



## “Sugaring” for Tachinidae in the HENRY MOUNTAINS of southern Utah, USA

**Figure 1.** Driving south on Lonesome Beaver Road towards the Henry Mountains in southern Utah.

by James E. O’Hara

*Canadian National Collection of Insects, Agriculture and Agri-Food Canada, 960 Carling Avenue, Ottawa, Ontario, K1A 0C6, Canada. E-mail: james.ohara@agr.gc.ca*

***The Henry Mountains of southern Utah*** (Figs. 1, 2) are located near the centre of the Colorado Plateau, a physiographic feature of western North America that is bounded by the Rocky Mountains to the north and east, and by lesser mountains to the west and south. Geographically, the Colorado Plateau is in the Four Corners of the United States, an area so named because it is the only place in the country where the corners of four states meet: Colorado, New Mexico, Arizona and Utah. The Plateau encompasses about 335,000 km<sup>2</sup> and is drained primarily by the Colorado River and its tributaries, which flow from northeast to southwest before curving southward and emptying into the Gulf of California in Mexico.

The Colorado Plateau is home to the highest concentration of national parks and national monuments in the United States, including the “Mighty Five” parks (Zion, Bryce, Arches, Canyonlands and Capitol Reef), the Grand Canyon N.P., Mesa Verde N.P., Grand Staircase–Escalante N.M. and the recently expanded Bears Ears N.M. In addition to these specially protected areas are large tracts of land set aside as national forests and BLM land (public land administered by the Bureau of Land Management). Dozens of books and guides are available for visitors to the region covering everything from scenic drives to technical canyoneering and rock climbing.<sup>1</sup>

There are important differences between the two main types of public land in the United States and these determine what recreational activities can be pursued within their boundaries. Generally speaking, national parks and

---

<sup>1</sup> One book that gives a particularly good overview of the Plateau’s parks and monuments and their attractions in terms of natural beauty, geology, and prehistoric human history is *Discovering the Colorado Plateau* (Haggerty 2021).

monuments are protected against removal of anything natural without a permit (be it geological, botanical or zoological, including insects), camping outside of campgrounds, and hunting and fishing. Natural forests and BLM land have fewer restrictions but there can be area-specific rules that limit certain activities, and hunting/fishing licenses are generally required.

The majority of visitors to the Colorado Plateau, especially those from other countries, are attracted to the area by the high density and splendor of the national parks and monuments. A minority of visitors, mostly North Americans



**Figure 2.** Map of the United States with state of Utah outlined in red. Insert shows a relief map of Utah with location of the Henry Mountains indicated and the “Mighty Five” national parks and nearby national monuments labelled.

who have seen the parks and have suitably equipped vehicles, seek out the quieter and lesser known public lands nearby that also offer remarkable recreational opportunities. The largest area in the latter category is a tract of BLM land bordered by Capitol Reef and Canyonlands/Arches national parks to its west and east, by the Glen Canyon National Recreation Area (along the Colorado and San Juan rivers) to the south, and by the Ashley National Forest to the north. This irregular egg-shaped area is about 200 km long and up to 150 km wide. Dominating the northern portion is the San Rafael Swell, described as follows by Utah tourism (see also Strom & Bailey 2022):

*“Eons ago, tremendous geologic upheavals formed a giant dome of rock - a “swell” in the earth’s surface. The harsh elements beat against this dome and eroded it into a wild, broken array of multi-colored sandstone. Wind and water carved this jumble of rock into incredible formations as buttes, canyons, pinnacles and mesas emerged, making the Swell one of the most ruggedly beautiful pockets of terrain in the world.”*

[Source: <https://www.utah.com/destinations/natural-areas/san-rafael-swell/>]

Cutting across the middle of this BLM land and the San Rafael Swell is the only major highway, Interstate 70, with this section being the longest stretch of interstate in the United States without towns or services (170 km). The “Swell” is home to the popular Goblin Valley State Park and the privately-owned (and off-limits) Mars Desert Research Station (MDRS).

## Henry Mountains

The Henry Mountains are south of the San Rafael Swell and surrounded by a mix of desert, buttes, badlands, and canyons. There are indications nearby of ancient human habitation and more recent but largely discontinued mining (mostly for uranium, vanadium, gold, and other metals). To the north is the small town of Hanksville, the only source for gas and supplies in this portion of BLM land south of I-70.

The main range of the Henrys is roughly 40 km long by 15 km wide and the tallest peaks are Mount Ellen in the north (3511 m/ 11,520 ft) and Mount Pennell in the south (3478 m/ 11,410 ft). These mountains were formed not by the eruption of ancient volcanos (unlike the San Francisco Peaks to the south, O’Hara 2023a) but by igneous intrusions, called laccoliths, that pushed the rocks above them upwards during the Oligocene<sup>2</sup>.

The Henry Mountains have the full range of vegetation “zones” that transition from the surrounding desert scrub to alpine on their highest peaks. The only thorough study of the flora of the Henrys was completed nearly a century ago as a thesis by Stanton (1931). Stanton found that the life zones proposed by C.H. Merriam several decades earlier (see O’Hara 2023a) did not work very well for the Henrys. He felt that the “confusion and zone jumbling” in the Henrys could be better classified on “climax plant forms”, with each climax termed a “formation” and each formation having an “association”. His results for the Henrys can be summarized as follows (Stanton 1931: 21–34, plant names updated):

**Scrub Climax, Scrub Formation, 4300–6500 ft [1310–1980 m].**

Ranges from desert to foothills.

Dominant plants are sagebrushes and saltbushes (*Artemisia* and *Atriplex*).

**Woodland Climax, Pinyon-Juniper Formation, 6000–8000 ft [1830–2440 m].**

Dominant trees are pinyon pine (*Pinus edulis*) and juniper (*Juniperus* spp.).

[This climax formation is where Stanton (1931) placed Gambel oak, *Quercus gambellii*, the tree species on which the tachinids discussed below were collected.]

**Montane Forest Climax, *Pinus-Pseudotsuga* Formation, 7000–10,000 ft [2135–3050 m].**

Dominant tree is Douglas fir. Less dominant are white fir, blue spruce and ponderosa pine.

**Subalpine Forest Climax, *Picea-Abies* Formation, 8500–11,000 ft [2590–3350 m].**

This formation is mostly confined to canyons on the east and north sides of the Henrys.

Dominant trees are Engelmann spruce and subalpine fir.

**Subalpine Grassland Climax and Formation, 8500–11,000 ft [2590–3350 m].**

Grasses, mostly in the genera *Festuca* and *Poa* as well as wheatgrass and spike trisetum.

---

<sup>2</sup> <https://geology.utah.gov/map-pub/survey-notes/geosights/the-henry-mountains/#:~:text=The%20Henry%20Mountains%2C%20however%2C%20are,Henry%20Mountains%20as%20%E2%80%9Claccoliths.%E2%80%9D>

I have passed through or visited the Colorado Plateau ten times since 2014 and have seen the Henry Mountains off in the distance during most of those trips. They looked rocky and barren and I had the impression they would not have much in the way of a tachinid fauna. I did not know anyone who had collecting insects there, let alone tachinids. That changed early last year when I came across a nice series of the tachinid *Ptilodexia conjuncta* (Wulp) in the Canadian National Collection of Insects (CNC) collected by Henry Howden and Jack Martin in 1968<sup>3</sup>. The flies were from a place called Lonesome Beaver Campground and had been identified by D.D. Wilder, who revised *Ptilodexia* for her Ph.D. thesis (Wilder 1979). A little searching on the Internet led me to an article by Howden (2008) in which he described the two weeks spent at the campground along with some of the unexpected incidents that happened there (most involving mice).

