

## A Survey of the Snail-killing Flies (Diptera: Sciomyzidae) of Howard County, Maryland

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**Abstract:** Results of an eight-year survey of the marsh flies or snail-killing flies (Sciomyzidae) of Howard County, Maryland are presented. Twenty-four described species in nine genera have been recorded from this small county in central Maryland. The genera include *Atrichomelina* Cresson, *Dictya* Meigen, *Ditaeniella* Sack, *Euthycera* Latreille, *Limnia* Robineau-Desvoidy, *Pherbellia* Robineau-Desvoidy, *Sepedon* Latreille, *Tetanocera* Duméril, and *Trypetoptera* Hendel. Two new (at the time of collection) state records—*Dictya stricta* Steyskal and *Tetanocera rotundicornis* Loew—were established, and one undescribed species of *Dictya* was discovered. Collecting records are included for all species. Biological information is summarized for each genus.

**Keywords:** Acalypterae, biological inventory, distribution, Schizophora, survey, seasonality

### INTRODUCTION

A faunal survey of the Diptera family Sciomyzidae was conducted from May 2014 through March 2022 of Howard County, Maryland. Howard County has largely been overlooked by collectors of flies, particularly sciomyzid flies. Until now, no one seems to have focused exclusively on the sciomyzid fauna (Murphy et al. 2018; W. L. Murphy, pers. comm.). During our survey we collected more than 1,700 specimens of 24 described species in nine genera, adding two new state records (*Dictya stricta* Steyskal and *Tetanocera rotundicornis* Loew). One specimen (male) of an undescribed species of *Dictya* Meigen was found.

The Sciomyzidae, commonly called snail-killing flies or marsh flies, are a family of acalyptate flies in the superfamily Sciomyzoidea (Wiegmann et al. 2011). Sixty-seven species in 16 genera have been recorded from Delmarva (39 species of which have been recorded from Maryland), with another 24 species in 10 genera recorded from nearby states (Murphy et al. 2018). Worldwide, 551 species are known in 61 genera (Murphy, unpubl.). Adults range in size from 1.7 mm (0.07 in) to 13.0 mm (0.51 in) (Murphy et al. 2018). In Howard County, our smallest sciomyzid is *Pherbellia nana nana* (Fallén), which can be as small as 2.4 mm (0.09 in) long, and our largest is *Sepedon fuscipennis* Loew, which can be as large as 7.35 mm (0.29 in) long (Murphy et al. 2018).

Larvae of sciomyzid flies attack freshwater and terrestrial snails or their eggs. Larvae of a few species attack slugs or fingernail clams (Knutson 1987). Notes on the biology of various taxa studied in this survey are provided in the Results section below.

Adult sciomyzid flies can be found in wet, intermittently wet, or somewhat dry areas near wet zones and even in damp, wooded areas nowhere near water. Habitats for sciomyzid flies in the Howard County survey area included edges of man-made lakes and stormwater management ponds and basins; a wetland park; bike paths through damp, wooded areas; and even large, temporary puddles in a residential yard after heavy rain.

County and private stormwater management ponds and basins provide excellent habitats for snails and therefore, for sciomyzids. Hundreds of such sites occur in Howard County, most of which are easily accessible. Stormwater management sites vary from large ponds to small, intermittently wet, shallow basins. The larger pond sites provide not only pond edges but often adjacent shallow forebays with emergent vegetation. The grass-covered runoff areas between the forebays and the ponds are almost always damp and muddy. Additionally, the ponds often are bordered by embankments that lead down to drainage ditches, which are typically wet all year.

Howard County has four man-made lakes, the edges of which include productive sciomyzid habitat. These lakes are Lake Elkhorn, Wilde Lake, Lake Kittamaquindi, and Centennial Lake.

On the county's southern border, which is defined by the Patuxent River, are two large reservoirs: Triadelphia and Rocky Gorge. We collected sciomyzids at one site on the northern edge of Triadelphia Reservoir (Pig Tail Recreation Area) but did not collect at Rocky Gorge. Triadelphia Reservoir encompasses an area of 3.23 km<sup>2</sup> (1.25 mi<sup>2</sup>). It is more than 4 km (2.5 mi) long and 0.7 km (0.4 mi) wide at its extremes. Extending from it are three large arms, each fed by a stream, and several smaller arms. Triadelphia Reservoir is irregular in shape, its long shoreline providing some microhabitats suitable for sciomyzid flies. The surrounding land is owned by the Washington Suburban Sanitary Commission (WSSC). This reservoir is one of the sources of water for the Washington Suburban Sanitary District (WSSD). Due to regulations in place to assure clean and sanitary drinking water, WSSC lands provide pristine habitats for insects and wildlife. No special permit is required for insect collecting on this land, but a daily or seasonal use permit is required.

Howard County is the second smallest county in Maryland, with only 650 km<sup>2</sup> (251 mi<sup>2</sup>) in land area (USA.com 2022), the smallest being Calvert County, with only 552 km<sup>2</sup> (213 mi<sup>2</sup>) (USA.com 2022). Howard County is located entirely within the Piedmont Province, with the extreme eastern edge of the county bordering the Fall Line and the Atlantic Coastal Plain (Maryland Geological Survey 2022). Howard County lies within the Patuxent River and the Patapsco Watersheds (Howard County Government 2022). It is bordered on the north by the Patapsco River and on the south by the Patuxent River, as noted above, and its three major tributaries: Little Patuxent River, Middle Patuxent River, and Western Branch.

Howard County has 1,261 ha (3,117 ac) of wetlands, which constitute 1.9 percent of the county. Most of the wetlands are classified as palustrine (Tiner and Burke 1995). Palustrine wetlands are nontidal and include marshes, bogs, fens, and swamps (Cowardin et al. 1979), all of which are typical sciomyzid habitats.

## CLIMATE

The climate of Howard County is classified as “Cfa” (humid subtropical) on the Köppen-Geiger climate classification scheme. Warm and temperate, this zone features an average annual temperature of 12.6 °C (54.6 °F) and average rainfall of 109.2 cm (43.0 in) (Climate-Data.org 2022).

The earliest we managed to collect sciomyzids was on 28 February and the latest was on 27 December. During this survey, temperatures in January to mid-February were too low for sciomyzids to be active.

In some years, late fall/early winter and late winter/early spring in Howard County include periods of two or three consecutive days with temperatures in the high 10s °C (60s °F). We found that this is warm enough for the emergence of species of sciomyzids that overwinter as pharate adults.

## MATERIALS AND METHODS

We located many collecting sites by use of Google Maps and Google Earth. We found some parks by use of an interactive map provided by Howard County (Howard County Maryland 2022). We found other sites by driving around the county, and we located some with the help of the Supervisor of the Howard County Stormwater Management Division. We extensively sampled suitable habitats bordering the man-made lakes in the county.

We collected flies by sweep netting vegetation in marshy areas, along the edges of ponds, and in ponds, as well as in shaded grassy areas near streams and lakes. We sampled shady, damp, wooded areas for sciomyzids whose larvae feed on terrestrial snails.

We removed most specimens from the net by use of a small aspirator fitted with a 6-dram (0.4-oz) glass vial. We carefully removed larger flies from the net by confining the fly at the end of the net and capturing it directly into a vial.

After each series of sweeps, we aspirated most micro-Diptera to prevent our missing any small sciomyzids, such as some species in the genus *Pherbellia* Robineau-Desvoidy that can easily be mistaken for other species of small flies also found in wet areas. When each vial was deemed to contain enough flies, we removed it from the aspirator, quickly closed it with a screw cap, and placed it in a field bag.

After we returned home, we placed the vials in a freezer (-18 °C [0 °F]) for at least 60 minutes to dispatch the flies. Freezing for shorter periods of time resulted in some of the flies reviving. Frozen specimens thawed within seconds of being placed on a piece of paper on the microscope stage. [Note: Care is needed when handling specimens just

removed from the freezer as the specimens may be quite fragile; sometimes even pouring the specimens out of the vial onto the paper caused loss of antennae or legs. Allowing the specimens five minutes or so to thaw in the vial before pouring them onto the paper resulted in no damage even to the smallest specimens.]

Specimens were either pinned directly with a #0 or #1 insect pin or with a double mount fashioned from a minuten pin inserted in a small cube of white silicone rubber through which a #2 black enameled insect pin had been inserted. Larger specimens, such as many *Dictya*, *Limnia* Robineau-Desvoidy, large *Sepedon* Latreille (*S. fuscipennis* and *S. tenuicornis* Cresson), and *Tetanocera* Duméril, were pinned directly with #1 or #2 insect pins.

The postabdomen of some male *Dictya* specimens was teased apart while fresh to avoid the necessity of clearing them later. Most specimens, however, were found to be resistant to teasing apart without tearing and possible damage to the structures; we simply allowed these to air dry at room temperature for a few days or weeks prior to clearing.

To positively identify most specimens, the abdomen had to be carefully removed by use of fine forceps and was then macerated. We placed the abdomen in a hot sodium hydroxide (NaOH) solution for seven minutes and then removed and immersed it for several minutes in a 50-ml (1.7-oz) beaker containing two parts distilled water and one-part white vinegar. For examination we placed the abdomen in glycerin in a small clear glass dish. After examination we placed each abdomen in a 4- or 6-mm (0.16- or 0.24-in) polyethylene microvial into which we had injected a small amount of glycerin by use of a syringe, then capped it with a black neoprene stopper. We then pinned the vial through the stopper on the same pin as the specimen from which we had removed the abdomen.

The identity of nearly all material examined in this survey were confirmed by use of keys and descriptions provided in Murphy et al. (2018). Female *D. stricta* determinations were confirmed by William L. Murphy (as noted in the text).

Geographic coordinates of collecting sites were obtained by use of Google Earth.

The photographs were taken by use of a VIEW 4K 8mp digital camera mounted to a Leica S Apo stereoscope with a 0.5x video tube. Minimal postprocessing was done using GIMP 2.10.24.

Morphological terminology follows Cumming and Wood (2017).

All specimens collected during this study are currently deposited in the authors' personal collection and will eventually be deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC.

## DESCRIPTIONS OF SELECTED STUDY SITES

To avoid repetitiveness, we describe below only some sites, chosen for their relatively large, diverse sciomyzid and other dipteran fauna and for the large number of times we sampled them.

## Stormwater Management Ponds and Basins

(In order from north to south)

Stormwater management ponds and structures in Howard County are largely owned and maintained by private companies. Some, however, are owned and maintained by the county. The ownership status of each of the structures is not identified in this paper.

### **Ellicott City: Extended Detention Structure Dry, Facility No. 1073** (39°16'50.67"N, 76°49'12.35"W)

“Dry detention ponds (a.k.a. dry ponds, extended detention basins, detention ponds, extended detention ponds) are basins whose outlets have been designed to detain stormwater runoff for some minimum time (e.g., 24 hours) to allow particles and associated pollutants to settle. Unlike wet ponds, these facilities do not have a large permanent pool of water. However, they are often designed with small pools at the inlet and outlet of the basin. They can also be used to provide flood control by including additional flood detention storage” (Environmental Protection Agency 2021).

Until 2019 this stormwater management structure, situated down a steep hill from a huge parking lot at a Target® department store location, consisted of an inlet surrounded by large stones at one end and an outlet protected by rip-rap stones at the other end. Running through the middle of the structure was a slow, shallow stream surrounded by a mudflat dotted with tufts of grasses 15–25 cm (6–10 in) tall in addition to sparse single-stemmed rushes. These grass tufts were mostly on the wet mudflat. Virtually no vegetation grew in the flowing stream.

