Tachinidae (Diptera) from Dominica (West Indies)

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Dominica is a small island in the eastern Caribbean (Fig. 2) about halfway between Puerto Rica and Trinidad in the Lesser Antilles (ca. 15°N 61°W). It is approximately 47 kms long and 26 kms wide with a total area of 75 sq. kms. The population of about 71,000 is relatively small compared to that of its nearest neighbours, Guadeloupe to the north and Martinique to the south. Most of the population live along the coast, and the capital of Roseau is on the southwest side at the mouth of the Roseau River.

The interior of Dominica is mountainous, the highest peak being Mount Diablotins at 1,447 m. The island is volcanic in origin with some volcanoes still active though rarely erupting, and has other associated features such as fumaroles and hot springs. The mountains are still extensively covered with tropical rain forest, more so than on other islands in the Lesser Antilles group. The island has a tropical maritime climate, with temperatures in Roseau averaging from 22°C in mid-winter to 31°C in mid-summer. Annual rainfall is high, with about 200 cm along the west coast, 250 cm along the east coast, and 500 cm or more in the mountains. The wet season lasts from June to December, sometimes with tropical storms including occasional hurricanes, and the driest months are between February and April.

Erica (Fig. 1) has been making annual visits to Dominica since 2015 as a participant in a series of Operation Wallacea biodiversity research expeditions, collecting many thousands of insects, particularly Diptera, though not surprisingly no visits have been possible since 2019 due to the Covid-19 pandemic. The visits were mostly made during June and July. Among the Diptera collected, 127 specimens representing 37 species of Tachinidae have been identified and are reviewed below. Given that virtually no previous records exist of the family from Dominica, this means that nearly all these species are recorded from the country for the first time. Only two three species have been recorded: *Eucelatoria*

dominica Sabrosky (Sabrosky, 1981) (described from Dominica and possibly endemic), *Cylindromyia uniformis* Aldrich (Aldrich, 1926) (described from Mexico and Dominica and later recorded by Guimarães (1976) as widely distributed throughout Middle America), and *Trichopoda eupilipes* Dios & Nihei (Dios & Nihei, 2020) (described from; Dominica, Dominican Republic, Haiti and Montserrat). Given that so little is known about tachinids of this island, the present findings seemed well worth publishing.

Generally, the tachinid fauna of the West Indies is still quite poorly known with currently 395 species recorded from the area (J.E. O'Hara, pers. comm.). Many of these are known mainly from the series of detailed studies on *The Tachinids of Trinidad* by W.R. Thompson during the 1960s. Other islands such as Jamaica and Puerto Rico are relatively well studied but many of the other islands have few if any records. Most of the few records from the eastern Lesser Antilles date back to Williston's (1896) study of the Diptera of St. Vincent.

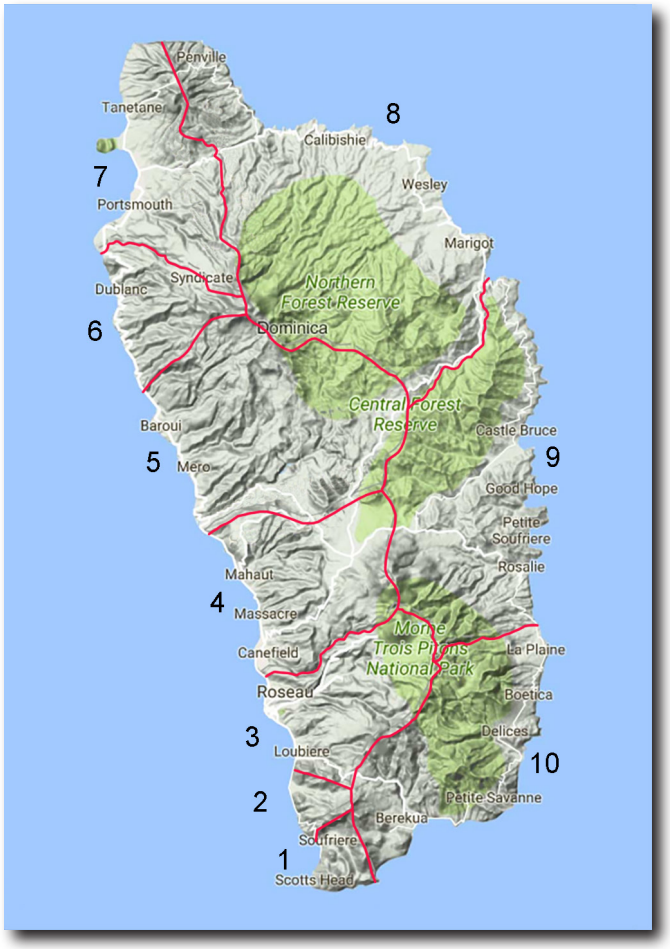

Figure 2. Topographic map of Dominica (image from Google Maps©).