My realization that the Henry Mountains were deemed worthy of a visit by one of my mentors piqued my interest. I could, however, find no published mention of these mountains in the tachinid literature (not even in Wilder 1979) or in a Google search for “Tachinidae Henry Mountains”. The latter did turn up something of interest, a report by Woodbury (1958) on the biological resources of the Glen Canyon Reservoir area (roughly corresponding to the BLM land discussed here, including the Henry Mountains). The report has a list of Tachinidae known from the area based on the works of Rowe (1930, 1931). A meagre 14 species are listed, all collected some distance away from the Henrys in Blanding, Bryce Canyon, La Sal, Moab, Monticello and Verdure.

I got my chance to collect in the Henry Mountains after attending the 10<sup>th</sup> *International Congress of Dipterology* in Reno, Nevada, last July. After the meeting I spent a day with colleagues in the Lake Tahoe area (see cover of this newsletter issue) and then headed homeward via the Arizona Strip (the small portion of Arizona north of the Grand Canyon) and southern Utah. I was travelling in my own vehicle on a joint work/holiday trip and planned to spend some of my time exploring the area and part in the Henry Mountains looking for tachinids.

The San Rafael Swell can be excessively hot in mid-summer (average daily high of 35°C) and my arrival on July 28<sup>th</sup> coincided with a hot spell. That first day was uncomfortably hot by mid morning and I decided to escape the heat and drive into the Henry Mountains to begin my search for tachinids. I stopped at the small town of Hanksville for gas and information<sup>4</sup> before heading south towards the Henrys on Lonesome Beaver Road (Figs. 1, 3, 4).

The elevation at Hanksville is about 1300 m and the road gradually climbs to 1900 m over the next 23 km before beginning to wind its way up into the mountains. From that point to Lonesome Beaver Campground (at 2480 m) is another 9–10 km over an easy route with only minor switchbacks and no steep sections. There are a couple of small streams that flow over the road and these spots might be problematic if trying to cross them during or after heavy rain.

---

<sup>3</sup> Howden and Martin were both CNC staff members at the time, the former a scarab beetle specialist and the latter the collections manager. Howden left the CNC several months later, in September of 1968, to become a professor at nearby Carleton University. I took his courses on entomology and zoogeography at Carleton in the mid 1970s and enjoyed them so much that they started me on a path towards graduate school and my current position.

<sup>4</sup> Checking weather and road conditions at the Hanksville BLM office (street address 380 E 100 N) is recommended before venturing off paved roads in the region. Road conditions can change rapidly and unpredictably due to rain, and cellphone service is limited. All roads in the Henrys are dirt and graded as needed on an irregular basis. The road to Lonesome Beaver Campground area is usually in good condition (Figs. 3–7) and a high clearance vehicle is not needed, but all-terrain tires are recommended because portions of the road are rocky and regular tires are prone to punctures. As with any travel off-road on BLM land, carry plenty of water and supplies in case of misadventure and be prepared to self-rescue if stranded. The local BLM office keeps a close watch on weather and road conditions but is not responsible for your safety in this “travel-at-your-own-risk” area.



**Figures 3–8.** 3. Cattle grazing on open range alongside Lonesome Beaver Road, Bull Mountain ahead on left (east). 4. Heading towards Sawmill Basin, white-topped peak on right is Mount Ellen. 5. Dandelion Flat Recreation Area in Sawmill Basin, 2445 m. 6. View along road where Gambel oaks were sugared, looking south towards Dandelion Flat; oaks are beyond 4Runner on the right. 7, 8. Two views of the sugared oak leaves.

I reached the empty campground and had hoped it would be a suitable place for collecting. My plan had been to drive as far as the campground while watching for places to collect along the way and then backtrack if I didn't like the campground area. This proved to be the case, as the campground is closely surrounded by evergreen forest. I went back to the Dandelion Flat Recreation Area, a more promising-looking spot less than 1 km down the road. It is a flat open space with a grassy meadow surrounded by mixed forest of aspen and evergreens (Fig. 5). The elevation is about 2445 m, in the transition zone between Stanton's (1931) Woodland Climax and Montane Forest Climax. There are picnic tables and grills in a shaded area, potable water, and a pit toilet – welcome and unexpected luxuries. The place was deserted and I could sweep and search for tachinids without providing entertainment for onlookers. Curiously, I caught nothing. I ate a quick lunch and continued back down the road for the next hour, stopping here and there at open places to check for tachinids on wildflowers and sweep the vegetation. This resulted in a single tachinid and I gave up on the idea of continuing this sort of collecting.

“Sugaring” seemed like the only prospect left, although I did not hold out much hope for it in the present circumstances. This method involves spraying a mixture of honey, cola and water on leaves in a sunny location to attract tachinids, and sometimes this works and sometimes it doesn't. My thoughts on sugaring have not changed since I wrote the following:

*“Under the right circumstances this mixture attracts a wide variety of tachinids. Interestingly, it is nearly impossible to predict what the results of sugaring will be on any single occasion. What appears to be an ideal spot can attract almost nothing or result in phenomenal activity all day long, with some species appearing in large numbers and others being represented by only a specimen or two. Respraying the leaves every 20 minutes or so will ensure that activity does not wane.” (O'Hara 2012: 34.)*

A sunlit stretch of Gambel oak about 0.5 km north of the Dandelion Flat Recreation Area caught my eye as a possible place to “sugar” (Figs. 6–8). I liked that the trees and leaves were close together, allowing me to apply liberal amounts of spray to the leaves and providing flies with a lot of places to land. I also liked the slope of the land, slightly downward to a stream 70 m behind the oaks and upward on the other side of the road. This may not have mattered, but tachinids sometimes congregate on sunlit vegetation at the top of a steep slope. There were no tachinids on the leaves when I applied the spray but after a few minutes they started to trickle in. Nineteen tachinids were caught that day on the sugared leaves between about 4–6 pm<sup>5</sup>. The sun had been in and out of clouds and the temperature was in the mid 20s (°C). I drove back to the Dandelion Flat Recreation Area for dinner and pinned my catch that evening in the car. I had not seen a vehicle all day and camped for the night next to the Recreation Area.

I drove out of the mountains the next morning (July 29<sup>th</sup>) to visit the Little Egypt Geologic Site<sup>6</sup> on the eastern side of the Henrys and returned to my sugaring spot about noon. There were already a few tachinids on the oak leaves due to the residual effects of sugaring the day before. Clouds over the mountain peaks obscured the sun from time to time and cut down on fly activity but otherwise conditions were good and I spent the next few hours alternating between spraying leaves and collecting flies (Fig. 9). I stopped for an hour around 4 pm to pin what I had collected and then resumed collecting until 6 pm, and after that sporadically until 7 pm. Increased cloudiness had turned to intermittent rain and the combined effects of weather and lateness of the hour ended my collecting. I had caught 95 tachinids, 94 from sugared leaves and one *Microphthalma* sp. from the dirt road in front of the oaks (members of

<sup>5</sup> Locality details: Utah, Garfield County, Henry Mountains, Sawmill Basin, 38°07.01'N 110°46.10'W, 2420 m.

<sup>6</sup> <https://geology.utah.gov/map-pub/survey-notes/geosights/little-egypt/>  
<https://www.americansouthwest.net/utah/little-egypt/index.html>

this genus are typically found on the ground and this one perhaps coincidentally landed near the oaks). I pinned my specimens and camped for the night in a nearby clearing.

The next day (July 30<sup>th</sup>) was my last in the Henrys. I drove out of the mountains for the morning and returned by 2 pm for more collecting at the sprayed oak leaves. The sky became overcast by 4:30 pm and I quit collecting, having caught 58 tachinids. I left the mountains and resumed my holiday before heading back to Ottawa.



**Figure 9.** Sprayed leaves of Gambel oak with tachinids indicated by arrows. **a.** *Mystacella ?frioensis* (Reinhard) (Exoristinae, Goniini). **b.** *Peleteria* sp. (Tachininae, Tachinini).

