*	**1989**	1
Andrena (*Taeniandrena*) *wilkella* (Kirby, 1802) [E]	F	H	L	M	NH	NL	T	W	Apr–Aug	1904	2023	
Andrena (*Thysandrena*) *bisalicis* Viereck, 1908	F	H		M	NH		T	W	Apr–Jun	1958	2013	
Andrena (*Thysandrena*) *w-scripta* Viereck, 1904	F				NH	NL	T	W	Apr–Sep	1942	2006	
Andrena (*Trachandrena*) *ceanothi* Viereck, 1917		H				NL	T	W	May–Jun	1961	2017	
Andrena (*Trachandrena*) *forbesii* Robertson, 1891		H	L		NH	NL	T	W	Apr–Jul	1904	2017	
Andrena (*Trachandrena*) *heraclei* Robertson, 1897					NH	NL			May	2003	2007	2
Andrena (*Trachandrena*) *hippotes* Robertson, 1895	F	H	L	M	NH	NL	T	W	Apr–Jul	1904	2018	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Andrena (*Trachandrena*) *miranda* Smith, 1879			L			NL		W	Jul	1905	2006	
Andrena (*Trachandrena*) *nuda* Robertson, 1891	F	H	L	M	NH	NL	T	W	May–Aug	<=1960*/1962	2023	
Andrena (*Trachandrena*) *rehni* Viereck, 1907				M	NH	NL			Jun–Jul	<=1960*/2019	2022	
Andrena (*Trachandrena*) *rugosa* Robertson, 1891	F	H	L	M	NH	NL	T	W	Mar–Jun	1914	2019	
Andrena (*Trachandrena*) *sigmundi* Cockerell, 1902	F	H	L	M	NH	NL	T		Apr–Jun	<=1904*/1915	2012	
Andrena (*Trachandrena*) *spiraeana* Robertson, 1895	F	H	L	M	NH	NL	T		May–Jul	1902	2023	
Andrena (*Trachandrena*) *virginiana* Mitchell, 1960		H	L			NL	T	W	Jul–Aug	1905	2017	
Andrena [formerly *Derandrena*] *uvulariae* Mitchell, 1960[5]		H	L			NL	T		May–Jun	2009	2019	
Andrena [formerly *Derandrena*] *ziziaeformis* Cockerell, 1908[5]		H								<=1920*	**<=1967***	2
Panurginae												
Calliopsini												
Calliopsis (*Calliopsis*) *andreniformis* Smith, 1853	F	H	L	M	NH	NL	T	W	May–Oct	1902	2023	
Calliopsis (*Verbenapis*) *nebraskensis* Crawford, 1902			L					W	Jul	1966	2013	2
Panurgini												
Panurginus potentillae (Crawford, 1916)		H							May	1962	**1962**	1
Perditini												
Perdita (*Alloperdita*) *bradleyi* Viereck, 1907		H			NH				Jun	2000	2001	
Perdita (*Alloperdita*) *novaeangliae* Viereck, 1907		H					T		Jun–Jul	1905	**1993**	
Perdita (*Perdita*) *octomaculata* (Say, 1824)	F	H	L	M	NH	NL	T	W	Jun–Oct	1905	2012	
Protandrenini												
Protandrena (*Heterosarus*) *pauper* (Cresson, 1878)					NH				Jun–Jul	1902	**1905**	2
Protandrena (*Pterosarus*) *aestivalis* (Provancher, 1882)			L				T		Aug	1905	2007	
Protandrena (*Pterosarus*) *andrenoides* (Smith, 1853)	F	H	L	M	NH	NL	T	W	Aug–Sep	1966	2020	
Protandrena (*Pterosarus*) *compositarum* (Robertson, 1893)					NH				Sep–Oct	1982	2023	
Protandrena (*Pterosarus*) *labrosa* (Robertson, 1895)	F				NH				Aug–Sep	1967	2023	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
APIDAE												
Apinae												
Anthophorini												
Anthophora (*Clisodon*) *terminalis* Cresson, 1869	F	H	L	M	NH	NL		W	May–Sep	1869	2023	
Anthophora (*Lophanthophora*) *ursina* Cresson, 1869					NH				May	1910	**1910**	1
Anthophora (*Melea*) *abrupta* Say, 1838					NH				Apr–Jun	1911	**1911**	2
Anthophora (*Melea*) *bomboides bomboides* Kirby, 1838			L						Jul	2023	2023	1
Habropoda laboriosa (Fabricius, 1804)		H			NH				Apr–Jun	1902	2022	
Apini												
Apis mellifera Linnaeus, 1758 [E]	F	H	L	M	NH	NL	T	W	Jan–Nov	1903	2023	
Bombini												
Bombus (*Bombias*) *auricomus* (Robertson, 1903)				M	NH		T		May–July	1905	2021	
Bombus (*Bombus*) *affinis* Cresson, 1863	F	H	L	M	NH	NL	T	W	Apr–Oct	1904	**1997**	
Bombus (*Bombus*) *terricola* Kirby, 1837	F	H	L		NH	NL	T		Apr–Sep	1904	2023	
Bombus (*Cullumanobombus*) *griseocollis* (De Geer, 1773)	F	H	L	M	NH	NL	T	W	Apr–Oct	1910	2023	
Bombus (*Psithyrus*) *ashtoni* (Cresson, 1864)	F	H	L		NH		T		May–Oct	1905	**1992**	
Bombus (*Psithyrus*) *citrinus* (Smith, 1854)		H	L	M	NH	NL	T	W	May–Oct	<=1863*/1904	2020	
Bombus (*Psithyrus*) *flavidus appalachiensis* Lhomme and Hines, 2021[6]			L						Jun–Jul	1911	2023	
Bombus (*Pyrobombus*) *bimaculatus* Cresson, 1863	F	H	L	M	NH	NL	T	W	Mar–Oct	1863	2023	
Bombus (*Pyrobombus*) *impatiens* Cresson, 1863	F	H	L	M	NH	NL	T	W	Apr–Nov	1863	2023	
Bombus (*Pyrobombus*) *perplexus* Cresson, 1863	F	H	L	M	NH	NL	T	W	Apr–Nov	1863	2023	
Bombus (*Pyrobombus*) *sandersoni* Franklin, 1913	F	H	L		NH	NL	T	W	Apr–Oct	1905	2023	
Bombus (*Pyrobombus*) *ternarius* Say, 1837		H	L		NH		T		May–Oct	<=1863*/1914	2021	
Bombus (*Pyrobombus*) *vagans vagans* Smith, 1854	F	H	L	M	NH	NL	T	W	Apr–Oct	<=1863*/1904	2023	
Bombus (*Subterraneobombus*) *borealis* Kirby, 1837		H	L						Jun–Aug	1932	2010	3
Bombus (*Thoracobombus*) *fervidus* (Fabricius, 1798)	F	H	L	M	NH	NL	T	W	Mar–Nov	<=1863*/1881	2023	
Bombus (*Thoracobombus*) *pensylvanicus* (De Geer, 1773)	F	H	L	M	NH	NL	T	W	Apr–Oct	1902	2006	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Emphorini												
Ptilothrix bombiformis (Cresson, 1878)	F	H		M	NH				Jul–Aug	1996	2021	
Osirini												
Epeoloides pilosulus (Cresson, 1878)	F		L		NH	NL			Jun–Jul	1911	2006	
Eucerinae												
Eucerini												
Eucera (*Synhalonia*) *atriventris* (Smith,1854)					NH		T	W	Apr–Jun	1904	2023	
Eucera (*Synhalonia*) *hamata* (Bradley, 1942)						NL			Jun	2011	2011	1
Melissodes (*Apomelissodes*) *apicatus* Lovell and Cockerell, 1906						NL	T		Jun–Jul	1974	2020	
Melissodes (*Eumelissodes*) *agilis* Cresson, 1878[7], sensu LaBerge, 1961			L		NH		T		Sep	<=1961*	**<=1961***	
Melissodes (*Eumelissodes*) *denticulatus* Smith, 1854	F	H	L	M	NH	NL	T	W	Jun–Sep	1904	2023	
Melissodes (*Eumelissodes*) *dentiventris* Smith, 1854			L		NH	NL	T		Sep	<=1904*/1933	**1933**	
Melissodes (*Eumelissodes*) *desponsus* Smith, 1854	F		L		NH	NL		W	Jul–Sep	1905	2023	
Melissodes (*Eumelissodes*) *druriellus* (Kirby, 1802)	F	H	L		NH	NL	T	W	Aug–Sep	1904	2022	
Melissodes (*Eumelissodes*) *illatus* Lovell and Cockerell, 1906		H						W	Jul	<=1962*/1966	2013	
Melissodes (*Eumelissodes*) *subillatus* LaBerge, 1961	F		L		NH	NL		W	Jun–Jul	<=1961*/2004	2023	
Melissodes (*Eumelissodes*) *trinodis* Robertson, 1901			L		NH		T		Jul–Sep	1916	2022	
Melissodes (*Melissodes*) *bimaculatus bimaculatus* (Lepeletier, 1825)	F	H	L	M	NH	NL	T	W	May–Sep	1906	2023	
Peponapis (*Peponapis*) *pruinosa* (Say, 1837) [8]	F	H	L	M	NH	NL	T	W	Jun–Sep	1905	2023	
Nomadinae												
Ammobatoidini												
Holcopasites calliopsidis calliopsidis (Linsley, 1943)		H			NH	NL		W	Jun–Jul	2009	2022	
Holcopasites illinoiensis (Robertson, 1891)					NH				Jun–Jul	1905	**1919**	2
Epeolini												
Epeolus autumnalis Robertson, 1902			L			NL			Sep	1901	2012	2
Epeolus bifasciatus Cresson, 1864	F				NH				Aug	1922	2021	2
Epeolus inornatus Onuferko, 2018							T	W	Jul	1976	2023	3

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Epeolus lectoides Robertson, 1901						NL			Aug	2009	2009	1
Epeolus pusillus Cresson, 1864	F				NH	NL	T		Aug–Sep	1905	2012	
Epeolus scutellaris Say, 1824		H	L	M	NH	NL	T	W	Jun–Oct	1904	2020	
Triepeolus cressonii (Robertson, 1897)						NL			Jul–Aug	<=1962*/2018	2019	3
Triepeolus donatus (Smith, 1854)			L		NH	NL	T		Jul–Aug	<=1864*/1905	2010	
Triepeolus helianthi (Robertson, 1897)	F	H							Aug	1951	2017	2
Triepeolus lunatus (Say, 1824)	F	H	L		NH	NL			Jul–Aug	<=1864*/1901	2021	
Triepeolus michiganensis Mitchell, 1962			L						Jul–Aug	1921	**1922**	2
Triepeolus obliteratus Graenicher, 1911							T	W	Jul	2009	2013	2
Triepeolus pectoralis (Robertson, 1897)	F	H				NL			Jul–Sep	1925	2012	4
Triepeolus remigatus (Fabricius, 1804)			L		NH				Jul–Aug	2011	2023	
Nomadini												
Nomada armatella Cockerell, 1903					NH				May	2010	2010	1
Nomada articulata Smith, 1854	F	H	L	M	NH	NL	T	W	May–Aug	<=1863*/1904	2023	
Nomada australis Mitchell, 1962		H		M	NH	NL	T		May–Jun	2006	2017	
Nomada bella Cresson, 1863	F	H		M	NH	NL	T		Mar–Jul	1863	2012	
Nomada bethunei Cockerell, 1903	F		L	M	NH				May–Jun	1967	2019	
Nomada ceanothi Cockerell, 1907					NH				Jun	2002	2021	2
Nomada composita Mitchell, 1962		H	L	M		NL			May–Jun	1962	2019	
Nomada cressonii Robertson, 1893	F	H	L	M	NH	NL	T	W	Mar–Jul	1905	2023	
Nomada cuneata (Robertson, 1903), sensu Mitchell, 1962	F	H	L	M	NH		T		May–Jul	1938	2023	
Nomada denticulata Robertson, 1902	F	H	L	M	NH	NL		W	May–Jun	1926	2023	
Nomada depressa Cresson, 1863		H	L	M	NH	NL	T		May–Jul	2005	2019	
Nomada electa Cresson, 1863	F								Sep	1863*	2002	2
Nomada electella Cockerell, 1903						NL			Jul	1993	**1993**	1
Nomada florilega Lovell and Cockerell, 1905			L							1962*	**1962***	1
Nomada gracilis Cresson, 1863	F	H	L		NH	NL			Mar–Jul	1986	2023	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Nomada illinoensis Robertson, 1900	F	H		M	NH	NL			Apr–Jul	1905	2013	
Nomada imbricata Smith, 1854	F		L	M	NH	NL			Apr–Jul	1904	2021	
Nomada integerrima Dalla and Torre, 1896										1962*	**1962***	1
Nomada lehighensis Cockerell, 1903	F	H			NH	NL	T		Mar–May	1913	2019	
Nomada lepida Cresson, 1863, sensu Mitchell, 1962		H		M	NH	NL	T	W	Apr–Jun	<=1962*/2000	2023	
Nomada luteola Olivier, 1812	F				NH				May–Jul	<=1863*/1954	2010	
Nomada luteoloides Robertson, 1895	F	H	L	M	NH	NL	T	W	Apr–Jun	1914	2023	
Nomada maculata Cresson, 1863	F	H	L	M	NH	NL	T	W	Apr–Jun	1862	2023	
Nomada obliterata Cresson, 1863			L						Jun	1926	**1926**	1
Nomada ovata (Robertson, 1903)	F	H		M	NH	NL	T	W	Apr–Jun	1931	2017	
Nomada parva Robertson, 1900		H			NH	NL			Jun	2005	2017	
Nomada perplexa Cresson, 1863		H	L		NH	NL	T	W	May–Jul	1863	2023	
Nomada placida Cresson, 1863					NH				Aug	2023	2023	1
Nomada pygmaea Cresson, 1863	F	H	L	M	NH	NL	T	W	Apr–Jul	1863	2023	
Nomada sayi Robertson, 1893	F	H			NH				Apr–May	<=1905*/1968	2005	
Nomada tiftonensis Cockerell, 1903			L	M					Aug	2011	2011	2
Nomada townesi Mitchell, 1962						NL			Apr	2009	2009	1
Nomada vicina Cresson, 1863	F	H	L	M	NH		T		Aug–Oct	<=1863*/1904	2023	
Nomada vincta Say, 1837					NH				Aug	1971	**1971**	1
Nomada xanthura Cockerell, 1908	F		L			NL			Apr–Jun	1968	2009	
Xylocopinae												
Ceratinini												
Ceratina (*Zadontomerus*) *calcarata* Robertson, 1900	F	H	L	M	NH	NL	T	W	Mar–Oct	1902	2023	
Ceratina (*Zadontomerus*) *dupla* Say, 1837	F	H	L	M	NH	NL	T	W	Mar–Oct	<=1864*/1962	2023	
Ceratina (*Zadontomerus*) *mikmaqi* Rehan and Sheffield, 2011	F	H	L	M	NH	NL	T	W	Apr–Oct	1958	2023	
Ceratina (*Zadontomerus*) *strenua* Smith, 1879	F	H		M	NH	NL	T		Mar–Nov	1906	2023	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Xylocopini												
Xylocopa (*Xylocopoides*) *virginica virginica* (Linnaeus, 1771)	F	H	L	M	NH	NL	T	W	Mar–Oct	1865	2023	
COLLETIDAE												
Colletinae												
Colletes aestivalis Patton, 1879					NH				Jun–Jul	<=1879*	**1879***	1
Colletes americanus Cresson, 1868	F	H	L		NH	NL	T		Aug–Oct	1919	2012	
Colletes banksi Swenk, 1908						NL			Jun	2012	2012	2
Colletes compactus compactus Cresson, 1868	F		L	M	NH	NL	T		Aug–Oct	1868	2021	
Colletes inaequalis Say, 1837	F	H	L	M	NH	NL	T	W	Mar–Jun	1904	2023	
Colletes latitarsis Robertson, 1891			L		NH				Jul–Aug	1972	2021	
Colletes productus Robertson, 1891	F		L			NL	T		Jun–Jul	1905	2007	
Colletes simulans armatus Patton, 1879	F		L	M	NH	NL	T	W	Aug–Oct	1919	2023	
Colletes solidaginis Swenk, 1906		H				NL	T		Jul–Aug	1973	2007	
Colletes speculiferus Cockerell, 1927						NL			Jul	2006	2006	1
Colletes thoracicus Smith, 1853	F	H		M	NH	NL	T		May–Jul	1963	2023	
Colletes validus Cresson, 1868					NH	NL	T	W	Apr–May	1904	2023	
Hylaeinae												
Hylaeus (*Cephalylaeus*) *basalis* (Smith, 1853)		H							Jun	1966	**1966**	1
Hylaeus (*Hylaeus*) *annulatus* (Linnaeus, 1758)		H	L			NL	T		May–Aug	1905	2007	
Hylaeus (*Hylaeus*) *leptocephalus* (Morawitz, 1871 [“1870”])[E]	F	H			NH	NL			Jun–Sep	1966	2020	
Hylaeus (*Hylaeus*) *mesillae cressonii* (Cockerell, 1907)	F	H	L	M	NH	NL	T	W	May–Nov	1904	2023	
Hylaeus (*Hylaeus*) *saniculae* (Robertson, 1896)		H					T		Jun–Sep	1972	2017	3
Hylaeus (*Metziella*) *sparsus* (Cresson, 1869)	F				NH	NL			May–Jun	1933	2012	4
Hylaeus (*Prosopis*) aff. *nelumbonis* (Robertson, 1890)					NH				Jul–Sep	2011	2012	
Hylaeus (*Prosopis*) *affinis* (Smith, 1853)	F	H	L	M	NH	NL	T	W	May–Sep	1905	2023	
Hylaeus (*Prosopis*) *illinoisensis* (Robertson, 1896)					NH				Aug	2012	2012	1
Hylaeus (*Prosopis*) *modestus modestus* Say, 1837	F	H	L	M	NH	NL	T	W	May–Sep	1902	2023	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Hylaeus (*Prosopis*) *schwarzii* (Cockerell, 1896)					NH				Jun–Sep	2002	2012	
HALICTIDAE												
Halictinae												
Augochlorini												
Augochlora (*Augochlora*) *pura pura* (Say, 1837)	F	H	L	M	NH	NL	T	W	Apr–Nov	1904	2023	
Augochlorella aurata (Smith, 1853)	F	H	L	M	NH	NL	T	W	Mar–Nov	1860	2023	
Augochloropsis (*Paraugochloropsis*) *viridula* (Smith, 1853)	F	H	L	M	NH	NL	T	W	Apr–Oct	1904	2023	
Halictini												
Agapostemon (*Agapostemon*) *sericeus* (Forster, 1771)	F	H	L	M	NH	NL	T	W	Apr–Oct	1902	2023	
Agapostemon (*Agapostemon*) *splendens* (Lepeletier, 1841)		H		M	NH	NL	T	W	May–Oct	<=1916*/1918	2018	
Agapostemon (*Agapostemon*) *subtilior* Cockerell 1898		H	L	M	NH	NL	T	W	Apr–Oct	1920	2023	
Agapostemon (*Agapostemon*) *virescens* (Fabricius, 1775)	F	H	L	M	NH	NL	T	W	Mar–Nov	1864	2023	
Halictus (*Nealictus*) *parallelus* Say, 1837	F	H	L	M	NH	NL	T	W	Apr–Oct	1966	2023	
Halictus (*Odontalictus*) *ligatus* Say, 1837	F	H	L	M	NH	NL	T	W	Apr–Nov	1903	2023	
Halictus (*Protohalictus*) *rubicundus* (Christ, 1791)	F	H	L	M	NH	NL	T	W	Apr–Oct	1902	2023	
Halictus (*Seladonia*) *confusus confusus* Smith, 1853	F	H	L	M	NH	NL	T	W	Mar–Nov	1904	2023	
Lasioglossum (*Dialictus*) *admirandum* (Sandhouse, 1924)		H			NH			W	May–Aug	<=1960*/2005	2013	
Lasioglossum (*Dialictus*) *albipenne* (Robertson, 1890)	F				NH			W	Jun–Aug	<=1905*/1911	2013	
Lasioglossum (*Dialictus*) *anomalum* (Robertson, 1892)	F	H		M	NH				Apr–Sep	1956	2017	
Lasioglossum (*Dialictus*) *bruneri* (Crawford, 1902)	F	H	L	M	NH	NL	T	W	Apr–Oct	1956	2023	
Lasioglossum (*Dialictus*) *cattellae* (Ellis, 1913)	F											1
Lasioglossum (*Dialictus*) *coeruleum* (Robertson, 1893)	F	H	L	M	NH	NL	T	W	Apr–Oct	<=1903*/1932	2023	
Lasioglossum (*Dialictus*) *coreopsis* (Robertson, 1902)					NH	NL		W	Jun–Aug	2004	2023	
Lasioglossum (*Dialictus*) *cressonii* (Robertson, 1890)	F	H	L	M	NH	NL	T	W	Apr–Nov	1890	2023	
Lasioglossum (*Dialictus*) *ellisiae* (Sandhouse, 1924)		H						W	May–Jul	2016	2023	
Lasioglossum (*Dialictus*) *ephialtum* Gibbs, 2010	F	H	L	M	NH	NL		W	Apr–Oct	1946	2017	
Lasioglossum (*Dialictus*) *fattigi* (Mitchell, 1960)								W	May–Jul	2023	2023	3

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Lasioglossum (*Dialictus*) *foveolatum* (Robertson, 1902)					NH				May	2000	2000	1
Lasioglossum (*Dialictus*) g*eorgeickworti* Gibbs, 2011					NH		T		Apr–Aug	1971	2012	
Lasioglossum (*Dialictus*) *gotham* Gibbs, 2011	F		L	M	NH				Apr–Sep	2004	2016	
Lasioglossum (*Dialictus*) *heterognathus* (Mitchell, 1960)	F	H	L	M	NH		T		Apr–Oct	1929	2017	
Lasioglossum (*Dialictus*) *hitchensi* Gibbs, 2012		H	L	M	NH	NL	T		Apr–Sep	1972	2017	
Lasioglossum (*Dialictus*) *illinoense* (Robertson, 1892)		H		M	NH	NL			May–Oct	1977	2012	
Lasioglossum (*Dialictus*) *imitatum* (Smith, 1853)	F	H	L	M	NH	NL	T	W	Apr–Oct	1891	2023	
Lasioglossum (*Dialictus*) *katherineae* Gibbs, 2011		H			NH		T		May–Sep	2009	2017	
Lasioglossum (*Dialictus*) *laevissimum* (Smith, 1853)		H			NH	NL			May–Aug	<=1960*/1967	2016	
Lasioglossum (*Dialictus*) *leucocomus* (Lovell, 1908)	F	H	L	M	NH	NL	T	W	Apr–Oct	1904	2023	
Lasioglossum (*Dialictus*) *lineatulum* (Crawford, 1906)	F	H	L	M	NH	NL	T		Apr–Oct	1937	2017	
Lasioglossum (*Dialictus*) *lionotus* (Sandhouse, 1923)					NH				Aug–Sep	2004	2010	2
Lasioglossum (*Dialictus*) *marinum* (Crawford, 1904)	F				NH	NL			Apr–Sep	<=1920*/2004	2023	
Lasioglossum (*Dialictus*) *michiganense* (Mitchell, 1960)					NH				May–Sep	2011	2012	4
Lasioglossum (*Dialictus*) *nigroviride* (Graenicher, 1911)	F	H	L	M	NH	NL	T	W	May–Sep	1942	2017	
Lasioglossum (*Dialictus*) *oblongum* (Lovell, 1905)	F	H	L	M	NH	NL	T		Apr–Sep	<=1938*/1960	2017	
Lasioglossum (*Dialictus*) *obscurum* (Robertson, 1892)	F		L		NH			W	May–Aug	<=1938*/2009	2023	
Lasioglossum (*Dialictus*) *oceanicum* (Cockerell, 1916)	F	H	L	M	NH	NL	T	W	Apr–Oct	<=1916*/1932	2019	
Lasioglossum (*Dialictus*) *perpunctatum* (Ellis, 1913)					NH			W	Jun–Aug	1942	2013	
Lasioglossum (*Dialictus*) *pilosum* (Smith, 1853)	F	H	L	M	NH	NL	T	W	Apr–Oct	1929	2023	
Lasioglossum (*Dialictus*) *planatum* (Lovell, 1905)	F	H					T		Jun	2001	2017	
Lasioglossum (*Dialictus*) *platyparius* (Robertson, 1895)			L		NH				Apr–Aug	2004	2012	
Lasioglossum (*Dialictus*) *pruinosum* (Robertson, 1892)		H			NH			W	May–Aug	1915	2023	
Lasioglossum (*Dialictus*) *smilacinae* (Robertson, 1897)		H	L	M	NH	NL	T		Apr–Aug	1933	2013	
Lasioglossum (*Dialictus*) *subviridatum* (Cockerell, 1938)		H		M	NH		T		Apr–Aug	1915	2017	
Lasioglossum (*Dialictus*) *taylorae* Gibbs, 2010					NH		T		Jun–Jul	1959	2017	
Lasioglossum (*Dialictus*) *tegulare* (Robertson, 1890)	F	H	L	M	NH	NL	T	W	Apr–Oct	1878	2023	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Lasioglossum (*Dialictus*) *timothyi* Gibbs, 2010					NH		T		Apr–Jul	2016	2017	4
Lasioglossum (*Dialictus*) *trigeminum* Gibbs, 2011					NH				Jul	2021	2021	1
Lasioglossum (*Dialictus*) *versans* (Lovell, 1905)	F	H	L	M	NH	NL	T	W	Apr–Oct	1911	2017	
Lasioglossum (*Dialictus*) *versatum* (Robertson, 1902)	F	H	L	M	NH	NL	T	W	Apr–Oct	<=1916*/1935	2023	
Lasioglossum (*Dialictus*) *vierecki* (Crawford, 1904)	F	H			NH	NL	T	W	May–Sep	<=1904*/1937	2023	
Lasioglossum (*Dialictus*) *viridatum* (Lovell, 1905)	F				NH		T	W	May–Sep	1919	2012	
Lasioglossum (*Dialictus*) *weemsi* (Mitchell, 1960)	F	H	L	M	NH	NL		W	Apr–Sep	2004	2019	
Lasioglossum (*Dialictus*) *zephyrus* (Smith, 1853)	F	H	L	M	NH			W	Apr–Oct	<=1916*/1925	2014	
Lasioglossum (*Evylaeus*) *cinctipes* (Provancher, 1888)	F	H	L	M	NH	NL	T	W	Apr–Aug	<=1916*/1932	2018	
Lasioglossum (*Hemihalictus*) *birkmanni* (Crawford, 1906)	F	H		M	NH	NL		W	May–Jul	<=1916*/1928	2006	
Lasioglossum (*Hemihalictus*) *foxii* (Robertson, 1895)	F	H	L	M	NH	NL	T	W	Mar–Jul	<=1916*/1934	2019	
Lasioglossum (*Hemihalictus*) *inconditum* (Cockerell, 1916)			L									
Lasioglossum (*Hemihalictus*) *macoupinense* (Robertson, 1895)		H	L		NH				Jun–Aug	1879	2017	
Lasioglossum (*Hemihalictus*) *nelumbonis* (Robertson, 1890)					NH	NL	T		May–Oct	1975	2019	
Lasioglossum (*Hemihalictus*) *pectinatum* (Robertson, 1890)			L						Jul	<=1906*/2020	2020	
Lasioglossum (*Hemihalictus*) *pectorale* (Smith, 1853)	F	H	L	M	NH	NL	T	W	Apr–Oct	<=1905*/1933	2023	
Lasioglossum (*Lasioglossum*) *acuminatum* McGinley, 1986		H	L	M	NH	NL	T		May–Oct	1971	2017	
Lasioglossum (*Lasioglossum*) *athabascense* (Sandhouse, 1933)			L				T			1928	**1986***	3
Lasioglossum (*Lasioglossum*) *coriaceum* (Smith, 1853)	F	H	L	M	NH	NL	T	W	May–Nov	<=1916*/1925	2023	
Lasioglossum (*Lasioglossum*) *fuscipenne* (Smith, 1853)	F	H		M	NH	NL	T		May–Oct	1951	2022	
Lasioglossum (*Leuchalictus*) *leucozonium leucozonium* (Schrank, 1781) [E]	F	H	L	M	NH	NL	T	W	Apr–Oct	1962	2019	
Lasioglossum (*Leuchalictus*) *zonulus zonulus* (Smith, 1848) [E]	F		L						Jun–Jul	2009	2019	
Lasioglossum (*Sphecodogastra*) *oenotherae* (Stevens, 1920)	F	H		M	NH				May–Aug	<=1960*/2007	2018	
Lasioglossum (*Sphecodogastra*) *quebecense* (Crawford, 1907)	F	H	L	M	NH	NL	T	W	Apr–Oct	1933	2023	
Lasioglossum (*Sphecodogastra*) *truncatum* (Robertson, 1901)	F	H	L		NH		T	W	Apr–Aug	<=1916*/1919	**1933**	
Sphecodes aroniae Mitchell, 1960	F	H	L	M	NH	NL	T		May–Jul	1966	2023	
Sphecodes atlantis Mitchell, 1956		H	L		NH	NL	T	W	May–Aug	1904	2016	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Sphecodes autumnalis Mitchell, 1956		H					T		Aug–Sep	<=1960*/1972	2004	
Sphecodes banksii Lovell, 1909		H				NL			May–Jul	<=1960*/2007	2016	
Sphecodes clematidis Robertson, 1897			L			NL			Jun	<=1960*/1968	2015	
Sphecodes confertus Say, 1837		H	L		NH	NL	T		Mar–Sep	<=1916*/1933	2019	
Sphecodes coronus Mitchell, 1956	F	H	L		NH	NL	T	W	Apr–Sep	<=1960*/1965	2018	
Sphecodes cressonii (Robertson, 1903)		H	L	M	NH	NL		W	Apr–Oct	1919	2016	
Sphecodes davisii Robertson, 1897		H	L		NH	NL	T		May–Oct	1933	2023	
Sphecodes dichrous Smith, 1853		H	L	M	NH	NL	T	W	May–Aug	<=1916*/1920	2017	
Sphecodes fattigi Mitchell, 1956			L				T		May–Sep	2012	2014	4
Sphecodes galerus Lovell and Cockerell, 1907										<=1960*	**1960***	1
Sphecodes heraclei heraclei Robertson, 1897	F	H	L	M	NH	NL			May–Aug	<=1960*/1962	2021	
Sphecodes hydrangeae Mitchell, 1956			L							1919	**1919**	2
Sphecodes illinoensis (Robertson, 1903)		H				NL			May–Oct	<=1960*/2000	2016	
Sphecodes johnsonii Lovell, 1909	F	H	L		NH	NL	T	W	May–Oct	1930	2022	
Sphecodes levis Lovell and Cockerell, 1907			L			NL			May–Jul	<=1960*/1968	2009	
Sphecodes mandibularis Cresson, 1872		H	L	M	NH	NL			May	<=1916*/2006	2016	
Sphecodes minor Robertson, 1898		H			NH		T		Jun–Aug	1905	2009	
Sphecodes nigricorpus Mitchell, 1956			**L**							1922	**1922**	1
Sphecodes pimpinellae Robertson, 1900		H		M	NH	NL			May–Sep	1919	2017	
Sphecodes prosphorus Lovell and Cockerell, 1907										<=1960*	**<=1960***	1
Sphecodes ranunculi Robertson, 1897	F	H	L		NH	NL	T	W	May–Aug	1913	2022	
Sphecodes townesi Mitchell, 1956			L					W	Jun	1936	**1968**	3
Rophitinae												
Rophitini												
Dufourea monardae (Viereck, 1924)			L						Jul–Aug	2009	2017	
Dufourea novaeangliae (Robertson, 1897)		H	L	M	NH		T	W	Jul–Aug	1894	2023	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
MEGACHILIDAE												
Megachilinae												
Anthidini												
Anthidiellum (*Loyolanthidium*) *notatum notatum* (Latreille, 1809)		H		M	NH	NL	T	W	May–Aug	1904	2023	
Anthidium (*Anthidium*) *manicatum manicatum* (Linnaeus, 1758) [E]	F	H	L	M	NH	NL	T	W	May–Oct	2002	2023	
Anthidium (*Proanthidium*) *oblongatum oblongatum* (Illiger, 1806) [E]	F	H	L	M	NH	NL	T	W	May–Sep	1996	2023	
Dianthidium (*Dianthidium*) *simile* (Cresson, 1864)										1864*	**1864***	1
Pseudoanthidium (*Pseudoanthidium*) *nanum* (Mocsáry, 1881) [E]	F	H			NH				Jun–Aug	2019	2023	
Stelis (*Dolichostelis*) *louisae* Cockerell, 1911	F	H	L	M	NH	NL	T	W	Jul–Sep	1971	2023	
Stelis (*Stelis*) *coarctatus* Crawford, 1916					NH				Jun	2018	2018	1
Stelis (*Stelis*) *foederalis* Smith, 1854							T					1
Stelis (*Stelis*) *labiata* (Provancher, 1888)										<=1962*	<=**1962***	1
Stelis (*Stelis*) *lateralis* Cresson, 1864	F	H					T	W	Jun–Jul	1966	2023	
Megachilini												
Coelioxys (*Allocoelioxys*) *coturnix* Pérez, 1884 [E]		H		M					Jul–Aug	2017	2020	2
Coelioxys (*Boreocoelioxys*) *moestus* Cresson, 1864					NH				Sep	1864	2018	2
Coelioxys (*Boreocoelioxys*) *octodentatus* Say, 1824	F	H	L	M	NH	NL	T	W	May–Sep	1864	2023	
Coelioxys (*Boreocoelioxys*) *porterae* Cockerell, 1900				M	NH	NL			May–Jul	1905	2015	
Coelioxys (*Boreocoelioxys*) *rufitarsis* Smith, 1854	F	H	L		NH	NL		W	Jul–Oct	1902	2009	
Coelioxys (*Boreocoelioxys*) *sayi* Robertson, 1897	F	H	L	M	NH	NL	T		May–Oct	1905	2020	
Coelioxys (*Coelioxys*) *sodalis* Cresson, 1878		H		M					May–Jun	2007	2016	3
Coelioxys (*Cyrtocoelioxys*) *modestus* Smith, 1854	F	H	L		NH	NL	T	W	Jul–Sep	1972	2023	
Coelioxys (*Paracoelioxys*) *funerarius* Smith, 1854	F			M	NH				Aug	1931	**1933**	3
Coelioxys (*Synocoelioxys*) *alternatus* Say, 1837				M					Aug	2017	2017	1
Coelioxys (*Synocoelioxys*) *hunteri* Crawford, 1914					NH				Jul	2009	2009	1
Coelioxys (*Xerocoelioxys*) *immaculatus* Cockerell, 1912						NL			May–Jun	2012	2012	2
Megachile (*Addendella*) *addenda* Cresson, 1878		H	L	M	NH	NL	T		Apr–Sep	1913	2018	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Megachile (*Callomegachile*) *sculpturalis* Smith, 1853 [E]	F	H	L	M	NH	NL	T	W	Jun–Sep	2000	2023	
Megachile (*Chelostomoides*) *campanulae* (Robertson, 1903)	F	H	L	M	NH	NL	T	W	Jun–Sep	1933	2023	
Megachile (*Eutricharaea*) *apicalis* Spinola, 1808 [E]					NH				Aug	2009	2009	1
Megachile (*Eutricharaea*) *rotundata* (Fabricius, 1787) [E]	F	H	L	M	NH	NL	T	W	Apr–Sep	1966	2023	
Megachile (*Litomegachile*) *brevis* Say, 1837	F	H	L	M	NH	NL	T	W	May–Oct	1901	2023	
Megachile (*Litomegachile*) *mendica* Cresson, 1878	F	H	L	M	NH	NL	T	W	May–Oct	1904	2023	
Megachile (*Litomegachile*) *texana* Cresson, 1878		H	L	M	NH	NL	T	W	Jun–Sep	1914	2023	
Megachile (*Megachile*) *centuncularis* (Linnaeus, 1758) [E]	F	H	L		NH	NL			Jun–Oct	1904	2021	
Megachile (*Megachile*) *montivaga* Cresson, 1878	F	H	L	M	NH	NL	T		May–Sep	1937	2019	
Megachile (*Megachile*) *relativa* Cresson, 1878	F	H	L	M			T	W	May–Sep	1905	2018	
Megachile (*Sayapis*) *frugalis frugalis* Cresson, 1872					NH				Jun–Jul	1980	2023	3
Megachile (*Sayapis*) *inimica sayi* Cresson, 1872	F	H	L	M	NH		T	W	Jul–Sep	1967	2018	
Megachile (*Sayapis*) *pugnata pugnata* Say, 1837	F	H	L	M	NH				Jun–Aug	1933	2023	
Megachile (*Xanthosarus*) *frigida frigida* Smith, 1853	F	H			NH	NL			May–Sep	1904	2023	
Megachile (*Xanthosarus*) *gemula gemula* Cresson, 1878	F	H	L	M	NH	NL	T		May–Sep	1914	2023	
Megachile (*Xanthosarus*) *latimanus* Say, 1823	F	H	L		NH	NL	T	W	Jun–Oct	1901	2023	
Megachile (*Xanthosarus*) *melanophaea melanophaea* Smith, 1853			L						May	1938*/2007	2007	2
Megachile (*Xanthosarus*) *mucida* Cresson, 1878				M	NH	NL			May–Jun	1974	2018	
Osmiini												
Chelostoma (*Gyrodromella*) *rapunculi* (Lepeletier, 1841) [E]		H							Jul	2007	2007	1
Chelostoma (*Prochelostoma*) *philadelphi* (Robertson, 1891)	F		L		NH			W	May–Jul	1935	2023	
Heriades (*Neotrypetes*) *carinata* Cresson, 1864	F	H	L		NH		T	W	Jun–Aug	1864	2023	
Heriades (*Neotrypetes*) *variolosa variolosa* (Cresson, 1872)			L				T		Jul	1976	2007	
Hoplitis (*Alcidamea*) *pilosifrons* (Cresson, 1864)	F	H	L	M	NH	NL	T	W	May–Jul	1864	2023	
Hoplitis (*Alcidamea*) *producta producta* (Cresson, 1864)	F	H	L	M	NH	NL	T	W	May–Jul	1905	2023	
Hoplitis (*Alcidamea*) *spoliata* (Provancher, 1888)		H	L	M	NH	NL	T	W	May–Aug	1864	2023	
Hoplitis (*Alcidamea*) *truncata* (Cresson, 1878)					NH			W	Jun–Aug	1902	**1973**	3

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Hoplitis (*Robertsonella*) *simplex* (Cresson, 1864)		H							May	1864	**1864**	1
Osmia (*Diceratosmia*) *conjuncta* Cresson, 1864	F						T		Apr–Jul	1864	**1934**	4
Osmia (*Helicosmia*) *caerulescens* (Linnaeus, 1758) [E]				M	NH		T		May–Aug	1905	**1975**	
Osmia (*Helicosmia*) *georgica* Cresson, 1878	F	H	L	M	NH	NL			May–Jul	1940	2023	
Osmia (*Melanosmia*) *albiventris* Cresson, 1864		H			NH	NL	T		May–Jun	1864	2017	
Osmia (*Melanosmia*) *atriventris* Cresson, 1864	F	H	L	M	NH	NL	T	W	Apr–Aug	1864	2023	
Osmia (*Melanosmia*) *bucephala* Cresson, 1864	F	H	L	M	NH	NL	T	W	Apr–Jul	1951	2023	
Osmia (*Melanosmia*) *collinsiae* Robertson, 1905			L			NL	T		May–Jul	2002	2017	
Osmia (*Melanosmia*) *distincta* Cresson, 1864	F	H	L	M	NH	NL	T	W	May–Aug	1864	2023	
Osmia (*Melanosmia*) *inermis* Zetterstedt, 1838										<=1962*	**<=1962***	1
Osmia (*Melanosmia*) *inspergens* Lovell and Cockerell, 1907		H			NH	NL	T		May–Jul	1923	2019	
Osmia (*Melanosmia*) *proxima* Cresson, 1864						NL			May	2007	2012	2
Osmia (*Melanosmia*) *pumila* Cresson, 1864	F	H	L	M	NH	NL	T	W	Mar–Jul	<=1905*/1924	2023	
Osmia (*Melanosmia*) *simillima* Smith, 1853		H	L		NH	NL	T		Jun–Jul	<=1916*/1941	2017	
Osmia (*Melanosmia*) *tersula* Cockerell, 1912			L						Jun	2007	2007	1
Osmia (*Melanosmia*) *virga* Sandhouse, 1939		H	L			NL	T	W	May–Jul	<=1962*/2006	2023	
Osmia (*Osmia*) *cornifrons* (Radoszkowski, 1887) [E]	F	H	L	M	NH	NL	T	W	Mar–Jun	2003	2023	
Osmia (*Osmia*) *lignaria lignaria* Say, 1837	F		L		NH				Apr–May	1903	2017	
Osmia (Osmia) *taurus* Smith, 1873 [E]	F	H	L		NH	NL	T	W	Apr–May	2009	2023	
MELITTIDAE												
Melittinae												
Macropidini												
Macropis (*Macropis*) *ciliata* Patton, 1880		H			NH	NL			Jun	1902	2017	
Macropis (*Macropis*) *nuda* (Provancher, 1882)		H	L		NH				Jun–Jul	1921	2007	
Macropis (*Macropis*) *patellata* Patton, 1880			L		NH			W	Jul–Aug	1904	**1918**	

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TABLE 2. (Continued)

FAMILY/Subfamily/Tribe/*Genus*/*Subgenus*/*species*	FF	H	L	M	NH	NL	T	W	Earliest to Latest Month	Earliest Year	Last Year	No. of records (if <5)
Melittini												
Melitta (*Cilissa*) *americana* (Smith, 1853)				M		NL			Jul–Jul	1985	2009	
Melitta (*Cilissa*) *melittoides* (Viereck, 1909)			L			NL	T		Jun–Jul	1921	2017	
County Totals	206	246	233	176	284	226	216	168				

[1]Subgenus *Tylandrena* is treated as a junior synonym of subgenus *Melandrena* (Pisanty *et al*. 2022).

[2]Subgenus *Opandrena* has been reinstated as a valid subgenus distinct from *Holandrena* (Pisanty *et al*. 2022) although it was retained in *Holandrena* by Gibbs *et al.* (2023).

[3]All New World *Euandrena* have been reassigned to subgenus *Ptilandrena* (Pisanty *et al*. 2022).

[4]The *alleghaniensis* species group of subgenus *Scrapteropsis* is closer to subgenus *Rhaphandrena* than to typical *Scrapteropsis* (Pisanty *et al.* 2022) and *A. alleghaneinsis* will likely be reassigned to that subgenus or a new subgenus.

[5]*Andrena ziziaeformis* was removed from subgenus *Derandrena* to *incertae sedis* within *Andrena* by Pisanty *et al*. (2022). *Andrena uvulariae* is likely related to *A. ziziaeformis* and is also treated as *incertae sedis.*

[6]*Bombus* (*Psithyrus*) *fernaldae* (Franklin) was recently synonymized with *B.* (*Psithyrus*) *flavidus* Eversmann, and eastern populations in North America have the designated subspecies *B.* (*Psithyrus*) *flavidus appalachiensis* Lhomme and Hines (Lhomme *et al.* 2022).

[7]*Melissodes agilis* reported based on the revision by LaBerge, but we think its status in Connecticut and vicinity requires reevaluation due to potential for confusion with *M. trinodis* (especially with males of that species possessing pale markings on the mandible).

[8] We retain the genus *Peponapis* as a genus pending improved resolution of the phylogenetic relationships among *Eucera* sensu lato (especially *Tetraloniella* sensu lato including Nearctic *Xenoglossodes*). Newly available subtribes (Freitas *et al*. 2023) can helpfully group related genera (sensu Michener 2007).