The ten parishes have been delimited by red lines and numbered as follows:
1. Saint Mark.
2. Saint Luke.
3. Saint George.
4. Saint Paul.
5. Saint Joseph.
6. Saint Peter.
7. Saint John.
8. Saint Andrew.
9. Saint David.
10. Saint Patrick.

Materials and Methods

Dominica is divided into ten parishes, each extending from the coast inland to the mountainous interior (Fig. 2). The main localities where tachinids were collected were in the following four parishes:

St David Parish: Castle Bruce (July/August 2015, June 2016, June 2017) on the east coast and 3 Rivers Eco Lodge (June 2018) a little further south and inland in the rainforest of the Rosalie River valley;

St Mark Parish: Soufriere area (June 2016, June 2017) in the far southwest of the island;

St Paul Parish: Pont Cassé, especially D-Smart Farm, among the forested hills in the central part of the island; and

St Peter Parish: the Syndicate Forest of Morne Diablotin National Park during June 2018, an area well inland in the northwestern part of the island.

Other sites included Cabrits National Park, a coastal promontory in the northwest in St John Parish, in the Roseau River valley near the coast, at Freshwater Lake well inland in St George Parish, and along the Layou River valley in the southwestern part of St Joseph Parish.

Most of these specimens were collected by sweep-netting, others caught in Malaise traps (Fig. 3), and a few were caught by light-trapping. Those specimens which were swept or light-trapped were preserved dry and pinned, while those from Malaise traps were preserved in 100% ethanol but were later critical point dried and pinned for easier identification.

Collecting permits were issued by the Forestry, Wildlife and Parks Division in Dominica (e-mail: forestry@cwdom.dm), for this a detailed inventory had to be provided of the groups which were to be collected, an estimate of how many specimens were to be collected, and an explanation of why collecting them was necessary. Some of the specimens are to be returned to Dominica but records of the specimens collected, including images, are to be made available for all to access.

Figure 3. Two Malaise traps in the forest of 3 Rivers Eco Lodge. This area was more consistently monitored than other parts of Dominica.

Identifications were made by Nigel with specimens initially identified to genus using the keys by Wood (1987) and Wood & Zumbado (2010) and then compared with identified material in the NHMUK (Natural History Museum, London, United Kingdom) collection. In most cases the available keys for West Indian tachinids were of little use for identification of the species found here except for some small groups such as Eucelatoria (Sabrosky, 1981); and although Thompson's keys to Trinidadian species are much more comprehensive few of the species covered by them were found in Dominica, probably due to that island's proximity to the South American mainland to which its fauna is more closely related, with a greater diversity of species. The NHMUK collection has small numbers of tachinids from several of the West Indian islands including a few type specimens described by Curran and by Walker from Jamaica, and by Williston from St. Vincent. There are rather more specimens from Trinidad & Tobago though several of these have not yet been identified to species. Many of the tachinids from Dominica could not be positively identified to species and some of them are undoubtedly new to science.

Collecting localities and dates of collection will be given in a future publication in which the species listed here will be reviewed in more detail and new species described.

Tachinidae identified from Dominica

The classification of Tachinidae and cited distributions follow O'Hara *et al*. (2020).

DEXIINAE

DEXIINI

1. *Ptilodexia sororia* (Williston, 1896) (Described from St. Vincent)
Two females collected in June 2016, one swept and the other caught in a Malaise trap, from the Pont Cassé area in St Paul Parish. This species is probably endemic to the West Indies, previously recorded from St. Vincent, Jamaica and Puerto Rico.

EPIGRIMYIINI

2. *Beskia aelops* (Walker, 1849) (United States)
One male swept at D-Smart Farm, St Paul Parish, in June 2016. A distinctive and widespread New World species occurring throughout the Americas and previously recorded in the West Indies from St. Vincent, Puerto Rico and Dominican Republic.

