

Two new records of fruit flies (Diptera: Tephritidae) for the fauna of Aksaray and Mersin provinces

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Abstract: This study was based on fruit flies collected from Aksaray and Mersin provinces in spring and summer of 2012–2013. During the study, samples were collected from host plants randomly or systematically by using an insect net. In the study, 62 species belonging to 21 genera from 5 subfamilies have been determined, and *Dioxyyna sororcula* and *Terellia ivannikovi* have been recorded for the first time in Turkey. In addition, adult figures of new records and wing figures of all species are given.

Key words: Fruit flies, Tephritidae, fauna, Aksaray, Mersin, Turkey

1. Introduction

According to Freidberg (2006), fruit flies (Diptera: Tephritidae) include 3 to 6 subfamilies, about 40 tribes and subtribes, approximately 500 genera, and about 4500 species. It seems that we already have enough suprageneric taxa and that not many additional genera are still to be discovered. Many species of fruit flies, especially the subfamily Tephritinae, develop in plants of the family Asteraceae (Freidberg and Kugler, 1989). Some species damage fruit. According to Carroll et al. (2002), 190 species of fruit flies have economic importance all over the planet.

According to Koçak and Kemal (2013), 156 species of fruit flies are present in Turkey. With this study, the number of fruit fly species in Turkey increases to 158.

2. Materials and methods

Adult specimens of fruit flies were collected from host plants randomly or systematically by using an insect net in various locations in Aksaray and Mersin provinces during 2012–2013. Species were identified by using the keys of Hendel (1927), White (1988), Freidberg and Kugler (1989), Merz (1994), Korneyev and White (1993 and 1999), Kütük (2003 and 2006), Korneyev (2003, 2006), and Korneyev et al. (2013). Adult specimens were deposited in the insect laboratory of Gaziantep University.

3. Results

In the results of this study, 62 species [*Acanthiophilus helianthi* (Rossi), *Aciura coryli* (Rossi) *Campiglossa*

producta (Loew), *Cam. tesellata* (Loew), *Capitetes ramulosa* (Loew), *Ceratitis capitata* (Wiedemann), *Chaetorellia carthami* Stackelberg, *Cha. jaceae* (Rob-Des), *Cha. loricatea* (Rondani), *Cha. succinea* (Costa), *Chaetostomella cylindrica* (Rob-Des), *Dioxyyna bidentis*, (Rob-Des), *D. sororcula* (Wiedemann), *Ensina sonchi* (Linnaeus), *Euaresta bullans* (Wiedemann), *Heringina guttata* (Fallen), *Hypenidium roborowskii* (Becker), *Orellia falcata* (Scopoli), *Spathulina sicula* Rondani, *Sphenella marginata* (Fallen), *Tephritis acanthiophilopsis* Hering, *Tep. cometa* (Loew), *Tep. dioscurea* (Loew), *Tep. divisa* Rondani, *Tep. fallax* (Loew), *Tep. formosa* (Loew), *Tep. hurvitzii* Freidberg, *Tep. mariannae* Merz, *Tep. matricariae* (Loew), *Tep. merzi* Freidberg-Kütük, *Tep. nigricauda* (Loew), *Tep. postica* (Loew), *Tep. praecox* (Loew), *Tep. recurrens* Loew, *Tep. sauterina* Merz, *Tep. separata* Rondani, *Tep. simplex* (Loew), *Tephritomyia lauta* (Loew), *Terellia colon* (Meigen), *Ter. gynaecochroma* (Hering), *Ter. ivannikovi* Korneyev et al., *Ter. luteola* (Wiedemann), *Ter. nigripalpis* (Hendel), *Ter. quadratula* (Loew), *Ter. serratulae* (Linnaeus), *Ter. virens* (Loew), *Ter. yukseli* Kütük, *Trupanea amoena* (Frauenfeld), *Tru. stellata* (Fuesslin), *Urophora affinis* (Frauenfeld), *U. aprica* (Fallen), *U. congrua* Loew, *U. cuspidata* (Meigen), *U. jaceana* (Hering), *U. mauritanica* Macquart, *U. phalolepidis* Merz-White, *U. quadrifasciata* (Meigen), *U. solstitialis* (Linnaeus), *U. stylata* (Fabricius), *U. tenuior* (Hendel), *U. terebrans* (Loew), *Xyphosia miliaria* (Schrank)] belonging to 21 genera in 5 (Aciurinae, Myopitinae, Tephritinae, Terellinae, Trypetinae) subfamilies were determined from Aksaray and Mersin provinces.