This site recently was redesigned with only a small stream in the middle, surrounded by both dry soil areas and short, mowed grass on the inclines above the stream. No native plants are allowed to grow, and there is no longer a mudflat at the bottom. We have observed that, increasingly, other stormwater management sites also are being redesigned causing them to become rather sterile, unwelcome habitats for local flora and fauna.

### **Ellicott City: Stormwater basin on Centennial Lane** (39°15'44.15"N, 76°51'47.43"W)

We discovered this stormwater management site in the spring of 2020. It measures approximately 60 m (197 ft) by 75 m (246 ft) and consists of a small stream running from west to east, ending in a berm and drainage pipe on the eastern end. The area surrounding the stream can be wet and muddy or dry, depending upon the amount of recent rainfall. The area bordering the stream consists largely of tall, thick grass, while the perimeter of the site supports a narrow, shady, wooded area.

### **Columbia: County stormwater management pond (SMP) F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964** (39°12'40.54"N, 76°56'00.82"W)

Technically designated as a Wet Extended Detention Structure, this stormwater management pond is somewhat square and is dammed at the south end by an embankment that covers an outlet structure that provides drainage for the pond. The site

is comprised of two small forebays, one each on the north and west sides, separated from the main pond by a berm and a rocky area between the large main pond and the forebays. Below the rocky area between the main pond and the north forebay is a wet, boggy, grassy area often with long, sunken tire tracks that hold standing water or which at least are wet.

**Columbia: Stormwater basin at end of Bird Song Pass, F-86-111, Cedar Woods, Parcels 36 & 37, Pond Facility #116** (39°12'32.11"N, 76°53'20.17"W)

This is a very small site, approximately 15 m (49 ft) by 20 m (66 ft). In 2014/2015 it consisted of a pond often covered with duckweed, *Spirodela* Schleid. (Lemnaceae). In later years this site became a wet, grassy, muddy spot, often with several large puddles.

**Columbia: Stormwater basin off Great Star Drive** (39°11'59.73"N, 76°55'27.76"W)

This is a small (~57 m [~187 ft] long by ~25 m [~82 ft] wide) marshy area surrounding a shallow pond overgrown with emergent vegetation, including sedges; rushes, *Juncus* L. spp. (Juncaceae); and other semiaquatic species. The site has a very small creek that runs under a bridge for a bike path at the southwestern edge of the marsh. This site varies in wetness depending on the amount of rainfall in any given period.

**Columbia: Dry stormwater basin, Harriett Tubman Lane at Beth Shalom Congregation** (39°11'05.25"N, 76°52'48.28"W)

We discovered this site in December 2015 during a series of days when the temperature reached 16–21 °C (60–70 °F). It consists of a dry basin completely covered with grasses, sedges, and *Juncus*. It is small, measuring approximately 52 m (171 ft) long by 16 m (52 ft) wide.

In 2016 we decided to return to this site on a regular basis to ascertain if the mix of *Dictya* species changed over time. We began collecting at this site on 28 February.

**Columbia: Kings Contrivance Loop, Stormwater basin “Busy Grass Pond”** (39°09'41.46"N, 76°52'08.00"W)

We first discovered and sampled this site in May 2019. This is a small (55 m [180 ft] by 58 m [190 ft]), somewhat square stormwater management pond set within a wooded area with a bike path over the embankment and along two sides of the pond. When we found this site, it had been recently flooded, as evidenced by the mud-covered vegetation around the margin of the pond.

### Man-made Lakes

**Columbia: Wilde Lake dam area** (39°13'24.72"N, 76°51'32.93"W)

Wilde Lake is a man-made drainage reservoir near Columbia Town Center. It is surrounded by some of the earliest housing built in the town. Its perimeter is rather well

tended, with little natural shoreline. Wilde Lake is 63 m (207 ft) wide at its west end and approximately 196 m (643 ft) wide at its widest point. It is dammed by a 9-m (30-ft) tall, approximately 61-m (200-ft) long concrete dam that allows water to flow over the top rather than having a drainage structure at its base. The overflow feeds onto a muddy, rocky area below the structure, with short grasses growing between the rocks.

**Columbia: Lake Kittamaqundi** (39°13'03.41"N, 76°51'13.08"W)

Lake Kittamaqundi is another man-made drainage reservoir in Columbia. It is located across a busy road from a major shopping mall. The lake is very popular, and many events are held there, including the Fourth of July fireworks display. It is linear in shape, approximately 166 m (545 ft) long by 221 m (725 ft) wide at its widest point. Much of the shoreline is well manicured and significantly disturbed by human activities. However, it is possible to find productive collecting areas along some of the shoreline, particularly the north and south ends, which are undisturbed because they are difficult to get to through thick vegetation and uneven surfaces.

**Columbia: Lake Elkhorn, east end** (39°11'06.79"N, 76°50'05.72"W [lake edge]);  
39°11'04.80"N, 76°49'57.28"W [feeder stream east of main lake])

Lake Elkhorn is one of the larger and more popular man-made lakes in Columbia. It is about 1,000 m (0.6 mi) long by 178 m (584 ft) wide near its dam (its widest point). It narrows to approximately 30 m (98 ft) at its extreme northeastern edge, where we did most of our collecting.

### County Parks

**Ellicott City: Font Hill Wetlands Park** (39°16'20.23"N, 76°51'39.35"W)

This 10.5-ha (26-ac) park consists of three interconnected ponds with a boardwalk meandering through. A branch of the Little Patuxent River runs through the park. We focused our collecting efforts on a small portion of the stream that is off the pathway and thus is undisturbed by park visitors. The stream is bordered by several species of grasses and trees.

**Savage: Savage Park, marsh adjacent to Little Patuxent River** (39°08'43.69"N,  
76°50'02.35"W)

We first sampled this site in June 2016. The main road through the park ends at four ballparks and the entrance to an asphalt walkway that leads down to the Little Patuxent River. A dirt path leads from the asphalt down to a second level, where another pathway runs parallel to the river, which is a few feet lower. This level area can be quite wet and muddy but varies depending upon recent rainfall.

### Residential and Other Lawn Sites

**Marriottsville: Alpha Ridge Landfill entrance** (39°18'25.21"N, 76°54'01.42"W)

This is a grassy recreation area measuring 95 m (312 ft) long by 80 m (262 ft) wide, located at the entrance to the Alpha Ridge Landfill that serves Howard County.

### **Bike Paths**

**Columbia: Bike path off Watch Chain Way** (39°12'19.71"N, 76°53'35.95"W)

**Columbia: Bike Path off Lakewater Lane** (39°12'08.55"N, 76°53'48.42"W)

### **Stream/Marsh Area**

**Ellicott City: Stream/marsh off Coventry Court Drive** (39°16'27"N, 76°52'22"W)

We discovered this area in 2021. It is a stream that is a branch of the stretch of the Little Patuxent River that meanders through the part of the county near U.S. Route 40. The stream has sections that are fast flowing as well as spots that are very calm. The area has at least three different habitats: marshy areas near the stream; a small, stagnant pond; and the stream itself. Thick grasses occupy most of the site, including the sides of the stream.

## **RESULTS**

The sciomyzid species we found in this eight-year survey are listed in Table 1 in phylogenetic order. Collection data for each taxon are organized in phylogenetic order, then by collecting sites, by the type of site, and then in north to south order within each type when there is more than one site. Phylogenetic, biological and other pertinent information is presented for most taxa.

### **Family SCIOMYZIDAE**

#### **Subfamily SCIOMYZINAE**

#### **Tribe SCIOMYZINI**

#### **Genus *Atrichomelina* Cresson**

*Atrichomelina pubera* (Loew)  
*Sciomyza pubera* Loew, 1862: 106

*Atrichomelina* is a monotypic genus that contains only *A. pubera*. These flies appear dark gray with slightly clouded crossveins and distinct white foretarsi. *Atrichomelina pubera* is widely distributed from southern Canada through the United States and into Mexico (Foote and Keiper 2004). The larval food of *A. pubera* is freshwater and terrestrial snails, both alive and putrefying. It has been recorded on large, dead clams as well (Murphy et al. 2018). *Atrichomelina pubera* is multivoltine and “overwinters as a pupa in the shell of prey snail or away from the shell” (Foote and Keiper 2004).



**Table 1. Sciomyzid species found in Howard County, Maryland, from May 2014 through March 2022.** All specimens were collected by G. A. Foster and A. M. Foster.

Family	Subfamily	Tribe	Species
Sciomyzidae			
	Sciomyzinae		
		Sciomyzini	
			<i>Atrichomelina pubera</i> (Loew, 1862)
			<i>Ditaeniella parallela</i> (Walker, 1853)
			<i>Pherbellia nana nana</i> (Fallén, 1820)
			<i>Pherbellia seticoxa</i> Steyskal, 1961
		Tetanocerini	
			<i>Dictya atlantica</i> Steyskal, 1954
			<i>Dictya brimleyi</i> Steyskal, 1954
			<i>Dictya expansa</i> Steyskal, 1938
			<i>Dictya heyjimi</i> Murphy, 2022
			<i>Dictya pictipes</i> (Loew, 1859)
			<i>Dictya stricta</i> Steyskal, 1938
			<i>Dictya texensis</i> Curran, 1932
			<i>Dictya</i> undescribed species number 1
			<i>Euthycera flavescens</i> (Loew, 1847)
			<i>Limnia boscii</i> (Robineau-Desvoidy, 1830)
			<i>Limnia conica</i> Steyskal, 1978
			<i>Limnia ottawensis</i> Melander, 1920
			<i>Limnia septentrionalis</i> Melander, 1920
			<i>Sepedon armipes</i> Loew, 1859
			<i>Sepedon floridensis</i> Steyskal, 1951
			<i>Sepedon fuscipennis</i> Loew, 1859
			<i>Sepedon neili</i> Steyskal, 1951
			<i>Sepedon tenuicornis</i> Cresson, 1920
			<i>Tetanocera rotundicornis</i> Loew, 1861
			<i>Tetanocera vicina</i> Macquart, 1843
			<i>Trypetoptera canadensis</i> (Macquart, 1843)

In our study, *A. pubera* seemed to be most active during the cooler periods of early spring and summer and then again from October through December. We found it only in small numbers at any site. The size range of specimens we collected was somewhat striking in that they ranged from 3.9 mm (0.15 in) to 6.6 mm (0.26 in).