VORIINI

3. *Meleterus nuperus* Reinhard, 1956 (United States) (Fig. 4a)
One female collected by light trap in forest at Pont Cassé in June 2016. This species was previously only recorded from the Nearctic Region.

4. *Spathidexia antillensis* Arnaud, 1960 (Puerto Rico) (Fig. 4b)
Several in Malaise trap samples, collected in St Paul Parish in June 2017, St David Parish in July 2018, and St Peter Parish in July 2019. Probably endemic to the West Indies, previously recorded from Cuba and Puerto Rico.

EXORISTINAE

BLONDELIINI

5. *Admontia* sp. cf. *nasoni* Coquillett, 1895
One female caught by light trap in forest at Pont Cassé in June 2016. It is quite similar to *A. nasoni* which is a Nearctic species described from northeastern United States but has a very narrow parafacial and the postpedicel of the antenna is very narrow and elongate and is extensively orange at the base. The only *Admontia* species previously recorded from the West Indies is *A. nigrita* Thompson, 1968 described from the island of Trinidad in Trinidad & Tobago (Thompson, 1968).

6. *Eucelatoria bigeminata* (Curran, 1927) (Virgin Islands)
Single specimens swept from riverside vegetation from four localities in St David Parish and St Joseph Parish in July 2015. It is otherwise known from southeastern United States, Mexico and other parts of the West Indies (Cuba, Puerto Rico, St. Vincent, Trinidad & Tobago, and Virgin Islands).

7. *Eucelatoria dominica* Sabrosky, 1981 (Dominica)
One male and one female caught by light trap at D-Smart Farm in St Paul Parish in June 2016 and a female swept from riverside vegetation in St David Parish in July 2015. Previously only known from the series of four males collected in the Layou Valley from which Sabrosky (1981) originally described this species.

8. *Eucelatoria* ?*carinata* (Curran, 1926)
A male and female swept from riverside vegetation in St Joseph Parish and another female caught in a light trap in forest near Pont Cassé in St Paul Parish. *Eucelatoria carinata* is a small species with no red on the abdomen and with median discal setae on tergites 3 to 5, and previously only known from the type locality in Jamaica (Curran, 1926).

9. *Lixophaga* sp.
One male caught in a light trap at 3 Rivers Eco Lodge, St David Parish in June 2018. Fourteen species of this large and mostly New World genus have been recorded from the West Indies, though most of these only from Trinidad & Tobago apart from two species described by Curran (1926) from Jamaica and the more widespread *L. diatraeae* (Townsend, 1916).

10. *Medina* sp.
One female swept at Syndicate Forest in St Peter Parish in June 2018. The small size (4 mm long) and modified terminalia are typical of *Medina*, a genus previously unrecorded from the West Indies.

11. *Myiopharus ?calyptratus* (Williston, 1896) (Fig. 4c)
Two females, both swept, one at Scott's Head, St Mark Parish, in June 2017 and the other at 3 Rivers Eco Lodge in St David Parish in June 2018. Described from St. Vincent by Williston (1896), and otherwise previously not recorded from anywhere else. After comparison with the female paralectotype of *M. calyptratus* in the NHMUK it seems likely that the Dominican specimens are conspecific. *Myiopharus* is a large New World blondeliine genus, with seven species previously recorded from the West Indies (mostly Trinidad & Tobago), including one from the eastern Antilles (*M. floridensis* (Townsend, 1892), Virgin Islands).

12. *Pseudoredtenbacheria* sp. (Fig. 4d)
One female swept from riverside vegetation in St David Parish in August 2015. It seems to differ from the three described species in this small Neotropical genus both by the more elongated postpedicel of the antenna and the reduced extent of yellow on the legs. The described species include two from Mexico and one from Brazil and the genus has not been previously recorded from the West Indies.

13. *Vibrissina* sp.
Four females caught in a Malaise trap at D-Smart Farm, St Paul Parish, in June 2016. A very small species with body length approximately 3.5 mm, and it shows typical characters of the genus such as setulose parafacial, ventrally keeled abdomen, and the basal depression on the abdomen extends to the hind margin of syntergite 1+2. *Vibrissina* is a mainly New World genus, especially Central America, but has not previously been recorded from the West Indies.