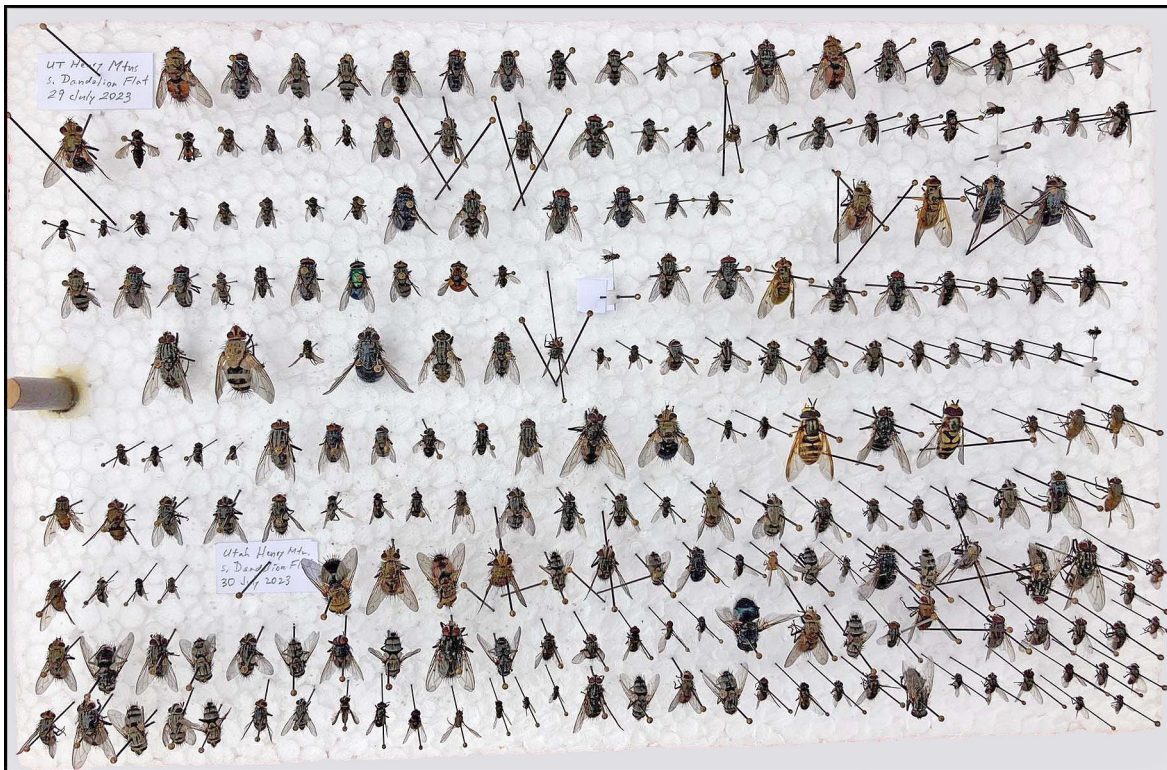
## Results

A total of 172 tachinid specimens were collected in the Henry Mountains, all but two (see above) from sugared oak leaves along Lonesome Beaver Road south of Dandelion Flat Recreation Area (Fig. 10). This was not a determined effort to survey the Tachinidae of the Henry Mountains but rather a few days of opportunistic collecting that resulted in two noteworthy outcomes:

- an annotated list of 43 tachinid species, and
- a quantitative assessment of “sugaring” for tachinid collecting.

Back in Ottawa, specimens were entered into the CNC specimen database<sup>7</sup> and assigned individual numbers, then labelled accordingly. Specimens were sorted to morphospecies and identified as far as possible using the key to genera by Wood (1987), and published revisions and CNC specimens for preliminary species identifications.

<sup>7</sup> Canadian National Collection database: <https://www.cnc.agr.gc.ca/taxonomy/TaxonMain.php>.



**Figure 10.** Flies caught during the last two days of collecting from the sugared oaks.

A leg from each of 69 specimens was removed and sent to the Biodiversity Institute of Ontario (BIO) at the University of Guelph for COI DNA barcoding. The resultant sequences were compared to my “DNA barcode library” of over 4000 CNC Tachinidae in the Barcode of Life Data Systems (BOLD) repository to further refine my identifications. A “match” was generally interpreted as sequences belonging to the same “BIN” (Barcode Index Numbers) in the BOLD system. But as discussed below, I encountered a few instances where the correlation between BINs and species is questionable (e.g., *Medina* sp. and *Frontiniella* spp.). Specimens that could not be identified beyond genus have been assigned a species number preceded by “SW” (= Southwest; e.g., *Phantasiomyia* sp. SW1, Figs. 15, 16).

I would not like to speculate on whether “sugaring” is more effective at attracting certain tachinid taxa than others, or how effective it is compared to other collecting methods. My reason for documenting my findings here is more to quantitatively demonstrate that sugaring for tachinids can be highly effective under the right circumstances. By way of comparison, the number of species collected by sugaring in the Henrys was 42% of the number I caught over 11 days by multiple Malaise traps and hilltopping in southern New Brunswick in 2022 (O’Hara 2023b) (41 vs. 98 species). Sugaring is also appealing as a collecting method because it can often be practiced at the same time as other collecting methods.

Another topic that can only be superficially addressed is the faunistic connections between the Tachinidae in the Henry Mountains and elsewhere. The mountain range is surrounded by desert and the tachinid fauna at about 2400 m – where I was collecting – has no counterpart close by. Presumably the fauna is most similar to that of the Manti-La Sal, Fishlake and Dixie National Forests of southern Utah, but no surveys of Tachinidae exist for any of those areas. Looking at my own data in the form of DNA barcoding matches, the most species shared with the Henrys



are from the Gila National Forest in southwestern New Mexico (see O’Hara 2012). This is not so unexpected given that I have over 600 specimens barcoded from New Mexico (compared to half that number from Arizona and much fewer from other states), but southern New Mexico also has a “Sky Islands” and Neotropical influence that I thought might distinguish its fauna more clearly from that of the Henry Mountains.

## Species list of Tachinidae for Henry Mountains

The classification of Tachinidae in the following list, and the geographical divisions of North America and the world, follow O’Hara et al. (2020). Each tachinid specimen is denoted by its CNC database number and sex. Specimens that were COI DNA barcoded are shown in red. BIN (Barcode Index Numbers) assignments are given and sometimes discussed.

### DEXIINAE, Dexiini

#### 1. *Ptilodexia conjuncta* (Wulp), CNC5277289♂ [BIN AAZ3896].

Distribution. Nearctic: USA (California, Great Plains, Northern Rockies, Pacific Northwest, Southwest, Texas), Canada (British Columbia, East, Prairies). Neotropical: Middle America (Mexico).

Nearctic species of *Ptilodexia* B. & B. can generally be identified using the revision of Wilder (1979). In addition to the key, this work has well-prepared diagnoses, illustrations and distribution maps. The CNC has the added advantage of possessing specimens that were identified by D.D. Wilder during the course of her Ph.D. study of the genus. The single specimen identified here as *P. conjuncta* is a good match with specimens collected in the Henry Mountains (including Lonesome Beaver Campground) by Martin and Howden in July 1968 (see above). The DNA barcode of my Henry Mtns specimen matches that of two other CNC barcoded specimens, both previously identified as *Ptilodexia conjuncta*<sup>1</sup>.

Wilder (1979: 24) treated *P. conjuncta* as a variable species, and I must have as well, because six other specimens I submitted for barcoding under the name *P. conjuncta* have been assigned to two other BINs by the BOLD algorithm<sup>2,3</sup>. For present purposes, Wilder’s identification of CNC specimens from the Henry Mtns as *P. conjuncta* is accepted as the proper assignment of the name. If this is the true identity of the species, then my listing of *P. conjuncta* from the Gila National Forest of New Mexico in O’Hara (2012: 38) was based on specimens of two other (possibly undescribed) species<sup>2,3</sup>.