#### **Stormwater management ponds and basins**

**Ellicott City: SMP Extended Detention Structure Dry:** (39°16'50.67"N,

76°49'12.35"W), 19, 23 Sep, 5, 8, 9, 16, 21 Oct, 27 Nov, 11 Dec 2015, mudflat with short tufts of lawn-type grass (18♂, 24♀)

**Columbia: SMP: F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 14 Sep 2014, grassy drainage area between large and small ponds (1♂)

**Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 17 Apr 2016 (2♂, 3♀)

**Columbia: SMP adjacent to Righttime Medical Center:** (39°11'51.95"N, 76°53'04.49"W), 9 Mar 2016, sweeping dead *Juncus* stumps in damp pond and pond margin (1♂, 1♀)

**Columbia: dry SMP basin, Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 13 Dec 2015, 8, 9, 10, 23, 30 Mar, 1, 13, 14 Apr, 20, 31 May 2016, 29 Apr 2017, 19, 30 Apr, 18 May 2019, 12 Apr 2020 (21♂, 22♀)

**Columbia: Kings Contrivance Village, SMP:** (39°09'41.46"N, 76°52'08.00"W), 27, 31 Jul 2019 (2♂, 2♀)

**Fulton: Maple Lawn SMP:** (39°09'23.23"N, 76°54'14.55"W), sweeping pond edges and grasses in adjoining shady forest, 4 Sep 2016 (1♂)

### Lakes

**Columbia: east end of Lake Elkhorn:** (39°11'04.80"N, 76°49'57.28"W), 24 Nov 2014, wet, marshy edge of small pond, short grasses mostly, 22–23 °C (71–73 °F) (1♀)

## Genus *Ditaeniella* Sack

### *Ditaeniella parallela* (Walker)

*Sciomyza parallela* Walker, 1853: 401

*Ditaeniella* seems to be rare in Howard County. In the more-than-eight-year span of this survey, we collected only eight specimens. The only site where we consistently found *D. parallela* was at a stormwater management site in Ellicott City that features a mudflat with short, emergent grasses and *Juncus*. Larval food of *D. parallela* includes freshwater and terrestrial pulmonate snails (Murphy et al. 2018). Overwintering is in the form of pupae, prepupae, or pharate adults (Murphy et al. 2018). Adults can be as small as 3.5 mm (0.14 in), so they are easily mistaken in the sweep net for any one of dozens of species of small acalyprate flies. We routinely aspirated all of the small flies in our net, if possible, so as to not overlook *Ditaeniella* and *Pherbellia* species.

### Stormwater management ponds and basins

**Ellicott City: SMP Extended Detention Structure Dry:** (39°16'50.67"N, 76°49'12.35"W), 27 Sep, 8, 9 Oct, 3, 15 Nov 2015, 14 Jun 2016, mudflat with short tufts of lawn-type grass (3♂, 4♀)

**Columbia: SMP adjacent to Righttime Medical Center:** (39°11'51.95"N, 76°53'04.49"W), 9 Mar 2016, sweeping dead *Juncus* stumps in damp pond (1♀)

## Genus *Pherbellia* Robineau-Desvoidy

Of the six species of *Pherbellia* known from Delmarva and seven species known from nearby states (Murphy et al. 2018), we found only two: *P. nana nana* (Fallén) and *P. seticoxa* Steyskal. Other than one male from Savage Park, we found *P. n. nana* only in stormwater management ponds and basins. Its flight period in Howard County seems to

be from April to December. We collected one female *P. seticoxa* in early spring 2021. *Pherbellia* specimens can be as small as 2.5 mm (0.10 in) and can be mistaken easily for many other small Diptera when in the net.

***Pherbellia nana nana* (Fallén)**  
*Sciomyza nana* Fallén, 1820: 15

*Pherbellia nana nana* is a very small, brownish-gray fly with distinctively patterned wings. It has the most extensive range of any species of *Pherbellia* in North America (Bratt et al. 1969). The larvae are not host specific, feeding instead on a wide range of pulmonate snails, including terrestrial snails. Overwintering is in the form of pupae, prepupae, and pharate adults (Murphy et al. 2018).

**Stormwater management ponds and basins**

**Ellicott City: SMP Extended Detention Structure Dry:** (39°16'50.67"N, 76°49'12.35"W), 19, 23, 27 Sep, 5, 8, 21, 29 Oct, 3, 6, 15, 27 Nov, 11 Dec 2015, mudflat with short tufts of lawn-type grass (30♂, 13♀)

**Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 24 Aug, 14 Sep 2014, 24, 26 Aug, 15, 16, 17, 19, 27 Sep 2015, grassy drainage area between large and small ponds (19♂, 9♀)

**Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 12, 17 Apr 2015, 13 Apr 2018, marshy drainage outlet behind main dam (3♂)

**Columbia: Stormwater management basin at end of Bird Song Pass:** (39°12'32.11"N, 76°53'20.17"W), 20 Oct, 28 Nov 2015, 2 May 2020, 5 Apr 2021 (5♂, 1♀)

**Columbia: SMP adjacent to Righttime Medical Center:** (39°11'51.95"N, 76°53'04.49"W), 9 Mar 2016, sweeping dead *Juncus* stumps in damp pond and pond margin (1♂, 1♀)

**Columbia: dry SMP basin, Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 28 Feb, 7, 8 Mar 2016, 12 May 2018 (specimen not retained), 30 Apr 2019, 6 Apr 2021 (9♂, 8♀)

**County parks**

**Savage: Savage Park, marsh adjacent to Little Patuxent River:** (39°08'43.69"N, 76°50'02.35"W), 29 Apr 2017 (1♂)

***Pherbellia seticoxa* Steyskal**  
*Pherbellia* (*Chaetocera*) *seticoxa* Steyskal, 1961: 414

*Pherbellia seticoxa* is a much larger species than *P. n. nana*. The one specimen we collected measured 6.9 mm (0.27 in) long. Murphy et al. (2018) noted only one previous Maryland record, a specimen collected in Laurel, Anne Arundel County, in May. The site at which we collected *P. n. nana* is approximately eight miles (13 km) from the site at which the first specimen was collected. *Pherbellia seticoxa* appears to have a short flight period (Murphy, pers. comm.).

**County parks**

**Ellicott City: Font Hill Wetlands Park:** (39°16'20.23"N, 76°51'39.35"W), 2 May 2021 (1♀)

**Tribe TETANOCERINI****Genus *Dictya* Meigen**

Species of the genus *Dictya* are the most common sciomyzids found in Howard County in numbers of individuals collected by sweep net. They are the most likely species to be found anytime one is collecting in wet, grassy areas. *Dictya* is the largest genus of Sciomyzidae in the Delmarva region, with 17 described species and three other species from nearby states (Murphy et al. 2018, Murphy 2022). In our eight-year Howard County survey, we collected 1,076 specimens of *Dictya*. We found seven described species in addition to one undescribed species. On the basis of the most current records of *Dictya* from Delmarva (Murphy et al. 2018), the only additional species of *Dictya* that we might hope to find in Howard County is *D. laurentiana* Steyskal, 1954, of which one specimen (male) has been recorded from Prince Georges County. The most common species of *Dictya* in Howard County is *D. texensis*. The second most common species is *D. brimleyi*.

Adult *Dictya* are easily recognized by their most obvious character: a flat, white face with a black spot in the center (Figure 1). All species are grayish-brown with dark spots on the body and dark bands on the femora. The wings are mostly brownish gray with light spots, giving them a mottled appearance. All species except one (*D. ptyarion* Steyskal, 1954, found only in the deep South) are identical in external morphology, making it impossible to identify them to species without dissecting the abdomen and examining the terminalia. Several references have excellent illustrations of both male and female terminalia, particularly Steyskal (1954), Orth (1991), and Murphy et al. (2018). Murphy et al. (2018) presented detailed interbreeding studies performed by Karl Valley (unpublished) that demonstrated that despite the mostly humanly undetectable differences in adult morphology, multiple mating attempts (successful and unsuccessful) were made when one species of male was introduced to a different species of female. Successful mating between different species only occasionally resulted in eggs being laid by the female, all of which were inviable.

Valley and Berg (1977) provided a detailed study of the biology of 21 species of *Dictya*. They stated that, "Species of *Dictya* are found in a wide variety of aquatic and semiaquatic habitats that support populations of the snails they feed on. Adults and immature stages occur especially in marshes (both freshwater and salt); wet woodlands; bogs; roadside ditches; wet meadows; and low, seepage areas." In our survey we commonly found *Dictya* in damp or wet grassy areas of all kinds, including around large puddles, along paths, and in our residential yard left soaking wet after several days of rain.

*Dictya* larvae feed mostly on aquatic and terrestrial pulmonate and operculate snails. They also have been found to feed on slugs and on egg masses of some species of snails. *Dictya* species overwinter in the pupal stage, with the pupae tending to be found floating at the surface of the water (Valley and Berg (1977)).

***Dictya atlantica* Steyskal**

*Dictya atlantica* Steyskal, 1954: 524

We found this species to be active if there were several successive warm days in December, and also from February to May.

**Stormwater management ponds and basins**

**Columbia: SMP: North Centennial Park:** (39°14'55.51"N, 76°51'08.34"W), 28 Feb, 10, 16 Mar 2016, 25 Feb 2017, sweeping dried cattail (*Typha* L. sp. [Typhaceae]) of damp mud and puddled water (14♂, 1♀)

**Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 29 Apr, 13 May 2020 (2♂)

**Columbia: dry SMP basin: Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 13, 25 Dec 2015, 28 Feb, 1, 7, 8 Mar 2016 (11♂, 2♀)

***Dictya brimleyi* Steyskal**

*Dictya brimleyi* Steyskal, 1954: 526

*Dictya brimleyi* is second only to *D. texensis* in number of specimens collected during our survey. We collected specimens in every month except January and February.

**Stormwater management ponds and basins**

**Ellicott City: SMP Extended Detention Structure Dry:** (39°16'50.67"N, 76°49'12.35"W), 19, 23 Sep, 5, 8, 16 Oct, 15, 27 Nov 2015, mudflat with short tufts of lawn-type grass (6♂, 5♀)

**Ellicott City: Stormwater basin on Centennial Lane:** (39°15'44.15"N, 76°51'47.43"W), 23, 30 May, 3, 21, 24 Jun 2020 (no specimens retained) (10♂)

**Clarksville: small stormwater basin, River Hill Garden Center:** (39°12'59.98"N, 76°56'02.40"W), 17 Jun 2016 (2♂)

**Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 7, 8, 21, 22 Jun, 27 Jul, 17 Aug, 25 Oct 2014, 7 May, 6 Jun, 22 Jul, 16, 27 Sep 2015, 4 Jun, 5 Aug 2016 (specimen not retained), 29 Apr 2017, grassy drainage area between large and small ponds (30♂, 15♀)

**Columbia: SMP: F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 12 Aug 2015, 25 May, 4 Jun 2016, 18 May 2019, marshy drainage outlet behind main dam (2♂, 2♀)

**Columbia: SMP: F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'37.71"N, 76°56'00.49"W), 26 May 2014, pond edge (1♂)

**Columbia: residential yard:** (39°12'32.97"N, 76°53'26.75"W), 1 May 2020 (1♂) (yard was very wet, with large puddles)

**Columbia: Stormwater management basin at end of Bird Song Pass:**

(39°12'32.11"N, 76°53'20.17"W), 2 May, 6 Jun 2020 (6 Jun specimen not retained)  
(5♂, 1♀)

**Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 7 May 2015,  
17 Apr 2016, 6, 18 May, 26 Jul 2019, 13 May 2020 (specimen not retained) (23♂, 3♀)

**Columbia: SMP: adjacent to Righttime Medical Center:** (39°11'51.95"N,  
76°53'04.49"W), 25 Apr 2016, emergent sedges in pond and periphery (4♂)

**Columbia: SMP: Homespun Drive and Pigeonwing Place:** (39°11'22.62"N,  
76°49'58.20"W), 24 Mar, 22 Apr 2016, sweeping dead emergent vegetation on  
perimeter of pond (11♂)

**Columbia: dry SMP basin, Harriett Tubman Lane at Beth Shalom Congregation:**  
(39°11'05.25"N, 76°52'48.28"W), 12, 13, 25 Dec 2015, 23 Mar, 1, 13, 14 Apr, 20, 24,  
26, 31 May, 10, 16, 17 Jun 2016, 29 Apr 2017, 2, 6 Jun 2018, 19, 26, 30 Apr, 18, 26  
May, 15, 19 Jul 2019, 9, 25 Apr 2020 (132♂, 34♀)

**Columbia: SMP, Kings Contrivance Village:** (39°09'41.46"N, 76°52'08.00"W),  
stormwater management pond perimeter, 26 May 2019 (4♂)

**Lakes**

**Columbia: east end of Lake Elkhorn:** (39°11'04.80"N, 76°49'57.28"W), wet, marshy  
edge of small pond, short grasses mostly, 26 °C (78 °F) (1♂); 25 Oct 2014, 23 May  
2015, wet pond edge, 21–22 °C (69–71 °F) (1♂, 2♀)

**Columbia: north end of Lake Kittamaquidi:** (39°13'10.46"N, 76°51'07.89"W), 8 Jun  
2020 (1♂)

**County parks**

**Ellicott City: Font Hill Wetlands Park:** (39°16'20.23"N, 76°51'39.35"W), 23, 30  
May, 1 Jun 2020 (specimens not retained) (4♂)

**Ellicott City: Meadowbrook Park:** (39°14'47.24"N, 76°49'21.24"W), 12, 21 Jun 2020  
(specimens not retained), (3♂)

**Savage: Savage Park, marsh adjacent to Little Patuxent River:** (39°08'43.69"N,  
76°50'02.35"W), 4 Jun 2016, 29 Apr 2017, 7 May 2019 (21♂, 3♀)

***Dictya expansa* Steyskal**

*Dictya expansa* Steyskal, 1938: 9

We observed that *D. expansa* seems to be found in highest numbers during the early part of the year, with occasional specimens occurring during November and December on successive warm days. Although not completely absent during midsummer, it was less common then than at other times.