14. *Zaira* sp. cf. *angustifrons* (Reinhard, 1930)
One of the most common and widespread species collected in Dominica. Fifteen specimens were collected, most of which were swept but one male and two females were light-trapped. It is apparently very similar to *Z. angustifrons*, which has been recorded from the southern United States (Texas, Florida) and Cuba, but the abdomen and legs are almost entirely dark. Similar specimens are in the NHMUK from other islands in the Lesser Antilles (St. Vincent and St. Lucia).

ERYCIINI
15. *Drino rhoeo* (Walker, 1849) (Country of type locality unknown)
One female of this fairly widespread New World species collected in a Malaise trap at D-Smart Farm, St Paul Parish, in June 2016.

16. *Lespesia thompsoni* O'Hara & Wood, 2021 (Trinidad & Tobago) (Fig. 4e)
This species was formerly known as *Sturmiopsoidea obscura* Thompson, 1966 (O'Hara *et al*. 2020) but was moved to *Lespesia* in O'Hara *et al*. (2021) and renamed *thompsoni* because *obscura* was a junior secondary homonym in that genus. One male collected in a light trap at Rodney's Wellness Retreat in St Mark Parish in June 2016, and a female swept at 3 Rivers Eco Lodge in June 2018. Apparently conspecific with a series of reared specimens (from larvae and pupae of the pierid butterfly, *Ascia monuste*) from St. Kitts in the NHMUK identified by Monty Wood as "*Lespesia obscura*", a then unpublished combination. These specimens do show characters of *Lespesia* including the "comb" of anterodorsal setae on the hind tibia, four katepisternals and setae extending almost halfway up the facial ridge. The species was otherwise only known from the type locality in Trinidad & Tobago.

17. *Lespesia* sp. (Fig. 4f)
A female caught in a light trap at D-Smart Farm in St Paul Parish in June 2016 with an elongated tergite 5 (about 1.5 times the length of tergite 4), and weak ocellars. An older male specimen from Dominica collected by E.P. Becher in the NHMUK collection also has weak ocellars and may be the same species but is in poor condition with most of the abdomen missing. *Lespesia* is a fairly large and mostly New World genus, with 15 species previously recorded from the West Indies.

GONIINI

18. *Belvosia bicincta* Robineau-Desvoidy, 1830 (United States)
One female hand-caught at night at D-Smart Farm in St Paul Parish in June 2016. This is a widespread Neotropical species, also known from southern United States.

19. *Houghia* sp.
One female swept from riverside vegetation in St David Parish in July 2015. A species with wing vein R_1 setose. Fleming *et al*. (2014) described only four species with this character out of the 35 species in this genus they recorded from Costa Rica. They also synonymized several genera with *Houghia* which as result is now quite a large genus containing nearly 70 species. The genus is only previously known in the West Indies from Trinidad & Tobago.

20. *Hyphantrophaga* sp. cf. *blandoides* (Thompson, 1963) (Fig. 5a)
Two females swept from riverside vegetation in St David Parish in August 2015, a male caught in a light trap in St Mark Parish in June 2016, and two females caught in a Malaise trap at D-Smart Farm in St Paul Parish also in June 2016. Six species of the genus have previously been recorded from the West Indies.

21. *Leschenaultia* sp. (Fig. 5b)
One female somewhat resembling *L. cilipes* (Robineau-Desvoidy, 1830) caught in a Malaise trap at D-Smart Farm in St Paul Parish in June 2016. *Leschenaultia cilipes* is a widespread Neotropical species which has been recorded in the West Indies from Cuba, Dominican Republic and Puerto Rico.

22. *Prospherysa* sp. (Fig. 5c)
There is some doubt as to whether this species belongs in *Prospherysa*. Although it shows many characters typical of this genus including facial ridge setose on most of its height, eye bare, abdomen with discals, and no genal dilation. The head in profile is strongly receding, being much narrower at the level of the epistoma than at the level of the antennal base, the ocellars are weak, and it is a generally dark species lacking any red on the tip of the abdomen or on the legs, unlike many other *Prospherysa* species. Four males were caught singly at four localities in St David, St Mark and St Paul Parishes, in June 2016 and June 2017. A small mostly New World genus not previously recorded from the West Indies.

23. *Pseudochaeta* ?*syngamiae* Thompson, 1964
One male caught in a light trap at 3 Rivers Eco Lodge, St David Parish in June 2018. It is most likely either *P. syngamiae* or *P. nitens* Thompson, 1964, both described from Trinidad by Thompson (1964) but only distinguishable using male genitalia characters. This genus only previously known in West Indies from Trinidad & Tobago.