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Dioxyyna sororcula (Wiedemann 1830) and *Terellia ivannikovii* Korneyev et al., 2013 are recorded for the first time from Turkey. Species are listed in alphabetical order. In addition, wing figures of all species and adult figures of new records have been given in this paper.

3.1. *Acanthiophilus helianthi* (Rossi 1794) (Figure 1)

Specimens examined: Aksaray, Ihlara, 38°16'N, 34°19'E, 1333 m, 26.06.2012, 2 ♂♂; Center, 38°23'N, 33°59'E, 956 m, 21.06.2012, 1 ♂; Ortaköy, 38°44'N, 34°11'E, 1041 m, 20.06.2013, 1 ♀; Hasan Mountain, 38°06'N, 34°37'E, 2050 m, 20.06.2013, 1 ♀; Center, 38°20'N, 34°13'E, 1150 m, 03.07.2013, 1 ♂; Mersin, Erdemli, 36°37'N, 34°19'E, 12 m, 08.05.2012, 1 ♀; Erdemli, Ayaş, 36°31'N, 34°11'E, 95 m, 08.05.2012, 1 ♂; Erdemli, Ayaş, 36°31'N, 34°10'E, 210 m, 08.05.2012, 2 ♂♂; Taşucu, 36°20'N, 33°54'E, 23 m, 08.05.2012, 6 ♂♂; Erdemli, 36°36'N, 34°16'E, 17 m, 09.05.2012, 1 ♀; Center, 36°51'N, 34°36'E, 142 m, 27.05.2012, 1 ♂; Center, 36°51'N, 34°35'E, 147 m, 27.05.2012, 3 ♂♂; Erdemli, 36°37'N, 34°19'E, 16 m, 28.05.2012, 1 ♂; Mersin, Tarsus, 37°09'N, 34°45'E, 593 m, 11.07.2012, 1 ♀, 2 ♂♂; Tarsus, 37°09'N, 34°48'E, 565 m, 11.07.2012, 1 ♀; Toroslar, Çağlarca village, 37°00'N, 34°27'E, 1242 m, 11.07.2012, 1 ♀, 1 ♂; Toroslar, Yavca village, 37°01'N, 34°19'E, 1242 m, 11.07.2012, 1 ♀; Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 5 ♀♀; Silifke, Kocaoluk village, 36°39'N, 33°54'E, 1390 m, 19.07.2012, 1 ♂; Tarsus, 36°55'N, 34°57'E, 19 m, 31.03.2013, 2 ♀♀; Center, 36°51'N, 34°35'E, 150 m, 31.03.2013, 1 ♀, 1 ♂; Center, 36°48'N, 34°35'E, 52 m, 31.03.2013, 5 ♀♀, 3 ♂♂; Erdemli, 36°34'N, 34°15'E, 43 m, 31.03.2013, 1 ♂; Silifke, 36°23'N, 33°59'E, 4 m, 01.04.2013, 3 ♀♀; Taşucu, 36°20'N, 33°54'E, 73 m, 01.04.2013, 1 ♀, 1 ♂; Taşucu, 36°55'N, 34°57'E, 19 m, 01.04.2013, 2 ♀♀; Silifke, 36°21'N, 33°55'E, 24 m, 12.04.2013, 1 ♀, 1 ♂; Mut, 36°29'N, 33°33'E, 91 m, 12.04.2013, 2 ♀♀; Erdemli, Kanlıdivane, 36°31'N, 34°13'E, 210 m, 13.04.2013, 1 ♂; Erdemli, Kanlıdivane, 36°31'N, 34°11'E, 102 m, 10.05.2013, 1 ♂; Silifke, 36°22'N, 33°55'E, 30 m, 10.05.2013, 6 ♀♀, 4 ♂♂.

3.2. *Aciura coryli* (Rossi 1794) (Figure 2)

Specimens examined: Mersin, Erdemli, Kanlıdivane, 36°31'N, 34°11'E, 102 m, 10.05.2013, 1 ♂.