**Stormwater management ponds and basins**

**Ellicott City: SMP Extended Detention Structure Dry:** (39°16'50.67"N,  
76°49'12.35"W), 8, 21 Oct, 3, 27 Nov 2015, mudflat with short tufts of lawn-type  
grass (4♂)

**Columbia: SMP, North Centennial Park:** (39°14'55.51"N, 76°51'08.34"W), 16 Mar  
2016, sweeping dried *Typha* sp. of damp pond (1♂, 1♀)

- Clarksville: small stormwater basin, River Hill Garden Center:** (39°12'59.98"N, 76°56'02.40"W), 17 Jun 2016 (1♂)
- Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 7, 8 Jun, 25 Oct 2014, 17 Mar, 11, 17 Apr, 16, 17 Sep 2015, 4 Jun, 5 Aug (specimens not retained) 2016, grassy drainage area between large and small ponds (4♂, 6♀)
- Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 17 Mar 2015, 13 Apr 2018, marshy drainage outlet behind main dam (3♂)
- Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 17 Apr 2016, sweeping dead *Typha* sp. in middle of upper fore-bay (2♂)
- Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'37.71"N, 76°56'00.49"W), 26 May 2014, pond edge (1♂)
- Columbia: Stormwater management basin at end of Bird Song Pass:** (39°12'32.11"N, 76°53'20.17"W), 22 Apr 2020 (2♂, 1♀)
- Columbia: SMP, Cedar Lane and Holland Court:** (39°12'21.57"N, 76°53'11.58"W), 24 Mar 2016, sweeping dead emergent vegetation on perimeter of mostly dry basin (1♀)
- Columbia: SMP at end of Prophecy Place:** (39°12'10.04"N, 76°49'35.31"W), 16 Aug 2014, storm management pond drainage ditch (1♂)
- Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 28 Apr 2015, 17 Apr 2016, 5, 8 May 2018, 29 Apr, 4 May 2020 (6♂, 2♀)
- Columbia: SMP, adjacent to Righttime Medical Center:** (39°11'51.95"N, 76°53'04.49"W), 25 Apr 2016, emergent sedges in pond and periphery (2♂, 4♀)
- Columbia: SMP, Homespun Drive and Pigeonwing Place:** (39°11'22.62"N, 76°49'58.20"W), 24 Mar, 22 Apr 2016, sweeping dead emergent vegetation on perimeter of pond (7♂, 1♀)
- Columbia: dry SMP basin, Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 12, 13, 25 Dec 2015, 23, 30 Mar, 1, 13, 14 Apr, 3, 20, 24, 26, 31 May, 16, 22 Jun 2016, 29 Apr 2017, 2 Jun 2018, 30 Apr 2019, 6, 25 Apr 2020 (61♂, 13♀)

### Lakes

- Columbia: Wilde Lake Dam:** (39°13'24.72"N, 76°51'32.93"W), 4 May 2014, rocky overflow area of the lake (1♂)
- Columbia: south end Lake Kittamaqundi:** (39°12'40.63"N, 76°51'16.53"W), 23 May 2018 (1♀)
- Columbia: east end of Lake Elkhorn:** (39°11'04.80"N, 76°49'57.28"W), 25 Oct 2014, wet pond edge, 21–22 °C (69–71 °F) (2♂, 1♀)

### Reservoirs

- Dayton: Triadelphia Reservoir, Pig Tail Recreation Area:** (39°13'08.37"N, 77°00'23.20"W), 19 Jun 2016 (1♀)

**Marsh/streams**

**Ellicott City: stream/marsh off Coventry Court Drive:** (39°16'27"N, 76°52'22"W), perimeter of small pond, 2 May 2021 (1♂)

**County parks**

**Glenwood: Warfields Pond Park:** (39°16'27.99"N, 77°01'11.38"W), 10 May 2015 (1♂, 1♀)

**Savage: Savage Park, marsh adjacent to Little Patuxent River:** (39°08'43.69"N, 76°50'02.35"W), 4 Jun 2016 (1♂)

***Dictya heyjimi* Murphy**

*Dictya heyjimi* Murphy, 2022: 635

We collected the first few specimens (males) of this recently described species at the tiny pond (now a muddy, grassy basin) at the end of Bird Song Pass. At that time, it was a pond covered with duckweed. We sent two specimens to sciomyzid specialist William L. Murphy (Fishers, Indiana). He informed us that we had found specimens of a new species that he was describing. Since then, we found a total of 14 specimens from various sites. While it is relatively rare, we seemed to find one or two of them on a regular basis.

This species is close to *D. orthi* Mathis, Knutson, and Murphy, 2009. It seems that a group of taxa including *D. orthi*, *D. heyjimi*, *D.* undescribed species number 1 (treated below), and several recently described species by W. L. Murphy (2022) are part of a subgroup of *Dictya* that share a “sharply pointed, slender preterminal lobe; the expanded area on the shaft of the ventral process of the hypandrium (VPH) at about midpoint; and the rather long, slender posterior lobe on the ventral process of the epandrium (VPE).” (W. L. Murphy, pers. comm.)

**Stormwater management ponds and basins**

**Ellicott City: Stormwater basin on Centennial Lane:** (39°15'44.15"N, 76°51'47.43"W), 3 Jun 2020, 15 May 2021 (2♂)

**Columbia: stormwater management basin at end of Bird Song Pass:** (39°12'32.11"N, 76°53'20.17"W), 17 May 2015, 15 Oct 2020 (2♂)

**Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 10 May 2019, 29 Apr, 13 May 2020 (3♂)

**Columbia: dry SMP basin: Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 20 May 2016, 29 Apr 2017 (2♂)

**County parks**

**Savage: Savage Park, marsh adjacent to Little Patuxent River:** (39°08'43.69"N, 76°50'02.35"W), 4 Jun 2016, 29 Apr 2017, 7 May 2019 (4♂)

**Natural areas**

**Columbia: bike path off Little Sparrow Place:** (39°12'28.14"N, 76°53'20.82"W), 8 Aug 2016, sweeping grasses bordering stream (1♂)



***Dictya pictipes* (Loew)***Tetanocera pictipes* (Loew), 1859: 292

In addition to the unique shape of the ventral process of the hypandrium, the male genitalia of this species are recognized easily by the strong, posteriorly directed setae on the posterodorsal apex of the surstylus. Like *D. expansa*, in Howard County, *D. pictipes* shows up in small numbers all year except for January. One or two specimens often are present in the mix of *Dictya* at any site.

**Stormwater management ponds and basins**

**Ellicott City: SMP Extended Detention Structure Dry:** (39°16'50.67"N, 76°49'12.35"W), 5, 8, 21 Oct, 3, 6, 15, 27 Nov 2015, 28 Feb, 14 Jun 2016, mudflat with short tufts of lawn-type grass (16♂, 9♀)

**Ellicott City: stormwater basin on Centennial Lane:** (39°15'44.15"N, 76°51'47.43"W), 24 Jun, 25, 29 Aug, 28 Sep, 14–15 Oct 2020 (specimens not retained) (5♂)

**Clarksville: small stormwater basin, River Hill Garden Center:** (39°12'59.98"N, 76°56'02.40"W), 17 Jun 2016 (1♀)

**Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 8 Jun, 22 Jul, 6, 24 Aug 2014, 17 Mar, 11 Apr 2015, grassy drainage area between large and small ponds (3♂, 3♀)

**Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 25 May 2016, marshy drainage outlet behind main dam (1♂)

**Columbia: stormwater management basin at end of Bird Song Pass:** (39°12'32.11"N, 76°53'20.17"W), 20 May, 16, 28 Nov 2015, 15 May 2018, 22 Apr, 6 Jun, 15 Oct 2020 (6 Jun, 15 Oct 2020 specimens not retained), 21 Apr 2021 (20♂, 1♀)

**Columbia: SMP, Cedar Lane and Holland Court:** (39°12'21.57"N, 76°53'11.58"W), 24 Mar 2016, sweeping dead emergent vegetation on perimeter of mostly dry basin (3♂)

**Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 13 Dec 2015, 5 May 2018 (2♂)

**Columbia: SMP, adjacent to Righttime Medical Center:** (39°11'51.95"N, 76°53'04.49"W), 9, 16 Mar, 25 Apr 2016, sweeping dead *Juncus* in damp pond (12♂, 2♀)

**Columbia: dry SMP basin: Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 12, 13, 27 Dec 2015, 28 Feb (one of these shows a variation in the VPH of the male), 1, 8, 9, 10, 23, 30 Mar, 1 Apr, 24 May, 16 Jun (this male shows a variation of the VPH) 2016, 12 May 2018, 19, 30 Apr, 18 May 2019, 6, 12 Apr 2020 (21♂, 9♀)

**Lakes**

**Columbia: east end of Lake Elkhorn:** (39°11'04.80"N, 76°49'57.28"W), 25 Oct 2014, wet pond edge, 21–22 °C (69–71 °F) (3♂)

County parks

**Ellicott City: Font Hill Wetlands Park** (39°16'20.23"N, 78°51' 39.35"W), 9 Aug 2020 (specimens not retained) (1♂)

**Columbia: SMP: North Centennial Park:** (39°14'55.51"N, 76°51'08.34"W), 16 Mar 2016, 25 Feb 2017, sweeping dried *Typha* sp. of damp pond (6♂, 3♀)

**Savage: Savage Park, marsh adjacent to Little Patuxent River:** (39°08'43.69"N, 76°50'02.35"W), 7 May 2019, 13 May 2020 (3♂)

*Dictya stricta* Steyskal

*Dictya stricta* Steyskal, 1938: 10

NEW MARYLAND RECORD

*Dictya stricta* is apparently rare in Howard County; we collected only four specimens, all females.