WINTHEMIINI

24. *Winthemia* sp. nr. *sexualis* Curran, 1927
Two females, one collected at St George Parish in July 2015 and the other at D-Smart Farm in St Paul Parish during June 2016. There are two males in the NHMUK from Barbados which are probably conspecific with the Dominica females and have hair patches on the ventral surfaces of tergites 4 and 5 but are not *W. okefenokeensis* Smith, 1916 as the front tarsi are not widened. Both males from Barbados are reared, from *Trichoplusia* sp. (Noctuidae) and *Anomis illita* (Erebidae).

PHASIINAE

GYMNOSOMINI

25. *Gymnoclytia* sp. nr. *immaculata* (Macquart, 1843) (Fig. 5d)

Two males swept at Sunrise Farm, St David Parish in June 2016 and one female from Springfield Centre in St Paul Parish in July 2015. *Gymnoclytia immaculata* is a mostly Nearctic species, in West Indies only recorded from Jamaica.

STRONGYGASTRINI

26. *Strongygaster triangulifera* (Loew, 1863) (United States)

A widely distributed species in the Americas but genus previously unrecorded from West Indies. One male swept on the Waikutubuli Trail in St Peter Parish during July 2018.

TACHININAE

GRAPHOGASTRINI

27. *Phytomyptera* sp. A (Fig. 5e)

This species is distinguished by a setose R_1, and the males having a large triangular postpedicel and extensive yellowish colour on the abdomen. Two males were light trapped at Pont Cassé in St Paul Parish in June 2016, two males were caught in a Malaise trap in St John Parish in July 2019, and three more individuals were caught by Malaise trap in St Paul Parish, including two males in June 2016 and a female in June 2017.

28. *Phytomyptera* sp. B (Fig. 5f)

A very small (body length 2 mm) and entirely dark species. Five males and two females were caught in a Malaise trap in St John Parish in July 2019, two males caught in a Malaise trap in St Paul Parish in June 2017 and one female swept at Freshwater Lake in St George Parish in June 2018.

29. *Phytomyptera* sp. C

Another dark species, but almost twice the size of the previous species. Three females collected: two caught by Malaise trap in St Paul Parish in June 2016, and the other swept in St Peter Parish in June 2018. It would be interesting to find males of this species as a similar looking undescribed species from Trinidad has males with a bifurcate postpedicel.

30. *Phytomyptera* sp. D

A somewhat aberrant *Phytomyptera* as the node of R_{4+5} has two or three small setae rather than a single strong seta. R_1 is setose on its apical third and the subcostal cell has a grey stigma. Two females caught in Malaise traps in St Paul Parish, in June 2016 and June 2017.

31. *Phytomyptera* sp. E

Another somewhat aberrant *Phytomyptera*, very small (body length 2 mm) and with R_{4+5} petiolate. Three males caught in a Malaise trap in St John Parish in July 2019.

32. *Phytomyptera* sp. F

Three females caught in a Malaise trap at 3 Rivers Eco Lodge, St Paul Parish in June 2017. A larger species quite similar to sp. B but the palpus is dark brown instead of yellow.

LESKIINI

33. *Crocinosoma ?cornuale* Reinhard, 1947

All collected at Syndicate Forest, St Peter Parish in 2018 with one female swept in June and two males caught in a Malaise trap in July. *Crocinosoma cornuale* is known from the United States to Costa Rica but has not been recorded from the West Indies.

34. *Crocinosoma* sp. A

A smaller, darker species than *C. cornuale*. A male was collected in a pan trap at 3 Rivers Eco Lodge in June 2018, and this species was quite numerous in Malaise trap samples from D-Smartfarm and 3 Rivers Ecolodge in St Paul Parish.

MINTHOINI

35. *Actinochaeta* sp.

Two female specimens collected in Malaise traps in St Paul Parish during June 2016 and June 2017. Four species of this genus have been described but this is the first record of it from the West Indies, the others only known from South and Central America, three of them described from Brazil.

36. *Paradidyma* sp. nr. *rufopalpus* (Curran, 1926)

This species resembles *P. rufopalpus*, which is only known from Jamaica. Two other species of *Paradidyma* are known from the West Indies, one also from Jamaica and the other from St. Vincent. In Dominica it appears to be widely scattered, on east coast and in hills. Five specimens were swept in June 2016 and June 2018, but two males were collected in Malaise traps in St Paul Parish during June 2016 and June 2017.