Taxonomic updates above follow Veit *et al.* 2022[“2021”].

In Appendix 1, placements in formal species groups are indicated within parentheses after the species name where relevant, such as for the diverse genera that lack subgenera such as *Colletes*, *Sphecodes*, and *Nomada*. Species group names employed follow a variety of published sources (Alexander 1990; Donovan 1977; Gibbs 2011; Hurd 1979; Ribble 1974; Scott *et al*. 2011; Stephen 1954). Many of these groups are also used online at Bugguide, using the "No taxon" option, and at iNaturalist, as "complexes"). They are useful for conveying relationships and suggesting similar species to compare when making identifications. Although most groups and corresponding subgenera (cf. Hurd, 1979) are distinctive and are monophyletic as far as we know, the *ruficornis* group of *Nomada* corresponding to *Nomada* (*Nomada*) sensu lato is heterogeneous and likely paraphyletic (Alexander 1990; Odanaka *et al.* 2022). A portion of the *ruficornis* group recognized as a separate subgenus *Heminomada* by some authors (e.g., Hurd, 1979) was reinstated by Straka *et al.* (2024) as a separate subgenus. However, its North American members may not comprise a single clade (see below) suggesting that the largely color-based subgeneric placements published by Hurd (1979) may not be reliable. Despite these complexities, the *ruficornis* group still has some utility to annotate "typical" *Nomada* as such, most of which are cleptoparasites of *Andrena.* Within the *ruficornis* group, a *bella* subgroup is recognized. This corresponds to *Nomada* (*Gnathias*) Robertson (Hurd 1979; Mitchell 1962; Viereck *et al*. 1916) and includes those species with bidentate mandibles. Seven species sampled by Odanaka *et al.* (2022) comprise a monophyletic group. Straka *et al.* (2024) reinstated subgenera for *Nomada*, but this paper focused on Western Palearctic taxa, and some placements of Nearctic species especially those in their subgenus *Heminomada* remain unclear. Furthermore, an earlier paper with additional Nearctic taxa (Odanaka *et al.* 2022) found that *N. armatella* (as reported by them) and *N. depressa*, both included in *Nomada* (*Nomada*) by Hurd (1979), together were the sister group of *N. luteoloides*, a *Heminomada* according to both Hurd (1979) and Straka *et al.* (2024). We find lack of sequence divergence of *Nomada armatella* with *N. depressa* surprising since *N. armatella* as we understand it is very similar to *N. cressonii*, a species well known to have white hairs at the apex of the hind tibia, as opposed to *N. depressa*, a species with darker, stout spine-like hairs (cf. Droege *et al.* 2010a). Until this and other uncertainties about the identification and phylogenetic position of Nearctic species of subgenus *Nomada* (*Nomada*) and *Nomada* (*Heminomada*), we prefer to hold off on adopting Straka's subgeneric system.

Some synonymies reported online by Ascher and Pickering (2022) for Connecticut species have not been documented in print, so we take the opportunity to do so here. In an intended third contribution toward a revision of the New World nomadine bees (the first was published as Snelling 1986), the late Roy R. Snelling proposed numerous new synonymies for North American *Nomada.* Although this work was never published, the manuscript in question was well advanced and was based on study of "about 17,000 specimens, as well as the types of many names" so is likely to be reliable. After studying this manuscript, which had been shared by Snelling with J. S. Ascher for review, and original descriptions, we concur with Snelling's proposed synonymies for *Nomada depressa* Cresson, *Nomada obliterata* Cresson, and *Nomada vicina* Cresson as reported in our abstract and species accounts.

Floral and Habitat Information

Floral visitation and habitat associations in species accounts (Appendix 1) came from specimen collection labels. Floral names were updated when necessary, using the ITIS website (https://www.itis.gov). Historical "*Solidago*" records surely apply to multiple genera as there have been taxonomic updates to that genus (Taylor & Taylor 1983); hence, *Solidago* s. l. is reported when species level determinations are not available. Floral visitation records from Connecticut were checked against Mitchell (1960, 1962) and Hurd (1979), floral associations aggregated on Discover Life (https://www.discoverlife.org) species pages (based in part on Ascher 2016 data), and numerous taxonomic revisions. Floral associations believed to be novel or otherwise important, such as those for rare species, state-listed species (threatened, endangered, or special concern in Connecticut), or specialist bee species, are selectively noted in species accounts to supplement the published record.

Problematic Species

Records of obscure taxa from literature or public databases without a traceable voucher or that are doubtful due to taxonomic difficulties or biogeographic considerations are excluded from the confirmed list and are annotated in Appendix 2. This includes certain *Nomada* species reported for Connecticut in Mitchell (1960, 1962) and some other bee species belonging to taxa lacking a complete modern revision.

Conservation Assessment

State-level ranks were calculated for 124 bee species using NatureServe methodology (Master *et al*. 2012) and are reported in Table 3. Standardized NatureServe methodology was used to ensure that assigned status ranks are consistent with those used across North America. Factors involved in assigning ranks are identified in Master *et al*. (2012). Long-term relative trends in range size within Connecticut were calculated for 28 of the 124 bee species as one of the factors for the NatureServe analysis using methods described in Tefler *et al*. (2002) and White *et al*. (2015) and these are also reported in Table 3. This index for trends in range size uses the standardized residuals from a logit regression to show the change in range over time of a taxon relative to the trend of the entire species group included in the analysis. We chose the year 2000 to delineate historic versus current time periods because the intensity of bee research in the state has grown exponentially from 2000 onward. The bee species used in the analysis were based on the criteria of the calculation itself (presence in five or more towns in the historic period) (Tefler *et al.* 2002), host/habitat specialization, and species with suspected declines in the northeast. All *Bombus* species reported for Connecticut were also included in the analysis. The inclusion of potentially declining and known stable species of *Bombus* in the analysis provided a benchmark from which to calibrate the results.

TABLE 3. State level ranks for select bee species in Connecticut. SX—Presumed Extirpated; SH—Possibly Extirpated; S1—Critically Imperiled; S2—Imperiled; S3—Vulnerable; S4—Apparently Secure; S5—Secure; SU—Unrankable. *insufficient data to calculate relative change in range size.

Species	State Rank	Relative Change in Range Size since 2000
Andrena aliciae	S1	*
Andrena canadensis	S1	*
Andrena clarkella	S1	*
Andrena helianthi	S1	*
Andrena parnassiae	S1	*
Andrena robervalensis	S1	*
Bombus auricomus	S1	*
Bombus borealis	S1	*
Bombus pensylvanicus	S1	**>=80% decrease**
Calliopsis nebraskensis	S1	*
Dufourea monardae	S1	*
Epeoloides pilosulus	S1	*
Eucera atriventris	S1	*
Hylaeus sparsus	S1	*
Lasioglossum foveolatum	S1	*
Lasioglossum georgeickworti	S1	*
Macropis nuda	S1	*
Melissodes illatus	S1	*
Melitta americana	S1	*
Nomada electa	S1	*
Protandrena aestivalis	S1	*
Protandrena compositarum	S1	*
Andrena braccata	S1S2	**>=10% decrease**
Andrena rehni	S1S2	*
Bombus terricola	S1S2	**>=10% decrease**
Colletes compactus compactus	S1S2	**>=50% decrease**
Andrena sigmundi	S2	*

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TABLE 3. (Continued)

Species	State Rank	Relative Change in Range Size since 2000
Bombus citrinus	S2	**Stable**
Bombus flavidus appalachiensis	S2	*
Habropoda laboriosa	S2	*
Macropis ciliata	S2	*
Melitta melittoides	S2	*
Osmia lignaria	S2	**Stable**
Andrena simplex	S2S3	*
Andrena uvulariae	S2S3	*
Bombus fervidus	S2S3	**>=10%–50% decrease**
Andrena arabis	S3	**Stable**
Andrena asteris	S3	**Stable**
Andrena bradleyi	S3	**Stable**
Andrena cornelli	S3	*
Andrena distans	S3	**Stable**
Andrena fragilis	S3	**Stable**
Andrena frigida	S3	**Stable**
Andrena placata	S3	**Stable**
Andrena violae	S3	*
Bombus sandersoni	S3	**Stable**
Bombus ternarius	S3	**Stable**
Lasioglossum marinum	S3	*
Megachile pugnata pugnata	S3	*
Melissodes desponsus	S3	*
Melissodes subillatus	S3	*
Osmia virga	S3	*
Perdita octomaculata	S3	*
Protandrena andrenoides	S3	*
Ptilothrix bombiformis	S3	*
Andrena carolina	S4	**>10% increase**
Andrena nubecula	S4	**>10% increase**
Calliopsis andreniformis	S4	**Stable**
Colletes simulans armatus	S4?	**Stable - >=10% decrease**
Melissodes druriellus	S4	**Stable**
Andrena hirticincta	S4S5	**Stable**
Bombus perplexus	S4S5	**Stable**
Bombus vagans vagans	S4S5	**>=10% decrease**
Melissodes denticulatus	S4S5	*
Bombus bimaculatus	S5	**Stable**
Bombus griseocollis	S5	**>10% increase**
Bombus impatiens	S5	**>10% increase**
Peponapis pruinosa	S5	**Stable**
Andrena duplicata	SH	*
Andrena krigiana	SH	*

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TABLE 3. (Continued)

Species	State Rank	Relative Change in Range Size since 2000
Andrena melanochroa	SH	*
Andrena nida	SH	*
Andrena nigrae	SH	*
Andrena nigrihirta	SH	*
Andrena persimulata	SH	*
Andrena personata	SH	*
Andrena platyparia	SH	*
Andrena wellesleyana	SH	*
Andrena ziziaeformis	SH	*
Anthophora abrupta	SH	*
Anthophora ursina	SH	*
Colletes aestivalis	SH	*
Epeolus inornatus	SH	*
Hoplitis truncata truncata	SH	*
Lasioglossum athabascense	SH	*
Lasioglossum truncatum	SH	*
Melissodes dentiventris	SH	*
Nomada obliterata	SH	*
Osmia conjuncta	SH	*
Osmia inermis	SH	*
Panurginus potentillae	SH	*
Perdita novaeangliae	SH	*
Protandrena labrosa	SH	*
Protandrena pauper	SH	*
Sphecodes galerus	SH	*
Sphecodes hydrangeae	SH	*
Sphecodes nigricorpus	SH	*
Sphecodes prosphorus	SH	*
Sphecodes townesi	SH	*
Stelis labiata	SH	*
Triepeolus michiganensis	SH	*
Hoplitis simplex	SH?	*
Macropis patellata	SH?	*
Nomada vincta	SH?	*
Andrena erigeniae	SU	*
Andrena erythrogaster	SU	*
Andrena erythronii	SU	*
Andrena integra	SU	*
Andrena kalmiae	SU	*
Andrena salictaria	SU	*
Chelostoma philadelphi	SU	*
Colletes latitarsis	SU	*
Colletes productus	SU	*

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TABLE 3. (Continued)

Species	State Rank	Relative Change in Range Size since 2000
Dufourea novaeangliae	SU	*
Lasioglossum nelumbonis	SU	*
Lasioglossum pectinatum	SU	*
Melissodes apicatus	SU	*
Bombus affinis	SX	*
Bombus ashtoni	SX	*
Coelioxys funeraria	SX	*
Dianthidium simile	SX	*
Holcopasites illinoiensis	SX	*
Hylaeus basalis	SX	*
Hylaeus saniculae	SX	*

Expected Bee Species for Connecticut

The list of expected bee species for Connecticut (Table 4) is based on their distribution in the Northeastern United States (known state records for only the Northeastern and Mid-Atlantic states are cited). The list was compiled by checking maps of bee records on DiscoverLife.org, GBIF.org, published checklists (e.g. Kilpatrick *et al.* 2020, 2021; Veit *et al.* 2022["2021"]) and literature (Mitchell 1960, 1962), consultation with regional experts (e.g. Michael F. Veit, Joan Milam, Spencer Hardy, and Molly M. Jacobson), and the personal database of J. S. Ascher. The list is not meant to be exhaustive, as climate change may shift the range of some additional southern bee species to northern latitudes.

TABLE 4. Expected bee species in Connecticut based on their distribution in the Northeastern United States (known state records for only the Northeastern and Mid-Atlantic states are cited).

Species	Mid-Atlantic to Northeastern distribution
Colletes consors mesocopus Swenk, 1907	MA, ME, NJ (highly disjunct record), NY (northern), VT
Colletes nudus Robertson, 1898	MA, NJ, NY, PA, MD (coastal)
Colletes willistoni Robertson, 1891	NH, MA, MD, NJ, NY, PA, VT (and Nova Scotia) (rare)
**Hylaeus floridanus* (Robertson, 1893)	ME, NY (outlying records, see footnote), PA
Hylaeus hyalinatus Smith, 1842 [E]	NY, PA (exotic)
Hylaeus punctatus (Brullé, 1832) [E]	MA, MD, NJ, NY, PA (exotic)
Hylaeus purpurissatus (Vachal, 1895) [E]	NY (New York City, obscure exotic)
Hylaeus verticalis (Cresson, 1869)	MA, ME, NH, NY, PA, VT (very rare, declined in region)
Augochlorella persimilis (Viereck, 1910)	MD, PA (unconfirmed RI and NH)
Halictus tectus Radoszkowski [E]	MD, PA, Washington, DC (exotic)
Lasioglossum achilleae (Mitchell, 1960)	MA, MD, NY (rare)
Lasioglossum ascheri Gibbs, 2011	NY (poorly known taxon) (and Nova Scotia, Ontario, and Michigan; may be more northern, Gibbs pers. comm.)
Lasioglossum callidum (Sandhouse, 1924)	MA, MD, NJ, NY, PA, VT? (mid-Atlantic stronghold)
Lasioglossum floridanum (Robertson, 1892)	MD, NJ, PA
Lasioglossum furunculum Gibbs, 2011	MA (parasitic, recently described)
Lasioglossum izawsum Gibbs, 2011	MA (Montague Plains WMA, Veit *et al.* 2022["2021"]), PA (Gibbs 2011), VT (extremely rare)
Lasioglossum paradmirandum Knerer & Atwood, 1966	ME, MD, NY, PA, VT
Lasioglossum rozeni Gibbs, 2011	MA, NJ, NY (NY record near CT border)

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TABLE 4. (Continued)

Species	Mid-Atlantic to Northeastern distribution
Lasioglossum sopinci (Crawford, 1932)	MD, NJ, NY
Lasioglossum wheeleri (Mitchell, 1960)	MA type locality (Veit *et al.* 2022[“2021”]), PA? (poorly known taxon)
Andrena atlantica Mitchell, 1960	MA, MD, NJ (mid-Atlantic stronghold)
Andrena cerebrata Mitchell, 1960	NY (New York City)
Andrena fenningeri Viereck, 1922	MA, MD, NY, NJ, PA (mid-Atlantic stronghold)
Andrena fulvipennis Smith, 1853	MD, NJ, NY (coastal)
Andrena geranii Robertson, 1891	MA, MD, NH, NJ, NY, PA, VT
Andrena rudbeckiae Robertson, 1891	MD, NJ, NY
Perdita pallidipennis Graenicher 1910	MA, MD, NJ, NY (rare) (=*bequaerti* Viereck, 1917, see Portman *et al*. 2023)
Perdita halictoides Smith, 1853	MA, MD, NH, NJ, NY, PA, VT
Perdita swenki Crawford, 1915	NY (common locally at coastal beaches)
Melitta eickworti Snelling and Stage, 1995	MA, MD, NJ, NY (very local)
Paranthidium jugatorium (Say, 1824)	MA, NJ, NY, VT
Heriades leavitti Crawford, 1913	MA, MD, ME, NH, NJ, NY, PA, VT
Heriades truncorum (Linnaeus) [E]	MD, PA (exotic)
Hoplitis anthocopoides (Schenck, 1853) [E]	MA (xeric barrens), MD, NY, PA (exotic)
Chelostoma campanularum (Kirby) [E]	NY (exotic)
Coelioxys banksi Crawford, 1914	MA, MD, NJ, PA (rare)
Coelioxys germanus Cresson, 1878	NJ, NY (cleptoparasite of *Megachile petulans*)
Coelioxys obtusiventris Crawford, 1914	NY, PA
Lithurgus chrysurus Fonscolombe [E]	NJ, PA (exotic)
Megachile inermis Provancher, 1888	MA, MD, ME, NH, NY, PA, VT (northern)
Megachile petulans Cresson, 1878	MA, MD, NJ, NY, PA, RI
Megachile pusilla Pérez, 1884 [“1833”] [E]	MD, NY (New York City) (common exotic)
Melissodes communis communis Cresson, 1878	DE, MA, MD, NJ (rare and local N of NJ), PA
Melissodes niveus Robertson, 1895	MD, NJ, NY
Nomada affabilis Cresson, 1878	MD, NJ (mid-Atlantic stronghold)
Nomada banksi Cockerell, 1907	MA, MD, NY, VT (uncommon)
Nomada binotata (Robertson, 1903)	MA (rare, taxonomy and status poorly known)
Nomada capillata Mitchell, 1962	MA (rare, taxonomy and status poorly known)
Nomada hydrophylli Swenk, 1915)	MD, NY (taxonomy and status poorly known)
Nomada proxima Cresson, 1863	ME (very rare)
Nomada rodecki Mitchell, 1962	MA, NJ (local, a cleptoparasite of *Melitta*)
Anthophora walshii Cresson, 1869	MA, NY, RI (very local, Veit *et al.* 2022[“2021”])
Bombus rufocinctus Cresson, 1863	MA, ME, NH, NY (very local downstate and very rare on Long Island), PA, VT
Triepeolus atripes Mitchell, 1962	MD, NY (New York City), PA
Triepeolus eliseae Rightmyer, 2017	MD, NH (recently described)
Triepeolus rhododontus Cockerell, 1921	MD, NY (New York City)

**Hylaeus* (*Paraprosopis*) *floridanus* (Robertson, 1893) is best known from the Southeastern and Midwestern United States. In the Northeastern United States it is represented by the holotype and paratype of *Hylaeus* (*Paraprosopis*) *packardi* Mitchell, 1951 from Troy, New York, and Brunswick, Maine, respectively (Mitchell, 1960; Snelling, 1970). Further investigation is needed to explain the lack of modern records for *H.* (*Paraprosopis*) in New England and vicinity.

Results

Overview of the Connecticut Bee Fauna

Our complete list of the 385 bee species confirmed for Connecticut includes representatives of 43 genera from all six New World bee families. Fifteen species are documented or confirmed from Connecticut for the first time, of which two, *Andrena sayi* and *Nomada placida*, are newly reported from New England. The family Halictidae has the most species (100, 26%), followed by Andrenidae (96, 25%), Apidae (93, 24%), Megachilidae (68, 18%), Colletidae (23, 6%), and Melittidae (5, 1%). There are 87 species that are represented by fewer than five records, 27 represented by two records, and 40 represented by only a single record.

Given the small number of Connecticut records for many species, information about persistence, abundance, and geographic distribution in the state over time for some species is limited. Forty-three species (11%) have not been detected in Connecticut since the year 2000. Of 385 total species in the state, 91 (24%) have been recorded in all eight counties, and thus are, or have been, widespread. However, two of these species have not been found in the state in recent years: *Bombus affinis* (latest year 1997) and *Bombus pensylvanicus* (latest year 2006). Fifty-five species (14%) have been recorded only from coastal counties (**See Figure 1:** Fairfield, New Haven, Middlesex, New London) (12 of those species ≥5 records), while 44 species (11%) have been recorded only from northern counties (**See Figure 1**: Litchfield, Hartford, Tolland, Windham) (16 of those species ≥5 records). Six species—*Nomada integerrima*, *Sphecodes galerus*, *S. prosphorus*, *Dianthidium simile*, *Stelis labiata*, and *Osmia inermis*—are reported from the state based on published records that lack county information.

Species totals are highest for New Haven County with 284 recorded species, followed by Hartford (246), Litchfield (233), New London (226), Tolland (216), Fairfield (207), Middlesex (176), and Windham County (168). This likely reflects relative collection effort in each county, such as the presence of Yale University and the main laboratories and experimental farm of CAES in New Haven County and, at the other extreme of the scale, the lack of resident collectors in rural Windham County.

iNaturalist Records

The contribution of iNaturalist records in Connecticut is substantial and growing. Research grade community science records contribute to county occurrence and phenology data and have documented extended flight seasons of several bee species, mostly bumble bees and members of subfamily Halictinae, during the unseasonably warm weather in early November in 2021 and 2022. Community science records also contribute information regarding the distribution of both native (e.g., *Nomada placida*) and exotic bee species in the state, especially for new adventive arrivals such as *Osmia taurus*, *O. cornifrons*, *Pseudoanthidium nanum* (see **Figure 2, A**. *Pseudonanthidium nanum* photographed by D. Cappaert in Hartford County, Connecticut), and *Coelioxys coturnix* (see **Figure 2, B.** *Coelioxys coturnix*, photographed by D. Cappaert in Hartford County, Connecticut). The number of Research Grade (RG) iNaturalist bee records in Connecticut has grown to 13,104 as of October 2023, with 11,135 being non-*Apis*. An observation has achieved Research Grade (RG) status when a photo has been posted with a date and location, and at least two experts have reached consensus on the identification. Among Connecticut counties, New London County has the most iNaturalist records with 6,349 RG observations (91% contributed from Allison B. Fennelly) followed by New Haven County with 2,119 records. The 130 bee species identified from Connecticut bee observations on iNaturalist represent 34% of bee species reported for the state. The proportions of bees by family and genus differ in iNaturalist records compared to sweep netting and pan trapping in Connecticut (using the AMNH database), with a large proportion of iNaturalist records in the genus *Bombus*. Of these RG *Bombus* records, 64% were *B. impatiens*, the most numerous species of bee reported in Connecticut. Notable *Bombus* observations include a) three records of *B. auricomus* in 2021 (see **Figure 2, C.** *Bombus auricomus*, photographed by M. Nichols in New Haven County, Connecticut), otherwise last detected in Connecticut in 1919; b) ten records of the state-listed Species of Concern *B. terricola*; c) one record in 2021 of *B. ternarius* (see **Figure 2, D.** *Bombus ternarius*, photographed by C. Young in Litchfield County, Connecticut.), a species not otherwise detected in Connecticut since 2010; d) the only record that we could find of the northern species *B. ternarius* in Hartford County. In addition, there were valuable records for *B. flavidus appalachiensis* (9 records) and *B. fervidus* (30 records). Bee (and wasp) records from Connecticut and vicinity continued to accumulate rapidly after the cutoff point for our compilation. As of 20

Nov 2024, all Apoidea for Connecticut on iNaturalist had been checked by JSA including honey bees and casual grade observations. These totaled 22,520 observations for bees and 4,315 for apoid wasps (Sphecidae sensu lato).

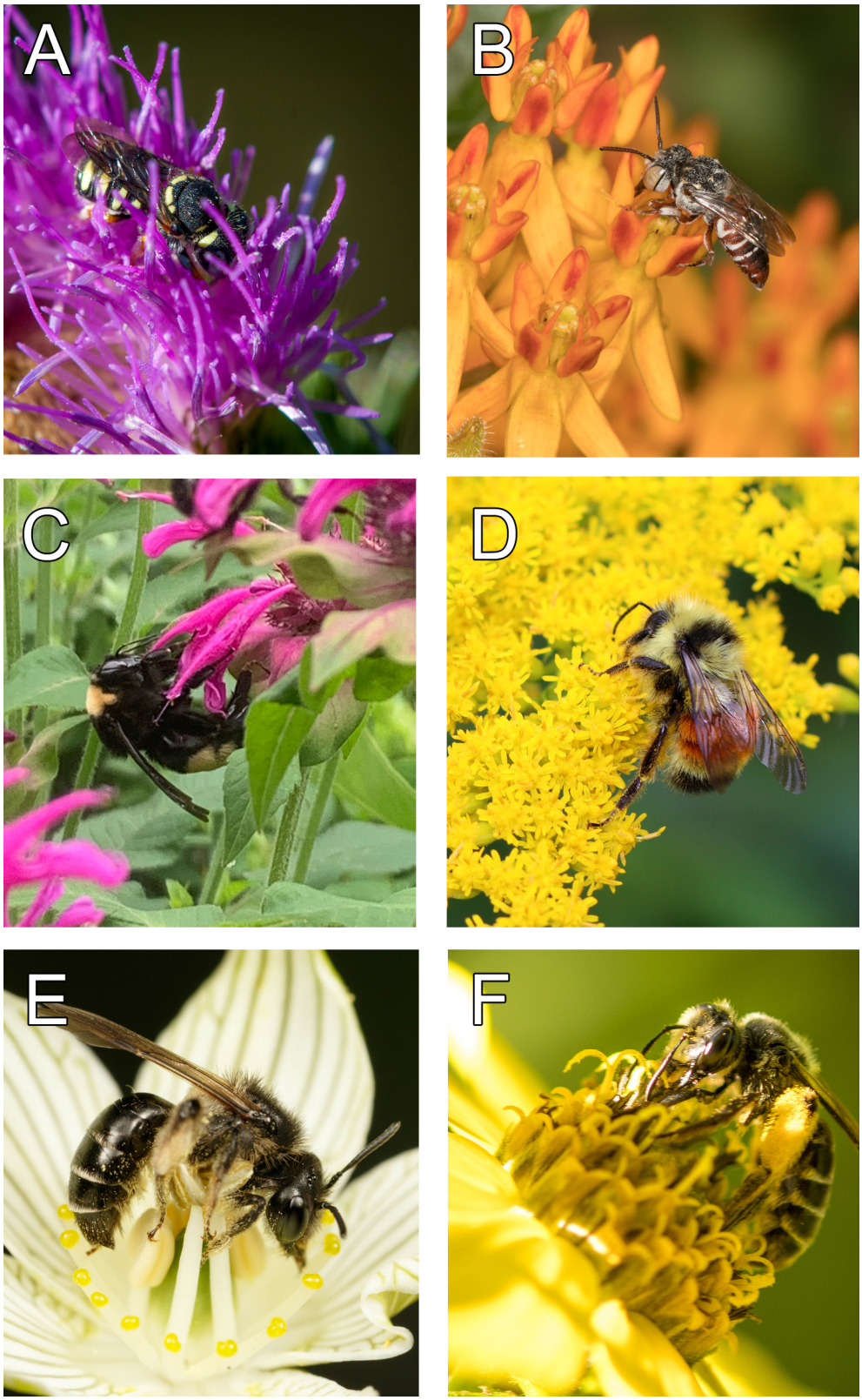

FIGURE 2. A) *Pseudoanthidium nanum* (Mocsáry), photographed by D. Cappaert in Hartford County, Connecticut. B) *Coelioxys coturnix* Pérez, photographed by D. Cappaert in Hartford County, Connecticut. C) *Bombus auricomus* (Robertson), photographed by M. Nichols in New Haven County, Connecticut. D) *Bombus ternarius* Say, photographed by C. Young in Litchfield County, Connecticut. E) *Andrena parnassiae* Cockerell, photographed by M. McCarthy in Litchfield County, Connecticut. F) *Andrena aliciae* Robertson, photographed by D. Cappaert in New Haven County, Connecticut.

Exotic Species

There are fifteen exotic bee species reported for Connecticut (see **Table 2**), seven of which are widespread in the state and documented in every county. Seventy-three percent (n = 11) of the exotic bee species in Connecticut are in the family Megachilidae, and 53% (n = 8) of all exotic bee species in Connecticut have been discovered in this century. All but two are accidental introductions, with the following being deliberately introduced to North America: *Apis mellifera* and *Osmia cornifrons* (Russo 2016). Exotic bee species documented in the eastern United States that have not yet been found in Connecticut include: *Hylaeus hyalinatus* Smith, *Hylaeus purpurissatus* (Vachal, 1895), *Hylaeus punctatus* (Brullé, 1832), *Halictus tectus* Radoszkowski, *Chelostoma campanularum* (Kirby), *Hoplitis anthocopoides* (Schenck, 1853), *Megachile pusilla* Pérez, 1884 ["1833"], *Lithurgus chrysurus* Fonscolombe (Russo 2016, Ascher unpublished data), and the recently-reported *Heriades truncorum* (Linnaeus) (United States Geological Survey 2024).

Range Limits and Comparisons with Other States

Given the location of Connecticut at the southwestern tail of New England, the region serves as a bridge between the Mid-Atlantic States and the more northern states. Connecticut has diverse ecoregions and topography (see **Figure 1**), which limit many species to certain parts of the state. For example, northern species, such as *Andrena nigrihirta* and *Bombus ternarius*, are best known from Litchfield County in northwestern Connecticut, whereas coastal species, such as *Lasioglossum marinum* and *Hylaeus schwarzii*, are restricted to the shoreline. As such, range limits are of biogeographic interest both locally and regionally.

Compared to other New England states, the bee fauna in Connecticut closely matches that of Massachusetts (Veit *et al.* 2022["2021"]) overlapping 364 species (95%), compared with Vermont (S. Hardy unpublished) overlapping 314 species (82%), New Hampshire (M. F. Veit unpublished) overlapping 298 species (78%), Maine (Dibble *et al.* 2017, M. F. Veit unpublished) overlapping 251 species (65%), and Rhode Island (J. S. Ascher unpublished) overlapping 217 species (57%). Species recorded from Connecticut but not documented from Massachusetts, Rhode Island, Vermont, New Hampshire, or Maine include: *Lasioglossum foveolatum* (rare), *L. trigeminum* (southern), *Sphecodes hydrangeae* (rare and taxonomically poorly known), *S. nigricorpus* (rare and taxonomically poorly known), *Andrena duplicata* (uncommon, southern), *A. confederata* (southern), *A. sayi* (southern, unconfirmed record from Rhode Island), *Calliopsis nebraskensis* (disjunct population), *Protandrena labrosa* (rare), *Nomada luteola* (southern), *Nomada ceanothi* (rare and taxonomically poorly known), *Nomada townesi* (rare and taxonomically poorly known), *Triepeolus cressonii* (southern), and *Ptilothrix bombiformis* (southern).

Nine bee species reported in northern New England states (Dibble *et al.* 2017; Hardy *et al.* 2021; Veit *et al*. 2022["2021"]) appear to reach their southern range limit in Connecticut (site or county cited in parentheses after the species). Two species have no records further south in this region (see range maps on DiscoverLife.org, iDigBio.org, and GBIF.org): a) *Osmia tersula* (Canaan); b) *Coelioxys sodalis* (East Hampton, East Hartford.). Seven species have four or fewer records further south: a) *Andrena nigrihirta* (Barkhamsted and Colebrook; one record from Adams County, Pennsylvania and one record from Buncombe County, North Carolina); b) *A. persimulata* (Waterbury; one record from Suffolk County, New York); c) *Bombus borealis* (Suffield and Canaan; one record from Adams County, Pennsylvania and one record from Nyack County, New York); d) *Hylaeus basalis* (["West" Hartland]; one record further south along the eastern seaboard from Carrol County, Maryland); e) *Lasioglossum inconditum* (Colebrook; extending further south only in mountains, e.g., in Upshur County, West Virginia, Allegany County, Maryland, and Cumberland County, Pennsylvania); f) *L. zonulus zonulus* (Canaan, Litchfield, Bridgeport; one record in Monroe County, Pennsylvania and Allegany County, Maryland, and two records in Hampshire County, West Virginia); and g) *Megachile melanophaea melanophaea* (Canaan; two records in Adams County, Pennsylvania). These range limits may recede north as the climate warms, making the habitat unsuitable. Of the preceding nine species, five have been shown to persist in Connecticut after the year 2000.

Fifty-six expected species for Connecticut based on known distribution in neighboring states are listed in Table 4, including nine exotic species. This list includes species that likely occur undetected, may have occurred in the past, or may be expected to extend their range northward as the climate warms.

Discussion

Bee Species of Conservation Concern in Connecticut

Bombus affinis is the first bee species in the United States to become listed as endangered under the federal Endangered Species Act (U. S. Fish & Wildlife Service 2017) and is also listed in Connecticut as a species of Special Concern by the Connecticut Department of Energy and Environmental Protection (2015b). Four other bee species are currently listed in Connecticut as endangered, threatened, or of special concern: *Bombus terricola* (Threatened), *B. ashtoni* (Special Concern), *Epeoloides pilosulus* (Endangered), and *Macropis ciliata* (Special Concern) (Connecticut Department of Energy and Environmental Protection 2015b). These five species, along with *B. pensylvanicus*, are also listed as Species of Greatest Conservation Need (SGCN) in Connecticut's current State Action Wildlife Plan (Terwilliger Consulting 2015), a document that will be updated in 2025. Of the 124 bee species with state-level ranks in Table 3, 22 were assigned a conservation rank of S1 (meaning "critically imperiled" within the state), seven were assigned S2 (meaning "imperiled"), and four were assigned S1S2 (equal chance of being either S1 or S2).

One species that has been ranked S1 in Connecticut and is worthy of SGCN status in the state is *Andrena parnassiae* (see **Figure 2, E.** *Andrena parnassiae*, photographed by M. W. McCarthy in Litchfield County, Connecticut)**.** This species is highly specialized on the pollen of grass of Parnassus (*Parnassia* spp.), a wetland plant that can be found in places such as calcareous fens, floodplains, and wetland margins—habitats imperiled in Connecticut by invasive plants (e.g., *Phragmites*), nitrification, and development (Tommins 2017). Additional species of conservation concern in the state that are limited by host or habitat specificity include:

Andrenidae: a) *Andrena aliciae* (see **Figure 2, F.** *Andrena aliciae*, photographed by D. Cappaert in New Haven County, Connecticut, associated with *Helianthus*, southern range) b) *A. braccata* (associated with *Salix*), c) *A. canadensis* (associated with Asteraceae, northern range), d) *A. clarkella* (associated with *Salix*, northern range), e) *A. helianthi* (associated with *Helianthus*, northern range), f) *A. krigiana* (associated with *Krigia*), g) *A. persimulata* (associated with *Cornus*, northern range), h) *A. rehni* (associated with *Castanea*), i) C*alliopsis nebraskensis* (associated with *Verbena* and old fields), j) *Panurginus potentillae* (associated with *Potentilla*), k) *Perdita bradleyi* (associated with sand plains), l) *P. novaeangliae* (associated with *Lyonia*), m) *Protandrena aestivalis* (associated with Asteraceae), n) *P. compositarum* (associated with Asteraceae), o) *P. pauper* (associated with *Ceanothus*).

Apidae: a) *Epeolus inornatus* (associated with a localized host, *Colletes productus*), b) *Habropoda laboriosa* (associated with sand plains and *Vaccinium*), c) *Melissodes illatus* (associated with Asteraceae, northern range), d) *Nomada electa* (associated with a localized host, *Andrena braccata*).

Colletidae: a) *Colletes aestivalis* (associated with *Heuchera*), b) *Colletes productus* (associated with *Lyonia*).

Halictidae: a) *Dufourea monardae* (associated with *Monarda*), b) *Lasioglossum georgeickworti* (associated with sand plains and dunes), c) *Lasioglossum pectinatum* (associated with *Physalis*).

Melittidae: a) *Macropis nuda* (associated with *Lysimachia*), b) *M. ciliata* (associated with *Lysimachia*), c) *M. patellata* (associated with *Lysimachia*), d) *Melitta americana* (associated with *Vaccinium stamineum*), e) *M. melittoides* (associated with *Lyonia*).

In addition to the species of concern noted above, *Bombus citrinus* is notably absent from recent bee surveys and iNaturalist observations in Connecticut except for one sighting in 2020 (https://www.inaturalist.org/observations/56458334). *Dianthidium simile* and *Hylaeus saniculae* are rare throughout their range (Veit *et al*. 2022["2021"]). We also note the absence of two cleptoparasitic species that have had no recent records in New York or New England (Dibble *et al.* 2017; Veit *et al.* 2022["2021"]; S. Hardy pers. comm.) and that may be regionally extinct: *Coelioxys funerarius* and *Holcopasites illinoiensis*. *Coelioxys funerarius* is a nest parasite of *Megachile frigida* (Baker 1975; Mitchell 1962), *M. inermis* (Baker 1975; Sheffield *et al*. 2008), *M. latimanus* (Baker 1975), *M. relativa* (Fye 1965; Sheffield *et al*. 2008), and *M. rotundata* (Baker 1975). *Holcopasites illinoiensis* is thought to be a brood parasite of *Calliopsis andreniformis* (Hurd & Linsley 1972), a common bee species in New England.

Important Bee Habitat in Connecticut

(see Figure 3)

Five key habitats have been identified in the Connecticut State Action Wildlife Plan (Terwilliger Consulting 2015) as being important in the state for conserving the six SGCN bee species noted above: Upland Forest, Upland Woodland and Shrub, Upland Herbaceous, Herbaceous Inland Wetland, and Manmade Habitats. Here we provide

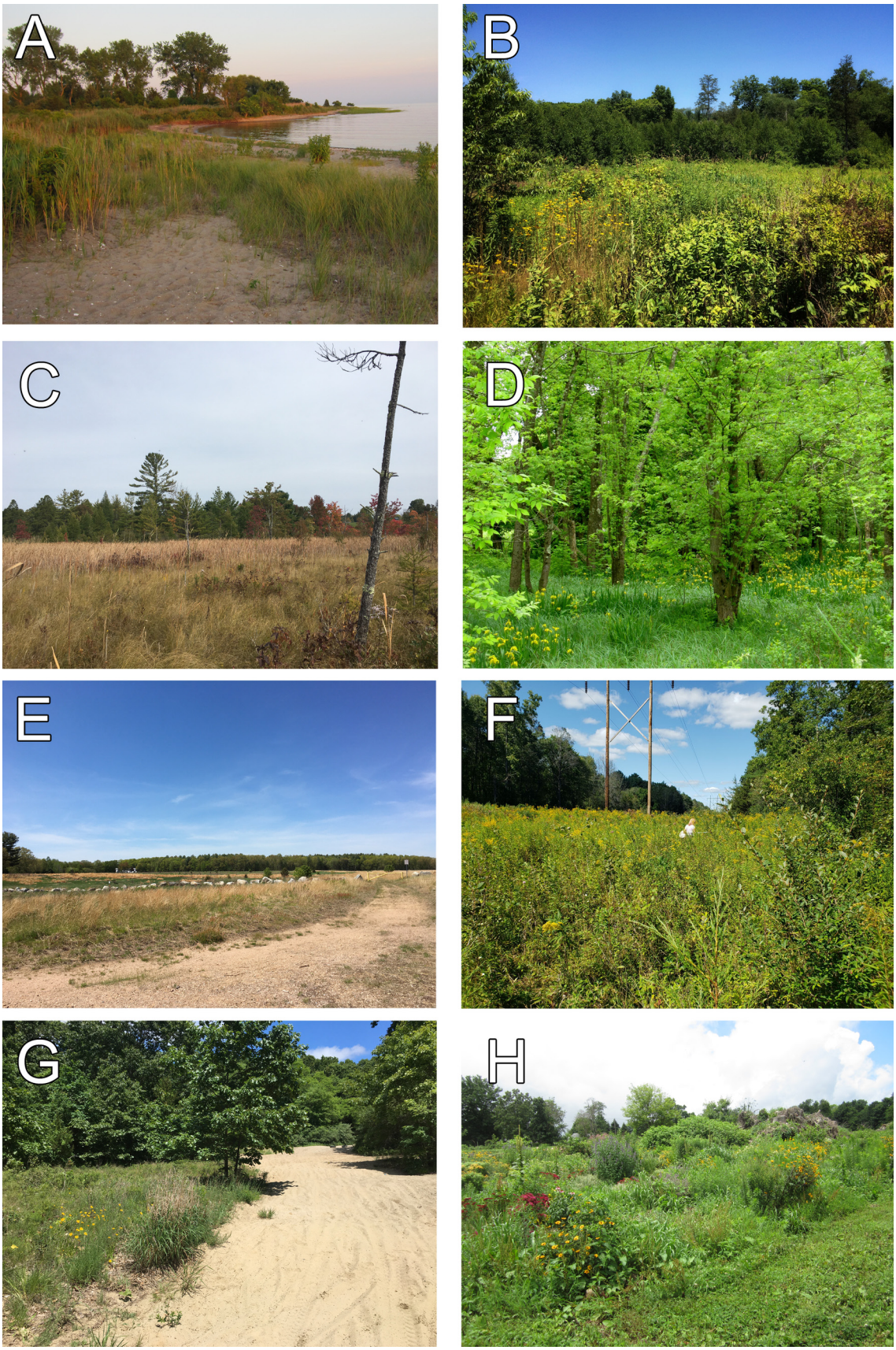

FIGURE 3. Bee habitats in Connecticut. A) Coastal. B) Early successional. C) Fen. D) Forest. E) Grassland. F) Powerline right-of-way. G) Sand plain. H) Agricultural.

details for sub-habitats within these categories to demonstrate their importance to SGCN species, as well as expand upon the importance of these habitats to other bee species in Connecticut.

Upland forest habitat

Oak Forest, Old Growth and Young Forests, Maritime Forests, and Northern Hardwood Forest

Upland forest is found throughout Connecticut and is comprised of seven sub-habitats (oak forest, calcareous forest, coniferous forest, old growth forest, northern hardwood forest, young forest, and maritime forest) (Connecticut Department of Energy and Environmental Protection 2015a). Connecticut currently has an estimated 724,230 hectares of forest, of which approximately 4,603 (0.6%) hectares are harvested or thinned annually, 1,668 (0.2%) hectares are converted to non-forest annually, 3,965 (0.5%) hectares revert to forest annually, and 4,336 (0.6%) hectares are disturbed by weather events annually (United States Department of Agriculture Forest Service 2019).

At least 95 bee species have been detected in Connecticut forests or along forest edges, and 42% of those are in the genus *Andrena*. Historical collections of bees in Connecticut forests have been opportunistic rather than part of a planned survey. Wagner *et al.* (2019) provide information about bee diversity in forests adjacent to powerline ROW, but the community composition of bees in the various forest sub-habitats listed above is not clear. Strategic surveys in Connecticut forests, forest canopies, and forest edges will provide a more complete assessment of forest-associated bee species in Connecticut.

Upland woodland and shrub habitat

Reverting Field and Early Successional Shrubland

Early successional shrubland and reverting fields are presently maintained by regular disturbance through management, except in a few environments where tree growth is limited by weather events, low nutrient availability, high water table, salt spray, or thin soil. Concern about these diminishing habitats has focused mainly on vertebrates, especially New England Cottontail (O'Connor 2015) and priority bird species (Askins 1998; King & Schlossberg 2014) such as Prairie Warbler, Brown Thrasher, Alder Flycatcher, Eastern Towhee, Yellow-breasted Chat, and others (Audubon Connecticut 2022), however, Milam *et al*. (2018) show that these habitats also support high bee diversity. In Connecticut, at least 159 bee species have been recorded from grasslands, hayfields, and meadows. Both *Bombus pensylvanicus* and *B. fervidus*, grassland species that are in decline in Connecticut, are especially sensitive to the loss of these habitats to natural succession.

Rights-of-way for utilities and for roads are also maintained as early successional habitats. Connecticut was historically the home of an innovative system of ROW management for electric utilities, established through the research of William Niering and colleagues at the Connecticut Arboretum (Dreyer & Niering 1986; Niering 1958; Niering & Goodwin 1974). Niering and colleagues advocated replacing blanket spraying of herbicides with selective direct basal treatment of tree sprouts to allow growth of a dense stable cover of shrubs, suppressing growth of tree species that would interfere with power lines (Dreyer & Niering 1986; Niering 1958; Niering & Goodwin 1974;). This dense cover of shrubs provided long-term populations of important host plants of bees, including those in the family Ericaceae (*Kalmia latifolia*, *Gaylussacia baccata*, *Vaccinium corymbosum*), Anacardiaceae (*Rhus copallinum*, *Rhus typhina*), Clethraceae (*Clethra alnifolia*), and Adoxaceae (*Viburnum lentago*) (Dreyer & Niering 1986).