Stormwater management ponds and basins

**Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 1 Dec 2014, 21 °C (69 °F), swept from dried *Typha* sp. leaves on edge of west forebay (1♀) [determination confirmed by W. L. Murphy]

**Columbia: stormwater management basin at end of Bird Song Pass:** (39°12'32.11"N, 76°53'20.17"W), 9 May 2015 (1♀) [determination confirmed by W. L. Murphy]

**Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 7 May 2015 (1♀)

Lakes

**Columbia: east end of Lake Elkhorn:** (39°11'06.79"N, 76°50'05.72"W), 29 Apr 2015, pond edge (1♀)

*Dictya texensis* Curran

(Figures 1 and 2)

*Dictya texensis* Curran, 1932: 6

*Dictya texensis* was the most common sciomyzid species collected in Howard County. It accounted for more than 50% of all *Dictya* specimens that we captured and constituted more than 31% of all sciomyzids we collected in Howard County. *Dictya texensis* can be expected to occur at all sites, at all times of year when sciomyzids are active.

Stormwater management ponds and basins

**Ellicott City: SMP, Extended Detention Structure Dry:** (39°16'50.67"N, 76°49'12.35"W), 19, 23, 27 Sep, 5, 8, 9, 16, 21 Oct, 3, 5, 6, 8, 15, 27 Nov, 11 Dec 2015, 28 Feb, 14 Jun (specimen not retained) 2016 (damp drainage area and perimeter of pond), mudflat with short tufts of grass (176♂, 46♀)



**Figure 1.** *Dictya texensis* Curran. Head, showing the flat, white face with a black central spot.



**Figure 2.** *Dictya texensis*. Male, habitus.

- Ellicott City: stormwater basin on Centennial Lane:** (39°15'44.15"N, 76°51'47.43"W), 6, 20, 21, 24, 28 Jun, 29 Jul, 3, 9, 25 Aug, 25, 28 Sep, 14–15 Oct, 7 Nov 2020 (no specimens retained) (53♂, 2♀)
- Clarksville: small stormwater basin, River Hill Garden Center:** (39°12'59.98"N, 76°56'02.40"W), 17 Jun 2016 (specimens not retained), sweeping emergent and shoreline grasses (4♂, 3♀)
- Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 7, 8, 22 Jun, 27 Jul, 17, 24 Aug, 10, 14, Sep, 25 Oct 2014, 17 Mar, 12, 29 Apr, 6 Jun, 6, 24, 26 Aug, 15, 16, 17, 19 Sep, 6 Oct, 27 Nov 2015, 4 Jun 2016 (specimens not retained) (specimens not retained), grassy drainage area between large and small ponds (58♂, 10♀)
- Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 1 Dec 2014, swept from dried *Typha* sp. leaves on edge of west forebay (4♂, 2♀)
- Columbia: SMP, F-96-089, Village of River Hill, Section 4, Area 2, Facility #1964:** (39°12'40.54"N, 76°56'00.82"W), 12 Apr, 30, 31 May, 6, 7, 16 Jun, 9 Jul, 12, 21 Aug, 5 Nov 2015, 29 Apr 2017, 12 Jul 2018, 18 May 2019, marshy drainage outlet behind main dam (14♂, 5♀)
- Columbia: marshy edge of woodland stream:** (39°12'32.79"N, 76°54'01.59"W): Little Patuxent Parkway at Blue February Way, 29 Jun 2016 (specimen not retained) (2♂, 1♀)
- Columbia: stormwater management basin at end of Bird Song Pass:** (39°12'32.11"N, 76°53'20.17"W), 9, 10, 13 May, 20, 22 Oct, 16 Nov 2015, 20 May 2019, 15 Oct, 9 Nov 2020 (3♂) (15 Oct, 9 Nov 2020 specimens not retained) (3♂)
- Columbia: SMP, Mount Pisgah A.M.E. Church on Cedar Lane:** (39°12'27.20"N, 76°53'11.40"W), 17 Mar 2016, sweeping *Typha* sp. stumps on perimeter of mostly dry basin (1♂, 1♀)
- Columbia: SMP, Cedar Lane and Holland Court:** (39°12'21.57"N, 76°53'11.58"W), 24 Mar 2016, sweeping dead emergent vegetation on perimeter of mostly dry basin (1♂, 1♀)
- Columbia: SMP at end of Prophecy Place:** (39°12'10.04"N, 76°49'35.31"W), 16 Aug 2014, pond edge (1♂, 1♀)
- Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 12, 19 Apr, 13 Dec 2015, 17 Apr 2016, 10 May 2018, 6, 10, 18 May 2019 (15♂, 3♀)
- Columbia: SMP, adjacent to Righttime Medical Center:** (39°11'51.95"N, 76°53'04.49"W), 9 Mar, 25 Apr 2016, emergent sedges in pond and periphery (15♂, 1♀)
- Columbia: SMP, F-83-120, Village of Hickory Ridge, Section 3, Area 1, Pond 2, Facility #109:** (39°11'44.54"N, 76°53'46.64"W), 7 Jun 2014, pond edge (1♂, 1♀)
- Columbia: SMP, Homespun Drive and Pigeonwing Place:** (39°11'22.62"N, 76°49'58.20"W), 24 Mar, 22 Apr 2016, sweeping dead emergent vegetation on perimeter of pond (8♂, 6♀)
- Columbia: dry SMP basin: Harriett Tubman Lane at Beth Shalom Congregation** (39°11'05.25"N, 76°52'48.28"W), 12, 13, 25, 27 Dec 2015, 28 Feb, 1, 16, 17, 23, 30 Mar, 1, 13, 14 Apr, 3, 20, 24, 26, 31 May, 4 (specimens not retained), 10 (specimens not retained), 16 Jun (specimens not retained) 2016, 29 Apr 2017, 19, 30 Apr, 18, 26 May, 15, 18 Jul 2019 (94♂, 14♀)

**Columbia: SMP, Kings Contrivance Village:** (39°09'41.46"N, 76°52'08.00"W), Stormwater management pond perimeter, 26 May, 31 Jul 2019 (6♂)

**Fulton: Maple Lawn SMP:** (39°09'23.23"N, 76°54'14.55"W), 4 Sep 2016, sweeping pond edges and grasses in adjoining shady forest (3♂, 2♀; specimens not retained)

### Lakes

**Columbia: Wilde Lake Dam:** (39°13'24.72"N, 76°51'32.93"W), 4 May 2014, rocky overflow area of the lake (1♂, 2♀)

**Columbia: Lake Kittamaqundi shoreline:** (39°13'03.41"N, 76°51'13.08"W), 17 Aug 2014 (3♂)

**Columbia: east end of Lake Elkhorn:** (39°11'06.79"N, 76°50'05.72"W), 2 Aug 2014, edge of stagnant pond at extreme tip of large lake, 26 °C (78 °F) (1♀)

**Columbia: east end of Lake Elkhorn:** (39°11'04.80"N, 76°49'57.28"W), 25 Oct, 24 Nov 2014, wet pond edge, 21–22 °C (69–71 °F) (2♂, 1♀)

### County parks

**Ellicott City: Font Hill Wetlands Park** (39°16'20.23"N, 76°51'39.35"W), 30 Jul 2020 (specimen not retained) (1♂)

**Columbia: SMP: North Centennial Park:** (39°14'55.51"N, 76°51'08.34"W), 28 Feb, 10, 16 Mar 2016, 25 Feb 2017, sweeping dried *Typha* sp. of damp pond (20♂, 1♀)

**Savage: Savage Park, marsh adjacent to Little Patuxent River:** (39°08'43.69"N, 76°50'02.35"W), 4 Jun 2016, 6 Jun 2018 (7♂)

### *Dictya* undescribed species number 1

We provided detailed photos to W. L. Murphy and based on the configuration of the male terminalia, we conclude that this unknown taxon is a new species belonging to the subgroup that includes *D. orthi* and others. Having only one male specimen, we hope to collect at least a few more specimens before describing and naming it. The ventral process of the hypandrium is straight, with the slightly sinuous basal half twice as wide as the distal half. The distal half of the VPH is straight, parallel sided, with a minute preterminal lobe. The posterior lobe of the ventral margin of the epandrium is slightly wider than long.

The collecting site was a grassy area bordering a small, actively flowing stream in Font Hill Wetlands Park. This site has yielded a diversity of Diptera, including two other *Dictya* species: *D. pictipes* and *D. texensis*.

### County parks

**Ellicott City: Font Hill Wetlands Park:** (39°16'20.23"N, 78°51'39.35"W), 23 May 2020 (1♂)

## Genus *Euthycera* Latreille

### *Euthycera flavescens* (Loew)

(Figure 3)

*Tetanocera flavescens* Loew, 1847

According to Murphy et al. (2018), this genus needs revision. Currently only one species of *Euthycera*—*flavescens*—is known from the Delmarva region. Until recently this taxon was known as *E. arcuata* (Loew, 1859). Adults range from 4.0 mm (0.16 in) to 8.5 mm (0.33 in). They can be common in damp, shady, wooded areas covered with grass or ferns, especially, as we found, along some of the many bike paths in Columbia. The larvae of *E. flavescens* are known to feed exclusively on terrestrial snails. Larvae overwinter in shells of partially eaten snails (Foote and Keiper 2004, Murphy et al. 2018).

This species is quite an attractive fly with a dark brown, mottled body and very dark brown, spotted wings which, in life, are held horizontally and bent down over the abdomen (Figure 3).

### Reservoirs

**Dayton: Triadelphia Reservoir, Pig Tail Recreation Area:** (39°13'08.37"N, 77°00'23.20"W), 20 Jul 2014, 17, 19 Jun 2016, sweeping low grasses under shady canopy, near small stream feeding into reservoir (3♂, 17♀)

### Natural Areas

**Columbia: marshy edge of woodland stream:** (39°12'32.79"N, 76°54'01.59"W), Little Patuxent Parkway at Blue February Way, 29 Jun 2016 (3♀)

**Columbia: bike path off Watch Chain Way:** (39°12'19.71"N, 76°53'35.95"W), 24, 25, 27 Jul, 2 Aug 2016, sweeping grasses bordering asphalt bike path (10♂, 14♀)

**Columbia: bike path off Lakewater Lane:** (39°12'08.55"N, 76°53'48.42"W), 4 Aug 2016, sweeping grasses bordering asphalt bike path (4♂, 3♀)

**Columbia: bike path off end of Harmel Drive:** (39°11'57.60"N, 76°53'46.59"W), 10 Jun, 7 Jul 2018, 28 Jul 2019 (7♂, 3♀)

**Columbia: footpath south of pond at end of Shadow Lane:** (39°11'40.06"N, 76°53'44.34"W), 12 Jun 2018 (2♀)

### County parks

**Savage: Savage Park, marsh adjacent to Little Patuxent River:** (39°08'43.69"N, 76°50'02.35"W), 6 Jun 2018 (1♀)



**Figure 3.** *Euthycera flavescens* (Loew). Habitus, showing the very dark brown, spotted wings which, in life, are held horizontally and bent down over the abdomen.



**Figure 4.** *Limnia boscii* (Robineau-Desvoidy). Habitus.

## Genus *Limnia* Robineau-Desvoidy

In Howard County, species of *Limnia* are often encountered in small numbers along with the more common *Dictya* species. *Limnia* species are identified easily in the field by their light brownish or bluish-yellow coloration, with a darker stripe on the pleura, mottled wings, and white arista. In the Delmarva region, 11 species have been recorded, with one more species recorded in nearby states (Murphy et al. 2018). Species of *Limnia* can be identified positively only by examination of the male terminalia; females of most species cannot be determined reliably. The best references to use for identifying *Limnia* specimens are Steyskal et al. (1978) and Murphy et al. (2018). Of the 11 species recorded in Delmarva, we found four in Howard County.