TACHININI

37. *Archytas basifulvus* (Walker, 1849) (Jamaica)

An apparently widespread Neotropical species, in the West Indies known from the Greater Antilles and Trinidad & Tobago. A female was swept in St Joseph Parish in July 2018.

Conclusions

These results show that there is much still to be discovered about the Caribbean fauna of Tachinidae, with 37 species collected from an island where only three species had previously been recorded. These specimens were mostly collected during June and July so there must be a possibility that there are yet more species to be discovered which fly at other times of the year. A study currently in preparation on the Muscidae collected on these field trips to Dominica resulted in the discovery of at least 10 undescribed species, many of which are probably endemic to Dominica or more widely in the West Indies. More detailed information on the Tachinidae of Dominica is to be published in a paper currently in preparation, including descriptions of new species.

References

Aldrich, J.M. (1926) North American two-winged flies of the genus *Cylindromyia* Meigen (*Ocyptera* of authors). *Proceedings of the United States National Museum*, 68 (No. 2624) [1927], 1–27 + 1 pl.

Curran, C.H. (1926) Appendix. New Diptera from Jamaica. Pp. 102–114. *In*: Gowdey, C.C., Catalogus insectorum jamaicensis. *Department of Agriculture, Jamaica. Entomological Bulletin*, 4, 1–114.

Dios, R. de V.P. and Nihei, S.S. (2020) Taxonomic revision of the genus *Trichopoda* Berthold, 1827 (Diptera: Tachinidae: Phasiinae), with emphasis on the Neotropical fauna. *Zootaxa*, 4870, 1–104.

Fleming, A.J., Wood, D.M., Smith, M.A., Hallwachs, W. & Janzen, D.H. (2014) Revision of the New World species of *Houghia* Coquillett (Diptera, Tachinidae) reared from caterpillars in Area de Conservación Guanacaste, Costa Rica. *Zootaxa*, 3858, 1–90.

Guimarães, J.H. (1976) A revision of the genus *Cylindromyia* Meigen in the Americas south of the United States (Diptera, Tachinidae). *Arquivos de Zoologia*, 27, 1–50.

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. & González, C.R. (2021) Annotated catalogue of the Tachinidae (Insecta, Diptera) of Chile. *ZooKeys*, 1064, 1–200.

Sabrosky, C.W. (1981) A partial revision of the genus *Eucelatoria* (Diptera, Tachinidae), including important parasites of *Heliothis*. *United States Department of Agriculture. Technical Bulletin*, 1635, iv + 18 pp.

Thompson, W.R. (1964) The tachinids of Trinidad. VI. The larviparous goniines of the carceliine type (Diptera, Tachinidae). *Studia Entomologica*, 7, 97–151.

Thompson, W.R. (1968) The tachinids of Trinidad. VIII. Phorocerines. *Memoirs of the Entomological Society of Canada*, 56, 1–207.

Williston, S.W. (1896) On the Diptera of St. Vincent (West Indies). *Transactions of the Entomological Society of London*, 1896, 253–446 + pls. 8–14.

Wood, D.M. (1987) Tachinidae. Pp. 1193–1269. *In*: McAlpine, J.F., Peterson, B.V., Shewell, G.E., Teskey, H.J., Vockeroth, J.R. and Wood, D.M. (coords.), Manual of Nearctic Diptera. Volume 2. *Agriculture Canada Monograph*, 28, vi + 675–1332.

Wood, D.M. and Zumbado, M.A. (2010) Tachinidae (tachinid flies, parasitic flies). Pp. 1343–1417. In: Brown, B.V., Borkent, A., Cumming, J.M., Wood, D.M., Woodley, N.E. and Zumbado, M.A. (eds.), *Manual of Central American Diptera*. Volume 2. NRC Research Press, Ottawa. xvi + 715–1442.