3.3. *Campiglossa producta* (Loew 1844) (Figure 3)

Specimens examined: Aksaray, Ortaköy, 38°42'N, 34°00'E, 1334 m, 20.06.2013, 1 ♀; Mersin, Taşucu, 36°20'N, 33°54'E, 23 m, 08.05.2012, 1 ♂; Taşucu, 36°19'N, 34°53'E, 2 m, 09.05.2012, 1 ♀, 1 ♂; Fındıklı, 36°57'N, 34°18'E, 1845 m, 11.07.2012, 2 ♂♂; Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 1 ♀, 2 ♂♂; Silifke, Kocaoluk village, 36°39'N, 33°54'E, 1390 m, 19.07.2012, 1 ♂; Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 1 ♂; Anamur, Bozyazı, 36°06'N, 32°56'E, 1 m, 01.04.2013, 1 ♂; Silifke, 36°21'N, 33°55'E, 24 m, 12.04.2013, 2 ♀♀; Silifke,

36°21'N, 33°53'E, 57 m, 12.04.2013, 1 ♀; Mut, 36°33'N, 33°26'E, 126 m, 12.04.2013, 5 ♀♀, 5 ♂♂; Mut, 36°29'N, 33°33'E, 91 m, 12.04.2013, 2 ♀♀, 1 ♂; Silifke, 36°23'N, 33°48'E, 139 m, 12.04.2013, 1 ♀; Silifke, 36°23'N, 33°48'E, 50 m, 10.05.2013, 1 ♂; Silifke, 36°22'N, 33°55'E, 30 m, 10.05.2013, 1 ♀, 3 ♂♂.

3.4. *Campiglossa tesellata* (Loew 1844) (Figure 4)

Specimens examined: Mersin, Silifke, 36°27'N, 34°06'E, 142 m, 09.05.2012, 1 ♀; Erdemli, Limonlu, 36°33'N, 34°14'E, 17 m, 09.05.2012, 1 ♀.

3.5. *Capitetes ramulosa* (Loew 1844) (Figure 5)

Specimens examined: Mersin, Erdemli, Limonlu, 36°33'N, 34°13'E, 150 m, 09.05.2012, 1 ♀; Silifke, 36°21'N, 33°55'E, 24 m, 12.04.2013, 8 ♀♀, 9 ♂♂; Silifke, 36°21'N, 33°53'E, 57 m, 12.04.2013, 5 ♀♀, 10 ♂♂; Mut, 36°33'N, 33°26'E, 126 m, 12.04.2013, 1 ♂; Erdemli, Kanlıdivane, 36°31'N, 34°11'E, 102 m, 10.05.2013, 1 ♀, 2 ♂♂.

3.6. *Ceratitis capitata* (Wiedemann 1830) (Figure 6)

Specimens examined: Mersin, Toroslar, Gözne, 36°52'N, 34°33'E, 259 m, 15.08.2013, 2 ♀♀.

3.7. *Chaetorellia carthami* Stackelberg 1929 (Figure 7)

Specimens examined: Aksaray, Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 2 ♂♂; Ihlara, 38°23'N, 34°07'E, 1135 m, 27.05.2013, 1 ♀; Ortaköy, 38°47'N, 34°12'E, 1211 m, 20.06.2013, 1 ♂.

3.8. *Chaetorellia jaceae* (Rob-Des 1830) (Figure 8)

Specimens examined: Aksaray, Center, 38°23'N, 33°59'E, 956 m, 21.06.2012, 1 ♂; Çavdarlılar village, 38°37'N, 33°57'E, 1309 m, 27.06.2012, 1 ♂; Kızılcı, 37°50'N, 34°10'E, 1100 m, 07.05.2013, 1 ♂; Center, 38°25'N, 33°57'E, 981 m, 08.05.2013, 1 ♂; Center, 38°33'N, 33°59'E, 1086 m, 08.05.2013, 1 ♂; Ihlara, 38°23'N, 34°07'E, 1135 m, 27.05.2013, 2 ♂♂; Güzelyurt, 38°18'N, 34°17'E, 1283 m, 27.05.2013, 6 ♂♂; Ortaköy, 38°44'N, 34°11'E, 1041 m, 20.06.2013, 1 ♀; Ortaköy, 38°42'N, 34°00'E, 1334 m, 20.06.2013, 1 ♀, 1 ♂; Mersin, Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 2 ♂♂; Silifke, 36°22'N, 33°54'E, 36 m, 12.04.2013, 1 ♀; Erdemli, 36°39'N, 34°19'E, 92 m, 10.05.2013, 1 ♂; Silifke, 36°23'N, 33°48'E, 50 m, 10.05.2013, 1 ♂; Silifke, 36°22'N, 33°55'E, 30 m, 10.05.2013, 2 ♂♂.