<sup>1</sup> CNC DIPTERA 105162 (NM, Torrance Co., Manzano Mtns); CNC852597 (UT, Salt Lake Co., Wasatch Mountains, Guardsman Pass).

<sup>2</sup> BINAAZ3897. DIPTERA 105163 (AZ, Cochise Co., Huachuca Mtns, Ramsey Canyon), DIPTERA 105164 (NM, Grant Co., Gila N.F., Gomez Peak), DIPTERA 105165 (NM, Gomez Peak), DIPTERA 105168 (NM, Gomez Peak trail), DIPTERA 105171 (NM, Gomez Peak).

<sup>3</sup> BINAAZ3898, CNC DIPTERA 105166 (NM, Grant Co., Gila N.F., Gomez Peak).

### EXORISTINAE, Blondeliini

#### 2. *Blondelia polita* (Townsend), CNC5277224♂, CNC5277265♂ [BIN ACE6779].

Distribution. Nearctic: USA (California, Northern Rockies, Pacific Northwest, Southwest), Canada (British Columbia, Prairies). Neotropical: Middle America (Mexico).

The DNA barcode matches those of six specimens from southern Arizona and New Mexico (Gila N.F., O’Hara 2012: 39).

**3. *Chaetonodexodes vanderwulpi* (Townsend)**, CNC5277206♂, **CNC5277282♂**, CNC5277287♂, CNC5277301♂, CNC5277240♀, CNC5277243♀, CNC5277279♀, CNC5277283♀, CNC5277284♀, **CNC5277337♀** [BIN ABW2496].

Distribution. Nearctic: USA (California, Florida, Great Plains, Southeast, Southwest, Texas). Neotropical: Greater Antilles (Puerto Rico).

The DNA barcodes match that of an Ohio specimen. This species was recorded from Gila N.F. by O'Hara (2012: 39).

**4. *Medina* sp.**, **CNC5277288♂** [BIN AAG6902].

Four species of *Medina* R.-D. are currently recognized from America north of Mexico (O'Hara et al. 2020). There are morphological differences that help to separate these species, but more study is needed to fully resolve species limits. Curiously, the 29 *Medina* in my BOLD barcode library from throughout North America appear to belong to several species based on morphology but are all assigned to the same BIN in BOLD. This is one of the rare instances in which DNA barcodes do not seem to differentiate putative species. One species, *Medina barbata* (Coquillett), was recorded from Gila N.F. by O'Hara (2012: 39).

**5. *Myiopharus ancillus* (Walker)**, CNC5277248♂, **CNC5277278♂**, CNC5277305♂, **CNC5277212♀**, CNC5277229♀ [BIN AAG2318].

Distribution. Nearctic: USA (Florida, Great Plains, Northeast, Southeast, Southwest, Texas), Canada (Ontario). Neotropical: Middle America (Mexico).

The DNA barcodes match those of four specimens from Arizona, Missouri, Ontario and Pennsylvania. This could be the same species recorded from Gila N.F. as *M. ?ancillus* by O'Hara (2012: 39).

## Eryciini

**6. *Aplomya theclarum* (Scudder)**, CNC5277234♂, CNC5277285♂, CNC5277306♂, **CNC5277326♂**, CNC5277327♂, CNC5277335♂, CNC5277343♂, CNC5277205♀, **CNC5277247♀** [BIN AAZ4724].

Distribution. Nearctic: USA (California, Great Plains, Northeast, Northern Rockies, Pacific Northwest, Southeast, Southwest, Texas), Canada (British Columbia, East, Ontario, Prairies, Yukon). Neotropical: Middle America (Mexico).

*Aplomya theclarum* is the only described species of *Aplomya* R.-D. in the New World except for *A. sellersi* (Thompson) in Trinidad & Tobago. The DNA barcodes of these Henry Mtns specimens match those of about 20 specimens from Arizona, Kentucky, Missouri, New Mexico, Ohio, Tennessee, Utah, New Brunswick, Ontario and Quebec. A second BIN (ABY9410) comprises unidentified *Aplomya* from Arizona, Missouri, New Mexico and Utah. O'Hara (2012: 39, Gila N.F.) listed *A. theclarum* as a species complex and O'Hara (2023b: 58, New Brunswick) commented: "DNA barcodes suggest there are two species under the name *A. theclarum* from Missouri westward".

**7. *Carcelia (Carcelia) reclinata* (Aldrich & Webber)**, **CNC5277217♂**, CNC5277323♂, **CNC5277294♀** [BIN AAI3685].

Distribution. Nearctic: USA (California, Florida, Great Plains, Northeast, Northern Rockies, Pacific Northwest, Southeast, Southwest, Texas), Canada (British Columbia, East, NWT, Ontario, Prairies, Yukon). Neotropical: Middle America (Mexico), South America (Colombia).

The DNA barcodes match those of four specimens from Maryland, New Mexico and Quebec, and the species was recorded from Gila N.F. by O'Hara (2012: 39). A second BIN (AAG2429) in my BOLD barcode library

contains barcodes of four specimens identified as *C. reclinata* (from Maine, New Mexico, Alberta and Yukon) and these specimens are presumed to belong to a misidentified species close to *C. reclinata*. The type locality of *C. reclinata* is in the Manzano Mtns of central New Mexico, the same mountain range where a barcoded specimen of the presumed “true” *C. reclinata* was collected (CNC DIPTERA 104456).

**8. *Carcelia (Euryclea) sp.*, CNC5277203♀, CNC5277251♀ [BIN AAP4825].**

The DNA barcode matches those of four specimens from Arizona, Missouri and New Mexico. O’Hara (2012: 39, Gila N.F.) called the species “*Carcelia (Euryclea) sp. 1*” and noted: “New record for this subgenus in the New World. The species is undescribed.”

**9. *Drino (Drino) sp. nr. incompta (Wulp)*, CNC5277345♂ [BIN AAZ4920].**

O’Hara (2012: 39) recognized two species in Gila N.F. as near *D. incompta*, calling them “sp. 1” and “sp. 2” and noting “The identity of true *D. incompta* is uncertain and could be *D. nr. incompta* sp. 1 or sp. 2, or a different species”. DNA barcodes of *Drino incompta* sp. 1 from Gila N.F. have separated males into one BIN (AAZ4919) and females into another (AAZ4920), with the latter BIN also containing the Henry Mtns male.

**10. *Nilea sp. SW1*, CNC5277274♂, CNC5277300♂ [BIN AAZ3936].**

The DNA barcode is a match with only one other specimen in my BOLD barcode library, a male from Gila N.F. (CNC DIPTERA 105138) called *Nilea sp. 2* (not in O’Hara 2012). Another BIN (AAZ3935) comprises three barcodes as *Nilea sp. 1* (O’Hara 2012: 39) and two as *Nilea sp. 2* (different specimens from the *Nilea sp. 2* above but also from Gila N.F. and not in O’Hara 2012). These preliminary results suggest that a combined morphological and molecular approach will help to resolve species limits within this species group of a generally difficult genus.

## Ethillini

**11. *Neoethilla sp. SW1*, CNC5277208♂ [BIN AFM6428].**

The genus *Neoethilla* was described by Cerretti et al. (2012) for an ethilline species previously mistaken as two *Winthemia* R.-D. species, *W. ignobilis* (Wulp, 1890) and *W. antennalis* Coquillett, 1902. The species was reported from Gila N.F. by O’Hara (2012: 39) as “*Winthemia*” *antennalis* and its pending transfer to Ethillini by Cerretti et al. was noted. Cerretti et al. (2012) synonymized *antennalis* with *ignobilis* and created the genus *Neoethilla* for the species. Three barcoded specimens of this species (now recognized as *N. ignobilis*) from Gila N.F. belong to BIN AAZ4736.