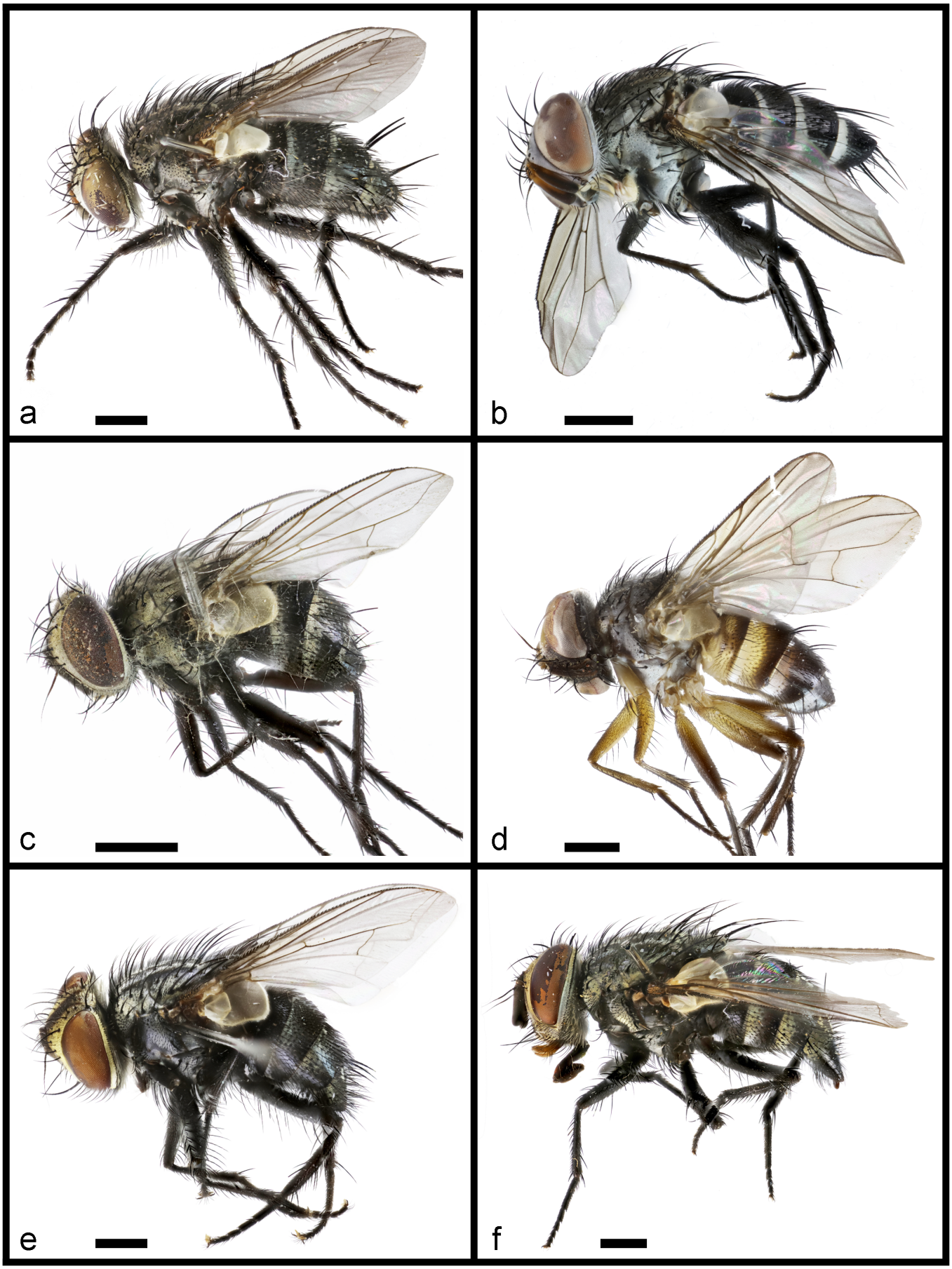

Figure 4. **a**. *Meleterus nuperus* Reinhard (Dexiinae, Voriini). **b**. *Spathidexia antillensis* Arnaud (Dexiinae, Voriini). **c**. *Myiopharus* ?*calyptratus* (Williston) (Exoristinae, Blondeliini). **d**. *Pseudoredtenbacheria* sp. (Exoristinae, Blondeliini). **e**. *Lespesia thompsoni* O'Hara & Wood (Exoristinae, Eryciini). **f**. *Lespesia* sp. (Exoristinae, Eryciini). Scale bars = 1.0 mm.