3.9. *Chaetorellia loricata* (Rondani 1870) (Figure 9)

Specimens examined: Aksaray, Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 1 ♂; Boyalı, 38°33'N, 34°59'E, 1106 m, 27.05.2013, 1 ♀, 1 ♂.

3.10. *Chaetorellia succinae* (Costa 1844) (Figure 10)

Specimens examined: Aksaray, Center, 38°23'N, 33°59'E, 956 m, 21.06.2012, 1 ♂; Mersin, Tarsus, 37°09'N, 34°45'E, 593 m, 11.07.2012, 2 ♀♀, 5 ♂♂; Tarsus, 37°09'N, 34°48'E, 565 m, 11.07.2012, 6 ♀♀, 8 ♂♂; Silifke, 36°22'N, 33°55'E, 30 m, 10.05.2013, 1 ♀, 5 ♂♂.

3.11. *Chaetostomella cylindrica* (Rob-Des 1830) (Figure 11)

Specimens examined: **Aksaray**, Center, 38°50'N, 34°11'E, 1092 m, 20.06.2012, 3 ♂♂; **Güzelyurt**, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 1 ♀; **Ihlara**, 38°16'N, 34°19'E, 1333 m, 26.06.2012, 5 ♀♀, 6 ♂♂; **Selime**, 38°19'N, 34°13'E, 1131 m, 21.06.2012, 1 ♂; **Center**, 38°31'N, 33°59'E, 1060 m, 27.06.2012, 1 ♂; **Ortaköy**, 38°45'N, 34°04'E, 1131 m, 27.06.2012, 2 ♀♀, 2 ♂♂; **Ihlara**, 38°20'N, 34°13'E, 1135 m, 07.05.2013, 2 ♂♂; **Ortaköy**, 38°47'N, 34°12'E, 1211 m, 20.06.2013, 1 ♀, 7 ♂♂; **Ortaköy**, 38°44'N, 34°11'E, 1041 m, 20.06.2013, 2 ♂♂; **Ortaköy**, 38°42'N, 34°00'E, 1334 m, 20.06.2013, 2 ♂♂; **Center**, 38°25'N, 34°06'E, 1167 m, 20.06.2013, 6 ♀♀, 14 ♂♂; **Center**, 38°12'N, 34°18'E, 1342 m, 20.06.2013, 3 ♀♀, 3 ♂♂; **Hasan Mountain**, 38°06'N, 34°37'E, 2050 m, 20.06.2013, 2 ♀♀; **Güzelyurt**, 38°19'N, 34°15'E, 1201 m, 03.07.2013, 1 ♀; **Güzelyurt**, 38°15'N, 34°25'E, 1711 m, 04.07.2013, 1 ♀; **Mersin**, **Silifke**, **Uzuncaburç village**, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 2 ♂♂; **Silifke**, **Kırobası**, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 2 ♀♀; **Taşucu**, 36°55'N, 34°57'E, 19 m, 01.04.2013, 1 ♂; **Silifke**, 36°21'N, 33°55'E, 24 m, 12.04.2013, 1 ♂; **Mut**, 36°33'N, 33°26'E, 126 m, 12.04.2013, 1 ♀; **Erdemli**, **Kanlıdivane**, 36°31'N, 34°11'E, 102 m, 10.05.2013, 1 ♂; **Silifke**, 36°35'N, 33°53'E, 1200 m, 05.07.2013, 1 ♂.

3.12. *Dioxya bidentis* (Rob-Des 1830) (Figure 12)

Specimens examined: **Aksaray**, Center, 38°24'N, 34°00'E, 1011 m, 07.05.2013, 1 ♀; **Mersin**, **Taşucu**, 36°20'N, 33°54'E, 73 m, 01.04.2013, 1 ♀.

3.13. *Dioxya sororcula* (Wiedemann 1830) (Figure 13)

Specimens examined: **Mersin**, **Erdemli**, **Limonlu**, 36°33'N, 34°13'E, 150 m, 09.05.2012, 1 ♀; **Erdemli**, **Kumkuyu**, 36°31'N, 34°11'E, 52 m, 28.05.2012, 1 ♂; **Center**, **Tömük**, 36°51'N, 34°35'E, 150 m, 31.03.2013, 1 ♀; **Erdemli**, 36°34'N, 34°15'E, 43 m, 31.03.2013, 24 ♀♀, 22 ♂♂.