In 2006, *Epeoloides pilosulus*, a cleptoparasite of oil bees in the genus *Macropis*, was rediscovered in New England in a Connecticut powerline ROW, along with one of its presumed hosts, *Macropis ciliata*, a specialist on native yellow loosestrife genus *Lysimachia* (Wagner & Ascher 2008). *Epeoloides pilosulus*, though rare, persists locally in disturbed areas where native loosestrife (*Lysimachia* spp.) and dogbane (*Apocynum* spp.) are present (Veit *et al*. 2022["2021"]). Surveys of bees (Wagner *et al*. 2014a) and vegetation (Wagner *et al*. 2014b) comparing a powerline ROW with adjacent woodland found a strong affinity for herbaceous perennials of importance to bees associated with the powerline, including *Euthamia graminifolia*, *Solidago rugosa*, and *Lysimachia quadrifolia*, along with shrubs *Rubus hispidus*, *R. allegheniensis*, and *Lyonia ligustrina* (Wagner *et al*. 2014a, b). Wagner *et al*. (2014a) netted *Melitta melittiodes* and *Colletes productus*, two rarely collected bees, from flowers of *Lyonia*

ligustrina during a powerline ROW bee survey in Connecticut. Unpublished work by G. I. Stage suggests that these two bee species, in addition to *Perdita novaeangliae*, are specialists on *Lyonia*. An additional ROW survey extending from northern Connecticut to southern New Hampshire identified 205 bee species in the corridor, nearly half of the 450 bee species in New England (Wagner *et al.* 2019). As a result of these surveys and additional surveys by T. A. Zarrillo (unpublished), at least 163 species of bees have been collected in Connecticut from powerline ROW, including *Andrena parnassiae*, the rare specialist of grass of Parnassus (*Parnassia* sp.). Unfortunately, some powerline corridors in Connecticut were already being resurfaced with crushed rock by the time of publication, with presumed negative effects on early successional plants and ground-nesting bees (Wagner *et al.* 2019). The Connecticut Land Conservation Council and the Connecticut Botanical Society have provided position papers and best management practices for powerline ROW that would continue to provide habitat for bees, as well as other wildlife and plant species of concern (Connecticut Land Conservation Council 2019).

Upland herbaceous habitat

Sand plains and Sparsely Vegetated Sand and Gravel Habitats

The Connecticut sand plains were formed by the deposition of sandy soil left behind by Wisconsinan glaciation and were historically maintained by natural disturbance such as fire. Although we do not know the exact acreage of inland sand plains in Connecticut before they were developed, we surmise that they were extensive in the central lowland of Connecticut. Olmsted (1937) noted the largest piece extended from North Haven and Wallingford north to Meriden (New Haven County), being 25–26 km long and 2.5 km wide, and also noted the existence of an impressive wind-formed dune in New Haven County that was 60–90 m long, at least 15 m wide, and with heights up to 3 m. Currently it is estimated that only 5 percent of sand plains in Connecticut remain, making them one of Connecticut's most imperiled ecosystems (Metzler & Wagner 1998; Woodside 2016). The remaining sand plain remnants are scattered across the Connecticut landscape and are either privately owned (businesses, housing developments, airports, cemeteries) or managed by the Connecticut Department of Energy and Environmental Protection Agency (natural areas, abandoned state land). At least 48 species of bees have been collected on airport property, and at least 121 species of bees have been collected in sand plain remnants other than airports, including the rarely collected *Perdita bradleyi*, *Lasioglossum foveolatum*, and *Colletes banksi*, which are likely habitat specialists.

Maritime Habitats

There are about 7,810 hectares of tidal wetland habitat in Connecticut, which include saltwater and brackish intertidal beaches, marshes, and rocky shores (Connecticut Department of Energy and Environmental Protection 2018). Connecticut beaches, which occupy about 14% of Connecticut's coastline, include barrier spits, pocket beaches, and beaches composed of gravel or cobblestone (University of Connecticut undated). Most sandy beaches in Connecticut are privately owned, however the state of Connecticut owns and manages beaches at Hammonasset State Park Beach (Middlesex County), Silver Sands State Park Beach (New Haven County), Rocky Neck State Park Beach and Bluff Point State Park (New London County), and Sherwood Island State Park Beach (Fairfield County). The United States Fish and Wildlife Service manages the Stewart B. McKinney National Wildlife Refuge, which consists of 10 units comprising 3.8 km^2 and scattered across 113 km of the Connecticut coastline. Conservation organizations such as the Connecticut Audubon Society manage a coastal center at Milford Point (New Haven County) and Stratford Point (Fairfield County), and Audubon Connecticut manages Greenwich Point Park (Fairfield County).

Coastal bees have been best studied at Grass Island preserve in Guilford, New Haven County (Zarrillo & Stoner 2019), although bee bowl surveys were also conducted concomitantly at six other coastal locations throughout Connecticut by Laura Saucier of the Connecticut Department of Energy and Environmental Protection (unpublished). One notable bee species found at Grass Island and the Connecticut coastline is the Atlantic coastal sand dune specialist *Lasioglossum marinum*. This maritime bee is also found on Cape Cod and other coastal regions in Massachusetts (Goldstein & Ascher 2016; Veit *et al.* 2022["2021"]), Gardiners Island, New York (Ascher *et al*. 2014), along the Long Island Shore east to Breezy Point in Queens, New York City (Ascher 2016) and at Napatree Point Conservation Area in Rhode Island (Rothwell & Ginsberg 2019). Its range spans the eastern seaboard from New Hampshire to Florida. *Hylaeus schwarzii* is a coastal specialist that has been collected only at Grass Island in Connecticut, however it has been detected recently at a nearby barrier beach in western Rhode Island at the Napatree

Point Conservation Area (Rothwell & Ginsberg 2019) near the Connecticut border. *Hylaeu*s aff. *nelumboni*s was found at Grass Island in Connecticut (Zarrillo & Stoner 2019) and on Gardiners Island in New York (Ascher *et al*. 2014), but not yet in Rhode Island (Rothwell & Ginsberg 2019). The recently described sand-specialist *Lasioglossum georgeickworti* has been detected at both Grass Island (Zarrillo & Stoner 2019) and Napatree Point in Rhode Island (Rothwell & Ginsberg 2019) but not on Gardiners Island (Ascher *et al*. 2014). Although *L. georgeckworti* has been found in Connecticut and Rhode Island in maritime locations only, it is not limited to coastal beach dunes as the holotype for *L. georgeckworti* was collected in an inland xeric pitch-pine-scrub oak barren by J. Milam in Massachusetts at the Montague Plains Wildlife Management Area (Franklin County).

Native flora of beach communities in Connecticut that are important to bees include sea lavender (*Limonium carolinianum*), seaside goldenrod (*Solidago sempervirens*), American searocket (*Cakile edentula*), eastern baccharis (*Baccharis halimifolia*), beach pea (*Lathyrus japonicus*), and beach plum (*Prunus maritima*). Exotic beach rose (*Rosa rugosa*) has become naturalized along the Connecticut coast and is considered an invasive plant species in Connecticut (Connecticut Invasive Plant Working Group 2022). *Rosa rugosa* is a major pollen source for bees in shoreline communities in Connecticut, especially *Bombus impatiens* (Zarrillo & Stoner 2019). It is unclear if *Rosa rugosa* is outcompeting native plants (Zarrillo & Stoner 2019).

Herbaceous inland wetland habitat

Bogs, Fens, Fresh Water Marshes, and Wet Meadows

Bogs and fens, especially those in the Western New England Marble Valleys and the Berkshire Transition ecoregions (see **Figure 1**), are on the list of critically imperiled ecosystems in Connecticut (Connecticut Department of Energy and Environmental Protection 2015a). At least 94 species of bees, including nine oligoleges, have been detected in these natural peatlands, with some bee species observed visiting flower species characteristic of these wetlands, such as those in the Ericaceae: highbush blueberry (*Vaccinium corymbosum*), black huckleberry (*Gaylussacia baccata*), leatherleaf (*Chamaedaphne calyculata*); Cornaceae: silky dogwood (*Cornus amomum*); Rosaceae: black chokeberry (*Aronia melanocarpa*), bog labrador tea (*Rhododendron groenlandicum*), swamp azalea (*Rhododendron viscosum*), bristly dewberry (*Rubus hispidis*); and Celastraceae: fen grass of Parnassus (*Parnassia glauca*). Several bee records from Connecticut fens and bogs are notable. *Andrena parnassiae* was detected in Connecticut for the first-time while visiting fen grass of Parnassus (*Parnassia glauca*) in a fen remnant at the edge of Robbins Swamp Management Area in Canaan (Litchfield County). Other specialist bees that were detected visiting their host plants (noted in parentheses following the bee associate cited) in these inland wetlands are *Andrena cornelli* (*Rhododendron* sp.); *A. bradleyi* (*Vaccinium* sp.); *A. carolina* (*Vaccinium* sp.); *A. distans* (*Geranium maculatum*); *A. fragilis* (*Cornus*, *Swida* group); *A. placata* (*Symphyotrichum* and *Solidago* s. l.); *A. violae* (*Viola* sp.); *Dufourea novaeangliae* (*Pontedaria cordata*). Seventy-six percent of *Bombus sandersoni* specimens were collected in or near the edges of northern bogs. Most of the bee records from these northern bogs, especially at Beckley Bog, Tobey Bog, and Benedict Pond in Norfolk, Robbins Swamp in Canaan, and Bingham Pond in Salisbury (Litchfield County) were contributed by C. T. Maier and D. L. Wagner *et al*. (unpublished).

Man-made habitats

Urban

In recent years, there have been efforts to increase the habitat for native plants and pollinators along Connecticut roadsides. Both Federal laws (United States Department of Transportation 2015) and state law (Connecticut General Assembly 2016) encouraged the state Departments of Transportation to establish native plant communities in the rights-of-way of state highways (Connecticut General Assembly 2016; Kuzovkina *et al.* 2016). The Connecticut Department of Transportation responded by establishing new plantings for pollinators in only eight sites, but also reduced mowing in 50 sites designated as pollinator conservation areas to allow existing native grasses and forbs to grow (Connecticut Department of Transportation 2019).

Connecticut's land area is increasingly covered with urban and suburban development (Arnold *et al.* 2020), so those environments provide important opportunities for creating pollinator habitat. An Act Concerning Pollinator

Health restricted the use of the nitro-guanidine neonicotinoid insecticides that are highly toxic to bees to licensed pesticide operators, eliminating the use of these systemic insecticides by homeowners and other unlicensed citizens (Connecticut General Assembly 2016). Nitro-guanidine neonicotinoids can still be used by licensed applicators in the landscape.

Conservation organizations, land trusts, garden clubs and other organizations decided to add to the protection of pollinators beyond the new law in 2016, forming a network of local Pollinator Pathways https://www.pollinator-pathway.org/. This network started in Fairfield County in Connecticut and in adjacent areas of southeastern New York State but has now spread to 89 of the 169 towns in Connecticut, distributed all over the state. The fundamental requirements of a Pollinator Pathway are to provide pesticide-free corridors of native plants, including trees and shrubs as well as forbs that provide nutrition and habitat to pollinators.

Agricultural Land

Thirty-two bee species have been recorded visiting apples in Connecticut. Of the 104 species of bees found in apples in New York State (Russo *et al*. 2015; see also Gardner & Ascher 2006), all but 3 species have been recorded (although not necessarily on apple) in Connecticut. Of the widespread and abundant species most important to the pollination of New York apples (Russo *et al*. 2017), several *Andrena* species and *Lasioglossum hitchensi* have not been recorded visiting apples in Connecticut, so further sampling may determine the full range and relative importance of species providing apple pollination in Connecticut.

Unlike apples, pumpkins and squash are dependent on only three bee species for nearly all flower visitation: *Apis mellifera*, *Bombus impatiens*, and *Peponapis pruinosa* (Stoner 2020). Although there was tremendous variation in bee abundance and species distribution among sites and years, and pollination was sufficient for full fruit set in 79 out of 80 combinations of site and date, there was a trend for decreasing abundance of the *Cucurbita* specialist *P. pruinosa* over the four years of the study (Stoner 2020). Among the possible threats to this ground-nesting species are exposure to neonicotinoid insecticides in soil (Chan *et al*. 2019) and in the nectar and pollen of treated squash (Stoner & Eitzer 2012).

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APPENDIX 1. Annotated Checklist of the Bees of Connecticut

Here we present an annotated checklist of all 385 bee species reported for Connecticut (see Table 2) with occurrence data provided for noteworthy species along with notes on pollen specialization, habitats used in Connecticut, taxonomy, and conservation status. Taxonomic publications used for delimitation and identification of species-group and genus-group taxa are listed after each genus.

ANDRENIDAE

Andreninae

Andrenini

Genus *Andrena* Fabricius

Reference: Bossert *et al*. (2022); Bouseman & LaBerge (1978); Cockerell (1902); Donovan (1977); Gibbs *et al.* (2017a); Hurd (1979); LaBerge (1967, 1969, 1971, 1973, 1977, 1980, 1985, 1986a, 1989); LaBerge & Bouseman (1970); LaBerge & Ribble (1972, 1975); Larkin *et al.* (2006); Mitchell (1960); Pisanty *et al*. (2022); Portman *et al.* (2020); Praz *et al.* (2022); Ribble (1967, 1968, 1974)

Subgenus *Andrena* Fabricius

Andrena (*Andrena*) *carolina* Viereck, 1909

Carolina Miner

Notes: This species is a known specialist on blueberry (*Vaccinium* sp.) (LaBerge 1980 [as *A. longifacies* LaBerge]; Wood & Roberts 2018) and is associated in Central New York State with other Ericaceae such as deerberry (*Vaccinium stamineum*) (Cane *et al.* 1985) [as *A. longifacies* LaBerge]. In Connecticut, it has been collected from leatherleaf (*Chamaedaphne calyculata*), highbush blueberry (*Vaccinium corymbosum*), and mountain maple (*Acer spicatum*). Collection locations in Connecticut include powerline ROW, the edge of an ericaceous bog, and a hardwood forest dominated by oaks (*Quercus* spp.).

Andrena (*Andrena*) *clarkella* (Kirby, 1802)

Clark's Miner

Notes: Hurd (1979), Litt (1998), and Westrich (2019) considered this naturally Holarctic, colorful, early-flying vernal species to be a specialist of willow (*Salix*). Studies of willow-visiting *Andrena* in New Brunswick found it to be a predominant species (Mosseler *et al*. 2020; Ostaff *et al.* 2015), and Falk & Lewington (2015), in the United Kingdom, note that, "Pollen is obtained almost exclusively from willows," assessments in accordance with our observations. In Connecticut, females of this species are known to visit willow (*Salix* spp.) in habitats such as hardwood forests, acidic bogs, and inland riparian habitats in the northern part of the state.

Andrena (*Andrena*) *cornelli* Viereck, 1907

Azalea Miner

Notes: This late spring bee has been netted from azaleas (*Rhododendron* sp.) in Connecticut, supporting evidence for its affinity for that host plant (LaBerge 1980), and is reliably found where its host plant is present within the state, even though it has not been found by recent workers at its type locality of Ithaca, New York (note lack of Tompkins County records in Ascher 2016). This species has been collected in a sandplain remnant, a sphagnum bog, a forest wildflower garden in an arboretum, and powerline ROW.

Andrena (*Andrena*) *frigida* Smith, 1853

Frigid Miner

Notes: This early spring bee is an oligolege of willow (*Salix* sp.) (LaBerge 1980) and the most abundant visitor to those in its core, northern, range (Mosseler *et al.* 2020; Ostaff *et al.* 2015). In Connecticut it has been

collected on or near its host plant in suburban neighborhoods, agricultural land, forest edges, and on school campuses.

***Andrena* (*Andrena*) *mandibularis* Robertson, 1892**

Mandibulate Miner

Notes: This species has been collected recently in orchards, coastal scrub, a forest wildflower garden in an arboretum, powerline ROW, and university plantings in Connecticut, and in forest fragments in Massachusetts (J. Milam pers. comm.).

***Andrena* (*Andrena*) *milwaukeensis* Graenicher, 1903**

Milwaukee Miner

Notes: This species has been collected from a variety of flowers in Connecticut including moosewood maple (*Acer pensylvanicum*) and Rosaceae including American mountain ash (*Sorbus americana*). It has been collected regularly but in small numbers from diverse habitats such as powerline ROW, a conifer plantation, acidic bogs, inland wetlands, orchards, agricultural land, upland hardwood forests, and school grounds.

***Andrena* (*Andrena*) *rufosignata* Cockerell, 1902**

Brown-fovea Miner

Notes: This species has a relatively long malar space, perhaps an adaptation for extracting nectar from Ericaceae which it routinely visits among other host plants. In Connecticut it has been found in meadows, agricultural land, and a mixed forest of coniferous and broad-leaved trees near a swamp and black spruce bog.

***Andrena* (*Andrena*) *thaspii* Graenicher, 1903**

Meadow-parsnip Miner

= *Andrena* (*Bythandrena*) *gabrielsoni* Mitchell, 1960: 115. (Connecticut holotype). Synonymy by LaBerge (1980).

Holotype. Female USA: Connecticut: Litchfield Co.: Colebrook, 23 July 1911, W. M. Wheeler (ANSP).

Notes: This widespread species has a relatively late flight season for a native *Andrena* and has been found in Connecticut along roadsides and forest edges visiting birds-foot-trefoil (*Lotus corniculatus*). Wood & Roberts (2018) report that *A. thaspii* is polylectic with a strong preference for Fabaceae pollen, but LaBerge (1980) noted "no strong floral preferences." This species has also been detected in sandplain remnants, agricultural land, and pollinator gardens in Connecticut.

***Andrena* (*Andrena*) *tridens* Robertson, 1902**

Tridentate Miner

Notes: This vernal species was not cited for Connecticut by early historical workers, possibly due to identification difficulties prior to modern revisionary studies (LaBerge 1980). It has been collected in Connecticut in agricultural land, powerline ROW, hardwood forests, and an arboretum.

Subgenus *Callandrena* Cockerell

***Andrena* (*Callandrena* s. l.) *duplicata* Mitchell, 1960**

Duplicate Miner

Notes: The only known record of this uncommon composite oligolege (Hurd 1979) in Connecticut is the female noted below. A putative first record for New York State (White *et al*. 2022) is from far north of the confirmed range of this species (see LaBerge 1967). No details are provided to document the identification, and we regard this report as unconfirmed at best.

Material examined. ***Fairfield Co.*****:** New Canaan: 15 September 1967, coll. M. Favreau, 1 ♀, AMNH, det. W.E. LaBerge, AMNH_BEE 00008267.

***Andrena* (*Callandrena* s. l.) *aliciae* Robertson, 1891**

Alice's Miner

Notes: Most records (n = 17) for this oligolege of Asteraceae (Hurd 1979) in Connecticut come from only 3 dates in 1967 from collections by M. S. Favreau in New Canaan (Fairfield County). There is a single record from Fairfield County in 1983, collector unknown. In 2020 and 2023, this species was detected in the towns of Southbury and North Haven (New Haven County) by community scientists on iNaturalist (https://www.inaturalist.org/observations?place_id=49&subview=table&taxon_id=336484) (see also **Figure 2, F).** It was also documented recently in the western counties of Massachusetts, where it is common on sunflowers (*Helianthus* sp.) in community gardens, small farms, and natural areas (Veit *et al.* 2022["2021"]).

***Andrena* (*Callandrena* s. l.) *asteris* Robertson. 1891**

Northern Aster Miner

Notes: This late season species has been found on its known host plants in Connecticut, including asters (*Symphyotrichum* spp.) and goldenrods (*Solidago* s. l.), in meadows, school grounds, agricultural land, and sandplain remnants.

***Andrena* (*Callandrena* s. l.) *braccata* Viereck, 1907**

Braccate Miner

Andrena braccata Viereck, 1907: 286 [287] (Connecticut lectotype designated by LaBerge, 1967).

Lectotype. Female USA: Connecticut: Tolland Co.: Rockville, 23 August 1905, H. L. Viereck (USNM).

Notes: This late season Asteraceae specialist has been found on goldenrods (*Solidago* s. l.) in Connecticut, in habitats such as powerline ROW and sandplain remnants. Its distribution in the northeast centers around Massachusetts and Connecticut, south to Gardiners Island (Ascher *et al*. 2014) and the tip of eastern Long Island, New York, at Montauk Beach (Suffolk County), extending northward to Vermont, New Hampshire, and Maine, and south to Virginia, with its western range limits uncertain (LaBerge 1967).

***Andrena* (*Callandrena* s. l.) *helianthi* Robertson, 1891**

Common Sunflower Miner

Notes: Most Connecticut specimens of this sunflower (*Helianthus* spp.) specialist (Hurd *et al*. 1980; Wood & Roberts 2018) were collected by M. S. Favreau in 1967 (n = 30). There are only three recent records; two are reported in Zarrillo *et al.* (2016) and the other is an observation made on iNaturalist by D. P. Mantack in 2023 (https://www.inaturalist.org/observations/178735972).

***Andrena* (*Callandrena* s. l.) *krigiana* Robertson, 1901**

Dwarf Dandelion Miner

Notes: This dwarf dandelion (*Krigia* sp.) specialist (Hurd 1979), recently reported northeast to Massachusetts (Veit *et al.* 2022["2021"]), is known in Connecticut from only one specimen noted below.

Material examined. ***New Haven Co.*****:** New Haven: 13 June 1902, coll. E.J.S. Moore, sex unverified, CAES, det. J.S. Ascher 2008, UCMS_ENT 00028187.

***Andrena* (*Callandrena* s. l.) *placata* Mitchell, 1960**

Shiny-tailed Goldenrod Miner

Notes: This late season specialist on goldenrods (*Solidago* s. l.) (Hurd 1979; Wood & Roberts 2018) was netted from its host plant during a study of alternative floral resources on vegetable farms in Connecticut (Stoner 2013). It was also found in sandplain remnants, powerline ROW, the edge of an inland swamp, and a quarry top.

***Andrena* (*Callandrena* s. l.) *simplex* Smith, 1853**

Dull-tailed Goldenrod Miner

Notes: This species has been collected from agricultural land, powerline ROW, a coastal wildlife refuge, and sandplain remnants.

Subgenus *Cnemidandrena* Hedicke

***Andrena* (*Cnemidandrena*) *canadensis* Dalla Torre, 1896**

Canada Miner

Notes: Most records (89%) for this species are from Litchfield County and are historical. Recent records (n = 2) were collected on 12 September 2007 and 11 October 2008. This species is broadly oligolectic on Asteraceae (Wood & Roberts 2018) and has been collected on goldenrod (*Solidago* s. l.) in Connecticut. Available habitat information for this species in Connecticut includes a small, diversified organic farm and a wooded suburban neighborhood. It is scarce in southern New England and evidently more numerous in northern New England, e.g. Coos County, New Hampshire, and Maine (M.F. Veit pers. comm.), and in Maritime Canada (J. S. Ascher pers. obs.).

***Andrena* (*Cnemidandrena*) *hirticincta* Provancher, 1888**

Hairy-banded Miner

Notes: This common species is broadly oligolectic on Asteraceae (Wood & Roberts 2018) and has been collected on wrinkleleaf goldenrod (*Solidago rugosa*), seaside goldenrod (*Solidago sempervirens*), late boneset (*Eupatorium serotinum*), and various asters (*Symphyotrichum* spp.) in diverse habitats in Connecticut, such as upland hardwood forests, sandplain remnants, a coastal wildlife refuge, coastal dunes, inland wetlands, powerline ROW, suburban neighborhoods, and agricultural land.

***Andrena* (*Cnemidandrena*) *nubecula* Smith, 1853**

Cloudy Miner

Notes: This specialist on Asteraceae (Wood & Roberts 2018) has been collected on goldenrod (*Solidago* s. l.) in Connecticut in powerline ROW, hardwood forests, sandplain remnants, inland wetlands, suburban neighborhoods, and agricultural land. This species was found in seven towns prior to the year 2000 and 18 towns after 2000, perhaps as an effect of the increasing number of community science observations of this distinctive species on iNaturalist (https://www.inaturalist.org/observations?place_id=49&subview=table&taxon_id=198973).

***Andrena* (*Cnemidandrena*) *parnassiae* Cockerell, 1902**

Parnassia Miner

Notes: A female of this rare specialist of grass of Parnassus (*Parnassia glauca*) was observed visiting its host plant in the town of Kent (Litchfield County) in 2020 on a dirt road along the western edge of the Housatonic River (https://www.inaturalist.org/observations/184382498). In 2021, two males were collected along a forest edge in a calcareous inland wetland in a powerline ROW in Canaan (Litchfield County) during a targeted search for this species. Although grass of Parnassus was in peak bloom and the weather was optimal, no other individuals were seen during a two-hour search. In 2023, targeted searches for *A. parnassiae* in Connecticut by M. W. McCarthy and T. A. Zarrillo, in five different locations, yielded only a single female (see **Figure 2, E**). This species is documented in New Jersey, Vermont, North Carolina, Ontario, Wisconsin, Michigan, and New York (near the Connecticut border in Dutchess County) by community scientists on iNaturalist.org, (https://www.inaturalist.org/observations?place_id=any&subview=table&taxon_id=198972), and there are recent records documented in Massachusetts (Veit *et al*.

2022["2021"]) and Manitoba (Gibbs *et al*. 2023). Although *A. parnassiae* may be more widespread than previously reported, host plant abundance alone may not be a great predictor of bee occurrence (M.W. McCarthy, pers. comm.) or abundance (J. Gibbs, pers. comm.).

Material examined. *Litchfield Co*.: Canaan: 41.98722 -73.35138, 4 September 2021, coll. T.A. Zarrillo, 2 ♂, CAES, det. T.A. Zarrillo 2021, netted from *Parnassia* sp., UCMS_ENT 00077627, UCMS_ENT 00077628; Sharon: 2023, coll. M.W. McCarthy, 1 ♀, Rutgers University, det. M.W. McCarthy 2023, netted from *Parnassia glauca.*

***Andrena* (*Cnemidandrena*) *robervalensis* Mitchell, 1960**

Roberval Miner

Notes: There has been confusion between this species and the similar *A. runcinatae* due in part to the latter having been misclassified in subgenus *Simandrena* (see Hurd, 1979) leading to its omission from Donovan's (1977) revision. Further taxonomic work on this pair is warranted, especially in the North Central States and Canada (Gibbs *et al.* 2017a, 2023; Portman *et al.* 2023). In the Northeastern United States, only *A. robervalensis* should occur, as reflected in relevant source databases but not yet all downstream institutional databases and metadatabases (which may report specimens as *A. runcinatae*).

Material examined. *Fairfield Co*.: New Canaan: 30 September 1956, coll. M. Statham, 1 ♂, AMNH, det. J.S. Ascher, AMNH_BEE 00012674; ***New Haven Co*.:** North Branford: 18 September 2002, coll. V.A. Nelson, 1 ♀, YPM, det. T.A. Zarrillo 2023, YPM ENT 828805.

Subgenus *Conandrena* Viereck

***Andrena* (*Conandrena*) *bradleyi* Viereck, 1907**

Bradley's Miner

Notes: *Andrena bradleyi* is most often associated with blueberry (*Vaccinium* spp.) (LaBerge 1985; Wood & Roberts 2018) although regional experts agree that this species is not a narrow oligolege of *Vaccinium* (J. Milam & M. F. Veit pers. comm.). Michael F. Veit (pers. comm.) has found *A. bradleyi* to be more common on leatherleaf (*Chamaedaphne calyculata*) than *Vaccinium*. In Connecticut, females and males have been observed visiting leatherleaf (*Chamaedaphne calyculata*) and willow (*Salix*, two males only) as well as blueberry in habitats such as acidic bogs, swamps, littoral zones of ponds and lakes, blueberry patches, and pollinator gardens. Watson *et al*. (2023) recently reported a single female *A. bradleyi* collected on willow (*Salix* sp.) in Manitoba with a pollen load consisting of 95.84% *Salix* pollen. This suggests that this bee species may be able to facultatively use pollen from another plant family when its preferred hosts are not available.

Subgenus *Gonandrena* Viereck

***Andrena* (*Gonandrena*) *fragilis* Smith, 1853**

Fragile Dogwood-Miner

Notes: This *Cornus* (Cornaceae) specialist, which has a more southern range than some other *Goandrena* (LaBerge & Ribble 1972), has been found commonly throughout Connecticut in habitats such as small, diversified organic farms, powerline ROW, forested urban parks, inland wetlands, and sandplain remnants. In Massachusetts, J. Milam has reliably captured this species on dogwood (*Cornus* sp.) in western counties (pers. comm.).

***Andrena* (*Gonandrena*) *integra* Smith, 1853**

Bare Dogwood-Miner

Notes: This specialist on *Cornus* (Cornaceae) (LaBerge & Ribble 1972; Wood & Roberts 2018) is not well known in Connecticut, having only five records from Fairfield County spanning 1904–1997, and one record from Hartford County collected in 2010. Growing numbers of community science observations of this readily

identifiable species in Vermont suggest that targeted searches for it in Connecticut on its preferred host plants might be productive.

Material examined. ***Fairfield Co.*****:** Brookfield: 26 May 1904, coll. W.E. Britton, 1 ♀, CAES, det. J.S. Ascher 2008, UCMS_ENT 00028186; New Canaan: 17 June 1956, coll. M. Statham, 1 ♂, AMNH, det. LaBerge, AMNH_BEE 00008842; 5 May 1962, coll. M. Statham, 1 ♂, AMNH, det. W.E. LaBerge, AMNH_BEE 00008843; 31 May 1968, coll. M. Favreau, 1 ♀, AMNH, det. W.E. LaBerge, AMNH_BEE 00008841; ***Hartford Co.*****:** Hartland: "West Hartland, 0.7 km S jct. State Route 20 and West Street", 42.0015 -72.97237, 26 May 2010, coll. C.T. Maier, 1 ♀, CAES, det. J.S. Ascher, netted from *Rubus allegheniensis*, UCMS_ENT 00082191.

***Andrena* (*Gonandrena*) *persimulata* Viereck, 1917**

Northern Dogwood-Miner

Notes: This specialist on *Cornus* (Cornaceae) (Hurd 1979) has a generally northern distribution and is known in Connecticut only from a Waterbury (New Haven County) record reported in LaBerge & Ribble (1972). Hardy *et al*. (2021) report this species is likely the least common of the four *Cornus* specialists in Vermont.

***Andrena* (*Gonandrena*) *platyparia* Robertson, 1895**

Dark-horned Dogwood-Miner

Notes: There are only four specimen records for this specialist on *Cornus* (Cornaceae) (LaBerge & Ribble 1972) in Connecticut.

Material examined. ***Fairfield Co.*****:** New Canaan: 3 June 1968, coll. M. Favreau, 1 ♀, AMNH, det. W.E. LaBerge, AMNH_BEE 00011834; 1 ♀, AMNH, det. J.S. Ascher 2010, AMNH_BEE 00108254; ***Tolland Co.*****:** Mansfield: "Storrs, Student Union", 2 July 1974, coll. G.I. Stage, 1 ♀, UCMS, det. T.A. Zarrillo 2021, UCMS_ENT 00077629; "near Chapins Pond", 6 July 1974, coll. G.I. Stage, 1 ♀, GSC, det. J.S. Ascher 2008, UCMS_ENT 00027924.

Subgenera *Iomelissa* Robertson

***Andrena* (*Iomelissa*) *violae* Robertson, 1891**

Violet Miner

Notes: This specialist on violet (*Viola*) pollen (LaBerge 1985) has been found in a variety of habitats in Connecticut, including agricultural land, orchards, beach dunes, coastal marsh, forests, and powerline ROW.

Subgenera *Larandrena* LaBerge

***Andrena* (*Larandrena*) *miserabilis* Cresson, 1872**

Tufted Miner

Notes: This spring species persists commonly across Connecticut.

Subgenera *Leucandrena* Hedicke

***Andrena* (*Leucandrena*) *barbilabris* (Kirby, 1802)**

Barb-lipped Miner

Notes: This Holarctic species (Falk & Lewington 2015; Westrich 2019) is known to visit rosaceous plants in Connecticut such as American gooseberry (*Ribes oxyacanthoides*), flowering plum (*Prunus triloba*), pear (*Pyrus communis*), peach (*Prunus persica*), European plum (*Prunus domestica*), and Chinese plum (*Prunus salicina*).

***Andrena* (*Leucandrena*) *erythronii* Robertson, 1891**

Trout-lily Miner

Notes: Hurd (1979) reports this spring species primarily collects pollen from trout-lily (*Erythronium americanum*), but it is known to use pollen from other taxa as well, such as *Quercus*, *Taraxacum*, *Prunus*, and *Malus* (Michener & Rettenmeyer 1956), and Smith *et al*. (2018) found the pollen loads of *A. erythronii* to be unusually diverse. LaBerge (1986a) reports *Andrena erythronii* from Hartford, New Haven, and Tolland Counties. We have also found this species in Litchfield County at the southern edge of an agricultural field and approximately 60 m from the edge of a hardwood forest.

Material examined. *Litchfield Co*.: Kent: "Millstone Farm, 49 Beardsley Road", 41.69833 -73.38722, 6 May 2013, coll. T.A. Zarrillo, 1 ♀, CAES, det. J.S. Ascher, netted from *Pyrus communis*, UCMS_ENT 00072057.

Subgenus *Melandrena* Pérez (sensu Pisanty *et al.* 2022)

***Andrena* (*Melandrena*) *barbara* Bouseman and LaBerge, 1979**

Barbara's Miner

Notes: There are three records for this large spring bee in Connecticut in three different counties. Due to its relatively recent description, it was not reported by historical workers in the region.

Material examined. *Fairfield Co*.: Danbury: "I-84, exit 2", 41.39247 -73.5271, 9 April 2005, coll. J.S. Ascher, 1 ♂, AMNH, det. J.S. Ascher 2008, netted from *Salix* sp., AMNH_BEE 00064349; ***Hartford Co*.:** South Windsor: 41.84313503 -72.54050636, 28 May 2017, coll. M.F. Veit, 1 ♀, personal collection, det. M.F. Veit, powerline ROW; ***Middlesex Co*:** Westbrook: "USFWS Stewart B. McKinney National Wildlife Refuge, Salt Meadow Unit, 733 Old Clinton Road", 41.28694 -72.47278, 29 May–10 June 2013, coll. K. Vagos, 1 ♀, CAES, det. S. Droege 2017 and re-examined by T.A. Zarrillo 2022, bee bowl, UCMS_ENT 00074991.

***Andrena* (*Melandrena*) *carlini* Cockerell, 1901**

Carlinville Miner

Notes: This vernal species, known to be an important blueberry visitor (Boulanger *et al.* 1967; Bushman & Drummond 2015; Kloet 1976), is commonly found throughout Connecticut in diverse habitats including a coastal wildlife refuge, beach dunes, inland sandplain remnants, acidic bogs, hayfields and grassy meadows, pollinator and botanical gardens, agricultural fields and orchards, hardwood forests, and powerline ROW. A large number of *Andrena* (*Melandrena*) records on community science sites from Connecticut and nearby states likely pertain to this species but are often left unidentified due to potential confusion with *A. regularis*, a numerous species to the north of Connecticut.

***Andrena* (*Melandrena*) *commoda* Smith, 1879**

Commodius Miner

Notes: This species has been found in coastal locations in Connecticut, such as beach dunes and marshes, as well as inland urban environments, agricultural land, and arboretums. Most Massachusetts records are coastal, from Cape Cod and Plymouth County, with some southern records from inland locations (M.F. Veit pers. comm.).

***Andrena* (*Melandrena*) *confederata* Viereck, 1917**

Confederate Miner

Notes: This southern species reaches its northern range limit in Connecticut, with only three records in two coastal counties.

Material examined. *Fairfield Co*.: New Canaan: 27 May 1962, coll. M. Statham, 1 ♂, AMNH, det. W.E. LaBerge, AMNH_BEE 00020584; ***New London Co*.:** Montville: "Route 163", 41.495556, -72.188611, 6–10 June 2005, coll. C.J. Daley, 1 ♂, UCMS, det. J.S. Ascher 2006, yellow bee bowl, UCMS_ENT 00020584; New London: "Connecticut College Arboretum, 270 Mohegan Avenue", 41.3797, -72.10985, 4–11 June 2019, coll. T.A. Zarrillo & J. Durrell, 1 ♀, CAES, det. J. Day 2019, bee bowl, UCMS_ENT 00082093.

***Andrena* (*Melandrena*) *dunningi* Cockerell, 1898**

Dunning's Miner

Andrena (*Melandrena*) *Dunningi* Cockerell, 1898: 103 (Connecticut holotype).

Holotype. Female USA: Connecticut: Hartford Co.: Hartford, 26 May 1895, S. N. Dunning (USNM).

Notes: This common spring species has been found across Connecticut in habitats such as agricultural land, urban and suburban neighborhoods, pollinator gardens, an arboretum, and at the edge of an inland swamp.

***Andrena* (*Melandrena*) *erythrogaster* (Ashmead, 1890)**

Red-tailed Miner

= *Andrena rhodora* Cockerell, 1898: 171 (Connecticut lectotype; see LaBerge and Bouseman, 1970).

Lectotype. Female USA: Connecticut: Hartford Co.: Hartford, 2 June 1895, S. N. Dunning (USNM).

Notes: First reported in Connecticut from Cockerell's description of *Andrena rhodura* (Cockerell 1898b), now a junior synonym. There are few records for this oligolege of willow (*Salix*) (Hurd 1979; Wood & Roberts 2018) in Connecticut, having only five records between 1904 and 1915, and then a gap of almost 90 years before this species was detected again on 24 April 2004 by J. S. Ascher in Bethel (Fairfield County) on willow (n = 17). The next detection of this species in Connecticut was a female singleton collected in Northford (New Haven County) on 12 May 2011 on wild mustard (*Brassica rapa*) during a study of alternative floral resources on diversified farms (Stoner 2013). More recently, this species was found in 2023 at Robbins Swamp Wildlife Management Area in Canaan (Litchfield County). This species is locally common on willow (*Salix* sp.) in Massachusetts (M.F. Veit pers. comm.) but may be declining in more southern sites.

***Andrena* (*Melandrena*) *hilaris* Smith, 1853**

Lively Miner

Notes: This southern species was reported in Britton & Viereck (1906) [as "*A. hilaris*?"] and again in Viereck *et al*. (1916), but records published before the subgeneric revision (Bouseman & LaBerge 1978) are not reliable. The first verified record for the state we could locate is from 1962, determined by J. K. Bouseman. There are fifteen verified records for this species in Connecticut from ten distinct collecting events, all in coastal counties.

***Andrena* (*Melandrena*) *nivalis* Smith, 1853**

Snowy Miner

Notes: This northern species was first reported in Viereck *et al.* (1916). The first specimen vouchers we could locate were collected in 1976 on meadowsweet (*Spiraea* sp.) and maleberry (*Lyonia* sp.) in Stafford (Tolland County) by G. I. Stage. Connecticut is near the southern edge of this species' range. *Andrena nivalis* is best known from inland and upland locations within the state except for two specimens collected at the Connecticut College Arboretum in coastal New London County in 2019, which is near the Thames River. It has been collected in habitats such as a forest meadow, powerline ROW, upland hardwood forest, agricultural land, and sandplain remnants.

***Andrena* (*Melandrena*) *perplexa* Smith, 1853**

Perplexing Miner

Notes: This species was reported in Viereck *et al.* (1916) [as *Andrena perplexa viburnella* Graenicher], but the historical voucher has not been located and there is the potential for confusion with several other *Melandrena* species e.g., *A. barbara*, and *A. vicina*. This species is widespread in Connecticut, being present in all but one county. Although not common, it is regularly collected in diverse habitats such as beach dunes, forest edges and openings, inland wetlands, powerline ROW, school grounds, grassy fields, and agricultural land.

***Andrena* (*Melandrena*) *pruni* Robertson, 1891**

Cherry Miner

Notes: Despite the distinctive narrow foveae of females and conspicuous sternal hair tuft of males, *Andrena pruni* was overlooked in historical collections (Gibbs *et al*. 2017a), and it may have been mistaken for *A. dunningi* by Viereck *et al.* (1916). Since Zarrillo *et al*. (2016), Tolland County has been added to its distribution. This species has been found in meadows, powerline ROW, agricultural land, beach dunes, hardwood forests, school grounds, an arboretum, suburban neighborhoods, and sandplain remnants. It has been collected regularly in Connecticut since 1962 and shows up in regional community science databases.

***Andrena* (*Melandrena*) *regularis* Malloch, 1917**

Point-tailed Miner

Notes: Historically, from 1904 to 1964, this species was detected only in New Haven County in southern coastal Connecticut, even though this species has a generally northern range (Bouseman & Laberge, 1978). However, in recent years all but two records in Connecticut come from the Lower Berkshire Hills, the Berkshire Transition, and the Western New England Marble Valleys in Litchfield County. This species has been found in habitats such as acidic and black spruce bogs in northern Connecticut.

***Andrena* (*Melandrena*) *sayi* Robertson, 1891**

Say's Miner

Notes: Correctly identified examples of this southern species (Bouseman & LaBerge 1978) are nearly absent from regional collections, so its recent detection as far north as Connecticut is surprising. A female was captured in a deciduous inland wetland. The specimen was carefully examined and determined by T. A. Zarrillo and M.F. Veit with reference to Bouseman & LaBerge (1978). This represents a large range extension for this species from the Midwest and Mid-Atlantic Regions into southern New England (there are no confirmed records from New York State).

Material examined. ***Fairfield Co*.:** Stamford: "Bartlett Arboretum", 41.13378 -73.55256, 13–20 May 2019, coll. T.A. Zarrillo, 1 ♀, CAES, det. T.A. Zarrillo & M.F. Veit 2021, bee bowl, UCMS_ENT 00776626.

***Andrena* (*Melandrena*) *vicina* Smith, 1853**

Neighborly Miner

Notes: This common species has been found in habitats such as agricultural land, powerline ROW, inland wetlands, upland hardwood forests, acidic bogs, and coastal wetlands.

Subgenus *Micrandrena* Ashmead

***Andrena* (*Micrandrena*) *melanochroa* Cockerell, 1898**

Strawberry Mini-Miner

Notes: First reported from Connecticut by Mitchell (1960), and not well known in the state.

Material examined. ***Hartford Co*.:** West Hartford**: "**Hartford Reservoir Number 3", 3 May 1967, coll. S.M. Fullerton, 1 ♀, UCMS, det. J.S. Ascher, UCMS_ENT 00050268; Granby: 24 May 1973, coll. J. Blake, 2 ♀, UCMS, det. J.S. Ascher, UCMS_ENT 00050266, UCMS_ENT 00050267; ***Tolland Co*.:** Mansfield: "Chaffeeville", 25 April 1972, coll. J.G. Berardinelli, 1 ♂, UCMS, det. J.S. Ascher, UCMS_ENT 00052414; "Storrs", 12 May 1972, coll. J.G. Berardinelli, 1 ♂, UCMS, det. J.S. Ascher, UCMS_ENT 00052415.

***Andrena* (*Micrandrena*) *neonana* Viereck, 1917**

Rugose-backed Mini-Miner

Notes: This small species of southern affinities is not well known in Connecticut, although it has been recently documented on Martha's Vineyard, Massachusetts (Goldstein & Ascher 2016), Gardiners Island, New York, and New York State (Ascher *et al.* 2014). There are only two Connecticut records, both captured during a Bioblitz.

Material examined. *Hartford Co.*: East Hartford: "Rentschler Field", 4 June 2005, coll. J.S. Ascher, 2 ♂, AMNH, det. J.S. Ascher 2010, AMNH_BEE 00141274, AMNH_BEE 00141275.