Another species of *Neoethilla* was recognized from Missouri as “*Neoethilla n. sp.*” in Stireman et al. (2020: 38) and is represented by specimen CNC1394271 (BIN ADZ9188) in my BOLD barcode library. The single specimen from Henry Mtns is likely a third, and also undescribed, species.

## Exoristini

**12. *Exorista (Adenia) dydas (Walker)*, CNC5277341♂, CNC5277328♀ [BIN ABZ7039].**

Distribution. Nearctic: USA (Alaska, California, Florida, Great Plains, Northeast, Northern Rockies, Pacific Northwest, Southeast, Southwest, Texas), Canada (British Columbia, East, NWT, Ontario, Prairies, Yukon).

This widespread species is represented by about 20 barcoded specimens in my BOLD barcode library, from British Columbia to New Brunswick as well as Colorado, Maryland and Utah. It was not listed from Gila N.F. by O’Hara (2012).



11

12

Figures 11–12. 11. *Ceromasia auricaudata* Townsend (Exoristinae, Goniini), CNC5277211♂, 7.1 mm. 12. *Frontiniella parancilla* Townsend (Goniini), CNC5277344♂, 4.5 mm.

## Goniini

13. *Ceromasia auricaudata* Townsend (Fig. 11), CNC5277211♂, CNC5277292♂, CNC5277236♀, CNC5277255♀, CNC5277259♀, CNC5277272♀, CNC5277277♀, CNC5277340♀, CNC5277367♀ [BIN AAG2173].

Distribution. Nearctic: USA (California, Great Plains, Northeast, Northern Rockies, Pacific Northwest, Southwest), Canada (British Columbia, East, Ontario, Prairies).

The two DNA barcodes are the only ones for *C. auricaudata* in my BOLD barcode library. The specimens were identified to genus using the key in Wood (1987) and to species by comparisons with identified specimens in the CNC.

14. *Chrysoexorista dawsoni* (Sellers), CNC5277291♂, CNC5277333♂ [BIN AAI4063].

Distribution. Nearctic: USA (Southeast, Southwest).

The DNA barcode matches those of five specimens from Arizona and New Mexico. The species was first recorded from New Mexico by O'Hara (2012: 40, Gila N.F.).

15. *Erynnia tortricis* (Coquillett), CNC5277296♂, CNC5277316♂, CNC5277330♂, CNC5277342♂ [BIN AAZ4745].

Distribution. Nearctic: USA (California, Florida, Great Plains, Northeast, Northern Rockies, Pacific Northwest, Southeast, Southwest, Texas), Canada (British Columbia, East, NWT, Ontario, Prairies, Yukon).

The DNA barcode matches those of six specimens from New Mexico (Gila N.F., O'Hara 2012: 40), Ontario, Quebec and Yukon.

**16. *Frontiniella parancilla* Townsend** (Fig. 12), CNC5277235♂, CNC5277249♂, CNC5277336♂, CNC5277344♂ [BIN AAZ3925].

Distribution. Nearctic: USA (California, Northeast, Pacific Northwest, Southeast, Southwest, Texas). Neotropical: Middle America (Mexico).

The DNA barcodes of the two Henry Mtns specimens of *F. parancilla* are only slightly different from those of six specimens of *F. spectabilis* (Aldrich) (four from Quebec, one from Henry Mtns, and one from Gila N.F.), but all of these belong to BIN AAZ3925. I am inclined to recognize both species as valid following O'Hara (1993: 21), who noted: "Most adults of *F. spectabilis* are shiny yellow or golden dorsally in contrast to the silver or more subdued yellow of adults of other *Frontiniella* species".

**17. *Frontiniella regilla* (Reinhard)**, CNC5277230♂, CNC5277238♂, CNC5277242♂, CNC5277246♂, CNC5277252♂, CNC5277257♂, CNC5277268♂, CNC5277334♂, CNC5277338♂, CNC5277228♀, CNC5277237♀, CNC5277250♀, CNC5277269♀, CNC5277264♂, CNC5277280♂, CNC5277362♀, CNC5277361♀ [BIN AAZ4790].

Distribution. Nearctic: USA (California, Southwest), Canada (British Columbia).

The morphological differences between *F. mitis* (Curran) and *F. regilla* are slight and variable, and all 26 barcoded specimens of the two species in my BOLD barcode library are in the same BIN. Although there could be just one variable species, O'Hara (1993: 30–33) noted that *F. mitis* and *F. regilla* are morphologically distinguishable and almost allopatric in their known distributions. Hence, two species are recognized here pending a modern morphological/molecular study of the genus.

**18. *Frontiniella spectabilis* (Aldrich)**, CNC5277220♀ [BIN AAZ3925, same as *Frontiniella parancilla* above].

Distribution. Nearctic: USA (Northeast, Southeast, Southwest), Canada (British Columbia, East, Ontario, Prairies).

This species has golden pruinosity dorsally compared to silvery pruinosity in *F. parancilla*. The DNA barcode matches those of four specimens from Quebec and one from New Mexico (Gila N.F., as *F. ?spectabilis* in O'Hara 2012: 40), and is only slightly different from the barcode of *F. parancilla* (same BIN).

**19. *Frontiniella* sp. SW1**, CNC5277361♀ [BIN AEC5992].

The DNA barcode of this tiny (3 mm long) female is in a BIN of its own among the 40+ specimens of *Frontiniella* Townsend in my BOLD barcode library. The specimen resembles *Frontiniella regilla* but is treated here as different based on its unique DNA barcode.

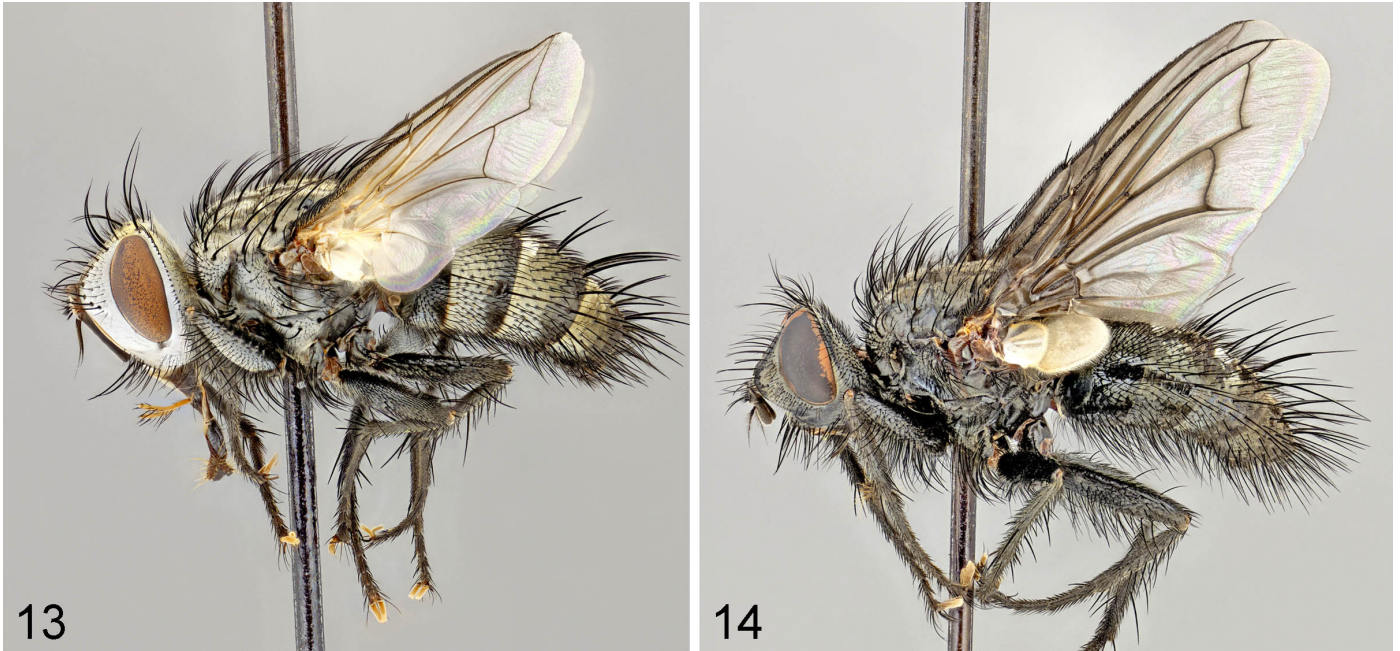
**20. *Gaediopsis* sp. SW1**, CNC5277232♂, CNC5277245♂, CNC5277260♂, CNC5277267♂, CNC5277312♂, CNC5277319♂, CNC5277321♂, CNC5277322♂, CNC5277200♀, CNC5277207♀, CNC5277298♀, CNC5277320♀ [BIN AAI5685].