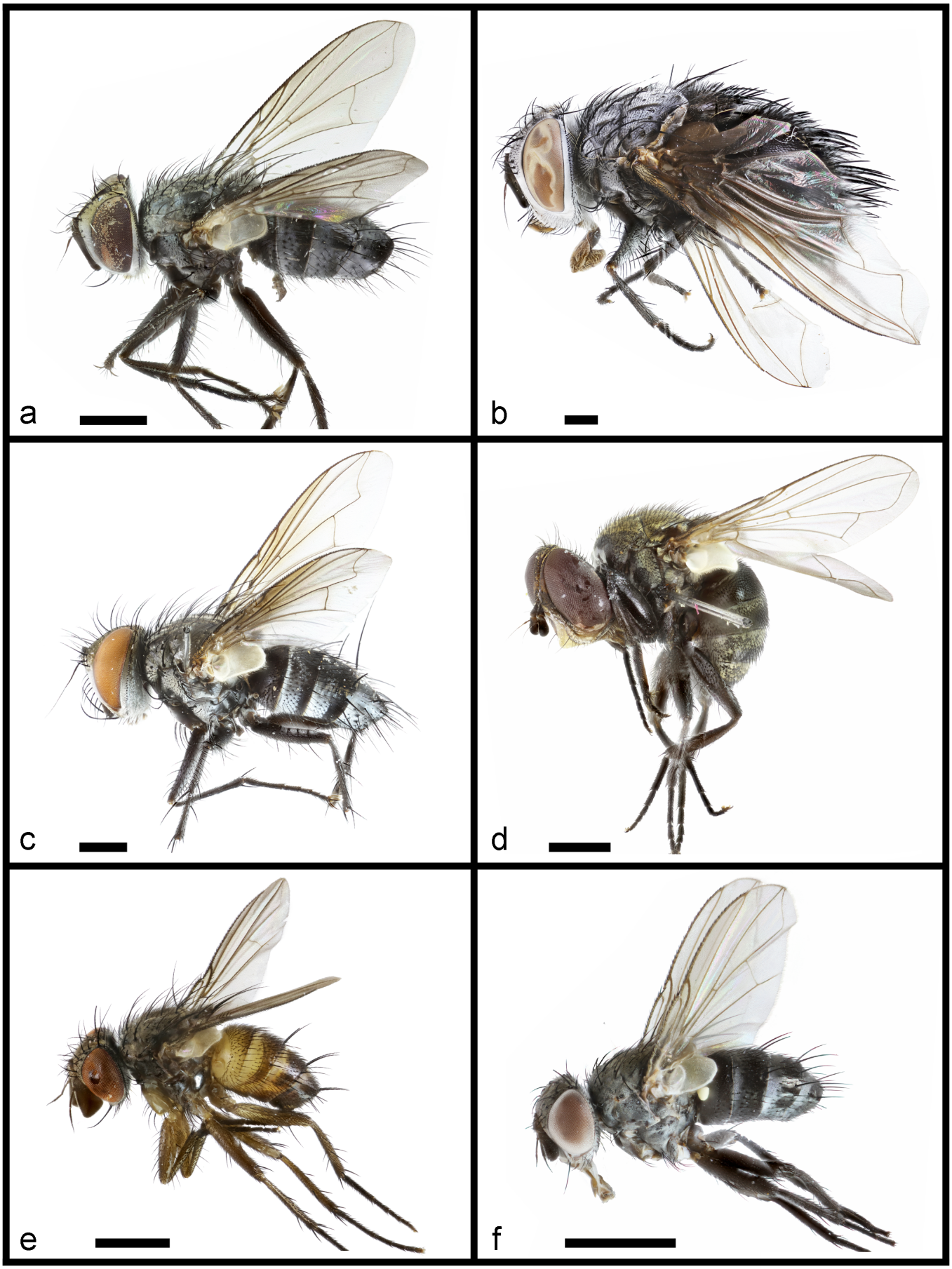

Figure 5. **a**. *Hyphantrophaga* sp. cf. *blandoides* (Thompson) (Exoristinae, Goniini). **b**. *Leschenaultia* sp. (Exoristinae, Goniini). **c**. *Prospherysa* sp. (Exoristinae, Goniini). **d**. *Gymnoclytia* sp. nr. *immaculata* (Macquart) (Phasiinae, Gymnosomini). **e**. *Phytomyptera* sp. A (Tachininae, Graphogastrini). **f**. *Phytomyptera* sp. B (Tachininae, Graphogastrini). Scale bars = 1.0 mm.