Of all genera of Sciomyzidae in our area, *Limnia* is the least known biologically. Despite numerous rearing attempts by entomologists, no first-instar *Limnia* larva has been reared to the second instar. Second- and third-instar larvae prey upon a variety of snails, but first-instar larvae starve when offered snails, slugs, or anything else that has been tried. Foote and Keiper (2004) recorded overwintering third-instar larvae of *L. boscii* (Robineau-Desvoidy) attacking “a variety of pulmonate aquatic snails.”

We found *Limnia* at 10 sites in the county. At the stormwater management pond in River Hill next to Columbia Gym, we found specimens behind the dam, between the forebays and the pond, and along the pond edge. The very small stormwater management basin next to Beth Shalom Congregation was a reliable site as well. Much smaller numbers were collected at a marshy area next to the north end of the main lake in downtown Columbia, Lake Kittamaqundi; the marshy area alongside of Little Patuxent River at Savage Park; on a large grassy lawn at the entrance to the county landfill; and one specimen collected at Pig Tail Recreation area next to Triadelphia Reservoir. In 2021, we found the largest number we collected at one time, at the marsh/stream area near Coventry Court Drive. The earliest we found *Limnia* was in May, and the latest was in November. No *Limnia* were collected in March or April.

### *Limnia boscii* (Robineau-Desvoidy)

(Figure 4)

*Pherbina boscii* Robineau-Desvoidy, 1830: 690

Our survey found that *Limnia boscii* is the most common species of *Limnia* in Howard County. If a *Limnia* species is collected by sweep net, there is a 70% chance that it is *L. boscii*.

### Stormwater management ponds and basins

**Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 30–31 May, 7, 11, 16 Jun; 9, 12 Jul; 6, 12, 26 Aug 2015, 20, 25, 26 May, 4 Jun, 19 Jul 2016, 26 May 2019, marshy drainage outlet behind main dam (23♂, 34♀)

**Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 15, 16, 19, 27 Sep, 5 Nov 2015, 4 Jun 2016, grassy drainage area between large and small ponds (14♂, 7♀)



- Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 7 Jun, 14 Sep 2014, sweeping pond edge with cattails (uncertain 2♀)
- Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 23 May 2018, 19 May 2021 (2♂, 1♀)
- Columbia: dry SMP basin, Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 16 Jun 2016, 2 Jun 2018 (1♂, 1♀)

### Lakes

- Columbia: north end of Lake Kittamaquidi:** (39°13'10.46"N, 76°51'07.89"W), 8 Jun 2020 (1♂, 1♀)

### Reservoirs

- Dayton: Triadelphia Reservoir, Pig Tail Recreation Area:** (39°13'08.37"N, 77°00'23.20"W), 17 Jun 2016, sweeping low grasses under shady canopy, near small stream feeding into reservoir (1♀)

### County parks

- Savage: Savage Park, marsh adjacent to Little Patuxent River:** (39°08'43.69"N, 76°50'02.35"W), 16 Jul 2016, 6 Jun 2018, 7 May 2019 (8♂, 8♀)

### Stream/marsh areas

- Ellicott City: stream/marsh off Coventry Court Drive:** (39°16'27"N, 76°52'22"W), 19, 22 May 2021 (4♂, 7♀)

### *Limnia conica* Steyskal

*Limnia conica* Steyskal, in Steyskal et al. (1978): 9

*Limnia conica* sometimes occurs with *L. boscii* but in fewer numbers. Interestingly, we collected four specimens of *L. conica* at a large grassy picnic/recreation area at the entrance to the Alpha Ridge Landfill. This area is not near any water bodies, so we were surprised to find it there, but according to W. L. Murphy (pers. comm.), this small species seems to prefer rather dry grassy areas rather than more typical sciomyzid habitats. *Limnia conica* is separated easily from *L. boscii* in the field as the fore margin of the wing is darker than the rest of the wing, unlike that of *L. boscii*, in which the wing is evenly mottled along the fore margin.

### Stormwater management ponds and basins

- Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 30 May, 6, 7, 11 Jun 2015; 20, 25 May, 4 Jun 2016, marshy drainage outlet behind main dam (3♂, 10♀)
- Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 15 Sep 2015, grassy drainage area between large and small ponds (1♂)
- Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 4 Jun 2016, grassy drainage area between large and small ponds (1♀)
- Columbia: dry SMP basin, Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 20, 25, 26, 31 May, 10, 16, 22 Jun 2016, 23 May, 2 Jun, 7 Jul 2018, 15 Jul 2019, 13 May 2020, 8 Jul 2021 (10♂, 8♀)

**Marriottsville: Alpha Ridge Landfill Entrance:** (39°18'25.21"N, 76°54'01.42"W), 7, 11 Sep 2021 (2♂, 2♀)

### County parks

**Savage: Savage Park, marsh adjacent to Little Patuxent River:** (39°08'43.69"N, 76°50'02.35"W), 6 Jun 2018 (3♂, 4♀)

#### *Limnia ottawensis* Melander

*Limnia saratogensis* (Fitch) var. *ottawensis* Melander, 1920: 324

### Stormwater management ponds and basins

**Columbia: dry SMP basin, Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 7 Jul 2018 (1♂), 19 Jul 2019 (1♂)

#### *Limnia septentrionalis* Melander

*Limnia louisianae* Melander, var. *septentrionalis* Melander, 1920: 325

Howard County is near the northern limit of the range of this uncommon species, which extends north to southern Pennsylvania and the southern tip of New Jersey.

### Stormwater management ponds and basins

**Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 16 Jun, 12 Aug 2015, marshy drainage outlet behind main dam (1♂, 1♀)

**Columbia: dry SMP basin, Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 7 Jul 2018 (1♂), 15 Jul 2019 (1♂, 1♀)

### **Genus *Sepedon* Latreille**

*Sepedon* is a worldwide genus with eight species known from Delmarva and one additional species known from nearby states (Murphy et al. 2018). In Howard County, we collected five of the eight expected species. We collected *Sepedon* species most often on emergent vegetation in ponds or on thick grasses nearby. In some cases, we found specimens in semi-dry, muddy basins. In this region, *Sepedon* species overwinter as adults, so one can expect to find them on warm days in winter as well as during the warm season. Larval food consists of freshwater pulmonate snails.

#### *Sepedon armipes* Loew

(Figure 5)

*Sepedon armipes* Loew, 1859: 298

*Sepedon armipes* is very common in Howard County. It can be determined easily in the field or in the lab on the basis of the highly modified hind femur of the male (Figure 5). *Sepedon armipes* is much smaller than any species in the *S. fuscipennis* group. *Sepedon armipes* and *S. neili* both have rather dense, dark setulae on the suprspiracular convexity of the metathorax (Steyskal 1951), whereas the suprspiracular convexity is bare in the

members of the *S. fuscipennis* group. Females tend to be smaller than males, which is unusual among sciomyzids.

### **Stormwater management ponds and basins**

**Ellicott City: SMP Extended Detention Structure Dry:** (39°16'50.67"N,

76°49'12.35"W), 19 Sep, 8 Oct 2015, mudflat with short tufts of lawn-type grass (2♂ + many ♂♂ and ♀♀ not retained)

**Columbia: Jackson Pond:** (39°12'58.17"N, 76°49'10.86"W), 27 Jul 2014, area around boat landing, slightly wet and marshy, 31 °C (88 °F) (1♂, 2♀)

**Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 7, 8, 21 Jun, 27 Jul, 17, 24 Aug, 10, 14 Sep, 17, 25 Oct 2014, 11, 12, 17, 28, 29 Apr, 7 May, 6 Jun 2015, 3 May 2018 (on emergent vegetation at pond edge; specimens not retained), grassy drainage area between large and small ponds (47♂, 29♀)

**Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 12, 17 Apr, 31 May 2015, 25 May 2019, marshy drainage outlet behind main dam (5♂, 1♂+♀ in copula)

**Columbia: SMP at end of Prophecy Place:** (39°12'10.04"N, 76°49'35.31"W), 16 Aug 2014, pond edge (1♂)

**Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 11, 12, 19, 28 Apr, 13 Dec 2015, 5 May 2018, 18 May 2019 (specimens not retained) (12♂, 10♀)

**Columbia: SMP, F-83-120, Village of Hickory Ridge, Section 3, Area 1, Pond 2, Facility #109:** (39°11'44.54"N, 76°53'46.64"W), 26 Apr 2014, pond edge (11♂, 1♀)

**Columbia: SMP: Homespun Drive and Pigeonwing Place:** (39°11'22.62"N, 76°49'58.20"W), 22 Apr 2016, sweeping dead emergent vegetation on perimeter of pond (many♂♂ and ♀♀, specimens not retained)

**Columbia: dry SMP basin, Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 13, 25, 27 Dec 2015, 7 Mar 2016, 19 Apr 2019 (2♂, 5♀)

### **Lakes**

**Columbia: Lake Kittamaqundi shoreline:** (39°13'03.41"N, 76°51'13.08"W), 17 Aug 2014 (1♂, 1♀)

**Columbia: east end of Lake Elkhorn:** (39°11'06.79"N, 76°50'05.72"W), 2 Aug 2014, edge of stagnant pond at extreme tip of large lake, 26 °C (78 °F) (3♂, 2♀)

**Columbia: east end of Lake Elkhorn:** (39°11'04.80"N, 76°49'57.28"W), 2 Aug, 25 Oct 2014, 29 Apr 2015, wet, marshy edge of small pond, short grasses mostly (7♂, 4♀)



**Figure 5.** *Sepedon armipes* Loew. Male, hind leg, showing the highly modified hind femur.



**Figure 6.** *Sepedon floridensis* Steyskal. Hind leg, showing the hind tibia with a yellow band surrounded by dark bands.

***Sepedon floridensis* Steyskal**

(Figure 6)

*Sepedon fuscipennis floridensis* Steyskal, 1951: 290

Orth (1986) elevated the former subspecies *floridensis* to full species level. *Sepedon floridensis* can be separated easily from *S. fuscipennis* by the presence of a yellow band surrounded by dark bands on the hind tibia (Figure 6). The hind tibia of *S. fuscipennis* (Figure 7) is uniformly brown with a darkened distal end. Regarding males, in *S. floridensis* the dorsal hairs on the hind tibia are much shorter than the width of the tibia, whereas in *S. fuscipennis* the dorsal hairs are about as long as the width of the tibia.

Orth (1986) listed Maryland as part of the range of *S. floridensis* but provided no specific records. Orth's records are lost (Murphy, pers. comm); thus, our record of *S. floridensis* in Howard County may be regarded as the first confirmed record for Maryland.

**Stormwater management ponds and basins****Columbia: Stormwater management basin at end of Bird Song Pass:**

(39°12'32.11"N, 76°53'20.17"W), 9, 20 Nov 2020 (3♂, 5♀)

**Columbia: dry SMP basin, Harriett Tubman Lane at Beth Shalom Congregation:**

(39°11'05.25"N, 76°52'48.28"W), 7 Mar 2022 (1♂)

***Sepedon fuscipennis* Loew**

(Figures 7 and 8)

*Sepedon fuscipennis* Loew, 1859: 299

*Sepedon fuscipennis* generally is considered to be the sciomyzid species best known to entomologists in the Nearctic, and the least often misidentified, because of its abundance, large size, and wide geographical range. It often is common wherever cattails grow. Larvae prey upon a wide variety of aquatic snails. The species overwinters as an adult fly. See notes under *S. floridensis* Steyskal, above.