Description: **Head:** yellow to brown, ocellar spot black, arista dark brown, face and gena white, third segment of antenna 1.3 times as long as wide. **Thorax:** ground color black, with dense pollinosity, hairs whitish, acuminate setae black, halter yellow. **Wing:** pattern weak, stigma hyaline, hyaline spot lacking in the middle of stigma. At apex, hyaline spot of cell R_{4+5} wider than half of cell. **Abdomen:** black, hairs and setae whitish, oviscapae shiny black, apex of aculeus pointed.

Measurements (length in mm): Female body: 3.4–4.0; wing: 3.2–3.6. Male body: 2.7–3.2; wing: 3.1–3.3.

This species was recorded for the first time in Turkey with this study.

3.14. *Ensina sonchi* (Linnaeus 1767) (Figure 14)

Specimens examined: **Aksaray**, **Güzelyurt**, 38°15'N, 34°25'E, 1711 m, 04.07.2013, 1 ♂; **Mersin**, **Toroslar**,

Yavca village, 37°01'N, 34°19'E, 1242 m, 11.07.2012, 1 ♂; **Silifke**, **Uzuncaburç village**, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 1 ♂; **Silifke**, **Kocaoluk village**, 36°39'N, 33°54'E, 1390 m, 19.07.2012, 2 ♂♂; **Silifke**, **Kocaoluk village**, 36°42'N, 33°54'E, 1411 m, 19.07.2012, 1 ♂; **Center**, **Tömük**, 36°51'N, 34°35'E, 150 m, 31.03.2013, 1 ♀, 2 ♂♂; **Silifke**, 36°23'N, 33°59'E, 4 m, 01.04.2013, 1 ♀, 1 ♂; **Silifke**, 36°21'N, 33°55'E, 24 m, 12.04.2013, 1 ♂; **Mut**, 36°37'N, 33°26'E, 310 m, 12.04.2013, 1 ♂; **Mut**, 36°33'N, 33°26'E, 126 m, 12.04.2013, 1 ♀, 1 ♂; **Silifke**, 36°23'N, 33°48'E, 139 m, 12.04.2013, 1 ♂; **Silifke**, 36°22'N, 33°54'E, 36 m, 12.04.2013, 1 ♀.

3.15. *Euaresta bullans* (Wiedemann 1830) (Figure 15)

Specimens examined: **Aksaray**, Center, 38°33'N, 33°59'E, 1086 m, 08.05.2013, 1 ♀, 1 ♂; **Boyalı**, 38°33'N, 34°59'E, 1106 m, 27.05.2013, 1 ♀, 4 ♂♂; **Mersin**, **Toroslar**, **Yavca village**, 37°01'N, 34°19'E, 1242 m, 11.07.2012, 2 ♀♀; **Silifke**, **Uzuncaburç village**, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 4 ♀♀, 4 ♂♂.

3.16. *Heringina guttata* (Fallen 1814) (Figure 16)

Specimens examined: **Aksaray**, **Güzelyurt**, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 1 ♀.

3.17. *Hypenidium roborowskii* (Becker 1908) (Figure 17)

Specimens examined: **Mersin**, **Silifke**, **Çömelek**, 36°42'N, 33°39'E, 1127 m, 19.07.2012, 1 ♂.

3.18. *Orellia falcata* (Scopoli 1763) (Figure 18)