***Andrena* (*Microandrena*) *nigrae* Robertson, 1905**

Orange-footed Mini-Miner

Notes: Hartford is reported for this rare species as either a town or county in Ribble (1967), and this record may be the specimen that Ribble determined at SEMC, collected on 13 May 1894 (SEMC 396379; unverified by us by the time of publication). *Andrena nigrae* has been historically confused with *Andrena illinoiensis* (see Appendix 2) and *Andrena salictaria.*

***Andrena* (*Micrandrena*) *personata* Robertson, 1897**

Masked Mini-Miner

Notes: The presence of this species in Connecticut is recorded only in Mitchell (1960) without details. Further confirmation is desirable given the paucity of fully confirmed records north of southern Pennsylvania (Ribble 1968). We accept the record in Mitchell (1960), however, due to the existence of credible records for New York and Vermont, despite lack of Massachusetts records (Veit *et al.* 2022["2021"]).

***Andrena* (*Micrandrena*) *salictaria* Robertson, 1905**

Willow Mini-Miner

Notes: This northern species is not well known from Connecticut, having only 16 records (including the record in Ribble 1968) and four known collection events in Bethel (Fairfield County, 9 April 2005, n = 1), Danbury (Fairfield County, 24 April 2004, n = 10), Windsor (Hartford County, 21 May 1934, n = 1), and West Hartford (Hartford County, 1 May 1967, n = 3). Ten of the sixteen records were netted from its pollen host willow (*Salix* sp.; Ribble 1968, see also Ostaff *et al.* 2015; Mosseler *et al.* 2020), and one specimen was collected from maleberry (*Lyonia ligustrina*).

***Andrena* (*Micrandrena*) *vernalis* Mitchell, 1960**

Vernal Mini-Miner

Andrena (*Micrandrena*) *vernalis* Mitchell, 1960: 168 (Connecticut holotype).

Holotype. Female USA: Connecticut: Litchfield Co.: Colebrook, 31 May 1922, W. M. Wheeler (MCZ).

Notes: At this time, we are considering only the specimens examined by Portman *et al*. (2020) at MCZ to be valid *A. vernalis*, due to the uncertain status of the remaining specimens at AMNH, UCMS, and CAES. Tracy A. Zarrillo examined the specimens at MCZ, UCMS, and CAES and was unable to distinguish this species from *Andrena ziziae* with confidence.

***Andrena* (*Micrandrena*) *ziziae* Robertson, 1891 (sensu Portman *et al.* 2020)**

Golden Alexander Mini-Miner

Notes: At this time, we are considering only the specimens examined by Portman *et al.* (2020) at MCZ to be valid *A. ziziae*, in Connecticut due to the uncertain status of the remaining specimens at AMNH, UCMS, and CAES. T. A. Zarrillo examined the vouchers at MCZ, UCMS, and CAES and was unable to distinguish this species from *Andrena vernalis* with confidence.

Subgenus *Opandrena* Robertson (reinstated as distinct from *Holandrena* by Pisanty *et al*. 2022)

***Andrena* (*Opandrena*) *cressonii cressonii* Robertson, 1891**

Cresson's Miner

Notes: This species is well known throughout Connecticut and has been collected in habitats such as agricultural land, powerline ROW, sandplain remnants, inland wetlands, state forests and parks, arboretums, urban/suburban neighborhoods, and a coastal wildlife refuge.

Subgenus *Parandrena* Robertson

***Andrena* (*Parandrena*) *nida* Mitchell, 1960**

Sandbar Willow Miner

Notes: This species is reportedly a willow specialist (LaBerge & Ribble 1972) and is known to visit sandbar willows very locally at Ithaca, New York, where it is scarce. There are only two records of this species in Connecticut.

Material examined. *Tolland Co*.: Coventry: "near Eagleville Dam", 25 April 1972, coll. M.M. Primiani, 1 ♂, UCMS, det. J.S. Ascher 2013, UCMS_ENT 00055442; Mansfield: "Chaffeeville", 25 April 1972, coll. J.G. Berardinelli, 1 ♂, UCMS, det. J.S. Ascher 2013, UCMS_ENT 00055441.

***Andrena* (*Parandrena*) *wellesleyana* Robertson, 1897**

Wellesley Willow Miner

Notes: There are twenty records for this willow specialist (Wood & Roberts 2018) in Connecticut. Five specimens were collected between 1915 and 1916 by H. L. Johnson in "South" Meriden (New Haven County), and then 56 years later this species was detected again on 25–27 April 1972 (n = 12) in Coventry (Tolland County) and Mansfield (Tolland County). Veit *et al*. (2022["2021"]) reported this species to be associated with interior sandplains and former gravel/sand pits in Massachusetts. Connecticut locality information is imprecise, with general references made to inland wetlands, such as "near Chapins Pond" (Mansfield) or "near Eagleville Dam" (Coventry). The two latest records collected by C. T. Maier on 21 April 1997 and 31 March 1998 were taken in a "heavily disturbed (ATV's) sandy area" (C. T. Maier pers. comm.) in "North Haven 0.5 km NNW of interchange 12 (US Highway 5) on Interstate 91", which is in New Haven County.

Subgenus *Plastandrena* Hedicke

***Andrena* (*Plastandrena*) *crataegi* Robertson, 1893**

Hawthorn Miner

Notes: This species has been found in diverse habitats throughout Connecticut, such as acidic bogs, agricultural fields and orchards, state forests and parks, marsh, beach dunes, a coastal wildlife preserve, and school grounds.

Subgenus *Ptilandrena* Robertson (sensu Pisanty *et al.* 2022)

***Andrena* (*Ptilandrena*) *algida* Smith, 1853**

Wintry Miner

Notes: There are only ten specimen records for this northern species in Connecticut, seven being captured before the year 2000. The two most recent specimens are males that were collected on pussy willow (*Salix discolor*) in Sharon (Litchfield County) by C. T. Maier on 16 April 2009 near an orchard and berry farm. Other records were collected near an inland lake, at an exit ramp off a major interstate highway, and a forested state park. This species may be more common as a willow visitor to the north of Connecticut (Mosseler *et al*. 2020; Ostaff *et al*. 2015).

***Andrena* (*Ptilandrena*) *distans* Provancher, 1888**

Cranesbill Miner

Notes: This specialist on wild geranium (*Geranium maculatum*) (Wood & Roberts 2018) has been collected locally along forest margins in Connecticut where its host plant occurs.

***Andrena* (*Ptilandrena*) *erigeniae* Robertson, 1891**

Spring Beauty Miner

Notes: This specialist of spring beauty (*Claytonia virginica*) (Hurd 1979; LaBerge 1986b; Wood & Roberts 2018) has been collected locally in forested landscapes in Connecticut where its host plant occurs.

***Andrena* (*Ptilandrena*) *nigrihirta* (Ashmead, 1890)**

Black-haired Miner

Notes: In addition to the voucher noted below, this northern species was reported from Connecticut by Mitchell (1960) and LaBerge & Ribble (1975).

Material examined. *Litchfield Co*.: Barkhamsted: "Peoples Forest, Beaver Brook Rd.", 16 May 1966, coll. S.M. Fullerton, 1 ♀, UCMS, det. J.S. Ascher, UCMS_ENT 00049850.

Subgenus *Rhacandrena* LaBerge

***Andrena* (*Rhacandrena*) *brevipalpis* Cockerell, 1930**

Short-palped Miner

Notes: Two female specimens collected by H. L. Viereck in Putnam (Windham County) on 12 July 1905 and determined historically as *Andrena robertsoni* were re-examined by J. S. Ascher in 2008 and found to be the very similar *A. brevipalpis* Cockerell. In Connecticut, *Andrena brevipalpis* has been collected in powerline ROW, Housatonic State Forest, and a coastal wildlife management area (Barn Island Wildlife Management Area), which contains one of Connecticut's largest remaining unfragmented maritime forests.

***Andrena* (*Rhacandrena*) *robertsonii* Dalla Torre, 1896**

Robertson's Miner

Notes: Although *Andrena robertsonii* Dalla Torre was reported in Viereck *et al*. (1916), the collection information cited matches exactly the collection information on the two specimens reidentified as *A. brevipalpis* from 1905, as noted above. However, true *Andrena robertsonii* identified with reference to LaBerge (1977) have been collected in habitats such as sandplain remnants, state forests, wildlife management areas, agricultural land, and a quarry.

Subgenus *Scaphandrena* Lanham

***Andrena* (*Scaphandrena*) *arabis* Robertson, 1897**

Mustard Miner

Notes: This species with an affinity for Brassicaceae (Hurd 1979; Wood & Roberts 2018) has been collected in Connecticut from exotic weeds such as hairy bittercress (*Cardamine hirsuta*) and yellow rocket (*Barbarea vulgaris*), and from intentionally planted mizuna (*Brassica rapa*). It has been found on agricultural land, school grounds, and in suburban settings with forest remnants.

Subgenus *Scrapteropsis* Viereck (likely non-monophyletic; see Pisanty *et al.* 2022)

***Andrena* (*Scrapteropsis*) *imitatrix* Cresson, 1872**

Imitator Miner

Notes: This species is widespread in Connecticut and has been found on agricultural land, powerline ROW, and state forests. It can be abundant in regional forests in early spring.

***Andrena* (*Scrapteropsis*) *kalmiae* Atwood, 1934**

Sheep-laurel Miner

Notes: LaBerge (1971) reported a single female collected on 26 May 1894 at the Hatch Experiment Station in Connecticut (likely referring to the Connecticut Agricultural Experiment Station in New Haven County, as the facility in Tolland County was called the Storrs Agricultural College at that time), the basis for our listing of New Haven as a probable county for this species. The only other records of this species in Connecticut are reported in Wagner e*t al*. (2019) from powerline ROW in Ellington (Tolland County) and South Windsor (Hartford County). This *Kalmia* specialist (LaBerge 1986b) has never been reported from New York State. It seems to be a regional specialty mostly or entirely restricted to New England and eastern Canada.

Material examined. *Hartford Co*.: South Windsor: 41.871 -72.519, 28 May 2017, coll. M.F. Veit, 1 ♂, CAES, det. M.F. Veit and re-examined by T.A. Zarrillo 2022, UCMS_ENT 00082289; ***Tolland Co*.:** Ellington: 41.908 -72.508, 15 June 2017, coll. M.F. Veit, 1 ♀, CAES, det. M.F. Veit and re-examined by T.A. Zarrillo 2022, UCMS_ENT 00082288.

***Andrena* (*Scrapteropsis*) *morrisonella* Viereck, 1917**

Morrison's Miner

Notes: Mitchell (1960) records this species for Connecticut, however confusion with *Andrena imitatrix*, *Andrena ilicis*, and *Andrena fennigeri* Viereck may contribute to the scarcity of Connecticut records. The first verified record we could locate was a female collected during a BioBlitz. There have been only two other detections of *A. morrisonella* in Connecticut since.

Material examined. *Fairfield Co*.: Danbury: "Tarrywile Park", 41.37972 -73.45527, 9 June 2001, coll. "Hymenoptera Team", 1 ♀, UCMS, det. J.S. Ascher, UCMS_ENT 00034950; ***Hartford Co*.:** Simsbury: "Simsbury Airport, Sand-plain", 41.91482 -72.774, 3 July 2003, coll. J.L. Smith, sex unverified, UCMS, det. J.S. Ascher, UCMS_ENT 00027405; ***Middlesex Co*.:** Westbrook: "USFWS Stewart B. McKinney National Wildlife Refuge, Salt Meadow Unit, 733 Old Clinton Road", 41.28708 -72.47288, 23 May–13 June 2012, coll. K. Vagos, 1 ♀, CAES, det. T.A. Zarrillo 2013, bee bowl, UCMS_ENT 00052634.

***Andrena* (*Scrapteropsis s. l.*) *alleghaniensis* Viereck, 1907**

Alleghany Miner

Notes: This species and perhaps others in "The *alleghaniensis* group" (LaBerge 1971) may need to be removed from subgenus *Scrapteropsis* based on its position in a recent phylogenetic analysis closer to subgenus *Rhapandrena* than to the type species of *Scrapteropsis* and of its subjective synonym *Mimandrena* (Pisanty *et al.* 2022). *Andrena alleghaniensis* has been found on school grounds, agricultural land, sandplain remnants, urban areas, an arboretum, and along the coast at state beaches in Connecticut.

***Andrena* (*Scrapteropsis s. l.*) *ilicis* Mitchell, 1960**

Holly Miner

Notes: A single specimen of this southern species was collected 13 Jun 2009 by M.F. Veit at Keney Park in East Hartford (Hartford County) during Hartford's first BioBlitz event. Despite its close resemblance to *A. imitatrix* and its inclusion as a divergent member of "The *imitatrix* group" within the subgenus by LaBerge (1961) this species may need to be removed from subgenus *Scrapteropsis* based on its position in a recent phylogenetic analysis closer to the seemingly different subgenera *Onagrandrena* and *Diandrena* than to the type species of *Scrapteropsis* and of its subjective synonym *Mimandrena* (Pisanty *et al.* 2022).

Subgenus *Simandrena* Pérez

***Andrena* (*Simandrena*) *nasonii* Robertson, 1895**

Nason's Miner

= *Andrena hartfordensis* Cockerell, 1902: 103 (Connecticut syntype, reported as the holotype by Laberge, 1989, likely based on its labelling).

Syntype. Female USA: Connecticut: Hartford Co.: Hartford, 31 May 1896, S. N. Dunning (UCMC).

Notes: This species has been collected in many diverse habitats throughout Connecticut such as agricultural land, meadows, quarries, coastal wetlands, powerline ROW, forest edges, forest meadows, and sandplain remnants.

***Andrena* (*Simandrena*) *wheeleri* Graenicher, 1904**

Wheeler's Miner

Notes: This species was reported to occur in the northwest hills of Connecticut by LaBerge (1989).

Subgenus *Taeniandrena* Hedicke

***Andrena* (*Taeniandrena*) *wilkella* (Kirby, 1802)**

Wilke's Miner

= *Andrena winkleyi* Viereck, 1907: 283, 285 (Connecticut holotype).

Holotype. USA Male: Connecticut: New Haven Co.: Branford, 22 July 1905 (22 May 1905), H. W. Winkley (USNM).

Notes: This ubiquitous ground-nesting species of Palearctic origin is found throughout Connecticut in habitats such as powerline ROW, a hayfield, a marsh, agricultural land, forest edges, inland dunes, state forests, urban and suburban land, school grounds, and sandy areas. It is the *Andrena* commonly found visiting Fabaceae in summer in the Eastern United States.

Subgenus *Thysandrena* Lanham

***Andrena* (*Thysandrena*) *bisalicis* Viereck, 1908**

Pebbled Miner

Notes: This willow specialist was the third most common species of *Andrena* foraging on willow (*Salix*) catkins in Mosseler *et al*. (2020), and it has been collected in Connecticut on its host plant. Most specimen records for this species in Connecticut (84%) were taken between 1958 and 1975, with four known records between 2004 and 2013.

***Andrena* (*Thysandrena*) *w-scripta* Viereck, 1904**

W-labrum Miner

Notes: Most records for this species (92%) were collected between 1964 and 1972, including one record from a feldspar quarry in the town of Portland (Middlesex County). This species was detected again in 1981 by C. T. Maier, likely in the sandplain remnant in "North Haven" (New Haven County), and in 2006 in a powerline ROW. These habitats differ from the boreal forest association described for this species in LaBerge (1986b).

Subgenus *Trachandrena* Robertson

***Andrena* (*Trachandrena*) *ceanothi* Viereck, 1917**

Ceanothus Miner

Notes: This species is associated with sandplain habitats (Goldstein & Ascher 2016), and is known in Connecticut from only five records, four of which were collected in powerline ROW.

Material examined. ***Hartford Co.*****:** Simsbury: "Stratton Br. Park", 17 May 1961, coll. J.F. Lienesch, 1 ♂, UCMS, det. J.S. Ascher 2011, UCMS_ENT 00041193; ***New London Co.*****:** Bozrah: "South Rd.", 41.52768 -72.17976, 12 June 2006, coll. N. Bricker & J. Watson, 1 ♀, UCMS, det. J.S. Ascher 2007, UCMS_ENT 00020564; Montville: "Fire St.", 41.436 -72.164, 14 June 2006, coll. N. Bricker & J. Watson, 1 ♀, UCMS, det. J.S. Ascher 2006, UCMS_ENT 00020815; ***Tolland Co.*****:** Ellington: 41.943434 -72.489386, 1 June 2017, coll. M.F. Veit, 1 ♂, personal collection, det. M.F. Veit; ***Windham Co.*****:** Killingly: "Louisa Viens Dr. (Rd.)", 41.86944 -71.90527, 12 May 2011, coll. D. Wagner, B. Gagliardi & A. Rodd, 1 ♀, UCMS, det. J.S. Ascher, UCMS_ENT 00050603.

***Andrena* (*Trachandrena*) *forbesii* Robertson, 1891**

Forbes' Miner

Notes: This species has been observed in Connecticut in habitats such as powerline ROW, forest edges, meadows, agricultural land, and coastal sites.

***Andrena* (*Trachandrena*) *heraclei* Robertson, 1897**

Cow Parsnip Miner

Notes: This southern species has a strictly coastal distribution in southern New England and there are only two records for this species in Connecticut, both in coastal counties.

Material examined. ***New Haven Co.*****:** Guilford: 41.2889 -72.6822, 4 May 2003, coll. J.S. Ascher, 1 ♂, AMNH, det. J.S. Ascher 2012, AMNH_BEE 00233765; ***New London Co.*****:** Waterford: "Douglas St., grassland B.", 41.39282 -72.15613, 10–13 May 2007, coll. N.K. Bricker *et al.*, 1 ♀, UCMS, det. J.S. Ascher 2009, bee bowl, UCMS_ENT 00025688.

***Andrena* (*Trachandrena*) *hippotes* Robertson, 1895**

Orange-legged Miner

Notes: In Connecticut this species has been collected on agricultural land, beach dunes, and school grounds.

***Andrena* (*Trachandrena*) *miranda* Smith, 1879**

Marvelous Miner

Notes: This northern species was well known in Litchfield County historically (1905-1926) but is rarely detected now. The most recent record was one collected on 25 July 2006 in New London County.

***Andrena* (*Trachandrena*) *nuda* Robertson, 1891**

Nude Miner

Notes: Detections of this southern species in Connecticut have been increasing since it was first discovered in the state in 1962. Notably, since 2005 this species has been collected or observed at least once in all years except 2014, 2015, and 2019. It has been found in sandplains, agricultural land, state parks and forests, and powerline ROW. This distinctive bee seems to be expanding its range regionally as it was historically undetected from the Finger Lakes Region but has been reported there recently (see White *et al*. 2022) and there are several iNaturalist records (https://www.inaturalist.org/observations/160991248).

***Andrena* (*Trachandrena*) *rehni* Viereck, 1907**

Rehn's Miner

Notes: Viereck *et al*. (1916) reported this species as having a probable presence in Connecticut, and Mitchell (1960) reported its presence in Connecticut without details, perhaps just following Viereck's report. Three females

of this uncommon species were captured on 1 July 2019 on the flowers of *Castanea* spp. at the CAES experimental farm in Hamden (New Haven County) in a chestnut orchard whose trees date back to 1939. Subsequent searches in 2021 in the same location have detected more individuals (T. A. Zarrillo unpublished) in June and July. A single female was also detected in Old Lyme (New London County) at the Roger Tory Peterson Estuary Center in 2021. LaBerge (1973) states that this species has been collected most frequently from the flowers of *Ceanothus* sp., but *Castanea pumila* is also listed as a floral record. In Connecticut, *Andrena rehni* visits the blossoms of both chestnut and chinquapin: *C. pumila*, *C. ozarkensis*, *C. dentata*, *C. henryi*, *C. mollissima*, *C. sativa*, *C. crenata*, *C. dentata* x (*C. pumila* x *C. crenata*), and *C. seguinii* x *C. seguinii*. The distribution and host specific information for this historically under-recorded bee species is currently under investigation regionally. There is an unverified historical record in BISON from 21 April 1895 deposited at the Snow Entomological Museum Collection. However, Mitchell (1960) reported the flight period for this species to be May through July, and the bloom period in Connecticut for *Castanea* and *Ceanothus* occurs in June and July. Therefore, we are excluding this phenologically anomalous record until it can be verified.

***Andrena* (*Trachandrena*) *rugosa* Robertson, 1891**

Rugose Miner

Notes: This early spring bee has been found across Connecticut in habitats such as powerline ROW, agricultural land, meadows, and upland state forests.

***Andrena* (*Trachandrena*) *sigmundi* Cockerell, 1902**

Sigmund's Miner

Notes: Known habitats in Connecticut for this species include a marsh, powerline ROW, an urban park, and a forest.

***Andrena* (*Trachandrena*) *spiraeana* Robertson, 1895**

Spiraea Miner

Notes: This species was reported in Viereck *et al.* (1916) from the village of "Mount Carmel" in Hamden (New Haven County) on 23 June 1902 and has since been detected in all counties except Windham. It has been found in an urban park, powerline ROW, sandplain remnants, coastal wildlife refuge, and a forest adjacent to a lake. While *A. spiraeana* is polylectic (Wood & Roberts 2018), LaBerge (1973) states this species seems to prefer flowers with small white or yellow clusters, and in Connecticut it has been collected from black cherry (*Prunus serotina*), meadowsweet (*Spiraea* sp.) and sumac (*Rhus* sp.).

***Andrena* (*Trachandrena*) *virginiana* Mitchell, 1960**

Virginia Miner

Notes: This summer flying species was reported in Viereck *et al*. (1916) [as *Andrena obscura* Robertson] from Colebrook (Litchfield County) on 21 July 1905. Of note, 81% (n = 39) of all known specimen records (n = 48) for this species were collected in 2006 in a powerline ROW by N. Bricker and J. Watson in Bozrah (New London County). The four most recent records, captured by M. F. Veit in 2017, were also collected in a powerline ROW on meadowsweet (*Spiraea* sp.).

Subgenus Uncertain

***Andrena uvulariae* Mitchell, 1960**

Bellwort Miner

Notes: Two additional females of this species have been captured since Zarrillo *et al*. (2016) in bee bowls placed in a planting of large-flowered bellwort (*Uvularia grandiflora*) at the Connecticut College Arboretum in New London (New London County) between 14–21 May 2019. This species was placed in the subgenus *Derandrena* prior to phylogenetic analyses by Pisanty *et al.* (2022).

***Andrena ziziaeformis* Cockerell, 1908**

Ephemeral Miner

Notes: This species was reported in Britton (1920) as occurring in Connecticut, and later reported for the state in Ribble (1967). We have not located any of the historical specimens, nor have we collected this species in recent surveys. Like *A. uvulariae*, this species has been removed from the subgenus *Derandrena* which is now restricted to California, Oregon, and Baja California.

Panurginae

Calliopsini

Genus *Calliopsis* Smith

Reference: Bossert *et al*. (2022); Mitchell (1960); Ramos *et al*. (2022); Shinn (1967)

Subgenus *Calliopsis* Smith

***Calliopsis* (*Calliopsis*) *andreniformis* Smith, 1853**

Eastern Calliopsis

Notes: This widespread species is common in Connecticut and is often associated with Fabaceae (Dyer & Shinn 1978). *Calliopsis andreniformis* has been found in habitats such as grasslands, powerline ROW, sand quarries, school grounds, and agricultural land.

Subgenus *Verbenapis* Cockerell & Atkins

***Calliopsis* (*Verbenapis*) *nebraskensis* Crawford, 1902**

Nebraska Vervain Calliopsis

Notes: There are two records for this regionally rare species in Connecticut. The male collected in Barkhamsted (Litchfield County) was re-examined by G. Diehl at UCFC in 2021 for this checklist. Another male was collected in a wet meadow during a survey of old fields in Connecticut (Urban-Mead 2017). *Calliopsis nebraskensis* has been found in the past very locally in northern New Jersey as well but is otherwise unknown in the Northeastern United States. It is more widespread in the Midwest east to Indiana.

Material examined. *Litchfield Co*.: Barkhamsted: "Pleasant Valley", 17 July 1966, coll. S.M. Fullerton, 1 ♂, UCFC, det. G. Diehl 2021, UCFC 0 287 977; ***Windham Co*.:** Pomfret: "Pomfret Center, nr. Mashmoquet Brook", 41.85641 -71.9448, 15 July 2013, coll. K. Urban-Mead, 1 ♂, YPM, det. S. Droege and re-examined by T.A. Zarrillo 2022 netted from *Verbena hastata*, YPM ENT 809277.

Panurgini

Genus *Panurginus* Nylander

Reference: Mitchell (1960); Ramos *et al*. (2022)

***Panurginus potentillae* (Crawford, 1916)**

Cinquefoil Bare-Miner

Notes: This regionally scarce, small, spring bee is a specialist on cinquefoil (*Potentilla* spp.) (Hurd 1979). This species reaches its northern range limit in Massachusetts (Veit *et al.* 2022["2021"]).

Material examined. *Hartford Co*.: Granby: "Gross' Meadow", 21 May 1962, coll. J.F. Lienesch, 1 ♂, UCMS, det. J.S. Ascher, UCMS_ENT 00032431.

Perditini

Genus *Perdita* Smith

Reference: Bossert *et al.* (2022); Cane (1989); Mitchell (1960); Ramos *et al*. (2022); Timberlake (1954, 1956, 1958, 1960)

Subgenus *Alloperdita* Viereck

***Perdita* (*Alloperdita*) *bradleyi* Viereck, 1907**

Bradley's Fairy Bee

Notes: This rare species has been collected in only three locations in Connecticut, two of which are known for their conservation value as remnant sandplains e.g., Matianuck Sand Dunes Natural Area Preserve, Windsor (Hartford County) and "Cytech Corp. Toelles Road", Wallingford (New Haven County). The former location is recognized as a unique ecological community and is managed by The Connecticut Department of Energy and Environmental Protection, and the latter is privately owned land. The third location is in South Windsor (Hartford County) from at or possibly just southwest of a large sandy area. All but one specimen (n = 12) was collected between 5–9 June 2000 by A. Dorval, D. Marti, and M. Wall. The other was collected on 6 June 2001 by J. Smith and C. Bursey.

***Perdita* (*Alloperdita*) *novaeangliae* Viereck, 1907**

New England Fairy Bee

Perdita novae-angliae Viereck, 1907: 394. (Connecticut syntype).

Syntype. Female USA: Connecticut: Hartford Co., "Poquonock", 27 June 1905, H. L. Viereck (USNMENT00532866). Timberlake (1958) noted Poquonock, Connecticut (not Hyannis Point, Massachusetts) as the type locality.

Notes: This specialist on maleberry (*Lyonia lingustrina*) was collected from its host plant in Connecticut, with most records (n = 29) spanning 3–30 July in 1976, all captured by G. I. Stage in Stafford (Tolland County).

Subgenus *Perdita* Smith

***Perdita* (*Perdita*) *octomaculata octomaculata* (Say, 1824)**

Eight-spotted Fairy Bee

Notes: *Perdita octomaculata* is by far the most encountered *Perdita* species in Connecticut. The first records for Connecticut were reported in Viereck *et al.* (1916) on goldenrod (*Solidago* s. l.) and asters (Asteraceae). This common species has been found on goldenrod in sandy locations throughout Connecticut such as inland and coastal dunes and agricultural land with a sand component.

Protandrenini

Genus *Protandrena* Cockerell

Reference: Bossert *et al*. (2022); Mitchell (1960); Ramos *et al*. (2022); Robinson (2023)

***Protandrena* (*Pterosarus*) *aestivalis* (Provancher, 1882)**

Aestival Bare-Miner

Notes: This late season Asteraceae specialist (Sheffield *et al.* 2014) was first detected in Connecticut by W. E. Britton in the town of Stafford (Tolland County) on 24 August 1905 (n = 22) on goldenrod (*Solidago* s. l.). This species was found again in Connecticut in Canaan (Litchfield County) on 29 August 1966 by S. M. Fullerton (n = 3), and on 19 August 2007 by L. Saucier and A. Bouchard at the edge of a northern swamp (n = 1).

***Protandrena* (*Pterosarus*) *andrenoides* (Smith, 1853)**

Eastern Bare-Miner

Notes: This small, late summer flyer has been found on goldenrod (*Solidago* s. l.) in Connecticut in powerline ROW, agricultural land, a coastal wildlife refuge, and a meadow.

***Protandrena* (*Pterosarus*) *compositarum* (Robertson, 1893)**

Composite Bare-Miner

Notes: This regionally-scarce species has a southern distribution in New England and was recently found on Gardiners Island (Suffolk County) New York (Ascher *et al*. 2014).

***Protandrena* (*Pterosarus*) *labrosa* (Robertson, 1895)**

Margined Bare-Miner

Notes: This uncommon species was detected historically in Connecticut in 1967 (n = 12), all specimens collected by M. Favreau in New Canaan (Fairfield County). *Protandrena labrosa* was rediscovered in Connecticut in Southbury (New Haven County) in August 2023 by M. W. McCarthy (https://www.inaturalist.org/observations/179634560) and D. Cappaert (https://www.inaturalist.org/observations/177087456).

***Protandrena* (*Pterosarus*) *pauper* (Cresson, 1878)**

Ceanothus Bare-Miner

Notes: The two known records for this uncommon species in Connecticut are specimens collected in New Haven County in 1902 and 1905, reported in Viereck *et al.* (1916) [as *Pseudopanurgus parvus* Robertson]. One of the two was collected from its associated host plant, New Jersey tea (*Ceanothus americanus*), a plant associated with xeric, open, sandy, or rocky habitats such as pitch pine-scrub oak barrens and sandplain communities (Wagner *et al.* 2003). A female was recently collected on New Jersey tea in Massachusetts (Franklin County) on 3 July 2022 by J. Milam in the Montague Plains Wildlife Management Area, which is a restored xeric barren (J. Milam pers. comm). This is the first sighting of *P. pauper* in New England and vicinity since <1932 (Veit *et al.* (2022[“2021”]).

Material examined. *New Haven Co*.: New Haven: 4 July 1905, coll. H.L. Viereck, 1 ♀, CAES, det. J.S. Ascher 2008, collected from *Ceanothus* sp., UCMS_ENT 00028194; Hamden: “Mount Carmel”, coll. E.J.S. Moore, 1 ♂, CAES, det. J.S. Ascher 2008, UCMS_ENT 00028193.

APIDAE

Apinae

Anthophorini

Genus *Anthophora* Latreille

Reference: Brooks (1983); Mitchell (1962)

Subgenus *Clisodon* Patton

***Anthophora* (*Clisodon*) *terminalis* Cresson, 1869**

Orange-tipped Wood-Digger

Notes: This species, which excavates nests in rotting wood, is well represented throughout Connecticut and has been found in habitats such as powerline ROW, agricultural land, upland forests, sandplain remnants, edges of inland wetlands, meadows, and forest fragments in rural neighborhoods.

Subgenus *Lophanthophora* Brooks

***Anthophora* (*Lophanthophora*) *ursina* Cresson, 1869**

Ursine Digger

Notes: There is only one record for this species in Connecticut. It is generally very rare in the region if not extirpated and there are no recent reports from the few historical sites such as the Albany Pine Barrens in New York (J. S. Ascher, pers. obs.) or Massachusetts (Veit *et al.* 2022[“2021”]).

Material examined. *New Haven Co*.: New Haven: 15 May 1910, coll. A.B. Champlain, 1 ♂, CAES, det. J.S. Ascher 2008, UCMS_ENT 00031233.

Subgenus *Melea* Sandhouse

***Anthophora* (*Melea*) *abrupta* Say, 1838**

Abrupt Digger

Notes: This species is historically known in Connecticut from Meriden (New Haven County) and New Haven (New Haven County). It is widespread in the Eastern United States but there are few recent records from northeast of New Jersey.

Material examined. *New Haven Co*.: New Haven: 24 June 1911, coll. A.B. Champlain, 1 ♂, CAES, det. J.S. Ascher 2008, UCMS_ENT 00028384; Meriden: “South Meriden”, 19 April 1911, coll. H. Johnson, 1 ♀, AMNH, det. R.W. Brooks, AMNH_BEE 00067908.

***Anthophora* (*Melea*) *bomboides bomboides* Kirby, 1838**

Bumblebee-like Digger

Notes: This species was recently discovered in Connecticut in a pollinator habitat restoration in the northwest hills of the state. The female was collected along the edge of the meadow near the Hollenbeck River.

Material examined. *Litchfield Co*.: Canaan: Robbins Swamp Wildlife Management Area, 41.97255 -73.35354, 5-6 July 2023, coll. T.A. Zarrillo, 1 ♀, CAES, det. T.A. Zarrillo 2023, captured in white bee bowl, CAES_HYM 00019130.

Genus *Habropoda* Smith

Reference: Mitchell (1962)

***Habropoda laboriosa* (Fabricius, 1804)**

Blueberry Digger

Notes: Although uncommon in Connecticut, this species persists in a sandplain remnant in the Connecticut River Valley. The first known record of this species in Connecticut was a male collected in 1902 in New Haven (New Haven County) [determined as *Emphoropsis floridana* (Smith)] and was noted in Viereck *et al.* (1916) [as *Anthophora floridana* Smith]. Females nest in sand to loamy sands (Cane 1994), and strongly prefer *Vaccinium* (Ericaceae) pollen (Cane & Payne 1988), although recent work has shown that this species can use other pollen sources (S. Droege pers. comm.). More recently females of this species were collected or observed in 2009, 2017, 2020, and 2022 near or in the Matianuck Sand Dunes Natural Area Preserve (Hartford County), and a male of this species was collected in 2014 on the inflorescence of Japanese pachysandra (*Pachysandra terminalis*) in the same general location. This species’ scarcity in Connecticut may be due to the loss of its required sandplain nesting habitat (Woodside 2016). Despite recent survey work in other remnant sandplains across Connecticut, *H. laboriosa* has not been detected in any location other than Matianuck Sand Dunes Natural Area Preserve. (T. A. Zarrillo unpublished).

Apini

Genus *Apis* Linnaeus

Reference: Engel (1999)

***Apis mellifera* Linnaeus, 1758**

Western Honey Bee

Notes: This exotic, managed species is widespread and abundant in Connecticut. CAES has had an important role in beekeeping in Connecticut since the early 1900s. Apiary inspections for European foulbrood and American foulbrood have been required by state legislation and conducted by the staff of CAES, under the supervision of the State Entomologist since 1910. Additionally, beekeepers have been required to register with their towns since 1919 (Stafford *et al.* unpublished). Apiary inspection for pests, parasites, and pathogens of honey bees and registration of hives continue to the present (https://portal.ct.gov/CAES/Bee-Information/Bee-Information/Laws-Pertaining-to-Honey-Bees-in-Connecticut). An early educational publication on beekeeping for Connecticut described the Langstroth hive and other beekeeping equipment as well as the diseases of bees and the apiary inspection program and indicated that several different races within the species were already present within the state (Yates 1918). More recent research on *A. mellifera* at CAES has included genetic analysis of genotypes of *Paenibacillus* larvae, the causative agent of American foulbrood disease (Dingman 2015), and the analysis of pesticide residues in dead honey bees and brood comb (Anderson & Wojtas 1986), or in pollen collected by honey bees (Stoner & Eitzer 2013, Stoner *et al.* 2019).

Bombini

Genus *Bombus* Latreille

Reference: Koch *et al.* (2018); Laverty & Harder (1988); Lhomme *et al.* (2021); Milliron (1971, 1973a, 1973b); Mitchell (1962); Williams *et al.* (2008, 2014)

Subgenus *Bombias* Robertson

***Bombus* (*Bombias*) *auricomus* (Robertson, 1903)**

Black-and-gold Bumble Bee

Notes: This species is rarely detected in Connecticut, having only three historical female records (two from 1919 and one from 1905), and three sightings on iNaturalist in 2021 (https://www.inaturalist.org/observations?place_id=49&subview=map&taxon_id=198856) (see also **Figure 2, C**). The 1905 specimen was netted from lilac (*Syringa* sp.), and the 2021 observations were visiting wild bergamot (*Monarda* spp.). The most recent sightings were in the towns of Milford (New Haven County) in a pollinator garden at The Connecticut Audubon Society Coastal Center at Milford Point near suburban coastal developments, Portland (Middlesex County) in a suburban flower garden largely composed of various *Monarda* spp. and anise hyssop (*Agastache foeniculum*), and Vernon (Tolland County) in a wildflower meadow in the Belding Wildlife Management Area.

***Bombus* (*Bombus*) *affinis* Cresson, 1863**

Rusty-patched Bumble Bee

Notes: This once-familiar species, now listed as "Federally Endangered" in the United States (United States Fish and Wildlife Service 2017) and "Special Concern" in Connecticut (Connecticut Department of Energy and Environmental Protection 2015b), is evidently extirpated from the state. The last known specimen was a female collected between 3–5 June 1997 in the town of Guilford (New Haven County) by C. T. Maier. Host records for Connecticut include greater burdock (*Actium lappa*), summersweet (*Clethra alnifolia*), quince (*Cydonia* sp.), golden currant (*Ribes auruem*), white clover (*Trifolium repens*), apple (*Malus* spp.) and cranberry (*Vaccinium macrocarpon*), in habitats such as agricultural land, school grounds, a red maple swamp, and among ericaceous shrubs in an acidic bog with red spruce (*Picea rubens*). Wagner *et al.* (2014a, 2019) reported the absence of *B.*

affinis in their studies of ROW in Connecticut, and CAES wild bee surveys conducted from 2010–2021 throughout Connecticut (unpublished), and the lack of records on community science portals from Connecticut and vicinity (see Veit *et al.* 2022[“2021”]) reaffirm its absence in the state. Its distinct coloration make it a likely candidate to be detected if it reappears here, as an increasing number of community science “bee watchers” on biodiversity portals such as iNaturalist and BugGuide routinely report it from where it persists such as the Upper Midwest and more locally in West Virginia and western Virginia.

***Bombus* (*Bombus*) *terricola* Kirby, 1837**

Yellow-banded Bumble Bee

Notes: This North American species has been listed as Vulnerable on the International Union for the Conservation of Nature’s (IUCN) Red List (Hatfield *et al.* 2015a) and is listed as “Threatened” in Connecticut (Connecticut Department of Energy and Environmental Protection 2015b). It has suffered an average decline of 49.94% (including relative abundance, range, and persistence) across its entire range (Hatfield *et al.* 2015a). This species has been recorded historically from six of Connecticut’s eight counties and was once common across most of the Northeast and Upper Midwest of the United States. Two Connecticut records were documented in Viereck *et al.* (1916) from Branford (New Haven County) and Colebrook (Litchfield County), and another record from 1904 was found at AMNH by the authors (a female collected in Litchfield (Litchfield County) on 26 August 1904). Since Zarrillo *et al.* (2016), 20 more individuals have been captured and 10 individuals have been observed on iNaturalist in the highlands of Litchfield County. Since the first recent detection in 2018 in the town of Canaan (Litchfield County), 29 individuals have been recorded in six neighboring towns. In 2023, *Bombus terricola* was observed in the town of Litchfield by K. Testerman on iNaturalist, which is the southernmost record in recent years for the state (https://www.inaturalist.org/observations/170866067). In Connecticut this species has been found in inland wetlands such as Beckley Bog and Bingham Pond (Litchfield County), shrubby meadows, roadside stands of flowers, ROW, and forested habitats. Floral records from Connecticut include Bishop’s goutweed (*Aegopodium podagraria*), pussy willow (*Salix discolor*), European linden (*Tilia* cf. *europaea*), summersweet (*Clethra alnifolia*), anise-scented goldenrod (S*olidago odora*), goldenrod (*Solidago* s. l.), king of the meadow (*Thalictrum pubescens*), white meadowsweet (*Spiraea alba*), annual fleabane (*Erigeron annus*), common milkweed (*Asclepias syriaca*) and wild bergamot (*Monarda* sp.).

Subgenus *Cullumanobombus* Vogt

***Bombus* (*Cullumanobombus*) *griseocollis* (De Geer, 1773)**

Brown-belted Bumble Bee

Notes: This species is widespread and common throughout Connecticut, found in pollinator gardens, agricultural land, powerline ROW, grasslands, dunes, and coastal scrub. This species was found in 23 Connecticut towns before the year 2000 and 80 towns after the year 2000, with 43 of the additional towns from observations on iNaturalist (https://www.inaturalist.org/observations?place_id=49&subview=table&taxon_id=120215).

Subgenus *Psithyrus* Lepeletier

***Bombus* (*Psithyrus*) *ashtoni* (Cresson, 1864)**

Ashton’s Cuckoo-Bumble Bee

Notes: This species is listed in Connecticut as “Special Concern” (Connecticut Department of Energy and Environmental Protection 2015b) and is of great conservation interest, as there are few recent records of this social parasite in the Northeastern United States (Dibble *et al.* 2017; Richardson *et al.* 2018; Veit *et al.* 2022[“2021”]) and no recent records in Connecticut (last recorded in 1992). Records for this species in Connecticut are limited, having only nine occurrences in five towns, seven of which were before the year 1925. Williams *et al.* (2014) stated in a popular identification guide that *Bombus ashtoni* and *Bombus bohemicus* “appear to be parts of the same species” so these may comprise a single, widespread, naturally Holarctic species. This synonymy has been accepted or at least noted in subsequent sources, but some authorities prefer to await more rigorous documentation of this synonymy in the technical literature.

***Bombus* (*Psithyrus*) *citrinus* (Smith, 1854)**

Lemon Cuckoo-Bumble Bee

Notes: The junior synonym *Apathus contiguous* Cresson, 1863, was described in part from a Connecticut syntype but a male from Delaware was designated as lectotype by the author (Cresson, 1916). This social parasite's preliminary IUCN category is "Least Concern" (Hatfield *et al.* 2014), however its status in Connecticut is uncertain. The most recent sighting is a single iNaturalist observation on 14 August 2020 at the Stewart B. McKinney National Wildlife Refuge (NWR) in the town of Westbrook (Middlesex County). This location has contributed bee records to the statewide wild bee monitoring program since 2011, yet this species has not been collected on premises during seasonal bee bowl trapping activities. Prior to this sighting, this species had not been detected in the state since 2010 despite the persistence of two of its hosts, *Bombus impatiens* and *Bombus vagans* (Hurd 1979) and its routine occurrence in New York State including New York City (https://www.inaturalist.org/observations?place_id=48&subview=table&taxon_id=198859).

***Bombus* (*Psithyrus*) *flavidus appalachiensis* Lhomme and Hines, 2021**

Yellowish Cuckoo-Bumble Bee

Notes: This regionally uncommon cleptoparasite of *Pyrobombus* (Lhomme *et al.* 2021; Williams *et al.* 2014), previously known as *B. fernaldae* and historically as *Psithyrus fernaldae*, has only been collected in Litchfield County in Connecticut, although its hosts are commonly detected throughout the state in many diverse habitats. There are historical records from 1911, 1912, and 1913, and then a 72-year gap before this species was detected again in 1985. This species has been detected most recently in survey work in locations where *B. terricola* has also been collected. Males have been found visiting white sweet clover (*Melilotus albus*), black knapweed (*Centaurea nigra*), and common milkweed (*Asclepias syriaca*) in habitats such as powerline ROW within a state forest and open meadows near forest edges. The range of this species seems to be increasing in Connecticut (being detected in only two towns prior to 2000, and five towns since 2010) and regionally, as evidenced by an increase in iNaturalist records throughout New England, including New York (https://www.inaturalist.org/observations?place_id=48&subview=table&taxon_id=541839) and Vermont (https://www.inaturalist.org/observations?place_id=47&subview=table&taxon_id=541839).

Subgenus *Pyrobombus* Dalla Torre

***Bombus* (*Pyrobombus*) *bimaculatus* Cresson, 1863**

Two-spotted Bumble Bee

Bombus bimaculatus Cresson, 1863: 392 (Connecticut holotype).

Holotype. Male USA: Connecticut: E. Norton (cited as "probably lost" by Cresson, 1916).

Notes: *Bombus bimaculatus* is one of the earliest bumble bee species to emerge in the spring in Connecticut and is found commonly throughout the state in many diverse environments such as sandplains, agricultural land, meadows, quarries, marsh, bogs, a coastal wildlife refuge, beach dunes, powerline ROW, and forests. The Connecticut type is evidently missing from ANSP and is presumed lost. It has been replaced with a male neotype from Massachusetts deposited at USNM (https://collections.nmnh.si.edu/search/ento/?ark=ark:/65665/35bb9c5e93a894307bed74ac350d6d3f3).