**Stormwater management ponds and basins****Ellicott City: SMP Extended Detention Structure Dry:** (39°16'50.67"N,

76°49'12.35"W), 19, 23 Sep, 6 Oct 2015, mudflat with short tufts of "lawn-type" grass (4♂, 1♀)

**Ellicott City: stormwater basin on Centennial Lane:** (39°15'44.15"N,

76°51'47.43"W), 20 Jul 2020 (1♀)

**Columbia: Jackson Pond:** (39°12'58.17"N, 76°49'10.86"W), 27 Jul 2014, area around boat landing, slightly wet and marshy, 31 °C (88 °F) (2♂, 1♀)**Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 21 Jun, 17 Aug, 10, 14 Sep, 17 Oct, 24 Nov 2014, 28, 29 Apr, 6 Jun, 15, 19 Sep 2015, 11 Aug 2020, grassy drainage area between large and small ponds (12♂, 8♀)**Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 11 Jun, 5 Nov 2015, marshy drainage outlet behind main dam (2♀)**Columbia: SMP, F-96-089, Village of River Hill:** 39°12'40.54"N, 76°56'00.82"W), 8 Aug 2015, pond edge (1♀)



**Figure 7.** *Sepedon fuscipennis* Loew. Hind leg, showing the uniformly brown hind tibia with a darkened distal end.



**Figure 8.** *Sepedon fuscipennis* Loew. Head, showing the wider (dorsal to ventral width) pedicel than that of *S. tenuicornis*, and the nearly parallel dorsal and ventral margins.

**Columbia: stormwater management basin at end of Bird Song Pass:**

(39°12'32.11"N, 76°53'20.17"W), 22 Mar 2021 (1♀)

**Columbia: SMP, at end of Prophecy Place:** (39°12'10.04"N, 76°49'35.31"W), 16 Aug 2014, pond edge (1♀)**Columbia: SMP, Homespun Drive and Pigeonwing Place:** (39°11'22.62"N, 76°49'58.20"W), 24 Mar, 22 Apr 2016, sweeping dead emergent vegetation on perimeter of pond (3♂)**Columbia: dry SMP basin: Harriett Tubman Lane at Beth Shalom Congregation** (39°11'05.25"N, 76°52'48.28"W), 13, 25 Dec 2015, 28 Feb, 1, 8, 9, 10 Mar, 14 Apr 2016, 7 Mar 2022, (8♂, 4♀)**Lakes****Columbia: Lake Kittamaqundi shoreline:** (39°13'03.41"N, 76°51'13.08"W), 17 Aug 2014 (1♀)**Columbia: east end of Lake Elkhorn:** (39°11'06.79"N, 76°50'05.72"W), 2 Aug 2014, edge of stagnant pond at extreme tip of large lake, 26 °C (78 °F) (1♂, 1♀)**Columbia: east end of Lake Elkhorn:** (39°11'04.80"N, 76°49'57.28"W), 2 Aug 2014, 23 May 2015, wet, marshy edge of small pond, short grasses mostly, 26 °C (78 °F) (3♀)***Sepedon neili* Steyskal***Sepedon neili* Steyskal, 1951: 286

Males of *Sepedon neili* can be differentiated from those of *S. armipes* by their lack of a highly modified hind femur (Steyskal 1951). Since in the field it can be difficult to discern the males from females, *S. neili* cannot be identified positively until the specimen is examined under a microscope and males with unmodified hind femora are found. Other differences are seen in the male terminalia (Steyskal 1951, Murphy et al. 2018). As in *S. armipes* and other *Sepedon* species, females typically are smaller than males.

**Stormwater management ponds and basins****Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 7 Jun, 10 Sep 2014, 7 May 2015, 11 Aug 2020, 19 May 2021, grassy drainage area between large and small ponds (6♂)**Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 19 Jul, 6 Aug 2015, pond edge (2♂)**Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 26 Jul 2019, 6 Apr 2021 (2♂, 2♀)**Columbia: SMP, Homespun Drive and Pigeonwing Place:** (39°11'22.62"N, 76°49'58.20"W), 22 Apr 2016, sweeping mostly dead emergent vegetation on perimeter of pond, some new *Juncus* growth occurring (1♂)**Fulton: Maple Lawn SMP:** (39°09'23.23"N, 76°54'14.55"W), 4 Sep 2016, sweeping pond edges and grasses in adjoining shady forest (1♂)**County parks****Glenwood: Warfields Pond Park:** (39°16'27.99"N, 77°01'11.38"W), 10 May 2015, short grasses near pond edge (1♂)

***Sepedon tenuicornis* Cresson**

(Figure 9)

*Sepedon tenuicornis* Cresson, 1920: 84

We found *Sepedon tenuicornis* to be rare in our area, with only three specimens collected over the eight-year survey period.

Both sexes of *S. tenuicornis* can be distinguished readily from *S. fuscipennis* by their longer, narrower, more tubular pedicel (second antennal segment). The pedicel of *S. fuscipennis* (Figure 8) is wider (dorsal to ventral width) than that of *S. tenuicornis*, and the dorsal and ventral margins are nearly parallel (Figure 8), whereas in *S. tenuicornis*, the pedicel (Figure 9) is tubular, with margins more divergent (trumpetlike) anteriorly than those of *S. fuscipennis*.

**Stormwater management ponds and basins****Columbia: Stormwater management basin at end of Bird Song Pass:**

(39°12'32.11"N, 76°53'20.17"W), 9, 23 May 2015 (1♂, 1♀)

**Columbia: SMP off Great Star Drive:** (39°11'59.73"N, 76°55'27.76"W), 11 Apr 2015 (1♂)



**Figure 9.** *Sepedon tenuicornis* Cresson. Head, showing the longer, narrower, more tubular pedicel with margins more divergent (trumpetlike) anteriorly than those of *S. fuscipennis*.

**Genus *Tetanocera* Duméril**

Of the 11 species of *Tetanocera* known from Delmarva and the three additional species known from nearby states, we found only two species in Howard County. Our Howard County specimens range from 6.74 mm (0.27 in) to 9.73 mm (0.38 in) in length. Some



*Tetanocera* species are indistinguishable from each other externally, so examination of the male terminalia is required to confirm the identity of a specimen. Steyskal (1959) observed that, “Although such characters as color, chaetotaxy, structure of the antennae, and venation are very useful, they are subject to considerable variation. Consequently, in almost all species certain individuals will be found whose determination must be made by examination of the postabdomen.”

***Tetanocera rotundicornis* Loew**

NEW MARYLAND RECORD

(At the time of collection, before publication of Murphy et al. [2018])

*Tetanocera rotundicornis* Loew, 1861: 344

*Tetanocera rotundicornis* can be differentiated from other species of *Tetanocera* by the posterior surface of the midfemur bearing only small setulae, the hind femur bearing a preapical posterodorsal seta, crossvein dm-cu straight, and vein R4+5 often with stump veins (see key in Murphy et al. [2018]).

The length of our specimens ranged from 6.7 mm (0.26 in) to 7.0 mm (0.28 in). We found this species in only one location: the drainage ditch below the embankment of the stormwater management pond in River Hill behind the Columbia Gym (6151 Day Long Lane). According to Foote (1996), *T. rotundicornis* is most commonly found in “open vernal and permanent marshes.” The drainage ditch behind the pond is more or less permanently wet and could qualify as a “permanent marsh.” Larvae of *T. rotundicornis* prey exclusively on snails of the genus *Oxyloma* Westerlund in the family Succineidae. Overwintering is in the pupal stage. Flight period in Howard County is from May to September.

**Stormwater management ponds and basins**

**Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 30, 31 May, 9, 12 Jul marshy drainage outlet behind main dam (2♂, 3♀) [determination confirmed by W. L. Murphy]; 6, 12, 21, 24 Aug 2015 (3♂, 3♀)

**Columbia: stormwater management basin at end of Bird Song Pass:** (39°12'32.11"N, 76°53'20.17"W), 9 Jun 2021 (1♀)

***Tetanocera vicina* Macquart**

*Tetanocera vicina* Macquart, 1843: 180

*Tetanocera vicina* can be distinguished from *T. rotundicornis* by the presence of one strong seta on the posterior surface of the midfemur, vein R4+5 with stump veins, and crossvein dm-cu strongly S-curved. Our specimens ranged in size from 6.8 mm (0.27 in) to 9.5 mm (0.37 in).

Foote (1999) stated that, “...it appears that *T. vicina* is best adapted to open, vernal marshes containing lush stands of grasses and sedges.” Our collecting sites were all full of thick grasses on wet ground. This species is a generalized predator of nonoperculate aquatic snails. Overwintering is in the pupal stage. The flight period (as recorded in

central New York) appears to be from May to September (Foote 1999). Our earliest collection was in May, and our latest was in October.

Foote (1999) observed that the larvae attacked successively larger snails as they passed through their first to third instars. The smallest snails attacked by first-instar larvae were *Gyraulus parvus* (Say, 1817) (Planorbidae) that were only 1.3 mm (0.05 in) to 2.9 mm (0.11 in) in diameter. The snails attacked by third-instar larvae ranged from 5.0 mm (0.20 in) to 7.0 mm (0.28 in).

### **Stormwater management ponds and basins**

- Ellicott City: SMP, Extended Detention Structure Dry:** (39°16'50.67"N, 76°49'12.35"W), 8 Oct 2015, collected on thick grasses at edge of mudflat containing short tufts of grass (1♀)
- Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 7 Jun 2015, 12 Jul 2018, 26 May 2019, marshy drainage outlet behind main dam (2♂, 1♀)
- Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 15–17 Sep 2015, grassy drainage area between large and small ponds (1♂, 2♀)
- Columbia: dry SMP basin: Harriett Tubman Lane at Beth Shalom Congregation** (39°11'05.25"N, 76°52'48.28"W), 20, 24, 26 May, 16 Jun, 16 Jul 2016 (3♂, 6♀)

### **Stream/marsh areas**

- Ellicott City: stream/marsh off Coventry Court Drive:** (39°16'27"N, 76°52'22"W), 19, 22 May 2021 (4♂, 5♀).

## **Genus *Trypetoptera* Hendel**

### ***Trypetoptera canadensis* (Macquart)**

*Tetanocera canadensis* Macquart, 1843: 338

*Trypetoptera canadensis* can be mistaken easily for a species of *Limnia*, both in size and overall coloration. Under the microscope, however, the dark-colored arista distinguishes it from *Limnia*, all species of which have a white arista. The genus includes only two species, the Nearctic *T. canadensis* and the Palearctic *T. punctulata* (Scopoli, 1763). *Trypetoptera* shares many morphological characters with *Limnia*. Murphy et al. (2018) stated that “*Trypetoptera* probably should be placed as a subgenus of *Limnia*.” One supporting fact is that the terminalia of male *T. canadensis* is identical to that of a species of *Limnia*, *L. lemmoni* Fisher and Orth (1971), a western Nearctic species (see illustration in Fisher and Orth [1971] and reproduced in Steyskal et al. [1978]).

The biology of *T. canadensis* is “largely unknown” (Foote and Keiper 2004). Murphy et al. (2018) reported that *T. canadensis* larvae feed on nonoperculate terrestrial snails and that often the species is found on the margin of woodlots, accompanied by *Euthycera flavescens*.

Our survey indicated that *T. canadensis* is rather rare in Howard County and occurs only in small numbers. Usually, we collected only one or two specimens in a day. Its flight period in Howard County seems to be from April to September.