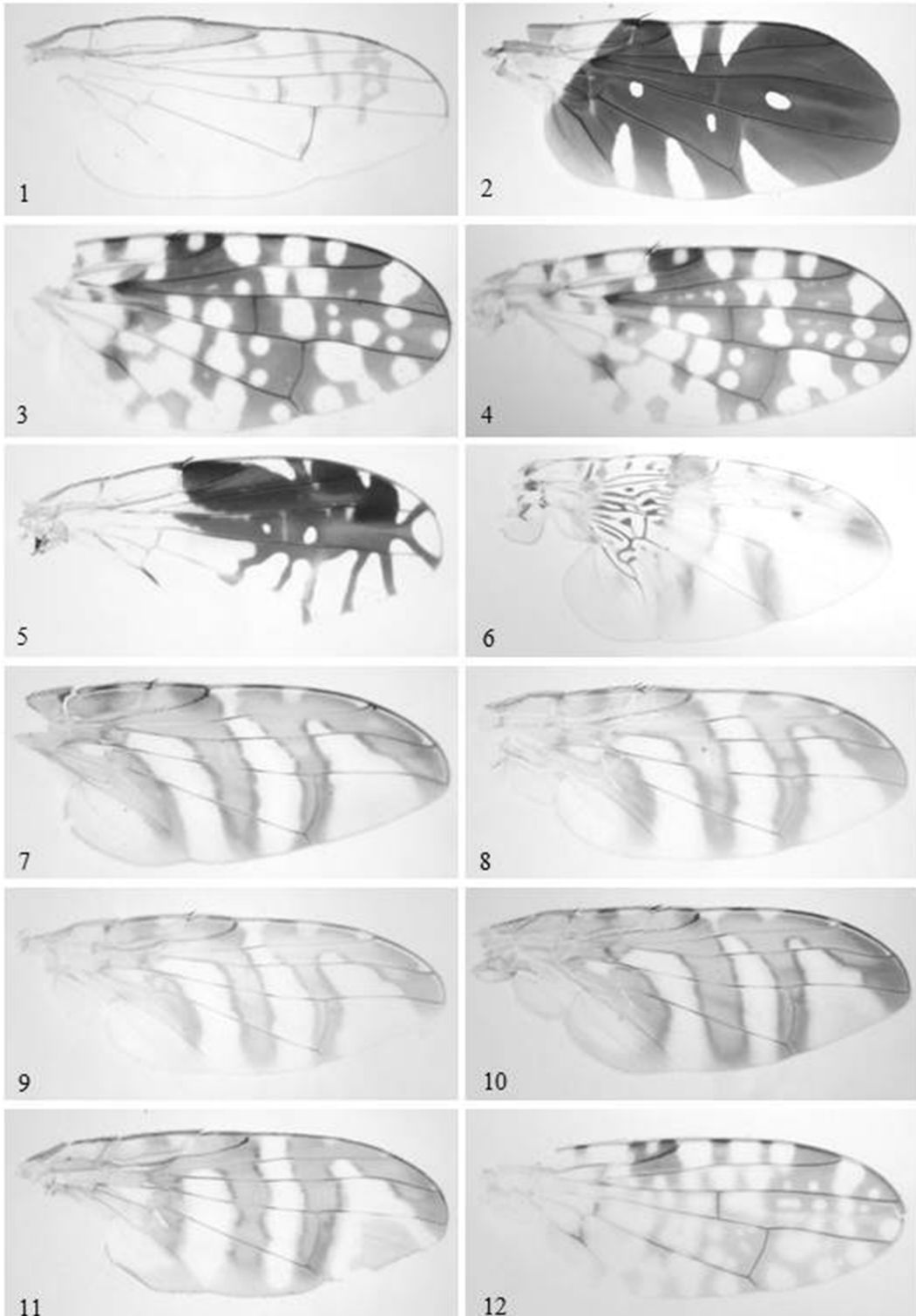
Specimens examined: **Mersin**, **Silifke**, 36°23'N, 33°48'E, 139 m, 12.04.2013, 2 ♀♀.

3.19. *Spathulina sicula* Rondani 1856 (Figure 19)

Specimens examined: **Mersin**, **Erdemli**, **Limonlu**, 36°33'N, 34°13'E, 150 m, 09.05.2012, 2 ♀♀, 1 ♂; **Erdemli**, **Limonlu**, 36°33'N, 34°13'E, 150 m, 28.05.2012, 1 ♀, 1 ♂; **Erdemli**, **Limonlu**, 36°33'N, 34°13'E, 131 m, 01.04.2013, 15 ♀♀, 17 ♂♂; **Silifke**, 36°21'N, 33°55'E, 24 m, 12.04.2013, 9 ♀♀, 7 ♂♂; **Erdemli**, **Limonlu**, 36°33'N, 33°13'E, 123 m, 13.04.2013, 12 ♀♀, 15 ♂♂; **Erdemli**, **Kanlıdivane**, 36°31'N, 34°11'E, 102 m, 10.05.2013, 2 ♀♀, 1 ♂.