***Bombus* (*Pyrobombus*) *impatiens* Cresson, 1863**

Common Eastern Bumble Bee

Notes: Consistent with its common name, *Bombus impatiens* is one of the most abundant bumble bee species in Connecticut and has the most records of all bee species observed in Connecticut on iNaturalist (https://www.inaturalist.org/observations?place_id=49&subview=table&taxon_id=630955&view=species). This pivotal pollinator of many agricultural crops (Kleijn *et al.* 2015) is likely under-represented in museum collections and/or databases relative to its true abundance because it is so ubiquitous (Zarrillo & Stoner 2019), rendering community

science observations on digital biodiversity portals an additional tool for documenting its prevalence. *Bombus impatiens* was the most abundant pollinator on vegetable farms in Connecticut (Stoner, 2013), with 2,445 individuals found visiting alternative floral resources. Stoner (2020) also reported 9,115 individuals visiting pumpkin and squash flowers over the years of the study, making it the most abundant pollinator of pumpkins and squash in Connecticut.

***Bombus* (*Pyrobombus*) *perplexus* Cresson, 1863**

Perplexing Bumble Bee

Bombus (*Pyrobombus*) *perplexus* Cresson, 186: 391 (Connecticut holotype).

Holotype. Male USA: Connecticut: E. Norton (lost?).

Notes: The Connecticut type is evidently missing from the ANSP and presumed lost. It has been replaced with a neotype from Massachusetts deposited at USNM (http://n2t.net/ark:/65665/3fd2779fe-c0c3-4156-9bca-c7b6c761b6b9). This common species has been collected in many diverse habitats across Connecticut, such as urban parks and gardens, sandplain remnants, meadows, bogs, swamps, coastal scrub, powerline ROW, grassy fields, and forests, and has been collected from a wide range of host plants in Connecticut. The flight season of this species in Connecticut extends later than reported in Williams *et al.* (2014), with 18 November the latest date for a *B. perplexus* queen in Connecticut (https://www.inaturalist.org/observations/101417680). Most records for this species in Connecticut (n = 592) are dated on or before 28 August, but beginning in 2001 this species has been observed on the wing in Connecticut in late September (n = 5) and October (n = 7), and, in 2021, in November (n = 4). It is unclear whether these late sightings are related to increased observations on iNaturalist or to effects of climate change.

***Bombus* (*Pyrobombus*) *sandersoni* Franklin, 1913**

Sanderson's Bumble Bee

Notes: This under-recorded species is associated with forest edges, fens, swamps, and acidic bogs in the northern part of the state and has been collected from white clover (*Trifolium repens*) and black chokeberry (*Aronia melanocarpa*) in Connecticut. The true status of this species in Connecticut and in New England is unclear, as it has been overlooked in collections and museum databases and under-reported in photo-based community science databases due to its similarity in appearance to *B. vagans* and *B. perplexus* (New England populations of *B. sandersoni* and *B. vagans* are often identical in color pattern). Records are increasing as better identification criteria are understood (Goldstein & Ascher 2016; Milam *et al.* 2020).

***Bombus* (*Pyrobombus*) *ternarius* Say, 1837**

Tricolored Bumble Bee

Notes: In Connecticut this northern species (see **Figure 2, D**) is known mostly from Litchfield County. More recently this species has been detected in Tolland County in 2010 and 2017, in New Haven County in 2012 (Zarrillo *et al.* 2016), and Litchfield County in 2021 (https://www.inaturalist.org/observations/92951878). The most recent New Haven County record is unusual in that it was collected in an agricultural habitat at the CAES experimental farm, which is not usually a preferred habitat for this species (Williams *et al.* 2014). Other collection locations include Beckley Bog in Norfolk (Litchfield County) and Bingham Pond in Salisbury. Specimens from Connecticut have been netted from spotted knapweed (*Centaurea stoebe*), wild bergamot (*Monarda fistulosa*), narrowleaf mountain mint (*Pycanthemum tenuifolium*), goldenrod (*Solidago* s. l.), spearmint (*Mentha spicata*), white clover (*Trifolium repens*), bush clover (*Lespedeza* sp.), and huckleberry (*Gaylussacia baccata*).

***Bombus* (*Pyrobombus*) *vagans vagans* Smith, 1854**

Half-black Bumble Bee

Notes: This species has been collected in a variety of habitats in Connecticut such as a coastal wildlife refuge, meadows, sandplain remnants, limestone quarries, powerline ROW, forests, agricultural land, and inland

wetlands such as bogs and swamps. It is underrecorded beyond subgenus in community science datasets due to its visual similarity with *Bombus sandersoni*.

Subgenus *Subterraneobombus* Vogt

***Bombus* (*Subterraneobombus*) *borealis* Kirby, 1837**

Northern Amber Bumble Bee

Notes: Until recently, this northern bumble bee was known from Connecticut only from a single female collected on 12 August 1932 in Falls Village (Litchfield County) by J. P. Johnson. Surprisingly, two females were collected on 26 June 2010 in Suffield (Hartford County) by R. Ferreira, who noticed a nest entrance under a piece of plywood on a dry, grassy berm near shrubs in a fallow field. Richardson *et al.* (2018) found that *B. borealis* has a significant positive correlation with grass and shrub habitat. The recent records and nest location constitute a new southernmost range extension in New England for this boreal bee, and records for this species in southern, warmer regions of Vermont appear to have increased in recent decades (S. Hardy pers. comm.). This is an exception to the most recent works by Kerr *et al.* (2015) and Soroye *et al.* (2020) that predict northern bumble bee species to be receding as the climate warms.

Material examined. *Hartford Co*.: Suffield: "DEEP property, Babs Road", 26 June 2010, coll. R. Ferreira, 2 ♀, CAES, det. T.A. Zarrillo 2020, UCMS_ENT 00077809, UCMS_ENT 00077810; ***Litchfield Co.:*** Canaan: "Falls Village", 12 August 1932, coll. J.P. Johnson, 1 ♀, CAES, det. J.S. Ascher 2008, UCMS_ENT 00028388.

Subgenus *Thoracobombus* Dalla Torre

***Bombus* (*Thoracobombus*) *fervidus* (Fabricius, 1798)**

Golden Northern Bumble Bee

Notes: This species has been listed as Vulnerable on the International Union for the Conservation of Nature's (IUCN) Red List (Hatfield *et al.* 2015b). It has also been designated a "Species of Greatest Conservation Need" (SGCN) in New Hampshire (New Hampshire Fish and Game Department 2015) and Hardy *et al.* (2021) report it is possibly on the decline in Vermont. Recent floral preference trials by K. A. Stoner (unpublished) at the CAES experimental farm in Hamden (New Haven County) detected this species in 2019, 2020, and 2021 visiting *Zinnia violacea* and *Zinnia marylandica*. Other floral records in Connecticut include morning glory (*Ipomoea* sp.), golden currant (*Ribes aureum*), lilac (*Syringa* sp.), white clover (*Trifolium repens*), common thistle (*Circium vulgare*), and gill-over-the-ground (*Glechoma hederacea* [as *Nepeta hederacea*]). This species has been found in Connecticut in agricultural land, sandy areas, powerline ROW, a limestone quarry, town parks, and on the grounds of an urban seaside university. Richardson *et al.* (2018) found *B. fervidus* to be positively associated with grasslands and cultivated crops. This species is still found routinely in New York including New York City (https://www.inaturalist.org/observations?place_id=48&subview=table&taxon_id=52774) in addition to Connecticut (https://www.inaturalist.org/observations?place_id=49&subview=table&taxon_id=52774), so regional trends in its status remain unclear.

***Bombus* (*Thoracobombus*) *pensylvanicus* (De Geer, 1773)**

American Bumble Bee

Notes: This well-known species was historically common throughout the eastern and central United States, and was at one time widespread throughout Connecticut, detected in pastures, fields, and meadows on flowers such as morning glory (*Ipomoea* sp.) and greater burdock (*Arctium lappa*). This species was also reported on black currant (*Ribes nigrum*), apple (*Malus domestica* [as *Pyrus malus*]), and common blackberry (*Rubus allegheniensis* [as *Rubus nigrobaccus*]) in Britton & Viereck (1906) [as *B. pensylvanicus* DeGeer and *B. americanorum* Fabricius] although vouchers were unable to be located. *Bombus pensylvanicus* has declined in the northern parts of its range in the United States (Williams *et al*. 2014), and it was last detected in Connecticut in 2006 at the Belding Wildlife Management Area in Vernon (Tolland County). The lack of records is notable given the extent of wild bee surveys in its preferred habitats, open farmland and fields (Williams *et al.* 2014), across the state since 2009. There is a

petition to list *B. pensylvanicus* as an endangered species under the United States Endangered Species Act (Center for Biological Diversity & the Bombus Pollinators Association of Law Students 2021), and its status in Connecticut should be reviewed in upcoming endangered species assessments. Despite its genuine scarcity in Connecticut (found in 23 towns prior to the year 2000 and with only the one record noted above since) and in New England generally, this species, however, has the seventh most records globally (n = 41,208; sixth among *Bombus* species) of all wild (non-*Apis*) bee species (n = 4,619) globally as reported on iNaturalist (accessed 16 September 2024) and has the fourth most records (n=40,451, most recent) of any wild bee species from North America and the United States raising doubts about whether it can be considered one of the most threatened taxa globally or nationally.

Emphorini

Genus *Ptilothrix* Smith

Reference: Flórez-Gómez & Danforth (2023); Martins *et al.* (1996); Mitchell (1962)

***Ptilothrix bombiformis* (Cresson, 1878)**

Hibiscus Turret Bee

Notes: This species has been collected in good numbers (n = 26) in New Haven County since Zarrillo *et al.* (2016), and an additional four individuals have been found in Fairfield, Middlesex, and Hartford Counties. Of note, three of these individuals were seen at their nest entrances on baseball fields, at Frances Veitch Memorial Field in New Haven (New Haven County) and at East Hartford High School (Hartford County). The nests were constructed in hard packed soil/sand in direct sunlight with minimal vegetation nearby. This species has been collected most often in bee bowls in Connecticut (n = 26) at the Pond Lily Nature Preserve, CAES New Haven campus, and CAES Lockwood Farm (New Haven County), and the Bartlett Arboretum (Fairfield County), with one individual captured visiting its host plant, rose mallow (*Hibiscus moscheutos*) (Hurd 1979), at Hammonasset Beach State Park (Middlesex County).

Osirini

Genus *Epeoloides* Giraud

Reference: Mitchell (1962)

***Epeoloides pilosulus* (Cresson, 1878)**

Pilose Yellow Loosestrife-Cuckoo

Notes: There are two early records from 1911 for this rare social parasite in New Haven County in Connecticut in the towns of Meriden and New Haven (the latter was digitized but not located—UCMS_ENT 00031791). *Epeoloides pilosulus* was also reported in Viereck *et* a*l.* (1916) [as *Viereckella pilosula*] from the town of Brookfield (Fairfield County), and in Britton (1920) [as *Epeoloides pilosula*]. There is another early specimen from Colebrook (Litchfield County) collected by W. M. Wheeler, with no specified date. This species was recently discovered in 2006 in powerline ROW in Bozrah (New London County), detailed in Wagner and Ascher (2008). *Epeoloides pilosulus* has since been added to Connecticut's endangered species list (Connecticut Department of Energy and Environmental Protection 2015b) and is a regional species of greatest conservation need in four eastern states (United States Geological Survey 2015), although a recent uptick in detections regionally is encouraging (Veit *et al*. 2022["2021"]).

Material examined. *Litchfield Co.*: Colebrook: coll. W.M. Wheeler, 1 ♂, UCMS, det. T.A. Zarrillo 2021, UCMS_ENT 00082278; ***New Haven Co.*:** Meriden: "South Meriden", 1911, coll. H. Johnson, 1 ♀, AMNH, det. J.S. Ascher 2005, AMNH_BEE 00010828; ***New London Co.*:** Bozrah: "Route 163, Plot 4 ROW", 41.4907 -72.17985, 22 June 2006, coll. N. Bricker & J. Watson, 1 ♀, UCMS, det. J.S. Ascher 2006, UCMS_ENT 00082279.

Eucerinae

Eucerini

Genus *Eucera* Scopoli

Reference: Mitchell (1962); Timberlake (1969)

Subgenus *Synhalonia* Patton

***Eucera* (*Synhalonia*) *atriventris* (Smith, 1854)**

Black-tailed Longhorn

Notes: This species is known historically in Connecticut from Tolland and New Haven Counties but was recently observed in Windham County on iNaturalist (https://www.inaturalist.org/observations/180138298), 92 years after the last known detection. Veit *et al.* (2022["2021"]) note that this species can still be found regularly in the village of Florence (Hampshire County, Massachusetts) where it visits flowers of native wild lupine, *Lupinus perennis*.

***Eucera* (*Synhalonia*) *hamata* (Bradley, 1942)**

Bent-Spurred Longhorn

Notes: A recent record of this vernal long-horned bee was identified on iNaturalist in Bedford Hills, New York, close to the Connecticut border (https://www.inaturalist.org/observations/4854578). This, along with other recent records (Zarrillo *et al.* 2016), further suggests that this species may be expanding its range into the northeast.

Material examined. See Zarrillo *et al*. (2016)

Genus *Melissodes* Latreille

Reference: Freitas *et al*. (2023); LaBerge (1956a, 1956b, 1961); Mitchell (1962)

Subgenus *Apomelissodes* LaBerge

***Melissodes* (*Apomelissodes*) *apicatus* Lovell and Cockerell, 1906**

Pickerelweed Longhorn

Notes: This specialist species has been collected from its host plant, pickerelweed (*Pontederia cordata*) in Connecticut near inland wetlands.

Subgenus *Eumelissodes* LaBerge

***Melissodes* (*Eumelissodes*) *agilis* Cresson, 1878, sensu LaBerge, 1961**

Agile Sunflower Longhorn

Notes: LaBerge (1961) lists four localities for this species in Connecticut (Colebrook, Litchfield County; Storrs, Tolland County; Wallingford, New Haven County; Westville, New Haven County), and we have found one Tolland County specimen record for *M. agilis* determined by LaBerge at SEMC. We are citing this species as valid for Connecticut on LaBerge's authority and are only including records from the revision in our county checklist (Table 2). Although *M. agilis* and *M. trinodis* are routinely separated in parts of their range such as Minnesota (Portman *et al.* 2023) and Manitoba (Gibbs *et al.* 2023), their status is less well known in the Northeastern United States. We cannot reliably separate potential *M. agilis* specimens from *M. trinodis* at this time, and our doubts about species delimitation between these species in New York and New England extend to determinations in the revision and to records from Massachusetts (Veit *et al.* 2022["2021"]). Further integrative taxonomic studies are needed to confirm the range limits of *M. agilis* since at present few investigators are confident in separating northeastern *M. agilis* from *M. trinodis*, and the dark wings veins of regional examples are more consistent with the latter.

***Melissodes* (*Eumelissodes*) *denticulatus* Smith, 1854**

Eastern Ironweed Longhorn

Notes: This specialist species is commonly found on its host plant, New York ironweed (*Vernonia noveboracensis*), across Connecticut in habitats such as agricultural land and meadows.

***Melissodes* (*Eumelissodes*) *dentiventris* Smith, 1854**

Tooth-vented Longhorn

Notes: *Melissodes dentiventris* is relatively numerous in the Southeastern United States but is not well known from New England, where it reaches its northeastern range limit (Mitchell 1962). There are only five historical records for this rarely-collected late-season composite specialist in Connecticut, three reported in Viereck *et al.* (1916) which were not available for re-examination (Branford, New Haven County, 3 August 1904, collected by Henry W. Winkley; New Haven ["'Westville"], New Haven County, 3 August 1905, collected by W. E. Britton on *Veronica* sp.; Vernon ["Rockville"], Tolland County, 23 August 1905, collected by H. L. Viereck) and two specimen records reported below. All but one of the Connecticut records come from coastal cities, which parallels its limited distribution in Massachusetts (Veit *et al.* 2022["2021"]). This species was recently documented on Tuckernut Island (Nantucket County, Massachusetts) on iNaturalist, observed on 29 August 2021 (https://www.inaturalist.org/observations/93158406).

Material examined. *New London Co.*: Waterford: 11 September 1933, coll. N. Turner, sex unverified, UCMS, det. J.S. Ascher, UCMS_ENT 00030352, UCMS_ENT 00030353.

***Melissodes* (*Eumelissodes*) *desponsus* Smith, 1854**

Thistle Longhorn

Notes: This thistle-associated species has been collected in powerline ROW, wet meadows, fields, and along railroad tracks. Until recently it and a related species from Western North America were placed in subgenus *Heliomelissodes* (Freitas *et al*. (2023).

***Melissodes* (*Eumelissodes*) *druriellus* (Kirby, 1802)**

Drury's Longhorn

Notes: This species has been collected in habitats such as sandplain remnants and powerline ROW in Connecticut.

***Melissodes* (*Eumelissodes*) *illatus* Lovell and Cockerell, 1906**

New England Longhorn

Notes: There are few records for this northern species in Connecticut, with the most recent specimens captured in Eastford (Windham County) during a study of old fields in Connecticut (K. Urban-Mead unpublished). This species has also been found on a quarry top and has been collected from black-eyed Susan (*Rudbeckia* sp.) in meadows in Connecticut. It may be underrecorded due to identification difficulties.

***Melissodes* (*Eumelissodes*) *subillatus* LaBerge, 1961**

Echinacea Longhorn

Notes: This specialist of composites was not listed in the early Connecticut checklists (Britton 1920; Britton 1938; Viereck *et al*. 1916) as it had not yet been described. However, there are two historical specimens of *M. subillatus* determined by LaBerge at MCZ collected in Colebrook (Litchfield County) by W. M. Wheeler with no verbatim date. We have records of other species collected by Wheeler in the period spanning 1911 to 1934; therefore, *M. subillatus* was collected in Connecticut earlier than reported in Table 2 although the exact year is unknown.

***Melissodes* (*Eumelissodes*) *trinodis* Robertson, 1901**

Dark-veined Longhorn

Notes: LaBerge (1961) lists three localities for this species in Connecticut (Colebrook, Litchfield County; Storrs, Tolland County; Westville, New Haven County), and we have found two records for *M. trinodis* determined by LaBerge at AMNH. The remainder of our material cannot be reliably separated from *M. agilis* at this time (see species account for *M. agilis*). However, we suspect that this is the species found very commonly visiting sunflowers across the region, including New York City, an opinion reflected in (provisional) species identifications based on images at iNaturalist and BugGuide.

Subgenus *Melissodes* Latreille

***Melissodes* (*Melissodes*) *bimaculatus bimaculatus* (Lepeletier, 1825)**

Two-spotted Longhorn

Notes: This distinctively black-colored species, which is not a composite specialist unlike many congeners, is commonly seen in pollinator gardens, agricultural land, and meadows, and has also been collected in powerline ROW and a limestone quarry.

Genus *Peponapis* Robertson

Subgenus *Peponapis* Robertson s. l.

***Peponapis* (*Peponapis*) *pruinosa* (Say, 1837)**

Pruinose Squash Bee

Notes: Dorchin *et al.* (2018) proposed a broad concept of *Eucera* that includes squash bees whereas Freitas *et al.* (2023) recognized the latter as comprising a single genus *Xenoglossa*. However, here we choose to retain *Peponapis* as valid pending further phylogenetic study, in particular improved resolution of New World species that have been included in *Tetraloniella* (Michener, 2007) or *Xenoglossodes* (Hurd, 1979). Stoner (2020) studied pollination of pumpkin and winter squash in Connecticut and found that the three primary bee species visiting these crops, *P. pruinosa*, *B. impatiens*, and *A. mellifera*, together provided sufficient pollination services for full fruit set and yield across a wide range of farms with different practices. The relative contribution of these species varied widely, however, among different farms, and even from year to year at the same farm. Although there were indications that the numbers of *P. pruinosa* visiting these crops were declining over the four years of the study (Stoner 2020), calculations made using Tefler *et al.* (2002) show that the relative range of this species in Connecticut is stable and/or increasing.

Nomadinae

Ammobatoidini

Genus *Holcopasites* Ashmead

Reference: Hurd & Linsley (1972)

***Holcopasites calliopsidis calliopsidis* (Linsley, 1943)**

Eastern Furrowed-Cuckoo

Notes: There have been eight more detections of this cleptoparasite of *Calliopsis andreniformis* in Connecticut since Zarrillo *et al.* (2016) in locations such as agricultural land, powerline ROW, and suburban neighborhoods.

***Holcopasites illinoiensis* (Robertson, 1891)**

Illinois Furrowed-Cuckoo.

Notes: There are only two known historical records for this species in Connecticut, and it seems to have disappeared entirely from the Northeastern United States.

Material examined. ***New Haven Co.*****:** New Haven: 30 June 1905, coll. B.H. Walden, 1 ♂, CAES, det. J.S. Ascher 2008, UCMS_ENT 00030635; Milford, 1 July 1919, coll. M.P. Zappe, sex unverified, CAES, det. J.S. Ascher 2008, UCMS_ENT 00030636.

Epeolini

Genus *Epeolus* Latreille

Reference: Onuferko (2017, 2018)

***Epeolus autumnalis* Robertson, 1902**

Autumn Cellophane-Cuckoo

Notes: This relatively large and late-flying species, presumably a cleptoparasite of *Colletes compactus compactus*, is known in Connecticut from a historical record in Litchfield (Litchfield County) and a more recent record in Montville (New London County) in powerline ROW.

Material examined. ***New London Co.*****:** Montville: "powerline ROW pole 347 corridor", 41.4325 -72.23333, 3 September 2012, coll. F.R. Morrison, M. Gould & J. Sanchez, 1 ♂, UCMS, det. J.S. Ascher, UCMS_ENT 00050905; ***Litchfield Co.*****:** Litchfield: 30 September 1901, 1 ♀, AMNH, det. J.S. Ascher 2011, AMNH_BEE 00145716.

***Epeolus bifasciatus* Cresson, 1864**

Two-banded Cellophane-Cuckoo

Notes: This cleptoparasitic species was first collected in Connecticut in 1922 and reported in Britton (1938). *Epeolus bifasciatus* was rediscovered in the state in 2021 near a planting of ground cherry (*Physalis* sp.), a host plant of its likely bee host (*Colletes latitarsis*), on an organic farm in the town of Ridgefield (Fairfield County).

Material examined. ***Fairfield Co.*****:** Ridgefield: "The Hickories Eco-Type Farm, 136 Lounsbury Road", 41.29179 -73.46268, 26 August 2021, coll. A. Bolduc, 1 ♀, CAES, det. T.A. Zarrillo 2021, netted from *Asclepias tuberosa*, UCMS_ENT 00077624; ***New Haven Co.*****:** North Haven, 6 August 1922, coll. B.H. Walden, 1 ♀, CAES, det. J.S. Ascher 2008, UCMS_ENT 00028386.

***Epeolus inornatus* Onuferko, 2018**

Inornate Cellophane-Cuckoo

Notes: This recently described species (Onuferko 2018) had previously been confused with *E. ilicis* which has a southeastern distribution. It is likely a cleptoparasites of *Colletes productus.*

Material examined. ***Tolland Co.*****:** Stafford: "Hampden Rd., 1.4 mi N of Bradway Pond", 9 July 1976, coll. G.I. Stage, 1 ♂, GSC, det. J.S. Ascher 2018, netted from *Lyonia ligustrina*, UCMS_ENT 00027148; Windham: "Windham Airport", 41.7496 -72.1791, 7 July 2023, coll. H. Baranowski, 2 ♂, UCMS, det. M.F. Veit and re-examined by T.A. Zarrillo 2023, netted from *Symphyotrichum* sp. in a pine barren.

***Epeolus lectoides* Robertson, 1901**

Sumac Cellophane-Cuckoo

Notes: This cleptoparasite of *Colletes nudus* is known in Connecticut from a single female collected in a coastal town.

Material examined. ***New London Co.*****:** East Lyme: "near jct. of US Hwy 1 and Liberty Way", 41.31778 -72.24361, 18 August 2009, coll. C.T. Maier, 1 ♀, CAES, det. J.S. Ascher, netted from *Eupatorium hyssopifolium*, UCMS_ENT 00039143.

***Epeolus pusillus* Cresson, 1864**

Dwarf Cellophane-Cuckoo

Notes: *Epeolus pusillus* has been collected in habitats such as sandplain remnants and coastal beaches in Connecticut. A female was collected by C. T. Maier on 22 September 2009 at Long Beach Park in Stratford (Fairfield County) while visiting seaside goldenrod (*Solidago sempervirens*).

***Epeolus scutellaris* Say, 1824**

Notch-backed Cellophane-Cuckoo

Notes: While this species only has 11 records in Connecticut, it is widely distributed, likely due to an association with the common *Colletes simulans armatus*, and has been detected in every county except Fairfield County. It has been found in sandplain remnants, a coastal state park, and powerline ROW, and visiting anise-scented goldenrod (*Solidago odora*) and American burnweed (*Erechtites hieraciifolius*).

Genus *Triepeolus* Robertson

Reference: Mitchell (1962); Rightmyer (2008)

***Triepeolus cressonii* (Robertson, 1897)**

Cresson's Longhorn-Cuckoo

Notes: This cleptoparasite of *Melissodes* was reported from Connecticut in Mitchell (1962) and is also known in the state from two recent records in New London County.

Material examined. *New London Co.*: Montville: "0.18 km SSE jct. State Route 85 and Beckwith Road", 41.4347 -72.2242, 2 August 2018, coll. C.T. Maier, 1 ♂, CAES, det. S. Droege and re-examined by T.A. Zarrillo 2022, netted from *Solidago odora*, UCMS_ENT 00082094; Waterford: "Harkness State Park, 275 Great Neck Road", 41.37696 -72.11389, 30 July–6 August 2019, coll. J. Durrell & A. Bolduc, 1 ♂, CAES, det. S. Droege and re-examined by T.A. Zarrillo 2022, bee bowl, UCMS_ENT 00082095.

***Triepeolus donatus* (Smith, 1854)**

Thistle Longhorn-Cuckoo

Notes: This species was reported for Connecticut in Cresson (1864a) [as *Epeolus donatus* Smith] and Viereck *et al.* (1916) and has since been collected in habitats including a powerline ROW and a wet meadow. Specimens from 1905, 1906, and 1914 have been vetted. It has been netted from thistle (*Cirsium* sp.) host plants of *Melissodes desponsus*, which it parasitizes, in Connecticut.

***Triepeolus helianthi* (Robertson, 1897)**

Sunflower Longhorn-Cuckoo

Notes: This species, likely associated with *Melissodes*, is known in Connecticut from only two records, one collected in a powerline ROW.

Material examined. *Fairfield Co.*: New Canaan: 26 August 1951, coll. M. Statham, 1 ♂, AMNH, det. J.S. Ascher 2013, AMNH_BEE 0025422; ***Hartford Co.*:** South Windsor: 41.84280187 -72.53556581, 4 August 2017, coll. M.F. Veit, 1 ♀, personal collection, det. M.F. Veit.

***Triepeolus lunatus* (Say, 1824)**

Lunate Longhorn-Cuckoo

Notes: This species was reported for Connecticut in Cresson (1864a) [as *Epeolus lunatus* Say] and Viereck *et al.* (1916), and historical specimens have been confirmed. It has since been collected in habitats such as agricultural land, powerline ROW, and sandy areas, and has been netted from black-eyed Susan (*Rudbeckia hirta*) in Connecticut. It is likely associated with *Melissodes bimaculatus.*

***Triepeolus michiganensis* Mitchell, 1962**

Michigan Longhorn-Cuckoo

Notes: Two specimens from Colebrook (Litchfield County) Connecticut were chosen to be a paratype and an allotype for this species as reported in Mitchell (1962) and are deposited at MCZ. Mitchell (1962) reported two collection events by W. M. Wheeler (female allotype collected on 28 July 1921; male paratype collected on 8 August 1922). It is likely associated with *Melissodes*, potentially including *M. subillatus.*

***Triepeolus obliteratus* Graenicher, 1911**

Obliterated Longhorn-Cuckoo

Notes: There are only two records for this cleptoparasitic species in Connecticut, one collected in an old orchard at the University of Connecticut, and another during a study of old fields in eastern Connecticut.

Material examined. *Tolland Co*.: Mansfield: "Storrs, old UCONN Orchard", 41.7822 -72.2148, 30 July 2009, coll. R.E. Roehm, 1 ♀, UCMS, det. J.S. Ascher 2013, UCMS_ENT 00055457; ***Windham Co*.:** Eastford: "Center Pike", 41.949255 -72.121825, 17 July 2013, coll. K. Urban-Mead, 1 ♀, YPM, det. S. Droege and re-examined by T.A. Zarrillo 2022, netted from *Rudbeckia hirta*, YPM ENT 809558.

***Triepeolus pectoralis* (Robertson, 1897)**

Goldenrod Longhorn-Cuckoo

Notes: This cleptoparasite of *Melissodes druriellus* is known in Connecticut from only four records, of which three below were confirmed.

Material examined. *Fairfield Co*.: Westport: 18 July 1925, coll. L. Lacey, 1 ♂, AMNH, det. M.G. Rightmyer 2006, AMNH_BEE 00140194; ***Hartford Co*.:** Windsor: 1951, coll. J.B. Kring, 1 ♂, CAES, det. S. Droege 2020, UCMS_ENT 00077811; ***New London Co*.:** Montville: "Route 85", 42.43512 -72.21401, 1 September 2012, coll. F. Morrison, 1 ♀, personal collection, det. J.S. Ascher.

***Triepeolus remigatus* (Fabricius, 1804)**

Squash Longhorn-Cuckoo

Notes: This cleptoparsite of *Peponapis pruinosa* was first reported for Connecticut and New England by Zarrillo *et al.* (2016). Twelve additional individuals have been collected in Connecticut since then, all from agricultural fields.

Nomadini

Genus *Nomada* Scopoli

Reference: Cockerell 1908; Droege *et al.* (2010a); Mitchell (1962); Odanaka *et al.* (2022); Schwarz & Gusenleitner (2004); Sheffield *et al.* (2009); Straka *et al.* (2024).

***Nomada armatella* Cockerell, 1903 (*ruficornis* group)**

Yellow-backed Nomad

Notes: The status of this species is poorly understood because only the male is described by Mitchell (1960). Due to variation in the color of the scutellum, atypical males of *N. armatella* and *N. cressonii* can potentially be confused by those relying on Mitchell's keys. Pronotal color also seems to vary, and further documentation of structural characters of both sexes is needed. Placement of *N. armatella* sister to *N. depressa* rather than close to *N. cressonii* by Odonaka *et al.* (2022) suggests that their concept of this species may differ from ours (see above).

Material examined. *New Haven Co*.: New Haven: "Lockwood Farm", 41.405833 -72.904722, 13 May 2010, coll. T.A. Zarrillo, 1 ♂, CAES, det. K. Odanaka 2021.

***Nomada articulata* Smith, 1854 (*erigeronis* group)**

Articulated Nomad

Notes: This species is expected to be a widespread and numerous cleptoparasite of the genus *Agapostemon* (Gibbs *et al.* 2017). Although its status in historical publications is generally uncertain due to potential confusion with *N. australis*, Connecticut vouchers as early as 1904 have been restudied and verified. Community science images frequently documented *N. erigeronis* group species (this or *N. australis*), but species identification from photos is challenging. This species has been collected in habitats across Connecticut such as powerline ROW, agricultural land, coastal beaches and dunes, suburban and urban areas, and the edge of a swamp.

***Nomada australis* Mitchell, 1962 (*erigeronis* group)**

Southern Nomad

Notes: This species is generally less commonly found than *N. articulata* and was overlooked historically due to confusion with that species. There are only nine records of *N. australis* in Connecticut, as opposed to at least 110 records for *N. articulata*. Even with so few records, *N. australis* has been detected in a variety of habitats in Connecticut, such as agricultural land, inland dunes, coastal scrub, grassland, and a suburban neighborhood.

***Nomada bella* Cresson, 1863 (*ruficornis* group, *bella* subgroup)**

Belle Nomad

Notes: Reported as "declining" in New Hampshire (Matthiasson & Rehan 2019), but this species, as identified by males, was one of the most numerous early spring-flying *Nomada* found at Ithaca, New York (ca. early 2000s), and elsewhere in the region by J. S. Ascher (unpublished). There are 81 records for *N. bella* in Connecticut (of those 71% are females identified by J. S. Ascher), and 95% were collected after the year 2000. Due to identification difficulties, especially of females, this species is likely to be under-recorded, and digitized records cannot be relied upon to fully capture its distribution and abundance. In Connecticut, it is best known from inland dunes, powerline ROW, and a plantation of eastern white pine (*Pinus strobus*) with an understory of blueberry (*Vaccinium* spp.) and black huckleberry (*Gaylussacia baccata*) at the Pachaug State Forest in Voluntown (New London County).

***Nomada bethunei* Cockerell, 1903 (*ruficornis* group)**

Bethune's Nomad

Notes: Generally a scarce bee although likely under-recorded prior to the recent association of the sexes (Droege *et al.* 2010a) which resulted in synonymy of *N. pseudops*, the name used by Mitchell (1962) for the female of the species. In addition to the records for New Haven County annotated in Zarrillo *et al.* (2016), this species has also been found at the edge of Robbins Swamp in Canaan (Litchfield County) on 26 May 2007 by D. L. Wagner and in town of Wilton (Fairfield County) on 3 June 2019 by C. T. Maier.

***Nomada ceanothi* Cockerell 1907 (*ruficornis* group)**

Ceanothus Nomad

Notes: Two records of this rare cleptoparasite are confirmed for New Haven County only in Connecticut.

Material examined. ***New Haven Co.:*** Orange: 21 Jun 2002, coll. M. Schwarz, 1 ♀, J.S. Ascher det. 2023, in his reference collection; New Haven: "Lockwood Farm, 890 Evergreen Avenue", 41.40590 -72.90433, 23 June 2021, coll. J. Durrell, 1 ♂, CAES, det. M.F. Veit and re-examined by T.A. Zarrillo (using Mitchell 1962) in 2023, netted from *Castanea henryi*, CAES_HYM 00019290.

***Nomada composita* Mitchell, 1962 (*ruficornis* group)**

Composite Nomad

Nomada composita Mitchell, 1962: 408 (Connecticut holotype).

Holotype. Female USA: Connecticut: Litchfield Co.: Colebrook (MCZ).

Notes: Under-recorded due to identification difficulties, but S. Droege (pers. comm.) has recognized it from numerous sites across the region. However, material determined by him from New York and Canada proved on reexamination to pertain to two species one of which may be the morphospecies reported as *Nomada* sp. aff. *composita* Mitchell by Veit *et al.* (2022[“2021”]); see also Ascher *et al.* (2014) which differs in having an all red T3 (lacking yellow lateral spots) and in having a wider prepygidial fimbria with yellower hairs (vs. narrower and more silvery in true *N. composita*) and subtle differences in spines at the apex of the hind femur. In Connecticut this species is best known from powerline ROW (Wagner *et al*. 2014a) where two voucher specimens confirmed to be true *N. composita* upon reexamination were found to vary in color, with one having small yellow sublateral spots on T4 and some diffuse yellow on T5 medially whereas the other had T4-T5 red.

***Nomada cressonii* Robertson, 1893 (*ruficornis* group)**

Cresson’s Nomad

Notes: Apparently this is one of the more abundant *Nomada* species in the Northeastern United States, but its true status is somewhat obscured by ongoing identification difficulties. Connecticut records come from habitats such as powerline ROW, agricultural land, northern bogs, inland sand plain remnants, wildlife management areas, coastal meadows, suburban/urban neighborhoods, forest edges, and an arboretum.

***Nomada cuneata* (Robertson, 1903), sensu Mitchell, 1962 (*ruficornis* group, *bella* subgroup)**

Cuneate Nomad

Notes: This species as interpreted by Mitchell (1962) is one of the more distinctive of the “bidentate” species (Gibbs *et al.* 2017a) annotated here as comprising a “*bella* subgroup,” and is one of the more numerous large-bodied species flying later in spring in the region, especially at “northern” sites in Connecticut where its presumed *Andrena* (*Melandrena*) hosts are abundant. As noted by Gibbs *et al.* (2017a), Robertson (1903) described four forms of *N. cuneata*, but their diverse color patterns suggest that these forms, including reports of these from Connecticut by Viereck *et al*. (1916, as var.), are not conspecific with *N. cuneata* sensu Mitchell as recognized here. Further study of types is required to confirm application of names for *N. cuneata* and its putative forms.

***Nomada denticulata* Robertson, 1902 (*ruficornis* group)**

Denticulate Nomad

Notes: Both sexes can be identified by experienced workers, and males possess distinctive antennae, yet the species is still likely under-recorded. It has been detected in seven of the eight counties in Connecticut in habitats such as powerline ROW and a large, municipal park.

***Nomada depressa* Cresson, 1863 (*ruficornis* group)**

Large-patched Nomad

= *Nomada hoodiana* Cockerell, 1903, unpublished synonymy of Snelling; = *Nomada depressicauda* Cockerell, 1908; = *Nomada carinicauda* Cockerell, 1921, unpublished synonymy of Snelling; = *Nomada media* Mitchell, 1962, unpublished synonymy of Snelling.

Notes: Like very many *Nomada* species this one is surely under-recorded regionally, especially males. As there seem to be a reasonable number of recent (1990s–present) records in collections, examined from pertinent “northern” sites in the region, including Connecticut (n = 11), it is hard to endorse an assessment of the species as “declining” in New Hampshire (Matthiasson & Rehan 2019). We are unable to reliably separate *N. skinneri* Cockerell, described as “belonging to the group of *N. depressa*” by its author, from *N. depressa*, so we regard a non-type Connecticut report of the former as hypothetical (see below). A voucher from Tuell *et al*. (2009) from Ottawa County Michigan (4.5 miles NW of Holland, 21 Apr 2005, coll. J. K. Tuell *et al.*) initially identified as a *Nomada* cf. *depressa* proved upon reexamination to be a *N. sobrina* male instead. It has a yellow pronotum (see image in Gibbs *et al*. 2017a). As discussed above, grouping of this species with a *Nomada* (*Heminomada*) species by Odanaka *et al.* (2022) contrasts with its placement in *Nomada* (*Nomada*) by Hurd (1979).

***Nomada electa* Cresson, 1863 (*ruficornis* group)**

Elect Nomad

Notes: Connecticut is the type locality of the male of this species, collected and deposited in the collection of E. Norton (Cresson 1863) and now presumably lost. The female lectotype is from Illinois and is deposited at ANSP. *Nomada electa* was later reported for Connecticut in Britton (1938), however, the voucher could not be located for reexamination. More recently, a single male was collected in northern Fairfield County in 2002. This species is expected to occur only where populations exist of its likely host *Andrena braccata* (Ascher *et al*. 2014).

Material examined. ***Fairfield Co.:*** New Fairfield: 41.48333 -73.48333, 9 September 2002, coll. J.S. Ascher, 1 ♂, AMNH, det. J.S. Ascher 2013, AMNH_BEE 00271284.

***Nomada electella* Cockerell, 1903 (*ruficornis* group)**

Georgia Nomad

Notes: This species is scarce in collections. It was discovered in Georgia and has since been found in the mid-Atlantic in Virginia and North Carolina (Wake County, new information) and in New England including Rhode Island and Massachusetts. The first and only Connecticut record supports an early summer flight season for this species (available records are from June-July).

Material examined: ***New London Co.*:** Norwich, 7 July 1993, coll. H.T. Facundo, 1 ♀, det. J.S. Ascher 2023, NUS-IDL.

***Nomada florilega* Lovell and Cockerell, 1905 (*ruficornis* group)**

Floral Nomad

Notes: This species is reported by Mitchell (1962) to occur in Connecticut.

***Nomada gracilis* Cresson, 1863 (*ruficornis* group)**

Gracile Nomad

Notes: This northern species is numerous in Eastern Canada (see iNaturalist) but is found more sparsely in the Northeastern United States. It was surely overlooked by regional workers historically due in part to an early flight season. Only recently has *N. inepta*, described from the female, been recognized as a junior synonym of *N. gracilis* (Sheffield *et al*. 2009). Connecticut records come from habitats such as sandplain remnants, northern bogs, and arboretums.

***Nomada illinoensis* Robertson, 1900 (*ruficornis* group)**

Illinois Nomad

Notes: A small-bodied species, likely associated with *Andrena miserabilis*, in a hard-to-identify complex of species with white setae at the apex of the hind tibia. Collection sites in Connecticut include agricultural land, coastal scrub, and a coastal meadow.

***Nomada imbricata* Smith, 1854 (*ruficornis* group)**

Imbricate Nomad

Notes: The identity of this and other relatives of *Nomada luteola* (included in subgenus *Heminomada* sensu Mitchell, 1962; Hurd, 1979) was highly confused prior to taxonomic studies by Schwarz & Gusenleitner (2004). It is now recognized to be a relatively numerous species across the region. Likely hosts in Connecticut include *Andrena dunningi* Cockerell and *Andrena regularis* Malloch (Gibbs *et al.* 2017a). This species has been found in habitats such as powerline ROW, coastal beaches and scrub, and agricultural land, with 39% of records coming from the Stewart B. McKinney National Wildlife Refuge in Westbrook (Middlesex County). Users of Discover Life identification keys should be aware that *N. imbricata* females from the Northeastern and North Central United

States and Canada can have more extensively red head, scutum, and propodeum than do extensively yellow-marked mid-Atlantic specimens, so approaches to identification overly reliant on color may prove unreliable.

***Nomada integerrima* Dalla Torre, 1896 (*ruficornis* group)**

Complete Nomad

Notes: Although reportedly widespread across the region and recorded from Connecticut by Mitchell (1962), its true status in New England remains unclear due to identification difficulties (Veit *et al.* 2022["2021"]).

***Nomada lehighensis* Cockerell, 1903 (*ruficornis* group)**

Lehigh Nomad

Notes: The identification and status of this species was clarified by Droege *et al.* (2010a) who reported the species from Connecticut and recognized *N. kingstonensis* Mitchell, 1962, from nearby Rhode Island as a junior synonym. Now that its identification has been clarified it has been found widely across the Northeastern United States but remains under-recorded especially based on the harder-to-recognize male.

***Nomada lepida* Cresson, 1863, sensu Mitchell, 1962 (*ruficornis* group, *bella* subgroup)**

Charming Nomad

Notes: As noted by Gibbs *et al*. (2017a), the type series may be composite, and specimens from the Eastern United States may not match the lectotype. It may be necessary to describe eastern populations as a new species or to assign them another name once type material in the challenging *bella* subgroup (=*Gnathias*) is better understood. Uncertainty about the identity of regional *N. lepida* sensu auct. extends to all New England records including those from Massachusetts, even though the taxonomic problem noted by Gibbs *et al.* (2017a) was not referenced by Veit *et al.* (2022["2021"]).

***Nomada luteola* Olivier, 1812["1811"] (*ruficornis* group)**

Yellowish Nomad

Notes: A southern species reaching its northern range limits in southern coastal Connecticut (Zarrillo *et al.* 2016) and New York City. Identification is challenging and should be attempted with reference to antennal proportions, genal morphology, and other characters as reported by Schwarz & Gusenleitner (2004).

Material examined. See Zarrillo e*t al*. (2016)

***Nomada luteoloides* Robertson, 1895 (*ruficornis* group)**

Black-and-yellow Nomad

Notes: One of the most numerous and widely recognized *Nomada* species in the Northeastern United States including Connecticut, likely reflecting an association with a common host species (likely *Andrena carlini*; see Gibbs *et al*. 2017a; Goldstein & Ascher 2016). Many females are more readily identifiable from images than are most other regional *Nomada*, so specimen records are supplemented with community science reports.