The DNA barcodes match those of seven specimens from Gila N.F. and one specimen from Arizona (Chiricahua Mtns, Rucker Canyon), all identified only as *Gaediopsis* B. & B. O'Hara (2012: 40) recorded several *Gaediopsis* species from Gila N.F., most only tentatively, but those identifications were deemed too questionable to include in my BOLD barcode library.

**21. *Mystacella ?frioensis* (Reinhard)** (Fig. 13), CNC5277216♂, CNC5277308♂, CNC5277313♂, CNC5277315♂, CNC5277317♂, CNC5277318♂, CNC5277324♂, CNC5277332♂, CNC5277359♂, CNC5277368♂, CNC5277369♂, CNC5277370♂, CNC5277215♀, CNC5277253♀, CNC5277303♀ [BIN ABY0456].

Distribution [for *M. frioensis*]. Nearctic: USA (California, Northern Rockies, Southwest, Texas), Canada (British Columbia). Neotropical: Middle America (Mexico).

The DNA barcodes do not match that of one specimen of *Mystacella chrysoprocta* (Wiedemann), the only representative of *Mystacella* Wulp in my BOLD barcode library. CNC specimens of *Mystacella frioensis* are somewhat variable in their abdominal pruinosity and I am uncertain whether they all belong to the same species. The identification of the Henry Mtns species is treated here as questionable for this reason.



**Figures 13–14.** 13. *Mystacella ?frioensis* (Reinhard) (Goniini), CNC5277216♂, 8.9 mm. 14. *Microchaetina ?rubidiapex* (Reinhard) (unplaced to subfamily), CNC5277201♂, 8.8 mm.

**22. *Myxexoristops* sp. SW1, CNC5277218♂ [BIN AAV0942].**

There are two described species of *Myxexoristops* Townsend in the New World, both widespread in America north of Mexico but not yet recorded from Mexico (O’Hara et al. 2020: 481): *M. fronto* (Coquillett) and *M. neurotomae* (Sellers). Neither species can be reliably identified from among the four or more morphospecies in the CNC. The DNA barcodes of six CNC specimens submitted to BOLD as *M. neurotomae* belong to two BINs, ADM8146 and AAV0942, and the barcode of the Henry Mtns specimen belongs to the latter.

**23. *Patelloa* sp. SW1, CNC5277231♂, CNC5277223♀ [BIN AFL4908].**

There are ten described species of *Patelloa* Townsend in America north of Mexico, and some are easier to identify than others. The barcode of this Henry Mtns species is in a BIN of its own among a cluster of BINs containing about a dozen identified and unidentified *Patelloa* species.

**24. *Pseudochaeta* sp. SW1, CNC5277213♂, CNC5277219♂, CNC5277233♂, CNC5277270♂, CNC5277286♂, CNC5277314♂ [BIN AFM3631].**

The two DNA barcodes are in a BIN of their own among five other *Pseudochaeta* Coquillett BINs in my BOLD barcode library. No *Pseudochaeta* species were recorded from Gila N.F. by O’Hara (2012).

## Winthemiini

25. *Nemorilla pyste* (Walker), CNC5277202♂, CNC5277209♂, CNC5277210♂, CNC5277225♂, CNC5277241♂, CNC5277261♂, CNC5277263♂, CNC5277266♂, CNC5277273♂, CNC5277299♂, CNC5277304♂ [BIN AAE4074].

Distribution. Nearctic: USA (California, Florida, Great Plains, Northeast, Northern Rockies, Pacific Northwest, Southeast, Southwest, Texas), Canada (British Columbia, East, Ontario, Prairies). Neotropical: eastern Lesser Antilles (Virgin Islands), southern Lesser Antilles (Trinidad & Tobago), Middle America (Mexico).

The DNA barcodes of this common species match those of 12 specimens from Arizona, California, New Mexico (Gila N.F., O'Hara 2012: 40), Ontario and Quebec.

## PHASIINAE, Gymnosomatini

26. *Gymnosoma* sp. SW1, CNC5277256♂ [BIN AAV0936].

The DNA barcode matches that of a specimen from Utah (Juab Co., Fish Springs WR) tentatively identified as *G. fuliginosum* R.-D.

27. *Xanthomelanodes* sp. SW1, CNC5277227♂, CNC5277365♂ [BIN AAP8643].

The DNA barcode matches those of five specimens of uncertain identification from Arizona, California, New Mexico (Manzano Mtns and Gila N.F. [O'Hara 2012: 40, as "*Xanthomelanodes arcuatus* (Say) or *X. californicus* Townsend"]) and Alberta.

## TACHININAE, Ernestiini

28. *Linnaemya (Linnaemya) comta* (Fallén), CNC5277302♂ [BIN AAN6462].

Distribution. Nearctic: USA (Alaska, California, Florida, Great Plains, Northeast, Northern Rockies, Pacific Northwest, Southeast, Southwest, Texas), Canada (British Columbia, East, NWT, Ontario, Prairies, Yukon). Neotropical: Middle America (Honduras, Mexico), South America (Chile, Peru). Palaearctic: Central Asia, China, Europe, Kazakhstan, Korean Peninsula, Middle East, Mongolia, North Africa, Russia, Transcaucasia. Oriental: China (southern), India, Nepal, Taiwan.

The DNA barcode matches those of 14 specimens from Arizona, Nevada, Alberta, Ontario and Saskatchewan. The morphological identity of this species is uncertain in North America and O'Hara (2012: 40) recorded it from Gila N.F. as *Linnaemya* "?comta (Fallén)".

29. *Panzeria ampelus* (Walker), CNC5277221♂, CNC5277360♂, CNC5277307♀, CNC5277371♀ [BIN AFN9356].

Distribution. Nearctic: USA (California, Great Plains, Northeast, Northern Rockies, Pacific Northwest, Southeast, Southwest), Canada (British Columbia, East, Ontario, Prairies).

There is some morphological difference between the two males that were DNA barcoded, but the barcodes of all four Henry Mtns specimens are in the same BIN along with those of ten specimens from North Carolina, Pennsylvania, Virginia, Ontario and Quebec.

## Leskiini

30. *Clausicella ?setigera* (Coquillett), CNC5277275♀ [BIN AAG2315].

Distribution [for *C. setigera*]. Nearctic: USA (California, Florida, Great Plains, Northeast, Northern Rockies, Pacific Northwest, Southeast), Canada (British Columbia, Ontario).