3.20. *Sphenella marginata* (Fallen 1814) (Figure 20)

Specimens examined: **Aksaray**, Center, 38°24'N, 34°00'E, 1011 m, 07.05.2013, 1 ♀; **Center**, 38°25'N, 33°57'E, 981 m, 08.05.2013, 2 ♂♂; **Ihlara**, 38°19'N, 34°13'E, 1150 m, 27.05.2013, 2 ♂♂; **Güzelyurt**, 38°15'N, 34°25'E, 1789 m, 27.05.2013, 1 ♀, 1 ♂; **Center**, 38°25'N, 34°06'E, 1167 m, 20.06.2013, 1 ♂; **Center**, 38°12'N, 34°18'E, 1342 m, 20.06.2013, 1 ♀; **Güzelyurt**, 38°15'N, 34°25'E, 1711 m, 04.07.2013, 1 ♀; **Mersin**, Center, 36°48'N, 34°35'E, 52 m, 31.03.2013, 1 ♂; **Center**, **Tömük**, 36°51'N, 34°35'E, 150 m, 31.03.2013, 2 ♀♀; **Taşucu**, 36°20'N, 33°54'E, 73 m, 01.04.2013, 2 ♀♀, 4 ♂♂; **Anamur**, **Aydıncık**, 36°09'N, 33°22'E, 16 m, 01.04.2013, 2 ♀♀, 2 ♂♂; **Silifke**, 36°21'N, 33°55'E, 24 m, 12.04.2013, 2 ♀♀, 1 ♂; **Silifke**, 36°21'N, 33°53'E, 57 m, 12.04.2013, 2 ♂♂.



Figures 1–12. Wing patterns of fruit flies: 1. *Acanthiophilus helianthi*, 2. *Aciura coryli*, 3. *Campiglossa producta*, 4. *Cam. tesellata*, 5. *Capitetes ramulosa*, 6. *Ceratitis capitata*, 7. *Chaetorellia carthami*, 8. *Cha. jaceae*, 9. *Cha. loricata*, 10. *Cha. succinea*, 11. *Chaetostomella cylindrica*, 12. *Dioxyna bidentis*.