***Nomada maculata* Cresson, 1863 (*ruficornis* group, *bella* subgroup)**

Spotted Nomad

Nomada maculata Cresson, 1863: 303 (Connecticut lectotype designated by Cresson, 1916).

Lectotype. USA: Connecticut: Female, [ex coll. E. Norton?] (ANSP).

Notes: One of the most abundant *Nomada* species in the region, likely reflecting an association with common *Andrena* (*Melandrena*) hosts, likely including *Andrena vicina.* Habitat associations in Connecticut include powerline ROW, coastal beaches, agricultural land, inland dunes and sandplain remnants, suburban neighborhoods, and field edges.

***Nomada obliterata* Cresson, 1863 (*ruficornis* group)**

Obliterated Nomad

= *Nomada viburni* Robertson, 1897*; = Nomada decepta* Mitchell, 1962, unpublished synonymy of Snelling.

Notes: Typical individuals with two submarginal cells are readily identified, but some individuals may have three cells in one or both wings complicating identification. This species is expected to be localized to the vicinity of willows in Connecticut due to its reported association with *Andrena erythrogaster.* It is known in Connecticut only from a singleton collected in 1926.

Material examined. *Litchfield Co*.: Cornwall: 4 June 1926, coll. K.F. Chamberlain, sex unverified, UCMS, det. J.S. Ascher 2008, UCMS_ENT 00032857.

***Nomada ovata* (Robertson, 1903) (*ruficornis* group, *bella* subgroup)**

Orange-tailed Nomad

Notes: One of the more numerous later spring-flying species in the region, e.g., at Ithaca, New York and vicinity (J. S. Ascher unpublished), but under-recorded, especially in the male, due to ongoing identification difficulties among *Nomada* with bidentate mandibles (see Mitchell 1962, key).

***Nomada parva* Robertson, 1900 (*ruficornis* group)**

Little Nomad

Notes: This species is generally scarce in the Northeastern United States and better known from further south. There are eight records of this species in Connecticut, most from warmer, coastal locations, and all records are relatively recent, spanning 2005–2017. *Nomada parva* is easily overlooked due to its unusually small size and similarity to other small-bodied species such as *N. illinoensis.*

***Nomada perplexa* Cresson, 1863 (*ruficornis* group, *bella* subgroup)**

Perplexing Nomad

Notes: This species can sometimes be recognized due to the more black (less red) integument in comparison to other species with bidentate mandibles. Identification is difficult and similar undescribed or at least generally unrecognized species may exist. Care should be taken to examine tibial spines when attempting to separate these. Early records from Connecticut have been augmented with recent material collected by M.F. Veit in powerline ROW and deciduous forests (Wagner *et al.* 2019).

***Nomada placida* Cresson, 1863 (*roberjotiana* group)**

Placid Nomad

Notes: Recent observations of this species on iNaturalist are notable as this species is rarely seen, especially in New England. It was first found visiting flat-topped goldenrod (*Euthamia graminifolia*) in New Haven County, Connecticut by D. P. Mantack (https://www.inaturalist.org/observations/179870206).

***Nomada pygmaea* Cresson, 1863 (*ruficornis* group)**

Pygmy Nomad

Nomada pygmæa Cresson, 1863: 299 (Connecticut holotype).

Holotype. Male USA: Connecticut, [ex coll. E. Norton] (ANSP).

Notes: This species is apparently one of the most numerous *Nomada* in the woodlands of the Northeastern United States, with records published for all counties in Massachusetts (Veit *et al.* 2022["2021"]) and all but one county (Windham County) in Connecticut. Although there are many records it is still likely under-recorded in digitized record sets due to serious identification difficulties and inability to recognize this and other similar *Nomada* from community science images.

***Nomada sayi* Robertson, 1893 (*ruficornis* group)**

Say's Nomad

Notes: As reported in the regional literature (e.g., Veit *et al.* 2022["2021"]), *N. sayi* is less widely recognized than is the rather similar *N. pygmaea*, although its true status is unclear due to identification difficulties. There are only five records of this species in Connecticut (three of which are from one collection event in New Canaan).

Material examined. *Fairfield Co*.: New Canaan: 17 May 1968, coll. M. Favreau, 3 ♀, AMNH, det. J.S. Ascher 2011, AMNH_BEE 00146949, AMNH_BEE 00146950, AMNH_BEE 00146951; ***Hartford Co*.:** Enfield: "1 km N of jct. State Route 192 and Brainard Rd.", 42.0332 -72.54247, 26 April 2005, 1 ♂ coll. C.T. Maier, CAES, det. J.S. Ascher 2008, UCMS_ENT 00030540; **New Haven Co.:** Meriden: 3 May 1972, coll. H.L. Johnson, 1 ♂, AMNH, det. J.S. Ascher 2011, AMNH_BEE 00146970.

***Nomada tiftonensis* Cockerell, 1903 (*vegana* group)**

Tifton Nomad

Notes: *Nomada tiftonensis* is a distinctive species flying in summer and early fall that can be found visiting sunflowers at sandy sites along with its presumed *Agapostemon* hosts. It was reported by Mitchell (1962) from Connecticut and Massachusetts as *N. heiligbrodtii*, now recognized as a junior synonym (Droege *et al*. 2010a).

Material examined. See Zarrillo *et al.* (2016)

***Nomada townesi* Mitchell, 1962 (*ruficornis* group)**

Townes' Nomad

Notes: *Nomada townesi* is a very poorly known species that has been known only from a male holotype collected on 26 Mar 1944 by H.K. and M. Townes at Takoma Park, Montgomery County, Maryland. The type specimen is one of four species keying to couplet 44 in Mitchell that have the basal vein of the forewing interstitial or nearly so with the transverse median vein. A specimen from Laurel, PWRC site 5, Prince Georges County Maryland, 20 Mar 2001, coll. Sam Droege, has such venation and otherwise matches Mitchell's description. However, another larger but evidently conspecific individual taken nearby (at PWRC site 6) three days later (23 Mar) has the basal vein distinctly basad of the transverse median vein. The Connecticut male reported here closely matches the second specimen with venation atypical for the species (but normal for *Nomada* of this group). From these observations we conclude that *N. townesi* occurs in the Northeastern United States but may have been overlooked if many (perhaps most) individuals cannot be keyed reliable in Mitchell (1962) due to variation in placement of the basal vein relative to the transverse median vein. This observation suggests that the obscure *N. ulsterensis* Mitchell, 1962, also keying to couplet 44, may prove to be a previously described *Nomada* species with anomalous venation as opposed to a valid species. However, ignoring venation, *N. townesi* does not seem to match any other regional species so we regard it as distinct for now. On the other hand, some obscure, yellow-banded species formerly included in *Heminomada* (e.g., *N. autumnalis* Mitchell, in Gibbs *et al.*, 2017) with interstitial basal veins that key out at couplet 32 may also represent individual variation as opposed to valid taxa. Schwarz and Gusenleiter (2004) placed one such taxon, *N. bishoppi* Cockerell, in synonymy, and we suspect that another obscure species in this group, *N. subrutila* Lovell and Cockerell, 1905, described from Maine (see Dibble *et al.* 2017) may prove to be a synonym of *N. luteoloides* (the description matches this better than another possible association, *N. imbricata.*)

Material examined. *New London Co*.: Preston: 1 km S jct. State Routes 2A and 12, 41.47346 N -72.06718 W, 9 Apr 2009, coll. C.T. Maier, 1 ♂, det. by (and on loan to) J.S. Ascher, 2023.

***Nomada vicina* Cresson, 1863 (*ruficornis* group)**

Neighborly Nomad

= *Nomada beulahensis* Cockerell, 1903, unpublished synonymy of Snelling; = *Nomada vicina stevensi* Swenk, 1913, unpublished synonymy of Snelling.

Notes: This species flies in the fall along with its presumed host *Andrena hirticincta* (Ascher *et al*. 2014) and is usually found on goldenrod or other composites. Care should be taken in identification, as the similar *Nomada banksi* Cockerell, 1907, might also occur in Connecticut.

***Nomada vincta* Say, 1837 (*vincta* group)**

Bound Nomad

Notes: A singleton in Connecticut was collected by H. L. Johnson on 29 August 1971, without specific locality information. Since H. L. Johnson typically collected near his home in Meriden (New Haven County), we surmise that this specimen was collected in that vicinity. This parasite of *Andrena* (*Callandrena* s. l.) is often recorded from sunflowers in the Central United States but is rarely reported from the Northeast (Broemeling & Moalif 1988). However, there are recent reports from New England states (Veit *et al*. 2022[“2021”]), including Vermont (S. Hardy pers. comm.).

Material examined. ***New Haven Co.*:** 29 August 1971, coll. H.L. Johnson, 1 ♂, UCMS, det. J.S. Ascher, UCMS_ENT 00050234.

***Nomada xanthura* Cockerell, 1908 (*ruficornis* group)**

Yellow-banded Nomad

= *Nomada ochlerata* Mitchell, 1962, new synonym; = *Nomada detrita* Mitchell, 1962, new synonym; = *Nomada mendica* Mitchell, 1962, new synonym.

Notes: This distinctively yellow-banded species was under-recorded in historical literature but has been found at various regional sites such as Ithaca, New York (J. S. Ascher pers. obs.; Veit *et al*. (2022[“2021”]), Vermont (S. Hardy pers. comm.), Massachusetts (Veit *et al*. 2022[“2021”]), and the following five towns in Connecticut: New Canaan and Danbury (Fairfield County), Barkhamsted and Goshen (Litchfield County), and Waterford (New London County). We consider both *Nomada mendica* Mitchell, 1962, and *Nomada ochlerata* Michell, 1962, to be junior synonyms of *N. xanthura* (see Gibbs *et al*. 2017a), and we concur with S. Droege’s observation shared on the Discover Life species page for *N. xanthura* that *Nomada detrita* Mitchell, 1962, is an atypical *N. xanthura* with two submarginal cells and thus a junior synonym. In the original description of *N. ochlerata* there is an inconsistency in the description of the coloration of the first metasomal tergum with, “abdominal terga 1-6 more or less completely yellow banded, that on 1 rather narrow…” contradicting, “tergum 1 piceous basally, more reddish apically.” The latter description is correct whereas in the former description “1” should be updated to 2.

Although *N. xanthura* has been considered a possible junior synonym of *N. gracilis* by S. Droege (e.g., as reported on the Discover Life species page for *N. gracilis*), we cannot accept this synonym because the two species differ strikingly in color pattern and occur together at places such as Ithaca, New York with no sign of intergradation. At least one male specimen identified as *N. depressa* by S. Droege from Essex County, New York proved upon reexamination to be *N. xanthura*.

Xylocopinae

Ceratinini

Genus *Ceratina* Latreille

Reference: Daly (1973); Rehan & Sheffield (2011)

Subgenus *Zadontomerus* Ashmead

***Ceratina* (*Zadontomerus*) *calcarata* Robertson, 1900**

Spurred Small Carpenter

Notes: This very common species can be found throughout Connecticut and has been collected in various habitats such as powerline ROW, agricultural land, town parks, grassy fields, inland wetlands, beach dunes, a coastal wildlife preserve, sandplain remnants, suburban neighborhoods, and pollinator gardens.

***Ceratina* (*Zadontomerus*) *dupla* Say, 1837**

Doubled Small Carpenter

Notes: This common species is best known in Connecticut from habitats such as coastal scrub, beach dunes, and powerline ROW, and was the third most abundant species captured in the Grass Island survey (Zarrillo & Stoner 2019). Scarpulla (2013) reported that this species was also found in notably high numbers in his survey of Hart-Miller Island in Maryland compared to other species in the *Ceratina* species complex and suggests that C. *dupla* may be more tolerant of these types of dry, open conditions.

***Ceratina* (*Zadontomerus*) *mikmaqi* Rehan and Sheffield, 2011**

Mikmaq Small Carpenter

Notes: This recently described species has been found on agricultural land, marsh, beach dunes, coastal scrub, and a meadow adjacent to a forest.

***Ceratina* (*Zadontomerus*) *strenua* Smith, 1879**

Nimble Small Carpenter

Notes: This species has been collected in the southern, coastal counties in Connecticut and in the Connecticut River Valley in Hartford County, in habitats such as powerline ROW, grassy meadows, agricultural land, suburban neighborhoods, and a coastal wildlife preserve. *Ceratina strenua* was observed to nest in the stems of sumac (*Rhus* sp.) by M. Favreau in the 1970's in New Canaan (Fairfield County).

Xylocopini

Genus *Xylocopa* Latreille

Reference: Hurd (1956)

Subgenus *Xylocopoides* Michener

***Xylocopa* (*Xylocopoides*) *virginica virginica* (Linnaeus, 1771)**

Eastern Carpenter

Notes: Records for this species in Connecticut span from 1900–2023, yet most of the records (about 79%) were collected after the year 2000. Although *X. virginica virginica* is considered to be a "pest" because of its tunneling nesting behavior in wood, it is known to be a valuable pollinator of agricultural crops such as watermelon, musk melon, and cucumber (Winfree *et al.* 2008).

COLLETIDAE

Colletinae

Genus *Colletes* Latreille

Reference: Mitchell (1960); Stephen (1954)

***Colletes aestivalis* Patton, 1879 (*aestivalis* group)**

Alumroot Cellophane Bee

Colletes aestivalis Patton, 1879: 142. (Connecticut holotype).

Holotype. Female USA: Connecticut: New Haven Co., 12 July [1878 or before], W. H. Patton, ex *Heuchera americana* (lost; replaced by a neotype from Maryland in USNM)

Notes: Connecticut is the type locality of this oligolege of alumroot (*Heuchera* sp.) (Robertson 1895); however, the type was lost and, in the absence of available Connecticut material, a female from Maryland was

designated as the neotype by Stephen (1954). *Colletes aestivalis* has not been detected in Connecticut since its description in 1879 and there is only one undated historical record for Masaschusetts (Veit *et al.* 2022["2021"]). The historical range of *C. aestivalis* extends up the eastern coast of the United States from Georgia to Massachusetts, and west to Illinois (Mitchell 1960) and Missouri. There have been few recent records of this species in the Northeastern United States, however the paucity of records may be due to lack of targeted collecting on its native host plant. It has been recorded recently in specialized habitat in the Mid-Atlantic region and in the western portion of its range (e.g., Missouri, see https://www.inaturalist.org/observations/139493810).

***Colletes americanus* Cresson, 1868 (*americanus* group)**

American Cellophane Bee

Notes: *Colletes americanus* was noted in Viereck (1916) as probably present Connecticut due to its known distribution and habitats, however, identification of this species is challenging and has been subject to numerous errors (Kuhlmann & Ascher 2010). Species such as the morphologically similar *Colletes speculiferus* [= *mitchelli*] were not yet described and thus unknown to Viereck and other collectors at that time. The first verified record we could find for *C. americanus* in Connecticut was a specimen collected in 1919. This species is now documented from six Connecticut counties, in habitats such as powerline ROW and sandplain remnants.

***Colletes banksi* Swenk, 1908 (*hyalinus* group)**

Banks' Cellophane Bee

Notes: This rarely captured species is a specialist on holly (*Ilex*) (Deyrup *et al.* 2002). The only two known Connecticut specimens were collected in 2012 in the town of Salem (New London County) near a gravelly, sandy, unfinished road.

Material examined. *New London Co*.: Salem: "jct. Rt. 11/82", 41.46 -72.26805, 14–16 June 2012, coll. D.L. Wagner, 1 ♀, UCMS, det. J.S. Ascher, bee bowl, UCMS_ENT 00050043; "Rt. 11 Extension", 41.46166 -72.27138, 14 June 2012, coll. F. Morrison, 1 ♂, UCMS, det. J.S. Ascher 2012, UCMS_ENT 00050148.

***Colletes compactus compactus* Cresson, 1868 (*compactus* group)**

Eastern Aster Cellophane Bee

Colletes compacta Cresson, 1868:166. (Connecticut syntype).

Syntype. Female USA: Connecticut. A specimen from Illinois was selected as the lectotype by the describer (Cresson, 1916).

Notes: This autumn bee is a specialist on Asteraceae (Gibbs *et al.* 2017a) and has been collected from goldenrod (*Solidago* s. l.) and unspecified Asters in Connecticut, in habitats such as coastal state parks, town beaches and inland ponds, and powerline ROW. Of note, one male was collected at Long Beach Park in Stratford (Fairfield County) on seaside goldenrod (*Solidago sempirvirens*) by C. T. Maier on 22 September 2009 along with a reported cleptoparasite (Rozen & Favreau 1968) *Epeolus pusillus*. Additionally, *Epeolus autumnalis*, a reported cleptoparasite of *C. compactus compactus* (Ascher *et al.* 2014), was netted with its host in a powerline ROW in Montville (New London County) on 3 September 2012 by F. Morrison.

***Colletes inaequalis* Say, 1837 (*inaequalis* group)**

Unequal Cellophane Bee

Notes: This common species is one of the earliest native bees to emerge in Connecticut, coinciding in phenology with the bloom of maple (*Acer* spp.) and willow (*Salix* spp.), which provide early season sources of nectar and pollen (Batra 1985; Tumminello *et al*. 2018). This bee commonly forms nesting aggregations throughout the state.

***Colletes latitarsis* Robertson, 1891 (*latitarsus* group)**

Broad-footed Cellophane Bee

Notes: This summer-flying species is a specialist on ground cherry (*Physalis* sp.) (Gibbs *et al.* 2017a) and a host of the cleptoparasitic bee *Epeolus bifasciatus* (Brumley 1965; Mitchell 1962). Only thirteen specimens of this species have been collected in two counties in Connecticut over the past 100 years: two from 1972 (New Haven County), one from 2007 (Litchfield County), five from 2020 (Litchfield County), and five from 2021 (Litchfield County). In 2021, a female *Epeolus bifasciatus* was opportunistically captured on an organic farm in the town of Ridgefield (Fairfield County) where ground cherry (*Physalis* sp.) has been grown as a crop for the past 12 years, suggesting that its host, *C. latitarsis*, must also be nearby.

***Colletes productus* Robertson, 1891 (*productus* group)**

Maleberry Cellophane Bee

Notes: The first known records in Connecticut for this rarely collected species were from W. E. Britton in Torrington (Litchfield County) on 7 July 1905 (male), and from an unknown collector (label data: B. T. R. Lab. Col.) in Stamford (Fairfield County) on 22 June 1929 (female). Likely under-collected historically, this specialist on maleberry (*Lyonia ligustrina*) (Hall *et al.* 2016; Wagner *et al.* 2014a) was later netted from this host plant in 1976 by G. I. Stage in the town of Stafford (Tolland County) (unpublished), with subsequent captures by Wagner *et al.* (2014) in their survey of wild bee communities living under transmission line ROW in Connecticut.

***Colletes simulans armatus* Patton, 1879 (*simulans* group)**

Eastern Spine-shouldered Cellophane Bee

Notes: *Colletes simulans* Cresson was originally described from Colorado. Stephen (1954) recognized four subspecies, with *armatus* Patton being the subspecies in New England, the northern Great Plains, and the eastern seaboard south to North Carolina. *Colletes simulans armatus*, is a specialist on late-season Asteraceae (Hurd 1979) and has been collected often on goldenrod (*Solidago* s. l.) in Connecticut and across the region. Its peak flight activity in Connecticut is earlier than *C. compactus compactus*, which generally matches its phenology in New York (Ascher *et al.* 2014).

***Colletes solidaginis* Swenk, 1906 (*americanus* group)**

Goldenrod Cellophane Bee

Notes: Gerald Stage collected specimens in Connecticut in 1973 (n = 6) in Mansfield (Tolland County) near Chapin's Pond, however this species was first reported from Connecticut by Wagner *et al.* (2014a). It has also been captured in a bee bowl in sand dune remnants in Simsbury (Hartford County) between 15–18 August 2007 by A. Bouchard and D. L. Wagner, and a powerline ROW in Bozrah (New London County) on 19 July 2006 by N. Bricker and J. Watson.

***Colletes speculiferus* Cockerell, 1927 (*americanus* group)**

Beach Dune Cellophane Bee

Notes: This autumnal specialist of Asteraceae is mostly known in New England from the offshore islands of Massachusetts (Goldstein & Ascher 2016; Stage 2009) [as *mitchelli*] and Rhode Island and is associated with sandy dunes with goldenrod. It is known in Connecticut from a single female collected in powerline ROW.

Material examined. *New London Co*.: Montville: "Chesterfield Rd.", 4 July 2006, coll. N. Bricker & J. Watson, 1 ♀, UCMS, det. J.S. Ascher, UCMS_ENT 00050606.

***Colletes thoracicus* Smith, 1853 (*inaequalis* group)**

Rufous-chested Cellophane Bee

Notes: This common species emerges later in the spring than *C. inaequalis* in Connecticut, and its large aggregations have been found in habitats ranging from beaches along the coast to inland sandplain remnants, organic farms, powerline ROW, urban planting beds, and school playgrounds. Males can be seen in large numbers flying low to the ground patrolling the area for females as they leave their nest to gather pollen.

***Colletes validus* Cresson, 1868 (*inaequalis* group)**

Blueberry Cellophane Bee

Notes: The first known records for this species in Connecticut were collected by Viereck in 1904 on American gooseberry (*Ribes oxyacanthoides*), and leatherleaf (*Chamaedaphne calyculata*). Rajotte (1979) studied the nesting habits, pheromone response, and foraging behavior of this species at a sandplain in the town of Mansfield (Tolland County), Connecticut, northeast of Chapins Pond. He found that *C. validus* waited 11–20 days after emergence to collect pollen from early and late lowbush blueberries (*Vaccinium angustifolium* and *V. pallidum* [as *V. vascillans*, a misspelling of *vacillans*] respectively) and found that excavated pollen provisions were almost exclusively from *Vaccinium* or other ericaceous species (Rajotte 1979). Due to its specialization on *Vaccinium* spp. pollen and its gregarious nesting habit (Rajotte 1979), this species has potential to be an important native pollinator of lowbush (Boulanger e*t al*. 1967; Rajotte 1979) and highbush blueberry (Scott *et al.* 2016; Tuell *et al*. 2009).

Hylaeinae

Genus *Hylaeus* Fabricius

Reference: Mitchell (1960); Oram (2018); Snelling (1966, 1968, 1970, 1983)

Subgenus *Cephalylaeus* Michener

***Hylaeus* (*Cephalylaeus*) *basalis* (Smith, 1853)**

Cinquefoil Masked Bee

Notes: This northern species persists in good numbers in the Northern and Western portions of its range (e.g., in Canada and the Rocky Mountains) but is rare and local at best in the Northeastern United States and may have declined at the southern edge of its range. Causes of a potential decline are unknown, but it is possible that reforestation of historically-denuded mountaintops in New England (and New York) led to a decline due to ecological succession of its host plant *Potentilla.*

Material examined. *Hartford Co*.: Hartland: "1 mi S of West Hartland", 6 June 1966, coll. S.M. Fullerton, f1, UCMS, det. S.M. Fullerton 1968, UCMS_ENT 00029328.

Subgenus *Hylaeus* Fabricius

***Hylaeus* (*Hylaeus*) *annulatus* (Linnaeus, 1758)**

Annulate Masked Bee

Notes: *Hylaeus annulatus* is a northern Holarctic species at the southern edge of its range in Southern New England where it is generally scarce. All but four of the eighteen Connecticut records are from northern towns (78%).

***Hylaeus* (*Hylaeus*) *leptocephalus* (Morawitz, 1871["1870"])**

Slender-faced Masked Bee

Notes: This exotic species is well known in New York City but was only recently reported from Massachusetts (Veit *et al.* 2022["2021"]). It has been detected in at least four counties in Connecticut.

***Hylaeus* (*Hylaeus*) *mesillae cressonii* (Cockerell, 1907)**

Cresson's Masked Bee

Notes: It is generally a common bee in the Northeastern United States, including Connecticut.

***Hylaeus* (*Hylaeus*) *saniculae* (Robertson, 1896)**

Sanicle Masked Bee

Notes: *Hylaeus saniculae* is generally scarce across its wide range (Veit *et al*. 2022["2021"]), but females may be under-recorded due to their similarity to *H. mesillae cressonii* (Snelling 1970).

Material examined. *Hartford Co.*: South Windsor: 21 June 2017, coll. M.F. Veit, f1, personal collection, det. M.F. Veit 2017, netted in powerline ROW; ***Tolland Co.*:** Coventry: "near Eagleville Dam", 7 July 1972, coll. G.I. Stage, m1, UCMS, det. J.S. Ascher 2008, UCMS_ENT 00032846; Mansfield: "Chaffeeville", 29 September 1973, coll. M.A. Wert, sex unverified, UCMS, det. J.S. Ascher 2008, UCMS_ENT 00032847.

Subgenus *Metziella* Michener

***Hylaeus* (*Metziella*) *sparsus* (Cresson, 1869)**

Broad-faced Masked Bee

Notes: *Hylaeus sparsus* is generally a rare bee in collections for unknown reasons, but it has been recorded in Prospect Park, Brooklyn, New York City, visiting Apiaceae (J. S. Ascher, unpublished). There are four records for this species in Connecticut, with the most recent (n = 2) collected in a powerline ROW and a woodland.

Material examined. *Fairfield Co.*: Newtown: 1 June 1933, coll. N. Turner, 1 ♂, CAES, det. J.S. Ascher 2008, UCMS_ENT 00030534; ***New Haven Co.*:** Beacon Falls: 14 May 1934, coll. G.H. Plumb, 1 ♂, CAES, det. J.S. Ascher 2008, UCMS_ENT 00030533; ***New London Co.*:** Montville: 41.4325 -72.23388, 12–14 May 2012, coll. B. Gagliardi & N. Schoppmann, 1 ♂, UCMS, det. J.S. Ascher 2012, bee bowl, UCMS_ENT 00050748; 41.43138 -72.23416, 31 May 2012, coll. M. Gould, N. Schoppmann & V. Bruzzese, 1 ♀, UCMS, det. J.S. Ascher 2008, UCMS_ENT 00050749.

Subgenus *Prosopis* Fabricius

***Hylaeus* (*Prosopis*) aff. *nelumbonis* (Robertson, 1890)**

Lotus Masked Bee

Notes: This dark form was first reported in Connecticut in Zarrillo & Stoner (2019). Vouchers collected at Grass Island (New Haven County, Guilford, CT) closely resemble *H. schwarzii* in that the first tergum (T1) of the abdomen of both the male and female are black or nearly black, however, DNA analysis assigned to BIN AAX2614 (*H. nelumbonis*) and certain morphological characters of our specimens, such as the lack of a median, basal elevation on S3 and S4 (males) and the presence of a short, flat, finely rugoso-punctate metanotum (females), suggest *H. nelumbonis* (Zarrillo *et al.* 2016, Zarrillo & Stoner 2019). Thirteen of our females have a hint of chestnut hue on the base of T1, while one has the base of T1 with bright ochraceous mottling, and another base of T1 with bronze mottling. Our vouchers of uncertain taxonomic status match those described in Ascher *et al*. (2014), Arduser (2020), and Jacobson (2021), and were collected from field sowthistle (*Sonchus arvensis*), Queen Anne's lace (*Daucus carota*), and common marshmallow (*Althaea officinalis*) in Connecticut. Further taxonomic study of this unusual form is warranted.

***Hylaeus* (*Prosopis*) *affinis* (Smith, 1853)**

Allied Masked Bee

Notes: *Hylaeus affinis* is thought to be a rather common species, although considerably less so than *H. modestus.* Its true status is somewhat unclear due to ongoing identification difficulties, especially of females, although recent work by Oram (2018) has helped to clarify morphological identification.

***Hylaeus* (*Prosopis*) *illinoisensis* (Robertson, 1896)**

Illinois Masked Bee

Notes: The putative male from Connecticut has been rechecked against Mitchell (1960), Oram (2018), and an unpublished key written by Arduser (2020). Our male specimen exhibits the following diagnostic characters: T1 shiny, very faintly punctate (visible only at 40x), with T2 densely punctured and less shiny (visible at 10×); hind tibia mostly yellow with a small dark maculation on the posterior surface only. We are accepting this specimen to be *H. illinoisensis* as understood by the preceding descriptive accounts. This species has been reported from many states and provinces, but it is poorly known, and it is possible that many records are unreliable. Regional *Hylaeus illinoisensis* males with yellow or mostly yellow hind tibiae are often identified as this based on Mitchell (1960), however they can now be rechecked against Oram (2018) and Arduser (2020) as well for further validation. The species may be associated with wetland areas at least in Manitoba (Gibbs *et al.* 2023).

Material examined. See Zarrillo *et al*. (2016)

***Hylaeus* (*Prosopis*) *modestus modestus* Say, 1837**

Eastern Modest Masked Bee

Notes: As understood by us this is the most observed *Hylaeus* in the region, but its status and identification are still rather problematic due to the existence of similar taxa including an unpublished morphospecies (Arduser 2020; Gibbs *et al.* 2023). Presumptive females are relatively large, have yellow (not white) markings (unlike various exotic *Hylaeus* in the region), and black tegulae. The latter character has been invoked to support preliminary image-based identification (e.g., at Bugguide and iNaturalist), but the reliability of this and other putative identification criteria requires further testing.

***Hylaeus* (*Prosopis*) *schwarzii* (Cockerell, 1896)**

Schwarz's Masked Bee

Notes: Connecticut specimens have been restudied by T. A. Zarrillo who has confirmed that the specimens are morphologically distinct from Connecticut *H*. aff. *nelumbonis* material. Our two male vouchers of *H. schwarzii* have the characteristic shining, impunctate, basal median elevation on the third sternite (S3) as described in Mitchell (1960). We are not able to confirm the elevation on S4 as it is hidden under S3. Our three females have the basal area of T1 piceous, and metanotum long, convex, dull with tessellation, and smooth. Connecticut material morphologically determined as *H. schwarzii* by experts was sent to York University for DNA barcoding and the queried specimen (and also a putative Maryland *H. schwarzii*, presumably also another black-colored bee) assigned to BIN: AAX2614, *H. nelumbonis* (very close to but not identical to the Mississippi *H. nelumboni*s and the Connecticut *H*. aff. *nelumbonis*). Further integrative taxonomic study is needed to see if red-marked and all-black bees in this complex from Connecticut and elsewhere (e.g., Maryland) are conspecific. If so, this may suggest that *H. nelumbonis* is variable, with some being all black. Alternative possibilities are that the black putative *H. schwarzii* from Connecticut and Maryland are a cryptic "new" form minimally diverged (for COI) from *H. nelumbonis* (and the Connecticut "*H.* aff. *nelumbonis*"). A more complicated interpretation would be that the Connecticut and Maryland "*H. schwarzii*" are *H. schwarzii* that have acquired *H. nelumbonis* mt DNA through past hybridization or some other mechanism.

Material examined: *New Haven Co*.: Guilford: "Chaffinch Island Park", 41.26470—72.67516, 22 August 2009, coll. C.T. Maier, 1 ♂, CAES, det. T.A. Zarrillo 2024, UCMS_ENT 00052699; "Grass Island", 41.267795 -72.656389, 18-19 June 2011, coll. T.A. Zarrillo, 1 ♀, CAES, det. T.A. Zarrillo 2024, bee bowl near a marsh, UCMS_ENT 00052698; 9 July 2011, coll. T.A. Zarrillo, 1 ♀, CAES, det. T.A. Zarrillo 2024, netted from *Rosa rugosa* near a marsh, UCMS_ENT 00052657; 41.2684, -72.6609, 18-19 June 2011, coll. T.A. Zarrillo, 1 ♂, CAES, det. T.A. Zarrillo 2024, bee bowl on beach dunes, UCMS_ENT_00052690; 7 July 2012, coll. T.A. Zarrillo, 1 ♀, CAES, det. T.A. Zarrillo 2024, netted from *Rosa rugosa*, UCMS_ENT 00052695.

HALICTIDAE

Halictinae

Augochlorini

Genus *Augochlora* Smith

Reference: Mitchell (1960)

Subgenus *Augochlora* Smith

***Augochlora* (*Augochlora*) *pura pura* (Say, 1837)**

Pure Green-Sweat Bee

Notes: This wood-nesting species is widely distributed and numerous across the region and is frequently identified from images.

Genus *Augochlorella* Sandhouse

Reference: Coelho (2004); Ordway (1966)

***Augochlorella aurata* (Smith, 1853)**

Golden Green-Sweat Bee

Notes: This is the only *Augochlorella* species confirmed by us from the Atlantic Coastal states north of central New Jersey, although other species have been reported in both literature (Rothwell & Ginsberg 2019) and online occurrence datasets (Ascher 2016; Droege & Maffei 2023; University of New Hampshire Collection of Insects and other Arthropods 2023; see Problematic species accounts below). *Augochlorella aurata* was the fifth most abundant bee species in the Grass Island surveys (Zarrillo & Stoner 2019).

Genus *Augochloropsis* Cockerell

Reference: Mitchell (1960); Portman *et al*. (2022)

Subgenus *Paraugochloropsis* Schrottky

***Augochloropsis* (*Paraugochloropsis*) *viridula* (Smith, 1853)**

Shiny Northern Epauletted-Sweat Bee

Notes: The taxonomic status of this species was recently clarified by Portman *et al.* (2022). Formerly *Augochloropsis metallica fulgida* sensu Mitchell (in part), this species is now confirmed from New York (type locality), New England, and Eastern Canada (Portman *et al*. 2022). In Connecticut, this species has been found predominantly in sandplain remnants and locations with a sand/gravel component.

Halictini

Genus *Agapostemon* Guerin-Meneville

Reference: Portman *et al.* (2024); Roberts (1972)

***Agapostemon* (*Agapostemon*) *sericeus* (Forster, 1771)**

Silky Striped-Sweat Bee

Notes: This is by far the most numerous *Agapostemon* species with green-tailed females away from coastal dune, sandplain, or otherwise sandy sites in the region.

***Agapostemon* (*Agapostemon*) *splendens* (Lepeletier, 1841)**

Dark-winged Striped-Sweat Bee

Notes: This sand specialist is best known from the coast in the Northeastern United States, thus inland records are notable. *Agapostemon splendens* has been found in both coastal and sandy inland locations in Connecticut, as far inland as Enfield (Hartford County) on the Massachusetts border in a sandplain remnant, and Mansfield [“Storrs “] (Tolland County).

***Agapostemon* (*Agapostemon*) *subtilior* Cockerell, 1898**

Subtle Striped-Sweat Bee

Notes: Portman *et al.* (2024) reinstated this taxon from synonymy with *Agapostemon texanus* (sensu Roberts 1977). All *Agapostemon texanus* records from the Northeastern United States can be attributed to *Agapostemon subtilior*, since confirmed records of *Agapostemon texanus* are limited to the Central United States with known eastern range limits extending from Minnesota to Louisiana and Mississippi. *Agapostemon subtilior* is expected to be more localized than is *A. sericeus* in the Northeastern United States and may be most numerous at sandy sites. In Connecticut this species is best known from powerline ROW, inland sandplain remnants and locations with a sand/gravel component, and in coastal scrub.

***Agapostemon* (*Agapostemon*) *virescens* (Fabricius, 1775)**

Bicolored Striped-Sweat Bee

Notes: This species is best known from agricultural locations around the state (53% of total records), with 39% of total records coming from the glycol cup traps used in the Connecticut Bee Monitoring Program (unpublished, see Introduction). This species is easily recognizable on community science portals (especially the female) and is the 7th most observed species in Connecticut on iNaturalist (https://www.inaturalist.org/observations?place_id=49&subview=table&taxon_id=630955&view=species) despite difficulties in identifying males.

Genus *Halictus* Latreille

Reference: Mitchell (1960)

Subgenus *Nealictus* Pesenko

***Halictus* (*Nealictus*) *parallelus* Say, 1837**

Parallel Furrow Bee

Notes: The genus *Halictus* is represented by four species in Connecticut, with *H. parallelus* being the largest in size, and perhaps the most restricted due to its association with sandy habitats. It is expected to be localized, and in Connecticut has been found in powerline ROW, inland sandplain remnants, grasslands, and on agricultural land.

Subgenus *Odontalictus* Robertson

***Halictus* (*Odontalictus*) *ligatus* Say, 1837**

Ligated Furrow Bee

Notes: By far the most encountered *Halictus* in the state of Connecticut, and the third most observed bee species in Connecticut on iNaturalist (https://www.inaturalist.org/observations?d1=1924-09-01&place_id=49&subview=table&taxon_id=630955&view=species).

Subgenus *Protohalictus* Pesenko

***Halictus* (*Protohalictus*) *rubicundus* (Christ, 1791)**

Orange-legged Furrow Bee

Notes: Availability of more than one thousand recent community science records from the Northeastern United States (https://www.inaturalist.org/observations?place_id=52339,42,48,51&subview=map&taxon_id=127747) including 45 from diverse sites across New Hampshire may lead one to question an assessment that this species is "declining" in that state (Matthiasson & Rehan 2019). There were 76 unique collection events for this species in Connecticut after 2000, and 65 unique collection events before 1999, suggesting that the status of this species in Connecticut is stable (formal rank not yet assigned).

Subgenus *Seladonia* Robertson

***Halictus* (*Seladonia*) *confusus confusus* Smith, 1853**

Confusing Metallic-Furrow Bee

Notes: This Holarctic species is widespread and common in Connecticut and regionally.

Genus *Lasioglossum* Curtis

Reference: Gardener & Gibbs (2022, 2023); Gibbs (2009, 2010, 2011, 2012); Gibbs *et al.* (2013); McGinley (1986)

Subgenus *Dialictus* Robertson

***Lasioglossum* (*Dialictus*) *admirandum* (Sandhouse, 1924)**

Admirable Metallic-Sweat Bee

Notes: Habitat associations for this species in Connecticut include agricultural land, a suburban neighborhood, and beach dunes. Its status and identification were clarified by Gibbs (2010, 2011).

***Lasioglossum* (*Dialictus*) *albipenne* (Robertson, 1890)**

White-winged Metallic-Sweat Bee

= *Halictus* (*Chloralictus*) *basilicus* Sandhouse, 1924:36. (Connecticut holotype). Synonymy by Gibbs (2010).

Holotype. Male USA: Connecticut: Litchfield Co.: Colebrook, 1-7 September, W. M. Wheeler (USNM).

Notes: There are only nine records for this species in the state, including the type and the one reported in Viereck *et al*. (1916) [as *Halictus albipennis* Robertson], collected in New Haven (New Haven County) on 17 June 1905. Known habitat associations include agricultural land and beach dunes.

***Lasioglossum* (*Dialictus*) *anomalum* (Robertson, 1892)**

Two-celled Metallic-Sweat Bee

Notes: *Lasioglossum anomalum* is unevenly distributed but locally numerous, with 87% percent of records for this species (n = 214) in Connecticut collected at the CAES experimental farm in Hamden (New Haven County) from various projects, including a study of alternative floral resources.

***Lasioglossum* (*Dialictus*) *bruneri* (Crawford, 1902)**

Bruner's Metallic-Sweat Bee

Notes: *Lasioglossum bruneri* has been found throughout most of Connecticut (except Windham County) in habitats such as powerline ROW, sandplain remnants, agricultural land, beach dunes, marsh, and grassy fields. It is a known urban associate.

***Lasioglossum* (*Dialictus*) *cattellae* (Ellis, 1913)**

Catell's Metallic-Sweat Bee

Notes: Although a specimen voucher was not able to be reconfirmed by the time of publication, we are including this species because we do know that the specimen was determined by J. S. Ascher and confirmed by J. Gibbs and was located within the collections of P. Gambino. We include Fairfield County for this species as P. Gambino collected primarily in the town of Greenwich.

***Lasioglossum* (*Dialictus*) *coeruleum* (Robertson, 1893)**

Blue Metallic-Sweat Bee

Notes: Milam *et al.* (2022) have found this wood-nesting species to be strongly associated with the forest mid-story and canopy in Massachusetts. It has been found in Connecticut forests, as well as powerline ROW, sandplain remnants, an arboretum, a coastal wildlife preserve, and agricultural land.

***Lasioglossum* (*Dialictus*) *coreopsis* (Robertson, 1902)**

Tickseed Metallic-Sweat Bee

Notes: The first known record of this species in Connecticut was captured on borage (*Borago officinalis*) in a floral preference study in 2004 at CAES Lockwood Farm, with subsequent detections in powerline rights of way documented in Wagner *et al.* (2014a) and in a grassland near an airport (H. Baranowski unpublished data.). This southern species reaches its northeastern range limits in Massachusetts (Veit *et al.* 2022["2021"]) and is uncommon in Connecticut.

***Lasioglossum* (*Dialictus*) *cressonii* (Robertson, 1890)**

Cresson's Metallic-Sweat Bee

Notes: This species is widespread in Connecticut and can be found in many habitats such as agricultural land, powerline ROW, sandplain remnants, inland wetlands, coastal wildlife management areas, meadows, beach dunes, and suburban neighborhoods.

***Lasioglossum* (*Dialictus*) *ellisiae* (Sandhouse, 1924)**

Ellis' Epauletted Metallic-Sweat Bee

Notes: Although this species was not reported from Connecticut in Gardner & Gibbs (2023), recent surveys have detected this species in Hartford and Windham counties in Connecticut. With further study more examples of the northern *L. ellisiae*, may be verified, especially from places such as Litchfield County, mixed in with its cryptic but more southern-distributed sister species *L. tegulare*.

***Lasioglossum* (*Dialictus*) *ephialtum* Gibbs, 2010**

Nightmarish Metallic-Sweat Bee

Notes: The first known records in Connecticut for this recently described species (Gibbs 2010) are two females that were found burrowing in a window box in West Haven (New Haven County) on 26 May 1946. *Lasioglossum ephialtum* was the most abundant species captured in the Grass Island bee survey (n = 1,082) (Zarrillo & Stoner 2019) and has been found throughout the state (except for Tolland County).

***Lasioglossum* (*Dialictus*) *fattigi* (Mitchell, 1960)**

Fattig's Metallic-Sweat Bee

Notes: This uncommon species was recently documented in Connecticut in a sand plain at Windham Airport.

Material examined: ***Windham Co.:*** Willimantic: 10 May 2023, coll. H. Baranowski, 1 ♀, UCMS, det. M.F. Veit and re-examined by T.A. Zarrillo 2023, netted from *Potentilla canadensis*; 41.7497 -72.1789, 22 May 2023, coll. D.L. Wagner, 1 ♀, UCMS, det. M. F.Veit and re-examined by T.A. Zarrillo 2023, pan trap in pine barren; 7 July 2023, coll. H. Baranowski, 41.7505 -72.1818, 1 ♀, UCMS, det. M.F. Veit and re-examined by T.A. Zarrillo 2023, netted from *Baptisia tinctoria*.

***Lasioglossum* (*Dialictus*) *foveolatum* (Robertson, 1902)**

Foveolate Metallic-Sweat Bee

Notes: The only record for this uncommon species in Connecticut was a female collected in a sandplain remnant [originally determined as *L. supraclypeatum* (Mitchell, 1960) by S. Droege, now considered a junior synonym (Gibbs 2011)].

Material examined. ***New Haven Co.*****:** Wallingford: "Toelles Rd., Cytech Corp.", 41.43194 -72.84, 31 May 2000, coll. J. Smith & D. Martin, 1 ♀, UCMS, det. S. Droege 2006 and re-examined by T.A. Zarrillo 2022, bee bowl, UCMS_ENT 00027367.

***Lasioglossum* (*Dialictus*) *georgeickworti* Gibbs, 2011**

George's Metallic-Sweat Bee

Notes: This species, recently described from a specimen collected in a gravel pit in Massachusetts, is associated with sandy habitats (Gibbs 2011). A Connecticut paratype (AMNH_BEE 00141892) reported in Gibbs (2011) has a correct collection date of 11 May 1971, not 1 May 1973. This species has been collected in Connecticut in a coastal preserve on beach dunes and near coastal scrub (Zarrillo & Stoner 2019).