**Figures 15–16.** *Phantasiomyia* sp. SW1 (Tachininae, Leskiini), CNC5277254♂, 6.0 mm. **15.** Lateral. **16.** Close-up of head showing bright yellow antenna and black machete-shaped arista.

The DNA barcode matches those of six specimens from Arizona, Missouri, New Mexico (Portales and Gila N.F. [O’Hara 2012: 40]) and Ontario (as *C. politura* (Reinhard)). Another specimen from California (CNC DIPTERA 104403, Del Norte Co.) identified as *C. setigera* is in a BIN of its own (ACP6653). These inconsistencies suggest that there are taxonomic issues to resolve in the *C. politura/setigera* group.

**31. *Clausicella turmalis* (Reinhard), CNC5277276♀ [BIN AAZ4986].**

Distribution. Nearctic: USA (?California, Great Plains, Northeast, Southeast, Texas), Canada (East, Ontario).

The DNA barcode matches those of 14 specimens from Kentucky, Mississippi, Missouri, New Mexico (Portales and Gila N.F. [but not listed in O’Hara 2012]), New Brunswick and Ontario.

**32. *Phantasiomyia* sp. SW1 (Figs. 15, 16), CNC5277254♂ [DNA barcode failed].**

The male of this undescribed species of *Phantasiomyia* Townsend looks like a prettier version of *P. gracilis* Townsend with its bright yellow antenna, black machete-shaped arista, and laterally compressed first three tarsomeres of the fore leg. I had forgotten that I had collected it before until I saw the specimens in the CNC: 5♂♂ and 37♀♀ mounted from a Malaise trap placed at the north end of Shuswap Lake in British Columbia, 23–31 August 1987. The DNA barcodes of two males from that series (CNC DIPTERA 103987 and CNC DIPTERA 103987, BIN AAZ4655) are in my BOLD barcode library as “*Phantasiomyia* sp. 2” (this is not the same “sp. 2” recorded from Gila N.F. by O’Hara 2012: 40, which has not been barcoded). This undescribed species is also represented in the CNC by specimens from California (Enterprise), Utah (several localities), and British Columbia (Cultus Lake).



## Megaprosopini

### 33. *Microphthalma disjuncta* (Wiedemann) sp. grp, CNC5277258♂ [BIN AFM4670].

Distribution [for *M. disjuncta*]. Nearctic: USA (California, Florida, Great Plains, Northeast, Northern Rockies, Pacific Northwest, Southeast, Southwest, Texas), Canada (British Columbia, East, Ontario, Prairies). Neotropical: Middle America (Guatemala, Mexico).

The DNA barcode of the single Henry Mtns specimen is in a BIN of its own. The barcodes of five other specimens (all identified as *M. disjuncta*) cluster next to this BIN and belong to four other BINs: AFM4670 (Arizona), AAM7883 (Texas), ACE8444 (Texas), and ACE4897 (Ontario). These specimens do not show as much morphological difference as one might expect of five BINs. O'Hara (2012: 40) recorded a species from Gila N.F. as "*Microphthalma disjuncta*", but this is best considered a placement to the *M. disjuncta* species group.



Figures 17–20. 17. *Paradidyma* sp. SW1 (Tachininae, Minthoini), CNC5277271♂, 7.3 mm. Lateral view. 18. Same, dorsal view. 19. *Paradidyma* sp. SW2, CNC5277366♂, 6.5 mm. Lateral view. 20. Same, dorsal view.

## Minthoini

34. *Paradidyma* sp. SW1 (Figs. 17, 18), CNC5277271♂ [BIN ACA5015].

The DNA barcode of this Henry Mtns specimen is in a BIN of its own. Species of *Paradidyma* B. & B. are notoriously difficult to identify despite the revision of the genus by Reinhard (1934). Sixteen species were recognized from America north of Mexico in the catalogue of O'Hara & Wood (2004). My BOLD barcode library has 35 barcodes assigned to 17 BINs, with some agreement between tentative names and BINs. O'Hara (2012: 40–41) listed seven species from Gila N.F., two with names (*P. aristalis* Reinhard and *P. singularis* (Townsend)) and five with numbers (*P. spp.* 1–5).

35. *Paradidyma* sp. SW2 (Figs. 19, 20), CNC5277366♂ [BIN AAG2341].

The DNA barcode matches those of two specimens called *Paradidyma* sp. 1 in my BOLD barcode library, one from Arizona (Pinal Mtns) and the other from Alberta (Medicine Hat).

## Nemoraeini

36. *Xanthophyto* sp. SW1 (Figs. 21, 22), CNC5277346♂, CNC5277347♂, CNC5277348♂, CNC5277350♂, CNC5277351♂, CNC5277352♂, CNC5277353♂, CNC5277354♂, CNC5277355♂, CNC5277349♀ [BIN AAZ3895].

The DNA barcodes match those of 11 specimens from Arizona and New Mexico. This species was called *Xanthophyto* sp. 2 and *X. sp.* 3 in O'Hara (2012: 41, Gila N.F.), the main difference between them being size (the latter smaller). John Stireman of Wright State University is revising the genus *Xanthophyto* Townsend.



Figures 21–22. *Xanthophyto* sp. SW1 (Tachininae, Nemoraeini), CNC5277347♂, 11.9 mm. 21. Lateral view. 22. View of abdomen with golden tergite 5.

## Polideini

37. *Lydina americana* Townsend sp. grp, CNC5277356♂, CNC5277204♀, CNC5277239♀, CNC5277295♀, CNC5277364♀ [BIN AAG2432].

O'Hara (2002: 130) regarded *Lydina* as “the most difficult group of species to resolve within the Polideini of America north of Mexico” due to “the confusing amount of variation evident among the many specimens studied”. This was despite the fact that there are only two described species, *L. americana* and *L. areos* (Walker) in the region. O'Hara (2002) left the former unresolved as “*L. americana* (Townsend) species complex”. The DNA barcodes of the Henry Mtns specimens match those of two specimens from my backyard in Ottawa and a specimen from New Mexico (Mora Co., Lefebres Canyon).

## Siphonini

38. *Siphona* sp. SW1 (Figs. 23–26), CNC5277262♂, CNC5277293♀ [BIN ACV1065].

This is one of many undescribed species of New World *Siphona* Meigen that do not belong to a named subgenus (see O'Hara 1989). These species are uncommonly collected and seldom represented in collections by more than a few specimens each. They are all of small size like other *Siphona* species. The DNA barcode of the Henry Mtns specimen matches that of a female from 4th of July Campground in the Manzano Mtns of New Mexico (CNC DIPTERA 105014, labelled in CNC as *Siphona s. lat.* New World sp. grp. 3, sp. 4).

## Strongygastrini

39. *Strongygaster robusta* (Townsend), CNC5277329♂, CNC5277363♂, CNC5277339♀, CNC5277357♀ [BIN AAG2369].

Distribution. Nearctic: USA (Northeast, Northern Rockies, Pacific Northwest, Southeast, Southwest), Canada (British Columbia, East, Ontario).

The DNA barcodes match those of nine specimens from Virginia, British Columbia and Ontario. A specimen of *S. robusta* from Gila N.F. (and listed as such in O'Hara 2012: 41) is the sole member of a sister BIN (AEB0429). In this instance I think the identification of members of both BINs as the single species *S. robusta* is correct. Incidentally, the type locality of *S. robusta* is in the White Mtns of New Mexico east of Gila N.F.

## Tachinini

40. *Archytas (Nemochaeta) lateralis* (Macquart), CNC5277226♂, CNC5277290♂, CNC5277297♀ [BIN AAC2588].

Distribution. Nearctic: USA (California, Florida, Great Plains, Northern Rockies, Southeast, Southwest, Texas), Canada (British Columbia, Prairies). Neotropical: Middle America (Mexico).