### **Stormwater management ponds and basins**

**Ellicott City: Stormwater basin on Centennial Lane:** (39°15'44.15"N, 76°51'47.43"W), 28 Jun 2020 (1♂)

**Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 20 May 2016, marshy drainage outlet behind main dam (1♂)

**Columbia: SMP, F-96-089, Village of River Hill:** (39°12'40.54"N, 76°56'00.82"W), 29 Apr 2017, grassy drainage area between large and small ponds (1♀)

**Columbia: Stormwater management basin at end of Bird Song Pass:** (39°12'32.11"N, 76°53'20.17"W), 6 Jun 2020 (1♂)

**Columbia: dry SMP basin, Harriett Tubman Lane at Beth Shalom Congregation:** (39°11'05.25"N, 76°52'48.28"W), 16 Jun 2016 (1♀)

**Fulton: Maple Lawn SMP:** (39°09'23.23"N, 76°54'14.55"W), 4 Sep 2016, sweeping pond edges and grasses in adjoining shady forest (1♀)

### **Reservoirs**

**Dayton: Triadelphia Reservoir, Pig Tail Recreation Area:** (39°13'08.37"N, 77°00'23.20"W), 20 Jul 2014, 17, 19 Jun 2016, sweeping low grasses under shady canopy, about 30 m (98 ft) from small stream feeding into reservoir (3♂, 2♀)

### **Natural areas**

**Columbia: bike path off of Watch Chain Way:** (39°12'19.71"N, 76°53'35.95"W): 2 Aug 2016, sweeping grasses bordering asphalt bike path (1♂)

**Columbia: bike path off of Little Sparrow Place:** (39°12'27.34"N, 76°53'21.17"W): 4 Aug, 3 Sep 2016, sweeping grasses bordering asphalt bike path (2♀)

### **Additional Sciomyzid Information for Selected Sites**

**Ellicott City: Extended Detention Structure Dry, Facility No. 1073** (39°16'50.67"N, 76°49'12.35"W)

Sweeping the grass tufts yielded mostly *Atrichomelina*, *Dictya*, *Ditaeniella*, *Pherbellia*, some *Sepeidon armipes*, and an occasional *S. fuscipennis*. An abundance of snails was exposed on the mudflat occasionally.

In early October 2015, the East Coast experienced four consecutive days of chilly (10–12 °C [50–53 °F]), cloudy weather, with heavy rain. When the warm, sunny days typical of October in Maryland finally returned, upon collecting at the site, we found very high populations of *Atrichomelina*, *Dictya*, and *Pherbellia*. Possibly the cool weather slowed the maturation of several populations allowing the pupae to catch up and then emerge simultaneously rather than in the normal staggered pattern of the various species (Murphy, pers. comm.).

**Ellicott City: stormwater basin on Centennial Lane** (39°15'44.15"N, 76°51'47.43"W)

We found the dipteran fauna at this site to be quite diverse. The sciomyzid fauna largely consisted of *Dictya* species and an abundance of *Sepedon armipes*, all found along the sides of the stream that runs through the center of the basin.

**Columbia: county stormwater management pond (SMP) F-96-089, Village of River Hill** (39°12'40.54"N, 76°56'00.82"W)

In warm months, the majority of sciomyzids we collected from this site were taken from the grassy area below the northern forebay and not from the emergent vegetation (mostly *Typha* sp.) of the forebays. Repeated sweeping in the grassy area sometimes yielded no sciomyzids, while other sweeps yielded five or six specimens, mostly *Atrichomelina*, *Dictya*, *Pherbellia*, *Sepedon*, and sometimes a specimen of *Tetanocera* and two or three specimens of *Limnia*.

The area around the drainage pipe behind and below the embankment also yielded a few species of *Dictya*, *Limnia*, *Pherbellia*, *Sepedon*, and *Tetanocera*. This small drainage area is very thick with grasses and is nearly always wet and slippery.

Sciomyzid abundance seems to vary with temperature, although on some days no sciomyzids were found even though we noticed no apparent difference in weather conditions from day to day. However, we noted that on very hot days (32+ °C [90+ °F]), in the afternoon few or no sciomyzids could be found; on such days, more sciomyzids appeared in our nets in late morning or late afternoon, with temperatures of 21–27 °C (70–80 °F). The areas between the forebays and the main pond are unshaded and can become quite hot in early to midafternoon. However, the area near the outflow pipe behind the dam is on the edge of a wooded area and thus is shaded for part of the day.

During two- or three-day warm cycles in winter, particularly on the second day (20.6+ °C [69+ °F]), we noted that *Dictya* spp. and *Sepedon fuscipennis* could be found on dried *Typha* leaves in wet, boggy areas of the western forebay and on the marshy area behind the dam, close to the outflow of the pond. In winter we found no *Dictya* or *Sepedon* on the grassy, marshy area next to the cattails, only on the dried *Typha* sp. leaves.

**Columbia: stormwater basin at end of Bird Song Pass** (39°12'32.11"N, 76°53'20.17"W)

This relatively small site regularly yielded at least some *Dictya* species during every season. In November 2020, we collected *Sepedon floridensis* here. This was the first time that we found this species in Howard County.

**Columbia: stormwater basin off Great Star Drive** (39°11'59.73"N, 76°55'27.76"W)

On 5 May 2019, the Mid-Atlantic Region experienced an all-day rain with cool temperatures in the low 15s °C (60s °F). On 6 May we sampled this site, including the pond and its perimeter plus the vegetation along the nearby bike path. The edges of the

bike path were still wet with standing rainwater. We sampled these wet areas extensively and found a dozen specimens of *Dictya*. This was the first time we collected *Dictya* in a woodland habitat.

**Columbia: dry stormwater basin, Harriett Tubman Lane at Beth Shalom Congregation** (39°11'05.25"N, 76°52'48.28"W)

Sweeping the vegetation during the first two days after discovering this site yielded several species of *Dictya*, including our first *D. atlantica* plus *Atrichomelina pubera*.

In 2016, we found a succession of *Dictya* species (Table 2), beginning with *D. atlantica* and *D. pictipes* on 28 February. On 7–8 March, we found *D. texensis* in addition to *D. atlantica* and *D. pictipes*. On 9–10 March, *D. atlantica* had disappeared, and we collected only *D. pictipes*. From 23 March on, we collected *D. expansa* in addition to *D. texensis* and *D. pictipes*. On 13 April, *D. brimleyi* was added to the mix, with *D. pictipes* disappearing until 24 May. At the end of April, the weather turned wet and cold (temperatures consistently in the 10s °C [50s °F]) until 20 May (with one exception: 3 May). On 20 May, we collected only *D. brimleyi* (13 males), *D. expansa* (8 males), *D. texensis* (4 males), and *D. heyjimi* (1 male). It seems that *Dictya* species may be temporally partitioning this small habitat, with three species (*D. brimleyi*, *D. expansa*, and *D. texensis*) finally dominating it by the time warmer temperatures become consistent.

**Table 2. Temporal distribution of *Dictya* species at the dry stormwater basin at Harriett Tubman Lane at Beth Shalom Congregation, Columbia, Maryland in 2016.**

Date	Species					
	<i>atlantica</i>	<i>texensis</i>	<i>pictipes</i>	<i>expansa</i>	<i>brimleyi</i>	<i>heyjimi</i>
02/28/16	X	-	X	-	-	-
03/01/16	X	-	-	-	-	-
03/07/16	X	X	-	-	-	-
03/08/16	X	X	X	-	-	-
03/09/16	-	X	X	-	-	-
03/10/16	-	-	X	-	-	-
03/23/16	-	-	-	X	-	-
03/30/16	-	X	X	X	-	-
04/01/16	-	X	X	X	-	-
04/13/16	-	X	-	X	X	-
04/14/16	-	X	-	X	X	-
04/22/16	-	-	-	-	-	-
05/03/16	-	X	-	X	-	-
05/20/16	-	X	-	X	X	X
05/24/16	-	-	X	X	-	-
05/26/16	-	X	-	X	X	-
05/31/16	-	X	-	X	X	-

**Ellicott City: Font Hill Wetlands Park** (39°16'20.23"N, 76°51'39.35"W)

This site yielded a very diverse dipteran fauna, including our first Howard County record of the diopsid (stalk-eyed fly) *Sphyracephala brevicornis* (Say, 1817) (Diopsidae). Specimens of *Dictya*, including undescribed species number 1, were found occasionally along the water's edge. In April 2021, we captured our first specimen of *Pherbellia seticoxa* here.

**Columbia: Kings Contrivance Loop, stormwater basin "Busy Grass Pond"**  
(39°09'41.46"N, 76°52'08.00"W)

A well-maintained drainage structure behind the embankment of the pond yielded no sciomyzids; however, the margins of the pond yielded *Atrichomelina*, *Dictya*, and the wooded area yielded *Euthycera*.

**Savage: Savage Park, marsh adjacent to Little Patuxent River** (39°08'43.69"N,  
76°50'02.35"W)

This site consistently yielded specimens of *Dictya* and *Limnia*.

**Marriottsville: Alpha Ridge Landfill entrance** (39°18'25.21"N, 76°54'01.42"W)

We swept the grass on several days during the 2021 season and were surprised to find *Limnia conica* here since we never collected *Limnia* on a dry, manicured lawn that was not near water.

**Columbia: bike path off Watch Chain Way** (39°12'19.71"N, 76°53'35.95"W)

This area often yielded many specimens of *Euthycera flavescens*, the larvae of which prey on land snails. During wet periods *E. flavescens* were quite common along the grassy borders of this and other bike paths.

**Columbia: bike path off Lakewater Lane** (39°12'08.55"N, 76°53'48.42"W)

This small spot yielded specimens of *Euthycera flavescens*. It consists of a large patch of grasses common to Howard County's shady, moist, wooded habitats.

**Ellicott City: stream/marsh off Coventry Court Drive** (39°16'27"N, 76°52'22"W)

The vegetation along the stream yielded the largest number of *Limnia* and *Tetanocera* specimens in a one-hour period that we encountered during this survey. With much of the stream flow being swift, it seems to be an unusual and perhaps unrecorded habitat for *Tetanocera* (Murphy, pers. comm.)

## SUMMARY

Although less than two percent of Howard County is classified as wetland, habitats for semi-aquatic and terrestrial marsh flies are abundant. We sampled nearly 20 sites over an eight-year period. Several of them were sampled multiple times beginning in late February through December, at all times of day, and we found that some of the smallest sites yielded the most diversity of not only sciomyzids but of many families of Diptera.

One site, an 832 m<sup>2</sup> (8,955 ft<sup>2</sup>) stormwater management site at Beth Shalom Congregation, that varies from shallow, standing water to nearly dry, yielded 18 of the 25 total species we found over the eight years.

Two new state records (*Dictya stricta* and *Tetanocera rotundicornis*) were recorded and a new habitat for *Tetanocera vicina* (vegetation at the edge of a swift flowing stream) was found.

We had a few surprises: 1) that *Limnia conica* could be found on a dry lawn, 2) that *Dictya texensis* could occur in a recently flooded backyard, and 3) that a new, undescribed species of *Dictya* occurs in our small county.

We found that in Howard County, sciomyzids are common but generally do not occur in large numbers.

Finally, a potentially important observation of the temporal partitioning of a small habitat by *Dictya* species was made.

Further studies employing Malaise traps and pan traps will likely reveal more species occurring in Howard County.

Although small compared to many U.S. states, Maryland has a plethora of habitats from mountains through coastal plains to salt marshes and beaches. Surveys such as this in other counties in Maryland could reveal even more species of sciomyzids occurring in this state.

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