***Lasioglossum* (*Dialictus*) *gotham* Gibbs, 2011**

Gotham Metallic-Sweat Bee

Notes: This recently described species has been collected in powerline ROW, agricultural land, suburban neighborhoods, and a coastal wildlife preserve in Connecticut.

***Lasioglossum* (*Dialictus*) *heterognathus* (Mitchell, 1960)**

Angle-jawed Metallic-Sweat Bee

Notes: Most records (n = 30, 88%) were collected before the year 2004, with scant information about habitat or floral associations. The most recent specimens were collected in a limestone quarry, powerline ROW near a vegetable farm, and a pollinator garden near agricultural land. We follow Gardner and Gibbs (2022) in treating the specific epithet as nondeclinable.

***Lasioglossum* (*Dialictus*) *hitchensi* Gibbs, 2012**

Hitchen's Metallic-Sweat Bee

Notes: This recently described species is notable due to past confusion with other species, such as L. a*dmirandum* (Gibbs 2010) and other members of the *L. viridatum* species group. The first record we could trace for Connecticut was collected in Mansfield, "Gurleyville" (Tolland County) on 6 May 1972 by A. G. Thornton, and it has subsequently been found in five other counties. This species has been captured on powerline ROW, agricultural land, sandplain remnants, grassland, the edge of a swamp, and a marsh. Corbin *et al.* (2021) suggest that *L. hitchensi* exhibits a bivoltine phenology.

***Lasioglossum* (*Dialictus*) *illinoense* (Robertson, 1892)**

Illinois Metallic-Sweat Bee

Notes: This southern species reaches its northern range limit in Massachusetts (Lerman & Milam 2016) and is not common in Connecticut. It has been found in habitats such as sandplain remnants, agricultural land, suburban neighborhoods, and a coastal wildlife preserve.

***Lasioglossum* (*Dialictus*) *imitatum* (Smith, 1853)**

Coarse-haired Metallic-Sweat Bee

Notes: This species has been collected in agricultural land, sandplain remnants, quarries, grassy fields, and inland wetlands in Connecticut.

***Lasioglossum* (*Dialictus*) *katherineae* Gibbs, 2011**

Katherine's Metallic-Sweat Bee

Notes: This uncommon species is known in Connecticut from 14 female specimens, five captured in a pollinator garden at the CAES experimental farm (Lockwood Farm) in Hamden (New Haven County), one captured

on the CAES main campus in New Haven (New Haven County), and eight captured on powerline ROW in South Windsor (Hartford County) and Ellington (Tolland County). It has been suggested that this species may have an association with sandplains or former gravel pits (Gibbs 2011; Veit *et al.* (2022[“2021”]).

***Lasioglossum* (*Dialictus*) *laevissimum* (Smith, 1853)**

Smoothest Metallic-Sweat Bee

Notes: This species is scarce in Connecticut, with only seven known occurrences from habitats such as sandplain remnants, agricultural land, and near a reservoir.

***Lasioglossum* (*Dialictus*) *leucocomus* (Lovell, 1908)**

Angle-faced Metallic-Sweat Bee

Notes: This common species seems to be found in more diverse habitats than its lookalike, *L. pilosum*, with which it has been historically confused. In Connecticut *L. leucocomus* has been captured in powerline ROW, sandy coastal areas, grassy fields, sandplain remnants, meadows, suburban neighborhoods, agricultural land, and wildlife management areas.

***Lasioglossum* (*Dialictus*) *lineatulum* (Crawford, 1906)**

Lineated Metallic-Sweat Bee

Notes: This species has been found in habitats such as sandplain remnants, agricultural land, and a coastal wildlife refuge.

***Lasioglossum* (*Dialictus*) *lionotus* (Sandhouse, 1923)**

Smooth-backed Metallic-Cuckoo-Sweat Bee

Notes: There are only two records for this parasitic species in Connecticut, a male collected on 19 August 2004 and a female collected on 20 September 2010, both captured at the CAES experimental farm in Hamden (New Haven County). We follow Gardner and Gibbs (2022) in treating the specific epithet as nondeclinable.

Material examined. See Zarrillo *et al.* (2016)

***Lasioglossum* (*Dialictus*) *marinum* (Crawford, 1904)**

Marine Metallic-Sweat Bee

Notes: This striking, uncommon bee is a sand dune specialist restricted to the coast of the eastern United States from Massachusetts (Veit *et al*. 2022[“2021”]) to Alabama (Gibbs 2011), and has been found in Connecticut at intertidal beaches and shores along the coast (unpublished). In Connecticut this species has been collected on American sea-rocket (*Cakile edentula*) and Carolina sea-lavender (*Limonium carolinianum*), plants which are specific to beach dunes and intertidal flats, and on beach rose (*Rosa rugosa*), a non-native plant which has become naturalized in the Connecticut landscape.

***Lasioglossum* (*Dialictus*) *michiganense* (Mitchell, 1960)**

Michigan Metallic-Cuckoo-Sweat Bee

Notes: There are four records in Connecticut for this uncommon parasitic species, captured at Grass Island Preserve, Guilford (New Haven County), on the beach dunes and coastal scrub on 30 April 2011, 23 July 2011, and 16 September 2012.

Material examined. See Zarrillo *et al*. (2016)

***Lasioglossum* (*Dialictus*) *nigroviride* (Graenicher, 1911)**

Black-and-green Metallic-Sweat Bee

Notes: This species has been collected in habitats such as sandplain remnants, powerline ROW, and agricultural land, and has been captured visiting chervil (*Anthriscus* sp.), cabbage (*Brassica oleracea*), and sweet pepperbush (*Clethra alnifolia*).

***Lasioglossum* (*Dialictus*) *oblongum* (Lovell, 1905)**

Oblong Metallic-Sweat Bee

Notes: Our specimens match Mitchell (1960) and Gibbs (2010, 2011), however the type specimen of *L. oblongum* is lost. This was one of the most abundant species collected in Zarrillo & Stoner (2019) (n = 436). The series collected from Grass Island were determined by J. Gibbs, S. Droege, and T. A. Zarrillo, and while it is uncertain if they are true *L. oblongum* as described by Lovell (1905), our specimens are distinct from *L. obscurum*, *L. abanci* sensu Gibbs, and *L. planatum*.

***Lasioglossum* (*Dialictus*) *obscurum* (Robertson, 1892)**

Dark Metallic-Sweat Bee

Notes: This species is not well known in Connecticut and has been found on agricultural land only on five farms in three different counties.

***Lasioglossum* (*Dialictus*) *oceanicum* (Cockerell, 1916)**

Oceanic Metallic-Sweat Bee

Notes: This species, reported by Mitchell (1960) as *Dialictus nymphaearum* (see Gibbs 2010, Gibbs *et al.* 2017), is common across Connecticut and has been found in habitats such as sandplain remnants, agricultural land, meadows, coastal parks, grassy fields, and powerline ROW.

***Lasioglossum* (*Dialictus*) *perpunctatum* (Ellis, 1913)**

Densely-punctate Metallic-Sweat Bee

Notes: This species is only known in Connecticut from seven records, with the most recent collected by K. Urban-Mead on black-eyed Susan (*Rudbeckia* sp.) along a roadside adjacent to a conifer forest in 2013. This species has also been collected in habitats such as a sandplain remnant, a town park with a heavy forest component, and a state forest.

***Lasioglossum* (*Dialictus*) *pilosum* (Smith, 1853)**

Pilose Metallic-Sweat Bee

Notes: Our locality records for females of this species strongly concur with the sand/gravel habitat association suggested in Goldstein & Ascher (2016) and (Veit *et al*. 2022[“2021”]). At least 79% of female specimen records come from habitats such as inland and coastal dunes, quarries, sandplain remnants, powerline ROW, or other locations known to have a large sand/gravel component in their soils (such as local airports and land in the central Connecticut River Valley and the eastern outwash plains). Connecticut males have not yet been consistently separated from its sister species *L. leucocomus* with confidence.

***Lasioglossum* (*Dialictus*) *planatum* (Lovell, 1905)**

Lovell’s Metallic-Sweat Bee

Notes: There are six known records of this uncommon species in Connecticut, five collected in powerline ROW by M.F. Veit in 2017 in South Windsor (Hartford County) and Ellington (Tolland County), and one captured during a BioBlitz in Tarrrywile Park in 2001 in Danbury (Fairfield County). The name of this species has been recently resurrected from synonomy with *L. oblongum* (Gibbs 2010).

***Lasioglossum* (*Dialictus*) *platyparius* (Robertson, 1895)**

Knob-lipped Metallic-Cuckoo-Sweat Bee

Notes: This uncommon parasitic species has been found at the following three locations in Connecticut: the New Haven campus of the CAES (New Haven County), the CAES experimental farm in Hamden (New Haven County), and in a meadow at the White Memorial Conservation Center in Litchfield (Litchfield County). We follow Gardner and Gibbs (2022) in treating the specific epithet as nondeclinable.

***Lasioglossum* (*Dialictus*) *pruinosum* (Robertson, 1892)**

Pruinose Metallic-Sweat Bee

Notes: This uncommon species was detected in the Mount Carmel neighborhood of Hamden (New Haven County) in 1915, and again in 2003 on the sandy grounds surrounding Bradley International Airport in Windsor Locks (Hartford County) in Connecticut. Interestingly, H. Baranowski found L. *pruinosum* in 2023 on the sandy grounds near the Windham Airport in Willimantic (Windham County).

***Lasioglossum* (*Dialictus*) *smilacinae* (Robertson, 1897)**

Sarsaparilla Metallic-Sweat Bee

Notes: In Connecticut this species has been collected on agricultural land, suburban neighborhoods, a cedar swamp, and a coastal wildlife refuge.

***Lasioglossum* (*Dialictus*) *subviridatum* (Cockerell, 1938)**

Polished-scutum Metallic-Sweat Bee

Notes: This wood-nesting species was commonly misidentified as *L. oblongum* (Lovell) prior to Gibbs (2010, 2011). Our specimens that predate those publications have been re-examined and verified by J. Gibbs. *Lasioglossum subviridatum* has been collected on agricultural land, powerline ROW, forest, and a coastal wildlife refuge in Connecticut.

***Lasioglossum* (*Dialictus*) *taylorae* Gibbs, 2010**

Taylor's Metallic-Sweat Bee

Notes: *Lasioglossum taylore* is not well known in Connecticut, detected only in 1959 (n = 1) and 2017 (n = 8), the latter being collected in powerline ROW and a forest (Wagner *et al.* 2019).

***Lasioglossum* (*Dialictus*) *tegulare* (Robertson, 1890)**

Common Epauletted Metallic-Sweat Bee

Halictus tegularis Robertson, 1890: 318 (Connecticut lectotype designated by Cresson, 1928).

Lectotype. Female: USA: Connecticut: 6 June 1878, W.H. Patton (ANSP).

Notes: This species is common in Connecticut and has been collected in powerline ROW, grassy fields, agricultural land, coastal areas, suburban neighborhoods, and meadows. The type series comprising syntypes from Connecticut, District of Columbia, Illinois, Montana, California, and Mexico, was surely composite, and even after selection of Connecticut as the lectotype locality (Cresson, 1928) it has been much-confused with other species in the *L. gemmatum* complex, especially *L. ellisiae.*

***Lasioglossum* (*Dialictus*) *timothyi* Gibbs, 2010**

Timothy's Metallic-Sweat Bee

Notes: *Lasioglossum timothyi* is also not well known in Connecticut, however it was fairly abundant at the Montague Plains WMA (Franklin County) in Massachusetts (J. Milam pers. comm.).

Material examined. ***New Haven Co.*****:** New Haven: 41.33083 -72.91972, 15 March–5 April 2016, coll. M. Lowry, 1 ♀, CAES, det. S. Droege 2017 and re-examined by T.A. Zarrillo 2022, bee bowl, UCMS_ENT 00075428; ***Tolland Co.*****:** Ellington: 41.908 -72.508, 15 June 2017, coll. M.F. Veit, 1 ♀, CAES, det. M.F. Veit and re-examined by T.A. Zarrillo 2022, UCMS_ENT 00082285; 1 ♀, personal collection, det. M.F. Veit; 17 July 2017, coll. M.F. Veit, 1 ♀, personal collection, det. M.F. Veit.

***Lasioglossum* (*Dialictus*) *trigeminum* Gibbs, 2011**

Notes: Historic material of *L. versatum* at CAES has been rechecked for possible *L. trigeminum* and *L. callidum*, however Connecticut material at AMNH, UCMS, YPM, and MCZ should be re-examined. A female of this species was recently captured on chestnut flowers (*Castanea seguinii*) in Connecticut at the CAES chestnut orchard in Hamden.

Material examined. ***New Haven Co.*****:** Hamden: "Lockwood Farm, 890 Evergreen Avenue", 41.40583 -72.90472, 6 July 2021, coll. J. Durrell, 1 ♀, CAES, det. M.F. Veit 2021 and re-examined by T.A. Zarrillo 2022, netted from *Castanea seguinii*, UCMS_ENT 00077625.

***Lasioglossum* (*Dialictus*) *versans* (Lovell, 1905)**

Dull Metallic-Sweat Bee

= *Halictus* (*Chloralictus*) *consonus* Sandhouse, 1924: 30. (Connecticut holotype). Synonymized by Mitchell (1960).

Holotype. Male USA: Connecticut: Litchfield Co.: Colebrook, 1-7 September, W. M. Wheeler (USNM).

Notes: This species has been found in habitats such as powerline ROW, sandplain remnants, forests, cedar swamps, agricultural land, and a coastal wildlife refuge in Connecticut.

***Lasioglossum* (*Dialictus*) *versatum* (Robertson, 1902)**

Experienced Metallic-Sweat Bee

Notes: Historic material at CAES has been rechecked for possible *L. trigeminum* and *L. callidum*, however Connecticut material at AMNH, YPM, UCMS, and MCZ needs to be re-examined. This species is common in Connecticut and has been found in habitats such as powerline ROW, grassy fields, inland wetlands, coastal locations, sandplain remnants, and wildflower meadows.

***Lasioglossum* (*Dialictus*) *vierecki* (Crawford, 1904)**

Viereck's Metallic-Sweat Bee

Notes: *Lasioglossum vierecki*, a sand specialist, is commonly found in open, sandy locations in Connecticut.

***Lasioglossum* (*Dialictus*) *viridatum* (Lovell, 1905)**

Verdant Metallic-Sweat Bee

Notes: This species is likely under-recorded as it belongs to a taxonomically challenging complex. Confirmed records have been collected in habitats such as a small, diversified farm, coastal marsh, beach dunes, and coastal scrub.

***Lasioglossum* (*Dialictus*) *weemsi* (Mitchell, 1960)**

Weem's Metallic-Sweat Bee

Notes: This species is commonly caught in Connecticut in habitats such as suburban neighborhoods, agricultural land, meadows, and coastal parks.

***Lasioglossum* (*Dialictus*) *zephyrus* (Smith, 1853)**

Zephyr Metallic-Sweat Bee

Notes: In addition to agricultural areas, *Lasioglossum zephyrus* has also been found in sandplain remnants and suburban neighborhoods in Connecticut. We follow Gardner and Gibbs (2022) in treating the specific epithet as nondeclinable.

Subgenus *Evylaeus* Robertson

***Lasioglossum* (*Evylaeus*) *cinctipes* (Provancher, 1888)**

Band-legged Sweat Bee

Notes: This species has been found in habitats such as grassy fields, coastal wildlife refuge, pollinator garden, and sandplain remnants in Connecticut.

Subgenus *Hemihalictus* Cockerell

***Lasioglossum* (*Hemihalictus*) *birkmanni* (Crawford, 1906)**

Birkmann's Sweat Bee

Notes: *Halictus* (*Evylaeus*) *quadrimaculatus* Robertson sensu Viereck *et al.* (1916), noted as occurring all over the state, likely included *L. birkmanni*, but confusion with true *L. macoupinense* sensu Gibbs *et al.* (2013) [= *divergens*] is likely (see entry for the latter taxon below). *Lasioglossum birkmanni* has been collected in state parks, forests, and powerline ROW in Connecticut.

***Lasioglossum* (*Hemihalictus*) *foxii* (Robertson, 1895)**

Fox's Sweat Bee

Notes: This species has been found throughout the state in habitats such as powerline ROW, agricultural land, upland forest, coastal areas, and near inland wetlands.

***Lasioglossum* (*Hemihalictus*) *inconditum* (Cockerell, 1916)**

Irregular Sweat Bee

Notes: The only record for this northern species in Connecticut was published in Gibbs *et al.* (2013) from Litchfield County. Regional specimens were cited by Mitchell (1960) as *Evylaeus rufitarse* (Cockerell) and other authors as *Lasioglossum rufitarse* (Zetterstedt) prior to Gibbs *et al*. (2013), which recognized this Holarctic species as distinct from Nearctic *L. inconditum.*

***Lasioglossum* (*Hemihalictus*) *macoupinense* (Robertson, 1895)**

Macoupin Sweat Bee

= *Halictus 4-maculatus* Robertson, 1890: 117 (replaced by *Halictus macoupinensis* Robertson, 1895, due to primary homonymy with *Halictus quadricinctus* Schenck, 1853] Connecticut lectotype of *Halictus 4-maculatus* designated by Cresson, 1928). Synonymy by Gibbs *et al.* (2013).

Lectotype. Female USA: Connecticut: New Haven Co.: Waterbury, 9 July 1879, W. H. Patton (ANSP).

Notes: *Lasioglossum macoupinense* sensu Gibbs *et al.* (2013) [=*Evylaeus divergens* (Lovell) sensu Mitchell, 1960], has a longer head than the otherwise similar *L. birkmanni* [=*Evylaeus macoupinensis* (Robertson) sensu Mitchell, 1960] and a generally more northern but broadly overlapping distribution. Gibbs *et al*. (2013) found that the type series *Halictus 4-maculatus* Robertson, 1890, was composite, comprising example of both of the above-mentioned taxa, and that Cresson (1928) had designated a long-headed bee from Connecticut as the lectotype of *H. 4-maculatus* (evidently overlooking Robertson's replacement name *Halictus macoupinense*). Choice of Connecticut not Illinois as the lectotype locality contradicted the original description of *H. 4-maculatus* as a broad-headed bee

with the clypeus "hardly produced" and also contradicted the etymology of the replacement name, referencing Macoupin County, Illinois [only short-headed *L. birkmanni* was reported by Gibbs *et al.* (2013) from Illinois, and Macoupin County appears to be south of the predicted range of the long-headed taxon]. Here we follow Gibbs *et al.* (2013) and subsequent authors in using the name *L. macoupinense* for the long-headed bee best known historically as *Evylaeus divergens.*

***Lasioglossum* (*Hemihalictus*) *nelumbonis* (Robertson, 1890)**

Lotus Sweat Bee

Notes: This distinctive species has been collected in a sandplain remnant, an arboretum, and sandy areas near agricultural land in Connecticut. *Lasioglossum nelumbonis* is newly confirmed for New Hampshire in an observation on iNaturalist (https://www.inaturalist.org/observations/131811071).

***Lasioglossum* (*Hemihalictus*) *pectinatum* (Robertson, 1890)**

Ground Cherry Sweat Bee

Notes: Britton & Viereck (1906) reported a single record of this *Physalis* specialist [as *Halictus pectinatus* Robertson] on American gooseberry (*Ribes oxyacanthoides*), and this species was later reported for Connecticut in Mitchell (1960). Likely under-collected due to its host specialization (Veit *et al.* 2022["2021"]), this species was not detected in Connecticut again until 2020 when C. T. Maier conducted a targeted search for this species on *Physalis* blooms.

Material examined. *Litchfield Co.*: Salisbury: "0.13 km NE jct. US Hwy. 44 and Sunrise Ridge Rd.", 42.00590 -73.36781, 16 July 2020, coll. C.T. Maier, 4 ♀, CAES, det. T.A. Zarrillo 2022, netted from *Physalis heterophylla*, CAES_HYM 00018841, CAES_HYM 00018842, CAES_HYM 00018843, CAES_HYM 00018844.

***Lasioglossum* (*Hemihalictus*) *pectorale* (Smith, 1853)**

Rugose-chested Sweat Bee

Notes: This species is very common throughout Connecticut, found in habitats such as agricultural land, quarries, sandplain remnants, grassy fields, powerline ROW, coastal preserves, inland wetlands, and university plantings.

Subgenus *Lasioglossum* Curtis

***Lasioglossum* (*Lasioglossum*) *acuminatum* McGinley, 1986**

Acuminate Sweat Bee

Notes: Females of this species have been netted from fire cherry (*Prunus penyslvanica*) and wild bergamot (*Monarda fistulosa*) in Connecticut, in habitats such as powerline ROW and sandplain remnants.

***Lasioglossum* (*Lasioglossum*) *athabascense* (Sandhouse, 1933)**

Athabascan Sweat Bee

Notes: There are two Connecticut records reported for this species in McGinley (1986) (Litchfield and Tolland Counties), and we also found a digitized record of a singleton collected in Storrs (Tolland County) from 1928 which was originally determined by McGinley (subsequently restudied by J.S. Ascher in 2008).

Material examined. *Tolland Co.*: Mansfield: "Storrs", 1928, coll. "Christen", 1 ♀, UCMS, det. J.S. Ascher 2008, UCMS_ENT 00030727.

***Lasioglossum* (*Lasioglossum*) *coriaceum* (Smith 1853)**

Leathery Sweat Bee

Notes: This common species has been found throughout Connecticut in many diverse habitats, including powerline ROW, sandplain remnants, and agricultural land.

***Lasioglossum* (*Lasioglossum*) *fuscipenne* (Smith, 1853)**

Dark-winged Sweat Bee

Notes: Connecticut is located close to the northeastern range limit of this species (McGinley 1986). Seventy percent of our specimen records (n = 43) have been collected in the southern coastal counties of Connecticut, in habitats such as powerline ROW, sandplain remnants, and a coastal wildlife refuge.

Subgenus *Leuchalictus* Warncke

***Lasioglossum* (*Leuchalictus*) *leucozonium leucozonium* (Schrank, 1781)**

White-zoned Sweat Bee

Notes: This exotic bee is widespread and relatively common throughout Connecticut. It has been collected in habitats such as powerline ROW, sandplain remnants, meadows, agricultural land, urban areas, pollinator gardens, and a coastal wildlife refuge.

***Lasioglossum* (*Leuchalictus*) *zonulus zonulus* (Smith, 1848)**

Bull-headed Sweat Bee

Notes: Since Zarrillo *et al.* (2016), four more females of this exotic bee have been collected in Connecticut, two on the campus of the University of Bridgeport (Fairfield County) in 2018, and two at the White Memorial Conservation Center in Litchfield (Litchfield County) in 2019. We follow Gibbs *et al.* (2023) in treating the specific epithet as nondeclinable.

Subgenus *Sphecodogastra* Ashmead

***Lasioglossum* (*Sphecodogastra*) *oenotherae* (Stevens, 1920)**

Eastern Evening Primrose-Sweat Bee

Notes: This specialist of evening primrose (*Oenothera* sp.) (Hurd 1979) has been collected in sandplain remnants, agricultural land, forest, a pollinator meadow, a suburban neighborhood, and a coastal wildlife refuge in Connecticut.

***Lasioglossum* (*Sphecodogastra*) *quebecense* (Crawford, 1907)**

Quebec Sweat Bee

Notes: This species is commonly found across Connecticut in habitats such as powerline ROW, sandplain remnants, inland wetlands, state forests, agricultural land, and coastal areas.

***Lasioglossum* (*Sphecodogastra*) *truncatum* (Robertson, 1901)**

Truncate Sweat Bee

Notes: This species is known only historically from Connecticut, having twenty-four specimen records with years spanning 1904–1933.

Genus *Sphecodes* Latreille

Reference: Mitchell (1960)

***Sphecodes aroniae* Mitchell, 1960 (*ranunculi* group)**

Aronia Blood Bee

Notes: This species is near its northern range limit in Massachusetts (Veit *et al*. 2022["2021"]), and has been confused historically with more northern, but widely overlapping, *S. ranunculi* Robertson (Giles & Ascher 2006). In Connecticut this species has been collected in places such as sandplain remnants, sandy agricultural sites, powerline ROW, and in several groves of mixed forests containing coniferous and broad-leaved trees near inland wetlands.

***Sphecodes atlantis* Mitchell, 1956 (*mandibularis* group)**

Atlantis Blood Bee

Notes: This species is difficult to identify based on structural characters, but many examples are so tiny as to rule out most other regional species. In Connecticut it has been detected in sandplain remnants, powerline ROW, agricultural fields, and coastal dunes.

***Sphecodes autumnalis* Mitchell, 1956 (*mandibularis* group)**

Autumnal Blood Bee

Notes: This species is expected in the fall visiting goldenrods in association with its host *Perdita octomaculata* (Eickwort 1977). It has been found in sandplain remnants and near the edge of a pond in Connecticut.

***Sphecodes banksi* Lovell, 1909 (*mandibularis* group)**

Banks' Blood Bee

Notes: Veit *et al.* (2022["2021"]) and Gibbs *et al.* (2017a) note that this species may be associated with sandy sites where its likely host *Lasioglossum vierecki* is present. In Connecticut, we have found both species present in bee bowls deployed on the same dates at two sandy locations.

Material examined. ***New London Co*.:** Waterford: "Vauxhall Rd.", 41.41428 -72.16155, 1–13 May 2007, coll. N. Bricker & D.L. Wagner, 1 ♀, UCMS, det. J.S. Ascher 2007, bee bowl, UCMS_ENT 00023619**;** Griswold, **"**CAES Research Center, 190 Sheldon Road", 41.56333 -71.87722, 6–20 July 2016, coll. R. Durgy, 1 ♀, CAES, det. M.F. Veit and re-examined by T.A. Zarrillo 2022, bee bowl, UCMS_ENT 00075524; 23 July–7 August 2012, coll. R. Durgy, 1 ♀, CAES, det. M.F. Veit and re-examined by T.A. Zarrillo 2022, bee bowl, UCMS_ENT 00075525; see also Zarrillo *et al.* (2016).

***Sphecodes clematidis* Robertson, 1897 (*dichrous* group)**

Clematis Blood Bee

Notes: This species is reported for Connecticut in Mitchell (1960) and is likely under-recorded due to identification challenges with its congener *Sphecodes prosphorus* Lovell and Cockerell (Veit *et al.* 2022["2021"]). There are six putative specimens of this species collected in 1968 in Litchfield County in Connecticut that are deposited at UCFC, identified by S. M. Fullerton, and two additional female specimens that were bowl trapped in a sandy location at the CAES research station in Griswold (New London County) between 10–24 June 2015, tentatively identified by T. A. Zarrillo and M.F. Veit.

***Sphecodes confertus* Say, 1837 (*confertus* group)**

Groove-faced Blood Bee

Notes: *Sphecodes confertus* is a rather distinctive and fairly numerous species, best known from sandplain remnants in Connecticut.

***Sphecodes coronus* Mitchell, 1956 (*mandibularis* group)**

Crowned Blood Bee

Notes: *Sphecodes coronus* is poorly understood historically, but now believed to be one of the more common small-bodied *Sphecodes* in the region. In Connecticut it has been found in sandplain remnants, a coastal preserve, agricultural land, and powerline ROW.

***Sphecodes cressonii* (Robertson, 1903) (*mandibularis* group)**

Cresson's Blood Bee

Notes: Females of this species are hard to identify, and historical records may need to be restudied. Habitat associations in Connecticut include agricultural land, a coastal scrub, and sandplain remnants.

***Sphecodes davisii* Robertson, 1897 (*mandibularis* group)**

Davis's Blood Bee

Notes: This parasite of *Agapostemon* species is often found on goldenrod in the fall. The female was widely reported as *Sphecodes persimilis* prior to recent documentation of synonymies (Gibbs *et al.* 2017a). Best known from sandplain remnants and sparsely vegetated sandy areas in Connecticut.

***Sphecodes dichrous* Smith, 1853 (*dichrous* group)**

Bicolored Blood Bee

Notes: *Sphecode dichrous* is a rather widespread and notably large species. In Connecticut it has been collected in habitats such as powerline ROW, a quarry top, grasslands, sandplain remnants, and a meadow at the edge of a deciduous forest.

***Sphecodes fattigi* Mitchell, 1956 (*mandibularis* group)**

Fattig's Blood Bee

Notes: This species was overlooked by historical workers but is now known from several states in the region (Veit *et al*. 2022["2021"]). Collection locations in Connecticut include a wildlife management area in Vernon (Tolland County) and the White Memorial Conservation Center in Litchfield (Litchfield County).

Material examined. *Litchfield Co*.: Litchfield: 41.72053 -73.21095, 9–23 September 2014, coll. J. Fischer, 1 ♀, CAES, det. M.F. Veit and re-examined by T.A. Zarrillo 2022, bee bowl, UCMS_ENT 00075523; ***Tolland Co*.:** Vernon: "Tankerhoosen WMA", 41.82667 -72.47722, 23 May 2012, coll. F. Morrison, 3 ♀, UCMS, det. J.S. Ascher 2013, UCMS_ENT 00055459, UCMS_ENT 00055460, UCMS_ENT 00055461.

***Sphecodes galerus* Lovell and Cockerell, 1907 (*mandibularis* group)**

Helmeted Blood Bee

Notes: Mitchell (1960) reported this species for Connecticut, but we have not been able to trace any details and its status and distribution requires clarification (Veit *et al.* 2022["2021"]).

***Sphecodes heraclei heraclei* Robertson, 1897 (*dichrous* group)**

Knob-crowned Blood Bee

Notes: This is a distinctive species due to the large knob on its vertex. It is widespread in the Northeastern United States, excluding far northern sites, but not especially common. In Connecticut *Sphecodes heraclei heraclei* has been found in powerline ROW, a coastal wildlife refuge, agricultural land, and a meadow at the edge of a deciduous forest.

***Sphecodes hydrangeae* Mitchell, 1956 (*dichrous* group)**

Hydrangea Blood Bee

Notes: Two male paratypes collected by W. M. Wheeler in Colebrook (Litchfield County) on 3 August 1919 and 5 September 1919 are described in Mitchell (1956) and are deposited at MCZ (MCZ:Ent:30467). There are few reports of this rare taxon by subsequent workers, although a male was recently reported in Minnesota (Portman *et al.* 2023).

***Sphecodes illinoensis* (Robertson, 1903) (*mandibularis* group)**

Illinois Blood Bee

Notes: This is a regularly found but rather localized species, with most Connecticut specimens collected on the sandy grounds at the CAES research stations in Windsor (n = 30, 50% of total) and Griswold (n = 27, 45% of total).

***Sphecodes johnsonii* Lovell, 1909 (*mandibularis* group)**

Johnson's Blood Bee

Notes: S*phecodes johnsonii* was described from Fall River, Massachusetts and is relatively well known in New York State, from which the male was recently described (Ascher *et al*. 2014). It occurs in New England but also occurs widely in Maritime Canada and Quebec, as well as locally in the Mid-Atlantic and Midwestern states (including Michigan, Gibbs *et al. 2*017a). Collection locations for this species in Connecticut include powerline ROW, agricultural land, the edge of a pond, and an urban pollinator planting near the coast.

***Sphecodes levis* Lovell and Cockerell, 1907 (*mandibularis* group)**

Light-bodied Blood Bee

Notes: This is a scarce species with a northern distribution that is similar to *S. townesi* (Giles & Ascher 2006). In Connecticut it has been collected in powerline ROW in northern New London County and in various locations in the northwest corner of the state, including near the edge of a swamp.

***Sphecodes mandibularis* Cresson, 1872 (*mandibularis* group)**

Stygian Blood Bee

Notes: Although there are few records for *Sphecodes mandibularis* in Connecticut (n = 13), it has been found in a variety of habitats, including inland dunes, a quarry ridge, grasslands, agricultural land, powerline ROW, and a coastal preserve.

***Sphecodes minor* Robertson, 1898 (*dichrous* group)**

Lesser Blood Bee

Notes: This species is not well known in Connecticut; however historical material has been vetted, including a specimen collected in Stafford (Tolland County) by W. E. Britton in 1905.

Material examined. *Hartford Co.*: Manchester: 4 August 1933, coll. unknown, 1 ♂, CAES, det. S. Droege 2008 and re-examined by T.A. Zarrillo 2022, UCMS_ENT 00029085; Suffield: "West Suffield", 42.0119 -72.745, 18–19 June 2009, coll. S. Deford, 1 ♂, UNHP, det. J.S. Ascher, bee bowl, UCMS_ENT 00038923; 1 ♀, UCMS, det. J.S. Ascher, UCMS_ENT 00038924; ***New Haven Co.*:** New Haven: 4 July 1942, coll. "J.C.S.", 1 ♀, CAES, J.S. Ascher 2008, UCMS_ENT 00027859; ***Tolland Co.*:** Stafford: 24 August 1905, coll. W.E. Britton, 1 ♀, CAES, det. J.S. Ascher 2008, UCMS_ENT 00027858.

***Sphecodes nigricorpus* Mitchell, 1956 (*mandibularis* group)**

Black-bodied Blood Bee

Sphecodes nigricorpus Mitchell, 1956: 220 (Connecticut holotype).

Holotype. Male USA: Connecticut: Litchfield Co.: Colebrook, 3 August 1922, W.M. Wheeler (MCZ).

Notes: The holotype for this species lacks appressed tomentum on the face, with facial hairs simple and erect, and with overall scant pubescence and weak punctation, resembling the female of *S. smilacinae* (M. Arduser pers. comm.). Interestingly, Gibbs *et al*. (2023) also suggest male *S. nigricorpus* may be associated with the female of *S. smilacinae*. *Sphecodes nigricorpus* was recently discovered in Michigan in 2021 during a survey of bees in

Lakeplain Prairie and Prairie Fen natural communities by Rowe *et al.* (2022), and in Minnesota at Two Rivers Aspen Parkland Scientific and Natural Areas in 2021 (Portman *et al*. 2023).

***Sphecodes pimpinellae* Robertson, 1900 (*mandibularis* group)**

Anise Blood Bee

Notes: The first records we could trace for this species in Connecticut were reported in Mitchell (1956) as *Sphecodes wheeleri* Mitchell, a taxon recognized by M. Arduser as the associated male (synonymy formalized by Gibbs *et al.* 2017a). The seven available specimens, all collected by W. M. Wheeler in Colebrook (Litchfield County) from 1919 to 1922, are deposited at MCZ, including a paratype (MCZ:Ent:30462),.

***Sphecodes prosphorus* Lovell and Cockerell, 1907 (*dichrous* group)**

New England Blood Bee

Notes: This species was reported for Connecticut in Mitchell (1960), but we have not been able to trace any details.

***Sphecodes ranunculi* Robertson, 1897 (*ranunculi* group)**

Buttercup Blood Bee

Notes: This is a rather common, distinctively slender bee, expected both at northern sites and also more southern ones where it can occur together with the similar *S. aroniae.*

***Sphecodes townesi* Mitchell, 1956 (*mandibularis* group)**

Townes' Blood Bee

Notes: This species is likely under-recorded due to its similarity to *Sphecodes levis* Lovell and Cockerell. There are two additional specimen records from Litchfield County that we accept but were unable to confirm ourselves.

Material examined. *Windham Co*.: Ashford: 18 June 1936, coll. N. Turner, CAES, det. J.S. Ascher 2008, UCMS_ENT 00030532.

Rophitinae

Genus *Dufourea* Lepeletier

Reference: Dumesh & Sheffield (2012)

***Dufourea monardae* (Viereck, 1924)**

Bee Balm Shortface

Notes: This species was historically unknown from Connecticut until its detection in Litchfield County by C. T. Maier in 2009. This species is now known to occur at six locations within the towns of Canaan, North Canaan, and Salisbury (Litchfield County). Females of this species have been collected in Connecticut on its preferred host plant, wild bergamot (*Monarda fistulosa*), and also spotted knapweed (*Centaurea stoebe*), while males have been collected while patrolling catnip (*Nepetia cataria*) and wild bergamot. This species has been found on roadside stands of its host plant, along field edges, in a pollinator meadow planting on school grounds, and a powerline ROW near a limestone quarry.

***Dufourea novaeangliae* (Robertson, 1897)**

Pickerelweed Shortface

Notes: This species has been collected from its host plant pickerelweed (*Pontedaria cordata*) in Connecticut. Habitat associations in Connecticut include a sphagnum bog, inland lake shores, and the edge of a sandplain remnant adjacent to the Farmington River.

MEGACHILIDAE

Megachilinae

Anthidiiini

Genus *Anthidiellum* Cockerell

Reference: Urban (2001)

Subgenus *Loyolanthidium* Urban

***Anthidiellum* (*Loyolanthidium*) *notatum notatum* (Latreille, 1809)**

Northern Rotund-Resin Bee

Notes: This relatively scarce native bee is quite localized this far north. Historically it has been found in New Haven (New Haven County) as early as 1905, with later records (>2000) coming from habitats such as sandplain remnants, forests, powerline ROW, and wildlife management areas. Portman *et al*. (2023) recently raised *Anthidiellum notatum boreale* to species.

Genus *Anthidium* Fabricius

Reference: Gonzalez & Griswold (2013); Litman *et al.* (2016); Warncke (1980)

Subgenus *Anthidium* Fabricius

***Anthidium* (*Anthidium*) *manicatum manicatum* (Linnaeus, 1758)**

European Woolcarder

Notes: This adventive bee was first discovered in the United States in Central New York State in 1963 (Jaycox 1967). The first known record for this species in Connecticut was captured by J. S. Ascher on 7 September 2002 in Fairfield County. Maier (2005) subsequently detected this species again by chance in 2004 in the coastal town of East Lyme, New London County, near the junction of State Route 156 and Liberty Way. It has since been found in every county within the state (Maier 2009).

***Anthidium* (*Proanthidium*) *oblongatum oblongatum* (Illiger, 1806)**

Oblong Woolcarder

Notes: This bee is a relatively recent addition to the exotic bee fauna of the United States and now very widespread across eastern North America and beyond. The first known Connecticut record is from New Haven County, collected in a malaise trap in a grassy strip between an apple orchard and an old field with trees and shrubs on 16 August 1996 by C. T. Maier.

Genus *Dianthidium* Cockerell

Reference: Litman *et al.* (2016); Mitchell (1962)

Subgenus *Dianthidium* Cockerell

***Dianthidium* (*Dianthidium*) *simile* (Cresson, 1864)**

Northeastern Pebble Bee

Notes: This bee species was reported from Connecticut as *Anthidium simile* in Cresson (1864a) with no additional information. It is a rarely recorded bee, especially in New England where records are widely scattered. Community science records from iNaturalist show that this species persists south along the Maine Coast to at least Cape Elizabeth in Cumberland County (https://www.inaturalist.org/observations?place_id=52339&subview=map&taxon_id=452980), but there are no recent records from Massachusetts (Veit *et al.* 2022[“2021”]) or elsewhere in Southern New England (or New York) and the species should be considered of great conservation interest.

Genus *Pseudoanthidium* Friese

Reference: Litman *et al.* (2016); Portman *et al*. (2019)

***Pseudoanthidium nanum* (Mocsáry, 1880[“1881”])**

European Small-Woolcarder

Notes: The presence of this European bee in Connecticut has been documented in three counties by six photo observations on iNaturalist, all urban locations (https://www.inaturalist.org/observations?place_id=49&taxon_id=499394). This exotic species (see **Figure 2, A**) has also been recently detected for the first time in Rhode Island on iNaturalist in 2021 (https://www.inaturalist.org/observations/91111117). *Pseudoanthidium nanum* is easily identified from photos in its exotic range, as its black tegula differentiates it from other visually similar Anthidiini in the Northeastern United States, especially *Anthidium oblongatum*. Thus, digital community science portals are a valuable tool for tracking how this species is spreading in the region.

Genus *Stelis* Panzer

Reference: Mitchell (1962); Parker & Bohart (1979)

Subgenus *Dolichostelis* Parker & Bohart

***Stelis* (*Dolichostelis*) *louisae* Cockerell, 1911**

Louisiana Painted-Dark Bee

Notes: This highly recognizable cleptoparasitic species has 37 photo observations from Connecticut on iNaturalist (https://www.inaturalist.org/observations?place_id=49&subview=table&taxon_id=313243), whereas only six physical specimens have been located and examined.

Subgenus *Stelis* Panzer

***Stelis* (*Stelis*) *coarctatus* Crawford, 1916**

Compressed Dark Bee

Notes: A female was captured in a bee bowl near a pollinator garden at Beaver Pond Park in New Haven (New Haven County). Its host, *Heriades carinata* (Matthews 1965, Sheffield *et al.* 2008), is widespread across the state.

Material examined. *New Haven Co.*: New Haven: “Beaver Pond Park”, 41.32659 -72.9384, 15–27 June 1018, coll. J. Kerr, 1 ♀, CAES, det. S. Droege and re-examined by T.A. Zarrillo 2022, bee bowl, UCMS_ENT 00082140.

***Stelis* (*Stelis*) *foederalis* Smith, 1854**

Federal Dark Bee

Notes: This uncommon cleptoparasite is known in Connecticut from a single male. Two of its reported hosts, *Osmia atriventris* (Hurd 1979) and *Hoplitis spoliata* (Fye 1965, Medler 1967), are found widely in Connecticut.

Material examined. *Tolland Co.*: Mansfield: coll. W.B. Roberts, 1 ♂, UCMS, det. J.S. Ascher 2008, UCMS_ENT 00032346.

***Stelis* (*Stelis*) *labiata* (Provancher, 1888)**

Labiate Dark Bee

Notes: Mitchell (1962) reported this species from Connecticut; however, we have not been able to locate the voucher for this record. This species has recently been documented in Massachusetts in pine barrens and a sand pit (Veit *et al.* 2022[“2021”]).

***Stelis* (*Stelis*) *lateralis* Cresson, 1864**

Spot-sided Dark Bee

Notes: This species is only known from five records in Connecticut, two of which were found in a powerline ROW (Wagner *et al*. 2019) and another in a grassland by an airport.

Material examined. *Hartford Co.*: Hartland: "1 mi S of West Hartland", 6 June 1966, coll. S.M. Fullerton, 1 ♂, UCMS, det. J.S. Ascher 2008, UCMS_ENT 00032208; Windsor: "Windham Airport", 41.7487 -72.1762, 7 July 2023, coll. H. Baranowski, 1 ♀, UCMS, det. M.F. Veit and re-examined by T. A. Zarrillo 2023.

Megachilini

Genus *Coelioxys* Latreille

Reference: Baker (1975); Le Divelec & Dufrêne (2020)

Subgenus *Allocoelioxys* Tkalc

***Coelioxys* (*Allocoelioxys*) *coturnix* Pérez, 1884 ["1883"]**

Red-tipped Sharptail

Notes: This species was first discovered in the New World based on specimens collected in Olney, Montgomery County Maryland, by J. S. Ascher in 2004 and identified with reference to material in the AMNH confirmed by Palearctic *Coelioxys* expert Maximilian Schwarz. Subgenus *Allocoelioxys* can be recognized by characters described by Michener (2007). The male T6 has eight teeth (two lateral, six apical) whereas other Holarctic subgenera have only six teeth (two lateral, four apical). Females have a transverse subocular carina extending posteriorly from posterior mandibular and joining the preoccipital carina whereas such a carina is absent or ending free in most other Holarctic *Coelioxys* (for exceptions see Michener 2007). In hand both sexes are notably smaller than most native *Coelioxys.* In images a variably reddened (not black) apical tergum (T6) is often useful for identification of *C. coturnix*. The apical tergum (T6) and sternum (S6) of female *C. coturnix* are less attenuate than in many native *Coelioxys* and lacks the specialized hairs fringing S6 in subgenus *Cyrtocoelioxys* (which is small-bodied and has a relatively non-attenuate metasomal apex). The precise pattern of white hair patches can also be helpful in recognizing *C. coturnix*, with notably conspicuous separated pairs of bright white hair patches present at the anterior of the scutum and on the scutellum (as posteriorly-directed triangles) whereas in many other *Coelioxys* hairs may be tan (not bright white) and arrayed more transversely and more continuously, e.g., forming a more or less complete transverse band along the scuto-scutello suture. This is the only known example of an adventive cleptoparasite becoming established on a different continent. A female of this species was first detected in Connecticut by F. Morrison on 15 July 2017 at Wesleyan University in the town of Middletown (Middlesex County) while nectaring in a small patch of *Coreopsis* sp. It has also been found in West Hartford (Hartford County), documented by photos taken by D. Cappaert on 25 August 2020 posted to iNaturalist (https://www.inaturalist.org/observations/57564258) (see also **Figure 2, B**).