The DNA barcodes match those of seven specimens from several locations in Arizona and one specimen from Oaxaca in Mexico. The abdomens of the Henry Mtns specimens are a little darker than those of the other specimens, but this is probably not significant.

41. *Peleteria* sp. SW1, CNC5277214♂, CNC5277222♂, CNC5277244♂, CNC5277309♂, CNC5277331♂, CNC5277311♀ [BIN AEB0151].

The DNA barcode does not match that of another specimen in my BOLD barcode library. This species is unremarkable externally and the male terminalia were not examined. It could be a described or undescribed species.



**Figures 23–26.** *Siphona* sp. SW1 (Tachininae, Siphonini). **23–24.** CNC5277262♂, 3.3 mm. **23.** Lateral view. **24.** Dorsal view of abdomen. **Figs. 25–26.** CNC5277293♀, 3.5 mm. **25.** Lateral view. **26.** Dorsal view of abdomen.

**42. *Peleteria* sp. SW2, ?CNC5277199♂, CNC5277325♂, CNC5277358♂ [BIN AAG2129].**

These specimens are externally similar to *Peleteria* sp. SW1 but smaller (7–8 mm in length vs. 10 mm), and I thought they were the same species until DNA barcoding suggested otherwise (specimen CNC5277199 was not barcoded and could be *P.* sp. SW2 or a small SW1).

The other seven specimens in BIN AAG2129 are all from New Mexico but do not form a cohesive group. Two are from Portales and identified as *P. (Sphyrmyia) malleola* (Bigot)<sup>1</sup> and the rest are from Gila N.F. and identified as *P. (Sphyrmyia) obsoleta* Curran<sup>2</sup>, *P. (S.)* sp. 1<sup>3</sup> and *P. (S.)* sp. 2<sup>4</sup> (these names corresponding with those used in O'Hara 2012: 41).

<sup>1</sup> CNC DIPTERA 162584, CNC DIPTERA 162585.

<sup>2</sup> CNC DIPTERA 105175 (Gomez Peak Trail).

<sup>3</sup> CNC DIPTERA 105179 (Gomez Peak).

<sup>4</sup> CNC DIPTERA 105180 (Gomez Peak), CNC DIPTERA 105181 (McMillen Campground), CNC DIPTERA 105182 (Group picnic area at base of Gomez Peak).

## Unplaced to tribe

**43. *Microchaetina ?rubidiapex* (Reinhard)** (Fig. 14), CNC5277201♂ [BIN AEB6183].

Distribution [for *M. rubidiapex*]. Nearctic: USA (California, Northern Rockies, Pacific Northwest, Southwest), Canada (British Columbia).

The DNA barcode of the single Henry Mtns specimen is in a BIN of its own and not near those of two other *Microchaetina* specimens. The specimen has the general appearance of *M. rubidiapex*, including the darkened wing, but there is no red on the tibiae as mentioned in the description of the species and present in CNC specimens from Oregon. I plan to include a leg from an Oregon specimen of *M. rubidiapex* in my next submission to BOLD to see if the DNA barcode matches that of my Henry Mtns specimen.

## Acknowledgements

I am grateful to Shannon Henderson of the CNC for her assistance with this project, particularly databasing the specimens and preparing the labels, sending legs to the Biodiversity Institute of Ontario in Guelph for COI DNA barcoding, imaging the specimens for the figures, and preparing the layout for this article. Scott Brooks, also of the CNC, kindly reviewed the manuscript and offered helpful corrections and suggestions.

## References

- Cerretti, P., Wood, D.M. & O'Hara, J.E. 2012. *Neoethilla*, a new genus for the first record of the Ethillini from the New World (Diptera, Tachinidae, Exoristinae). *ZooKeys* 242: 25–41.
- Haggerty, B. 2021. *Discovering the Colorado Plateau. A guide to the region's hidden wonders.* Falcon Guides, Rowman & Littlefield Publishing Group, Lanham. xii + 305 pp.
- Howden, H.F. 2008. In *Past Years – IX 1964–69.* SCARABS Occasional Issue No. 27: 7–21. [Account of Utah trip on pp. 16–17.]  
<http://www.bio-nica.info/biblioteca/Scarabs2008No27.pdf>
- O'Hara, J.E. 1989. Systematics of the genus group taxa of the Siphonini (Diptera: Tachinidae). *Quaestiones Entomologicae* 25: 1–229.
- O'Hara, J.E. 1993. Revision of the species of *Frontiniella* Townsend (Diptera: Tachinidae). *Canadian Entomologist* 125: 11–45.
- O'Hara, J.E. 2002. Revision of the Polideini (Tachinidae) of America north of Mexico. *Studia dipterologica.* Supplement 10: 170 pp.
- O'Hara, J.E. 2012. Review of the tachinid fly diversity in the Gila National Forest, New Mexico. *New Mexico Botanist, Special Issue No. 3* [= *Proceedings of the Third Natural History of the Gila Symposium, October 14–16, 2010, Western New Mexico University, Silver City, New Mexico*]: 32–41.

- O'Hara, J.E. 2023a. In the footsteps of C.H. Merriam and C.H.T. Townsend on the San Francisco Peaks of Arizona, USA. *The Tachinid Times* 36: 4–17.
- O'Hara, J.E. 2023b. Tachinidae of the Canadian Maritimes with a survey in New Brunswick. *The Tachinid Times* 36: 37–64.
- O'Hara, J.E., Henderson, S.J. & Wood, D.M. 2020. Preliminary checklist of the Tachinidae (Diptera) of the world. Version 2.1. PDF document, 1039 pp. Available at: <http://www.nadsdiptera.org/Tach/WorldTachs/Checklist/Worldchecklist.html>
- O'Hara, J.E. & Wood, D.M. 2004. Catalogue of the Tachinidae (Diptera) of America north of Mexico. *Memoirs on Entomology, International* 18: iv + 410 pp.
- Reinhard, H.J. 1934. American muscoid flies of the genera *Ceratomyiella* and *Paradidyma*. *Proceedings of the United States National Museum* 83 (No. 2973) [1937]: 9–43.
- Rowe, J.A. 1930. Distributional list of tachinid flies from Utah. *Entomological News* 41: 303–305.
- Rowe, J.A. 1931. A revision of the males of the Nearctic species in the genus *Fabriciella* (Tachinidae). *Annals of the Entomological Society of America* 24: 643–678.
- Stanton, W.D. 1931. A preliminary study of the flora of the Henry Mountains of Utah. *Theses and Dissertations* 7984. 63 pp. + 4 pls. <https://scholarsarchive.byu.edu/etd/7984>
- Stireman, J.O. III, O'Hara, J.E. & Perilla López, J.M. 2020. A brief survey of tachinids from the Ozark Plateau of Missouri, USA. *The Tachinid Times* 33: 25–40.
- Strom, S.E. & Bailey, J.T. 2022. *The Greater San Rafael Swell: honoring tradition and preserving storied lands*. University of Arizona Press, Tucson. 355 pp.
- Wilder, D.D. 1979. Systematics of the Nearctic *Ptilodexia* Brauer and Bergenstamm (Diptera: Tachinidae). *Proceedings of the California Academy of Sciences* 42: 1–55.
- Wood, D.M. 1987. Tachinidae. Pp. 1193–1269. *In*: McAlpine, J.F., Peterson, B.V., Shewell, G.E., Teskey, H.J., Vockeroth, J.R. & Wood, D.M., eds., *Manual of Nearctic Diptera*. Vol. 2. Agriculture Canada Monograph 28: vi + 675–1332.
- Woodbury, A.M. 1958. Preliminary report on biological resources of the Glen Canyon Reservoir. *University Of Utah Anthropological Papers* 31 (Glen Canyon Series No. 2). University of Utah Press, Salt Lake City. vii + 219 pp. <http://npshistory.com/series/archeology/glen-canyon/uu/2.pdf>