Material examined. *Middlesex Co.*: Middletown: 15 July 2017, coll. F. Morrison, 1 ♀, personal collection, det. F. Morrison, netted from *Coreopsis.*

***Coelioxys* (*Boreocoelioxys*) *moestus* Cresson, 1864**

Mournful Sharptail

Coelioxys mœsta Cresson, 1864: 403 (Connecticut holotype).

Holotype. Female USA: Connecticut: (ANSP).

Notes: There are two known records for this species in Connecticut, the holotype (Cresson 1864a), and a female collected in a pollinator meadow at the Pond Lily Nature Preserve in New Haven (New Haven County).

Material examined. *New Haven Co.*: New Haven: "Pond Lily Preserve", 41.33608 -72.97573, 25 September–2 October 2018, coll. J. Durrell, 1 ♀, CAES, det. M.F. Veit and re-examined by T.A. Zarrillo 2022, bee bowl, UCMS_ENT 00082131.

***Coelioxys* (*Boreocoelioxys*) *octodentatus* Say, 1824**

Eight-toothed Sharptail

Notes: This cleptoparasitic species is found throughout Connecticut, as are some of its hosts, *Megachile mendica* Cresson and *Megachile rotundata* (Fabricius). The type series of *C. brevis* Cresson (preoccupied) included Connecticut material but a specimen of *C. altilis* (a replacement name) from Pennsylvania was chosen as the lectotype (Cresson, 1916).

***Coelioxys* (*Boreocoelioxys*) *porterae* Cockerell, 1900**

Porter's Sharptail

= *Coelioxys dubitata* var. *melanopoda* Viereck, 1917: 747 (Connecticut holotype).

Holotype. Male USA: Connecticut: New Haven Co.: New Haven, 17 June 1905, (USNM).

Notes: The first known record from Connecticut was a male collected by H. L. Viereck from red raspberry (*Rubus strigosus*) on 17 June 1905 (USNM ENT 00536891), reported as a "new variety" in Viereck *et al.* (1916). *Coelioxys porterae* was rediscovered in the state 102 years later at the Adder Reservoir in Middletown (Middlesex County) by D. L. Wagner, with subsequent detections in five towns (Middlesex County: Westbrook; New Haven County: North Branford, Guilford; New London County: Montville).

***Coelioxys* (*Boreocoelioxys*) *rufitarsis* Smith, 1854**

Red-footed Sharptail

Notes: This northern species is known to parasitize soil-nesting species of *Megachile* (*Xanthosarus*) and has been found in powerline ROW in Connecticut.

***Coelioxys* (*Boreocoelioxys*) *sayi* Robertson, 1897**

Say's Sharptail

Notes: This species has a more southern distribution and occurs widely in the Eastern United States. In Connecticut it has been found in meadows, a coastal wildlife refuge, forests, powerline ROW, agricultural land, sandplain remnants, and urban parks.

Subgenus *Coelioxys* Latreille

***Coelioxys* (*Coelioxys*) *sodalis* Cresson, 1878**

Complicit Sharptail

Notes: This is a northern species and thus is expected to occur only locally in Connecticut.

Material examined. *Hartford Co*.: East Hartford: 4148.52 -7240.87, 3 June 2016, coll. M.F. Veit, 1 ♀, personal collection, det. M.F. Veit, netted at BioBlitz; ***Middlesex Co*.:** East Hampton: "Hurd State Park, 41.51277 -72.54611, 16–21 May 2007, coll. D.L. Wagner *et al.*, 1 ♀, UCMS, det. J.S. Ascher 2008, bee bowl, UCMS_ENT 00026273.

Subgenus *Cyrtocoelioxys* Mitchell

***Coelioxys* (*Cyrtocoelioxys*) *modestus* Smith, 1854**

Modest Sharptail

Notes: This widely distributed cleptoparasite is usually found in small numbers where it occurs. It has been found in every Connecticut county except Middlesex, usually near rivers and locations with sand and/or gravel.

Subgenus *Paracoelioxys* Gribodo

***Coelioxys* (*Paracoelioxys*) *funerarius* Smith, 1854**

Funereal Sharptail

Notes: Although this northern species was known historically from New York and New England we are not aware of any recent records from the region (Veit *et al.* 2022[“2021”]) and it may be extirpated. This species is much better known recently from Canada, the mountains of the Western United States, and Minnesota (Portman *et al.* 2023).

Material examined. *Fairfield Co.*: Wilton: 7 August 1931, coll. B. W. McFarland, 1 ♂, CAES, det. J.S. Ascher 2008, UCMS_ENT 00028245; ***Middlesex Co.*:** Middletown: 1 August 1933, 1 ♀, CAES, det. J.S. Ascher 2008, UCMS_ENT 00028246; ***New Haven Co.*:** Waterbury: 31 August 1932, 1 ♀, CAES, det. J.S. Ascher 2008, UCMS_ENT 00028247.

Subgenus *Synocoelioxys* Mitchell

***Coelioxys* (*Synocoelioxys*) *alternatus* Say, 1937**

Sunflower Sharptail

Notes: This cleptoparasite of *Megachile pugnata* can usually be found with its host on sunflowers (J. S. Ascher pers. obs.). Only a singleton is known from Connecticut, collected during a study of pollinator plantings on diversified farms.

Material examined. *Middlesex Co.*: Middletown: “Yellow House Farm, 216 Arbutus Street”, 41.52738 -72.64864, 4 August 2017, coll. D. Chenoweth. 1 ♂, CAES, det. M.F. Veit and re-examined by T.A. Zarrillo 2022, netted from *Vernonia noveboracensis*, UCMS_ENT 00082133.

***Coelioxys* (*Synocoelioxys*) *hunteri* Crawford, 1914**

Hunter’s Sharptail

Notes: This southern species is likely a parasite of subgenus *Sayapis* other than *M. pugnata*, e.g. of *M. inimica sayi* and/or *M. frugalis frugalis*. *Coelioxys hunteri* is known in Connecticut only from a singleton caught near a river within the city of New Haven (New Haven County).

Material examined. *New Haven Co.*: New Haven: “West River Memorial Park, near Nature Center”, 41.30925 -72.95457, 20 July 2009, coll. C.T. Maier, 1 ♀, CAES, det. J.S. Ascher, netted from *Verbena hastata*, UCMS_ENT 00082075.

Subgenus *Xerocoelioxys* Mitchell

***Coelioxys* (*Xerocoelioxys*) *immaculatus* Cockerell, 1912**

Immaculate Sharptail

Notes: This species has been collected in an inland sandplain remnant in Connecticut, a location where its host *M. addenda* (Cane *et al.* 1996) has also been collected.

Material examined. *New London Co.*: Salem: **“**Salem Rt. 11 Extension”, 41.46166 -72.27138, 14 June 2012, coll. F. Morrison, 1 ♂, UCMS, det. J.S. Ascher, UCMS_ENT 00049746; 29 May 2012, coll. F. Morrison, 1 ♂, UCMS, det. F. Morrison and re-examined by T.A. Zarrillo, UCMS_ENT 00049747.

Genus *Megachile* Latreille

Reference: Bzdyk (2012); Mitchell (1933, 1935a, 1935b 1936a, 1936b, 1937a, 1937b, 1937c, 1962); Parker (1978); Sheffield *et al.* (2011).

Subgenus *Addendella* Mitchell

***Megachile* (*Addendella*) *addenda* Cresson, 1878**

Cranberry Leafcutter

Notes: This species is a potentially important pollinator of cranberry, but managed populations can be subject to high rates of parasitism by *C. immaculatus* (Cane *et al.* 1996). In Connecticut this species has been found in wildlife management areas, grasslands, and sandplain remnants.

Subgenus *Callomegachile* Michener

***Megachile* (*Callomegachile*) *sculpturalis* Smith, 1853**

Sculptured Resin Bee

Notes: This exotic species of Asian origin is now widespread regionally and well established in Connecticut (Maier 2005).

Subgenus *Chelostomoides* Robertson

***Megachile* (*Chelostomoides*) *campanulae* (Robertson, 1903)**

Bellflower Resin Bee

Notes: This elongate-bodied native species is often found visiting *Campanula.* In Connecticut it has been found in habitats such as sandplain remnants, wildlife management areas, powerline ROW, quarries, and grasslands.

Subgenus *Eutricharaea* Thomson

***Megachilidae* (*Eutricharaea*) *apicalis* Spinola, 1808**

Apical Small-Leafcutter

Notes: A single female was captured on its non-native host plant, spotted knapweed (*Centaurea stoebe*), by C. T. Maier on 22 August 2009 in North Haven (New Haven County) near a stand of deciduous trees adjacent to a railway line in a degraded industrial area. This species has also been detected in Michigan (Gibbs *et al.* 2017a) and Illinois (Gruver & CaraDonna 2020) visiting *C. stoebe* in similar disturbed habitats near rail lines, and Gibbs *et al.* (2017a) and Gruver & CaraDonna (2020) suggest non-native plants such as *C. stoebe* might be facilitating the spread of *M. apicalis*. This species is relatively well known in New York City (https://www.inaturalist.org/observations?place_id=48&subview=map&taxon_id=335714) and New Jersey (https://www.inaturalist.org/observations?place_id=51&subview=map&taxon_id=335714) but it has only recently been detected in New England including Massachusetts, with new state records in 2022 from Middlesex and Suffolk Counties (https://www.inaturalist.org/observations?place_id=2&taxon_id=335714). *Megachile apicalis* was likely first detected in the United States in Virginia in 1931 (Mitchell 1962) and has since been documented for Canada (Sheffield *et al.* 2011), British Columbia, Oregon, Washington, Montana (Kuhlman & Burrows 2017), California (Cooper 1984), Pennsylvania (Donovall 2010), Ohio (Sivakoff *et al.* 2018), Illinois (Gruver & CaraDonna 2020) and Missouri (Camilo *et al.* 2017). Future targeted surveys in urban, industrial, highly disturbed areas, especially along railway lines, in Connecticut and elsewhere are warranted to monitor the spread of this non-native species.

Material examined. ***New Haven Co.*:** North Haven: "0.28 km S jct. Sackett Point Road and Universal Drive", 41.36506 -72.87088, 22 August 2009, coll. C.T. Maier, 1 ♀, CAES, det. J.S. Ascher, UCMS_ENT 00082080.

***Megachile* (*Eutricharaea*) *rotundata* (Fabricius, 1787)**

Alfalfa Leafcutter

Notes: This is a widespread species of *Megachile* (*Eutricharaea*), an exotic subgenus of Palearctic origin. It is often found visiting Fabaceae. Critical identifications should be made since the similar *Megachile* (*Eutricharaea*)

pusilla Pérez, 1884["1883"] is well known from New York City and may appear in nearby southwestern Connecticut (or further afield). *Megachile pusilla* was until recently known in the United States as *Megachile concinna* (e.g., Parker 1978). It is evidently *M. pusilla*, not true *M. concinna* that has been redescribed from Japan (Soltani *et al*. 2017) and reported from Taiwan.

Subgenus *Litomegachile* Mitchell

***Megachile* (*Litomegachile*) *brevis* Say, 1837**

Short Leafcutter

Notes: This southern species has been found in all eight counties of Connecticut in habitats such as inland sandplain remnants, coastal dunes, grasslands, agricultural land, edge of a northern swamp, powerline ROW, and wildlife management areas.

***Megachile* (*Litomegachile*) *mendica* Cresson, 1878**

Flat-tailed Leafcutter

Notes: This is a very common species regionally and is often associated with composites and observed flying relatively late in the fall. In Connecticut this species has been found in habitats such as agricultural land, powerline ROW, grasslands, sandplain remnants, coastal dunes, forest edges, and a coastal wildlife management area.

***Megachile* (*Litomegachile*) *texana* Cresson, 1878**

Texas Leafcutter

Notes: *Megachile texana* is often found in urban areas and has a strong affinity for milkweed. In Connecticut this species has been found in sandplain remnants, powerline ROW, and agricultural land.

Subgenus *Megachile* Latreille

***Megachile* (*Megachile*) *centuncularis* (Linnaeus, 1758)**

Patchwork Leafcutter

Notes: The first known records of *Megachile centuncularis* in Connecticut were collected by H. L. Viereck and H. W. Winkley in August 1904. In Connecticut this species has been found in habitats such as a pollinator garden in an agricultural setting, a sandplain remnant, and urban areas. Due in part to lack of fully confirmed records from Alaska this species has been considered non-native by some regional experts (Veit *et al.* 2022["2021"]; Gibbs *et al*. 2017a, considered it possibly exotic).

***Megachile* (*Megachile*) *montivaga* Cresson, 1878**

Silver-tailed Petalcutter

Notes: A reported status of "declining" in New Hamphsire (Matthiasson & Rehan 2019) is inconsistent with widespread detection of this species from areas such as Tompkins County, New York where there are no or at most few historical collections available. If anything, this species seems to be increasing regionally. There are 23 records from Connecticut with years spanning 2003-2019, collected in habitats such as inland grasslands, edges of swamps, inland dunes, coastal preserves, meadows, and a gravel pit.

***Megachile* (*Megachile*) *relativa* Cresson, 1878**

Golden-tailed Leafcutter

= *Megachile* (*Xanthosarus*) *exclamans* Viereck, 1916: 743 (Connecticut holotype).

Holotype. USA Female: Connecticut: Windham Co.: West Thompson, 12 July 1905, H. L. Viereck (USNM).

Notes: This common species was first recorded for Connecticut in Viereck *et al.* (1916) as the junior synonym *M. exclamans* Viereck. This species is known in Connecticut from habitats such as meadows near forest edges, quarry tops, edges of swamps, and powerline ROW.

Subgenus *Sayapis* Titus

***Megachile* (*Sayapis*) *frugalis frugalis* Cresson, 1872**

Frugal Leafcutter.

Notes: This bee is generally scarce in the region, with scattered records, although it is showing up in new locations regionally on iNaturalist (https://www.inaturalist.org/observations?place_id=52339&subview=map&taxon_id=271776). There are two specimen records from Connecticut, as well as one photo record on iNaturalist (https://www.inaturalist.org/observations/173236137), all in New Haven County.

Material examined. ***New Haven Co.*:** North Branford: "Cecarelli Farms, 186 Old Post Rd.", 41.405 -72.78777, 11 July 2016, coll. T.A. Zarrillo, 1 ♀, CAES, det. S. Droege 2013 and re-examined by T.A. Zarrillo 2022, UCMS_ENT 00075431; West Haven: "Maltby Lake, Route 34 near Orange", 25 June 1980, coll. L. Morgan-Thompson, 1 ♂, YPM, det. R.J. McGinley and re-examined by T.A. Zarrillo 2022, on flowers of *Asclepias syriaca*, YPM ENT 704658.

***Megachile* (*Sayapis*) *inimica sayi* Cresson, 1872**

Hostile Leafcutter

Notes: This bee is widespread but not commonly collected in Connecticut, having only fourteen records but found in seven counties. It has been collected in places such as agricultural land, roadsides, at the edge of a large, denuded hilltop, and a quarry. This species is expected on composites other than sunflower at southern sites in New England.

***Megachile* (*Sayapis*) *pugnata pugnata* Say, 1837**

Pugnacious Leafcutter

Notes: There is an uptick in records for this readily identifiable bee in Connecticut due to the increasing number of photo observations (9 specimen records spanning 1933–2015; 15 confirmed iNaturalist photo observations spanning 2012–2023) (https://www.inaturalist.org/observations?place_id=49&subview=table&taxon_id=198850). This species is expected on sunflowers including at northern sites.

Subgenus *Xanthosarus* Robertson

***Megachile* (*Xanthosarus*) *frigida frigida* Smith, 1853**

Frigid Leafcutter

Notes: This leafcutter has been in Connecticut on the grounds of a high school, near a reservoir, and in a pollinator planting. In New York City it was observed to excavate a nest burrow in a rotting log (J. S. Ascher pers. obs.).

***Megachile* (*Xanthosarus*) *gemula gemula* Cresson, 1878**

Tan-cheeked Leafcutter

Notes: This northern leafcutter has been found throughout Connecticut in diverse habitats such as agricultural land, inland dunes, a coastal preserve, meadow near deciduous forest, and powerline ROW.

***Megachile* (*Xanthosarus*) *latimanus* Say 1823**

Broad-handed Leafcutter

Notes: This species regularly collects pollen of the Fabaceae and Asteraceae, and in Connecticut it has been found on agricultural land, sandplain remnants, wildlife management areas, and grasslands.

***Megachile* (*Xanthosarus*) *melanophaea melanophaea* Smith, 1853**

Black-and-gray Leafcutter

Notes: This northern leafcutter reaches its southern range limit in Connecticut. It was recorded from Connecticut in Britton (1938), however, the only confirmed specimen record we could find is a singleton recently collected at the edge of a swamp in the northwest hills of Litchfield County.

Material examined. *Litchfield Co*.: Canaan: **"**Sand Rd, Robbins Swamp edge", 41.9812 -73.3535, 29 May 2007, coll. D.L. Wagner, 1 ♂, UCMS, det. J.S. Ascher 2007, UCMS_ENT 00025275.

***Megachile* (*Xanthosarus*) *mucida* Cresson, 1878**

Mucid Leafcutter

Notes: This southern bee is perhaps increasing at its northern range limits (Dibble *et al*. 2017; Gibbs *et al.* 2017a; Veit *et al*. 2022["2021"]). In Connecticut, this species has been found in powerline ROW and inland sandy habitats.

Osmiini

Genus *Chelostoma* Latreille

Reference: Buck *et al.* (2005); Delphia (2023); Eickwort (1980); Falk & Lewington (2015); Müller (2015)

Subgenus *Gyrodromella* Michener

***Chelostoma* (*Gyrodromella*) *rapunculi* (Lepeletier, 1841)**

Rampion Scissor Bee

Notes: This exotic species is associated with bellflower (*Campanula*) (Falk & Lewington 2015) and is best known in the United States from Central New York State, only recently detected in Connecticut. Delphia (2023) reports a range expansion for *C. rapunculi* and *C. campanularum* in Montana. These are the first records for both species in the Western United States.

Material examined. *Hartford Co*.: Simsbury: "1519 Hopmeadow Rd., back dune", 41.90973 -72.7979, 26 July 2007, coll. D.L. Wagner, 1 ♀, UCMS, det. J.S. Ascher 2007, pitfall trap, UCMS_ENT 00025084.

Subgenus *Prochelostoma* Robertson

***Chelostoma* (*Prochelostoma*) *philadelphi* (Robertson, 1891)**

Mock-orange Scissor Bee

Notes: *Chelostoma philadelphi* is a native species likely benefiting from ornamental plantings of its floral host, mock orange (*Philadelphus* spp.). It was recently detected from Massachusetts (Veit *et al.* 2022["2021"]), Vermont (https://www.inaturalist.org/observations?place_id=47&subview=table&taxon_id=452986), and Maine (https://www.inaturalist.org/observations?place_id=17&subview=table&taxon_id=452986) beyond its historical range limits.

Genus *Heriades* Spinola

Reference: Michener (1938)

Subgenus *Neotrypetes* Robertson

***Heriades* (*Neotrypetes*) *carinata* Cresson, 1864**

Carinate Armored-Resin Bee

Notes: This is the most common *Heriades* species regionally and locally. It has been found in six of eight Connecticut counties.

***Heriades* (*Neotrypetes*) *variolosa variolosa* (Cresson, 1872)**

Variegated Armored-Resin Bee

Notes: This bee is scarce regionally but perhaps under-recorded due to identification challenges with *H. leavitti* and *H. carinata* (especially from images). The ten Connecticut records are from three collecting events, with eight of the ten collected at the same location and date.

Genus *Hoplitis* Klug

Reference: Michener (1947); Neff (2009)

Subgenus *Alcidamea* Cresson

***Hoplitis* (*Alcidamea*) *pilosifrons* (Cresson, 1864)**

Hairy-fronted Small-Mason Bee

Alcidamea pilosifrons Cresson, 1864: 386 (Connecticut lectotype designated by Cresson, 1916).

Lectotype. Male USA: Connecticut: E. Norton (ANSP)

Notes: This species is widely distributed throughout Connecticut in habitats such as agricultural land, grasslands, powerline ROW, sandplain remnants, and the edge of an inland swamp.

***Hoplitis* (*Alcidamea*) *producta producta* (Cresson, 1864)**

Produced Small-Mason Bee

Notes: This bee has been found across Connecticut in habitats such as agricultural land, at the edge of an inland swamp, powerline ROW, and sandplain remnants.

***Hoplitis* (*Alcidamea*) *spoliata* (Provancher, 1888)**

Dilated-horned Small-Mason Bee

= *Andronicus cylindricus* Cresson, 1864: 384 (Connecticut holotype) (preoccupied).

Holotype. Male USA: Connecticut: E. Norton (USNM).

Notes: This species has been found in habitats such as sandplain remnants, on the shore of a major river, and powerline ROW.

***Hoplitis* (*Alcidamea*) *truncata truncata* (Cresson, 1878)**

Truncate Small-Mason Bee

Notes: This bee is scarce regionally and locally, with only three Connecticut records.

Material examined. ***New Haven Co.*:** New Haven: 28 June 1902, coll. E.J.S. Moore, 1 ♂, CAES, det. T.A. Zarrillo 2022, UCMS_ENT 00028718; Guilford: "Leetes Island, Yale Field Station, Yale University Peabody Museum Field Station, Yale Natural Lands", 16 August 1973, coll. C.L. Remington, 1 ♀, YPM, det. J.S. Ascher 2013, YPM ENT 829376; ***Windham Co.*:** West Thompson: 12 July 1905, coll. H.L. Viereck, 1 ♀, CAES, det. T.A. Zarrillo 2022, UCMS_ENT 00028717.

Subgenus *Robertsonella*

***Hoplitis* (*Robertsonella*) *simplex* (Cresson, 1864)**

Robertson's Small-Mason Bee

Heriades simplex Cresson, 1864: 384 (Connecticut holotype).

Holotype. Female USA: Connecticut: E. Norton (USNM).

Notes: Mitchell (1962) reported this species from Connecticut; however, no other specimens have been collected in the state other than the holotype, which was presumably from Hartford County (and was reported from there by Neff, 2009). *Hoplitis simplex* is rare in New England and expected to be a specialist on the family Hydrophylloideae, such as the genus *Phacelia* (Neff 2009). Targeted surveys on its host plant may elucidate its status in the region.

Genus *Osmia* Panzer

Reference: Amiet *et al.* (2004); Griswold & Rightmyer (2017); Mitchell (1962); Rightmyer *et al.* (2010); Rust (1974)

Sungenus *Diceratosmia* Robertson

***Osmia* (*Diceratosmia*) *conjuncta* Cresson, 1864**

Conjunct Mason

Osmia conjuncta Cresson, 1864: 31 (Connecticut holotype).

Holotype. Female USA: Connecticut: E. Norton (USNM).

Notes: This unusual bee species nests in snail shells (Richards *et al*. 2011) and perhaps for this reason is notably localized regionally.

Material examined. *Fairfield Co*.: Redding: "Saugatuck River", 4 July 1933, coll. H. Spieth, 1 ♀, AMNH, det. J.S. Ascher 2012, AMNH_BEE 00224648; Shelton: 15 June 1934, coll. N. Turner, 1 ♀, CAES, det. J.S. Ascher 2008, UCMS_ENT 00031232; ***Tolland Co.*:** Mansfield: "Storrs", 7 May 1931, coll. Peser, 1 ♀, UCMS, det. J.S. Ascher 2008, UCMS_ENT 00032328.

Subgenus *Helicosmia* Thomson

***Osmia* (*Helicosmia*) *caerulescens* (Linnaeus, 1758)**

Caerulean Mason

Notes: This holarctic species is likely adventive in the New World. Connecticut records are historic only, and it seems to have declined regionally especially southward.

***Osmia* (*Helicosmia*) *georgica* Cresson, 1878**

Georgia Mason

Notes: This southern composite-associated species has been captured in Connecticut in habitats such as a meadow near the edge of a hardwood forest, a coastal wildlife preserve, and a pan trap placed in a thicket of blueberry (*Vaccinium* sp.).

Subgenus *Melanosmia* Schmiedeknecht

***Osmia* (*Melanosmia*) *albiventris* Cresson, 1864**

White-bellied Mason

Notes: This mason bee is relatively scarce, with recent records from powerline ROW.

***Osmia* (*Melanosmia*) *atriventris* Cresson, 1864**

Black-bellied Mason

Osmia (*Melanosmia*) *atriventris* Cresson, 1864: 29 (Connecticut lectotype designated by Cresson, 1916).

Lectotype. Female USA: Connecticut: E. Norton (USNM).

Notes: This mason bee is reported to be a major visitor to blueberries (*Vaccinium*) in Maine (Dibble *et al.* 2017; Stubbs *et al.* 1997), and it has been collected from *Vaccinium* in Connecticut as well. It has been found at the edge of northern wetlands, agricultural land, a coastal wildlife refuge, a riverbank, powerline ROW, and an arboretum.

***Osmia* (*Melanosmia*) *bucephala* Cresson, 1864**

Bufflehead Mason

Notes: This is a distinctive species due to its large size and resemblance to bumble bees. It has been found in habitats such as a limestone quarry, powerline ROW, agricultural land, and meadows.

***Osmia* (*Melanosmia*) *collinsiae* Robertson, 1905**

Collinsia Mason

Notes: This eastern species was first detected in Connecticut at a bioblitz held at Mohegan Park in the city of Norwich (New London County) in 2002 and has since been collected in habitats such as powerline ROW.

***Osmia* (*Melanosmia*) *distincta* Cresson, 1864**

Beardtongue Mason

Osmia distincta Cresson, 1864: 30 (Connecticut holotype).

Holotype. Female USA: Connecticut. E. Norton (USNM).

Notes: This species has been collected in habitats such as powerline ROW, wildlife management areas, pollinator gardens, and sandplain remnants in Connecticut.

***Osmia* (*Melanosmia*) *inermis* Zetterstedt, 1838**

Unarmed Mason

Notes: This species was reported for Connecticut in Mitchell (1962) and remains plausible in the northern counties of Connecticut although we have not been able to confirm any specimens. The reason we accept Mitchell's record is that the other similar non-metallic species are less plausible on biogeographic grounds (Rightmyer *et al*. 2010). All regional records should be rechecked however with respect to updated keys to non-metallic *Osmia* by Rightmyer *et al*. (2010). *Osmia inermis* was last recorded in Massachusetts in 1914 (Veit *et al.* 2022["2021"]), however it was detected in 2006 in Orange County, New York during a survey of the Black Rock Forest Preserve (Giles & Ascher 2006). This site in southern New York State and Connecticut are believed to be at the southern range limits of this northern species.

***Osmia* (*Melanosmia*) *inspergens* Lovell and Cockerell, 1907**

Polished-faced Mason

Notes: This species has been captured in powerline ROW and sandplain remnants in Connecticut.

***Osmia* (*Melanosmia*) *proxima* Cresson, 1864**

Proximal Mason

Notes: There are only two known records for this species in Connecticut collected in powerline ROW in New London County.

Material examined. ***New London Co.*:** Waterford: "Vauxhall Rd.", 41.41745 -72.16256, 10 May 2007, coll. N. Bricker & D.L. Wagner, sex unverified, UCMS, det. J.S. Ascher 2007, bee bowl, UCMS_ENT 00022727;

Montville: 41.43305 -72.22944; 12 May 2012, coll. B. Gagliardi & N. Schoppmann, 1 ♀, UCMS, det. J.S. Ascher, UCMS_ENT 00050296.

***Osmia* (*Melanosmia*) *pumila* Cresson, 1864**

Dwarf Mason

Notes: This species is the most common mason bee in Connecticut and can be found in habitats such as powerline ROW, suburban neighborhoods, coastal areas including beach dunes, scrub and marsh, agricultural land, town parks, meadows, and near inland wetlands.

***Osmia* (*Melanosmia*) *simillima* Smith, 1853**

Cup-legged Mason

Notes: An unconfirmed record of this species was reported in Viereck *et al*. (1916) on the flowers of January jasmine (*Lonicera fragrantissima*) in Connecticut, and its presence in the state was validated in 1941. Since then, this species has been found in small numbers at several locations in Connecticut, including powerline ROW, grasslands, and a coastal dune (Zarrillo *et al*. 2016). Ascher *et al.* (2014) and Rothwell & Ginsberg (2019) also report this species from coastal habitats, on Gardiners Island off the coast of eastern Long Island, New York, and Napatree Point Conservation Area in Westerly, Rhode Island respectively.

***Osmia* (*Melanosmia*) *tersula* Cockerell, 1912**

Neat Mason

Notes: The only known record for this northern species in Connecticut was collected at the edge of an inland swamp in Canaan (Litchfield County). This record marks the southern end of its current range limit in the Northeastern United States.

Material examined. *Litchfield Co*.: Canaan: "Sand Rd., Robbins Swamp edge, 41.9812 -73.3535, 17–21 June 2007, coll. L. Saucier & A. Bouchard, 1 ♀, UCMS, det. J.S. Ascher 2009, bee bowl, UCMS_ENT 00025954.

***Osmia* (*Melanosmia*) *virga* Sandhouse, 1939**

Blueberry Mason

Notes: This species has been found in limited locations in Connecticut, including powerline ROW and the edges of inland bogs near *Vaccinium corymbosum* and *Chamaedaphne calyculata*.

Subgenus *Osmia* Panzer

***Osmia* (*Osmia*) *cornifrons* (Radoszkowski, 1887)**

Horn-faced Mason

Notes: The first record we could locate for this exotic species in Connecticut was collected by P. Gambino in Fairfield County on 28 April 2003. This species has become established in Connecticut and is now found throughout the state in habitats such as suburban neighborhoods, agricultural land, coastal beach dunes and scrub, sandplain remnants, meadows, university campuses, and pollinator gardens.

***Osmia* (*Osmia*) *lignaria lignaria* Say, 1837**

Eastern Blue Orchard Mason

Notes: *Osmia lignaria lignaria* has not been collected in Connecticut since 2017, despite considerable collecting efforts for megachilids in recent years, including in agricultural settings (C. T. Maier unpublished). Interesting to note that in 1905, *Osmia lignaria* was the most abundant bee collected in apple, at 19% of all bees (Britton and Viereck 1906), while recently in NY apple orchards, *O. lignaria* represented 0.04% of the bees in apple, and all species of *Osmia* together represented 0.2% (Russo *et al.* 2017). LeCroy e*t al.* (2020) in the mid-Atlantic states reported *O. lignaria* to be declining 2003–2017 at a mean rate of 13.78% per year.

***Osmia* (*Osmia*) *taurus* Smith, 1873**

Taurus Orchard Mason

Notes: The first record that we could locate for this exotic species in Connecticut was collected on 25 April 2009 by R. J. Pupedis in Willimantic (Windham County). This species is becoming more widespread in Connecticut, now found in seven counties. LeCroy *et al.* (2020) in the mid-Atlantic states found *O. taurus* increasing from 2003–2017 at a mean rate of 16.99% per year.

MELITTIDAE

Melittinae

Genus *Macropis* Panzer

Reference: Snelling and Stage (1995)

***Macropis* (*Macropis*) *ciliata* Patton, 1880**

Ciliate Yellow Loosestrife Bee

Macropis ciliata Patton, 1880: 31. (Connecticut syntype).

Syntype. Male USA: Connecticut: New Haven Co.: "New Haven" "Waterbury", June-July, W. H. Patton (lost?).

Notes: Males were described from individuals collected in New Haven County, Connecticut—5 from the town of New Haven collected on the flowers of northern dewberry (*Rubus flagellaris* [= *R. villosus*]) on 22 June, and another from the town of Waterbury collected on the flowers of gray dogwood (*Cornus racemosa* [= *C. paniculata*]) on 4 July (year of collection not specified in description). These syntypes are presumed lost. This species is the presumed host of *Epeoloides pilosulus*, is listed as threatened in Connecticut (Connecticut Department of Energy and Environmental Protection 2015b) and is currently a regional species of greatest conservation need in four eastern states in the United States: Connecticut, Massachusetts, New Jersey, and Maryland (United States Geological Survey 2015). The historical range of this species spans Wisconsin eastward to the province of Quebec, Canada and south to Georgia (Mitchell 1960). In Connecticut, this species has historically been detected in low numbers; however, in recent bee surveys spanning the years 2005–2017 it has been detected in seven locations in New London and Hartford Counties (n = 15).

***Macropis* (*Macropis*) *nuda* (Provancher, 1882)**

Dark-footed Loosestrife Bee

Notes: There are only six records of this northern species in Connecticut; five are historic (1921–1935), with the most recent record from 2007.

***Macropis* (*Macropis*) *patellata* Patton, 1880**

Patellate Yellow Loosestrife Bee

Macropis patellata Patton, 1880: 33. (Connecticut syntype).

Syntype. Male USA: Connecticut: New Haven Co.: "Plymouth" "Waterbury", July-August, H. F. Bassett or W. H. Patton (lost?).

Notes: The male syntypes noted above are also presumed lost. All records for this species in Connecticut and from Massachusetts (Veit *et al*. 2022["2021"]) are historic, although there are some recent records of the species from New Jersey (E. Wyman pers. comm.), New York (White *et al*. 2022), and Vermont (S. Hardy pers. comm.). *Macropis patellata* is recognized as a species of greatest conservation need in Delaware, Massachusetts, and Maryland (United States Geological Survey 2015).

Genus *Melitta*

Reference: Snelling and Stage (1995)

Subgenus *Cilissa* Leach

***Melitta* (*Cilissa*) *americana* (Smith, 1853)**

Cranberry Blunt-horn

Notes: This species has been collected from a host plant, American cranberry (*Vaccinium macrocarpon*), in Connecticut on 10 and 25 July 1985 in East Haddam (Middlesex County) in a fen at the north end of Lake Hayward by F. Campbell, and 10 and 13 July 2009 near a wetland in the Pachaug State Forest in Voluntown (New London County) by C. T. Maier. Although this species was reported from the Finger Lakes Region of New York State by White *et al*. (2022), this species is not confirmed from anywhere in New York, and the Finger Lakes records surely pertain instead to *Melitta eickworti* Snelling and Stage, 1995, which has a type locality of, "South Hill Preserve, vicinity of Ithaca, Tompkins County, New York" and was named in honor of Cornell Professor George Eickwort.

***Melitta* (*Cilissa*) *melittoides* (Viereck, 1909)**

Lyonia Blunt-horn

Notes: Seventy-eight percent of the records (n = 54) for this species in Connecticut were collected near inland wetlands such as ponds and lakes by G. I. Stage in Stafford and Ellington (Tolland County), with 40 specimens captured between 1972–1976, and fourteen captured between 1990–1999. Twenty percent (n = 14) were captured during surveys of powerline ROW in Montville and Bozrah (Tolland County) with dates spanning 2005–2017. Fifty-eight percent of the Connecticut records were netted from its host plant, maleberry (*Lyonia ligustrina*). All but one early record collected in 1921 (from Colebrook, Litchfield County) are from eastern Connecticut in Tolland and New London County.

APPENDIX 2. Problematic Species

Here we report and annotate eight excluded species whose presence in Connecticut is improbable based on known distribution, two unresolved morphotypes, five species with taxonomic confusion, and three expected species including one also with taxonomic confusion (Table 4) that could be in Connecticut based on recent records in neighboring states.

Andrenidae

***Andrena* (*Micrandrena*) *illinoiensis* Robertson, 1891, Excluded**

Ilinois Mini-Miner

Notes: Citation of *Andrena illinoiensis* for New York State (White *et al.* 2022) likely reflects historical confusion with *A. nigrae* (and also *A. salictaria* especially northwards in the region, see discussion by Ribble 1968). The closest fully confirmed records of *A. illinoiensis* cited in the revision are from Columbus, Ohio (Ribble 1968). We therefore exclude this species from our confirmed list.

***Protandrena* (*Pterosarus*) *albitarsis* (Cresson, 1872), Excluded**

White-footed Bare-Miner

Notes: The citation of *P. albitarsis* for Connecticut in the table "Distribution of species of *Panurginus*, *Pseudopanurgus*, *Psaenythia*, and *Calliopsis* by states" in Mitchell (1960) is clearly in error, as the reported range in the species account states, "Illinois to North Carolina and Georgia, west to Texas." Supporting this interpretation of an error in the table is the citation of "New England states" in the species account of *P. andrenoides* but the omission of any New England state in the table entries. We are therefore excluding *P. albitarsis* from our confirmed list.

Apidae

***Melissodes* (*Melissodes*) *communis communis* Cresson, 1878, Possible**

Common Longhorn

Notes: Although treated as hypothetical for Massachusetts by Veit *et al*. (2022[“2021”]), soon after that checklist was published confirmation of its presence and persistence in that state was obtained through photos submitted to iNaturalist (https://www.inaturalist.org/observations/88061067), suggesting that a prior specimen record (LaBerge 1956a) from the area was likely valid. Although there are no other records from elsewhere in the region north of southern New Jersey, the newly confirmed Massachusetts records suggest that this species likely achieved its apparently disjunct range by traversing Connecticut at some point.

***Nomada affabilis* Cresson, 1878, Possible (*superba* group)**

Affable Nomad

Notes: This species was reported in Viereck *et al.* (1916) as probable for Connecticut, however we have not been able to locate any specimens. Recent records of its host, *E. atriventris*, from Connecticut (https://www.inaturalist.org/observations/180138298) and Massachusetts (Veit *et al*. 2022[“2021”]) suggests *N. affabilis* may genuinely occur or have occurred in Connecticut.

***Nomada skinneri* Cockerell, 1908, Taxonomic confusion (*ruficornis* group)**

Skinner’s Nomad

Notes: No modern workers seem to recognize this species, but it was listed for Connecticut by Mitchell (1962). The type is from Pennsylvania, but it is uncertain if the Connecticut specimen matches it. This species was described in Cockerell (1908) and may be a synonym or relative of *N. depressa* (see entry for that species). Given the uncertain status of this form, we cite it here rather than on the main list.

***Nomada valida* Smith, 1854, Excluded (*ruficornis* group)**

True Nomad

Notes: The determination of the specimen in Zarrillo & Stoner (2019) proved to be erroneous. We are therefore removing this species from our confirmed list.

Colletidae

***Hylaeus* (*Hylaeus*) *rudbeckiae* (Cockerell and Casad, 1895), Excluded**

Coneflower Masked Bee

Notes: This species is reported in Mitchell (1960) and Hurd (1979) to occur in Connecticut, however Mitchell (1960) notes that the records are based on females and are tentative. No other records for this species in Connecticut or New England can be found. The distribution of this species suggests that the specimens reviewed may be atypical and further study is needed.

Halictidae

***Augochlorella gratiosa* (Smith, 1853), Excluded**

Southeastern Green-Sweat Bee

Notes: This species was reported to occur in Connecticut by Mitchell (1960), and there are suspect records for this species in northern North America in specimen databases (USGS_DRO466886, INHS 361008) and in White *et al*. (2022) in New York. The verified range of this species is not known to extend north beyond southern New Jersey and Washington D.C. (Ordway 1966), and Coelho (2004) further refines the boundaries for this species as North Carolina to southern Florida, along the Gulf Coast states to eastern Texas. We therefore exclude this species from the confirmed list for Connecticut.

***Augochlorella persimilis* (Viereck, 1910), Taxonomic confusion, Possible**

Prairie Green-Sweat Bee

Notes: This species is easily confused with its cryptic sister species *A. aurata*, which is very common throughout Connecticut and the northeastern US. There are unvalidated records for *A. persimilis* in Rhode Island (Rothwell & Ginsberg 2019), New Hampshire (University of New Hampshire Collection of Insects and other Arthropods 2023), and Connecticut (AMNH_BEE 00185030). Until these are rechecked, we regard this species as a doubtful occurrence in New England.

***Lasioglossum* (*Dialictus*) cf. *abanci* (Crawford, 1932), Unresolved morphotype**

Appalachian Metallic-Sweat Bee

Notes: This uncommon species has historically been confused with *L. oblongum*, *L. planatum*, and *L. subviridatum* (Gibbs 2011). Specimens that agree with *L. abanci* characters using Gibbs *et al.* (2011) have been collected in Connecticut and throughout the northeast, however they are not 'true' *L. abanci* (J. Gibbs pers. comm.). 'True' *L. abanci* have been collected only in or near the type locality in the Great Smoky Mountains in North Carolina (J. Gibbs pers. comm) and the identity of the similar morphospecies found widely in New England is unclear.

***Lasioglossum* (*Dialictus*) nr. *atwoodi* Gibbs 2010, Unresolved morphotype**

Atwood's Metallic-Sweat Bee

Notes: The female specimen in question was identified as *L.* nr. *atwoodi* by J. Gibbs in 2011. It has mesepisternum strongly rugose, dorsal opening of T1 acarinarial fan as wide as lateral acarinarial patches, T1 declivitous surface coriarious, metapostnotum with rugae not reaching posterior margin, head and mesosoma bluish, and supraclypeal area sparsely punctate. It was collected on an organic farm in a bee bowl in 2009 in the town of Cheshire (New Haven County).

***Lasioglossum* (*Dialictus*) *cephalotes* (Dalla Torre, 1896), Taxonomic confusion**

Large-headed Metallic-Cuckoo-Sweat Bee

Notes: This uncommon cleptoparasite of *Lasioglossum zephyrus* was reported from Connecticut in Hurd (1979) and Britton and Viereck (1906) [as *Paralictus cephalicus* Robertson], however this species closely resembles the subsequently described *L. rozeni* (Gibbs 2011). As we cannot validate the older Connecticut records, and because confusion is likely with recently described forms, we are excluding this species from our confirmed list, even though there are confirmed reports from eastern Long Island (Suffolk County), New York (Gibbs 2011) and Philadelphia, Pennsylvania (Gibbs pers. comm.).

***Lasioglossum* (*Dialictus*) *reticulatum* (Robertson, 1890), Excluded**

Reticulate Metallic-Sweat Bee

Notes: We regard a report from Connecticut by Mitchell (1960) [as *Dialictus reticulatus* (Robertson)] as erroneous since the species is fully confirmed north only to North Carolina and has frequently been confused with *L. bruneri*.

***Lasioglossum* (*Lasioglossum*) *forbesii* (Robertson, 1892), Taxonomic confusion**

Forbes' Sweat Bee

Notes: Although reported for Connecticut by Mitchell (1960), *L. forbesii* was not reported for Connecticut in McGinley's (1986) revision. However, *L. forbesii* was reported from Brainard, Rensselaer County, New York in McGinley (1986), which is very close to Connecticut. Z.M. Portman reviewed two historical specimens from Colebrook, Connecticut in the insect collection at the Museum of Comparative Zoology at Harvard University that were misidentified as *L. forbesii*, as well as two misidentified specimens from Massachusetts (Z.M. Portman, pers.

comm.). As such, we cannot confirm the presence of *L. forbesii* in Connecticut at this time, as historical records may refer to similar species, in particular *L. coriaceum*.

Megachilidae

***Osmia* (*Helicosmia*) *chalybea* Smith, 1853, Taxonomic confusion**

Steel-blue Mason

Notes: Mitchell (1962) and Rust (1974) report this species from Connecticut; however, these records may be the result of taxonomic confusion with the more northern *Osmia texana* (Goldstein & Ascher 2016). We do not have details of voucher specimens for these records and are therefore excluding this species from our confirmed list even though it was recorded from Gardiners Island off the eastern tip of Long Island (Ascher *et al.* 2014) and could conceivably occur or have occurred in Connecticut just across Long Island Sound.