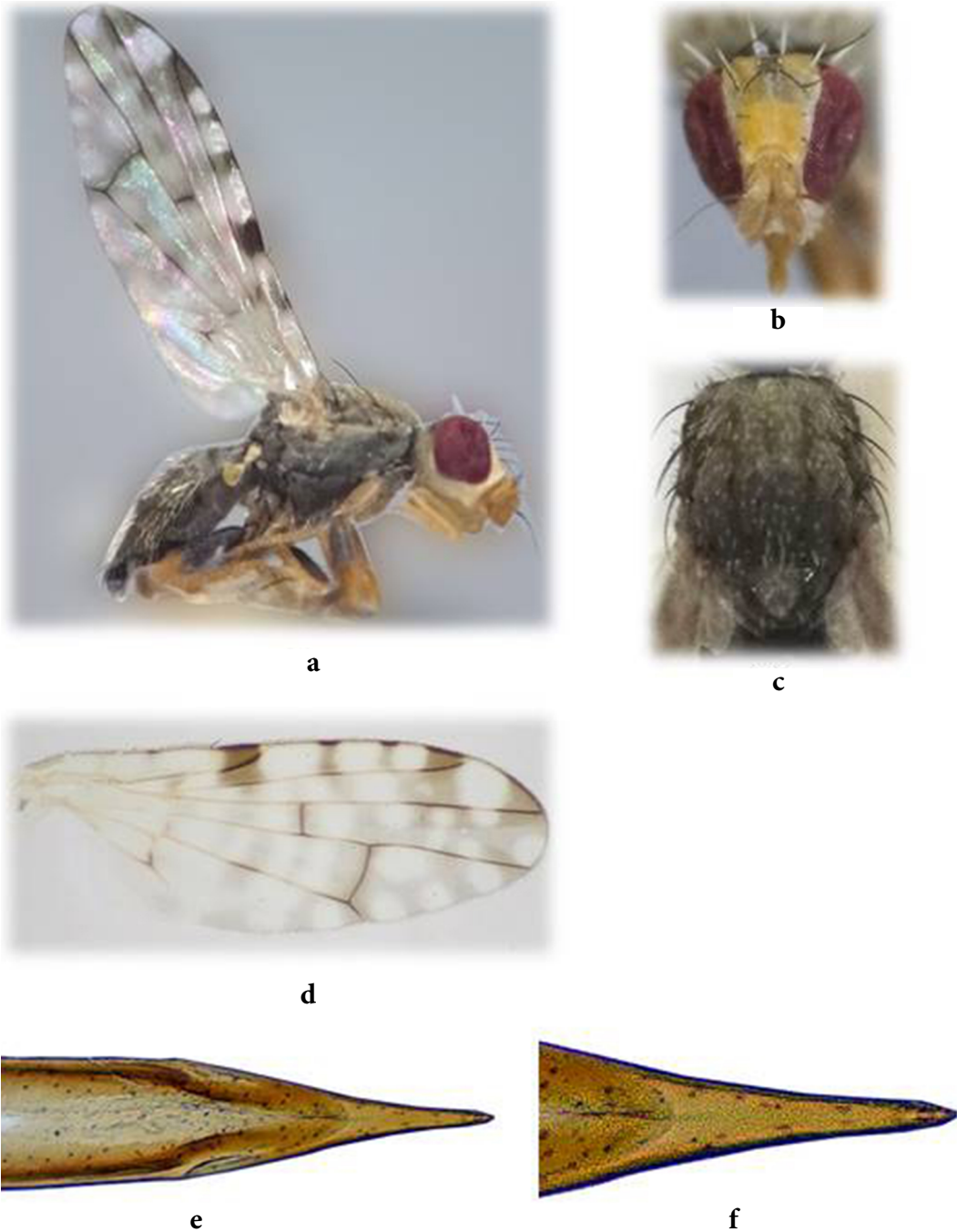


Figure 13. *Dioxyna sororcula*: a) male adult, b) male head, c) male thorax, d) wing, e) aculeus, f) apex of aculeus (enlarged).

3.21. *Tephritis acanthiophilopsis* Hering 1938 (Figure 21)
Specimens examined: Mersin, Toroslar, Yavca village, 37°01'N, 34°19'E, 1242 m, 11.07.2012, 2 ♀♀, 1 ♂; Silifke, Kırobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 1 ♂; Taşucu, 36°20'N, 33°54'E, 73 m, 01.04.2013, 1 ♂.

3.22. *Tephritis cometa* (Loew 1840) (Figure 22)
Specimens examined: Aksaray, Güzelyurt, 38°15'N, 34°25'E, 1711 m, 04.07.2013, 1 ♂.

3.23. *Tephritis dioscurea* (Loew 1856) (Figure 23)
Specimens examined: Aksaray, Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 1 ♀; Mersin, Silifke, Kocaoluk village, 36°39'N, 33°54'E, 1390 m, 19.07.2012, 1 ♂.

3.24. *Tephritis divisa* Rondani 1871 (Figure 24)

Specimens examined: Mersin, Erdemli, Limonlu, 36°33'N, 34°14'E, 7 m, 08.05.2012, 1 ♂; Toroslar, Yavca village, 37°01'N, 34°19'E, 1242 m, 11.07.2012, 4 ♀♀, 6 ♂♂; Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 1 ♀, 2 ♂♂.

3.25. *Tephritis fallax* (Loew 1844) (Figure 25)

Specimens examined: Mersin, Toroslar, Yavca village, 37°01'N, 34°19'E, 1242 m, 11.07.2012, 1 ♂; Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 1 ♀; Silifke, Kocaoluk village, 36°39'N, 33°54'E, 1390 m, 19.07.2012, 1 ♀; Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 1 ♂; Silifke, 36°21'N, 33°53'E, 57 m, 12.04.2013, 1 ♀.

3.26. *Tephritis formosa* (Loew 1844) (Figure 26)

Specimens examined: Mersin, Erdemli, Ayaş, 36°31'N, 34°11'E, 95 m, 08.05.2012, 1 ♀, 1 ♂; Taşucu, 36°18'N, 34°51'E, 5 m, 09.05.2012, 1 ♀; Erdemli, Akkum, 36°31'N, 34°12'E, 15 m, 09.05.2012, 1 ♀; Erdemli, 36°37'N, 34°19'E, 16 m, 28.05.2012, 1 ♀; Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 1 ♀, 3 ♂♂; Silifke, 36°23'N, 33°48'E, 139 m, 12.04.2013, 1 ♂.

3.27. *Tephritis hurvitzii* Freidberg 1981 (Figure 27)

Specimens examined: Aksaray, Güzelyurt, 38°15'N, 34°25'E, 1789 m, 27.05.2013, 2 ♀♀, 2 ♂♂; Mersin, Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 2 ♂♂.

3.28. *Tephritis mariannae* Merz 1992 (Figure 28)

Specimens examined: Mersin, Center, Tömük, 36°41'N, 34°22'E, 152 m, 08.05.2012, 1 ♀; Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 2 ♂♂; Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 1 ♀, 1 ♂.

3.29. *Tephritis matricariae* (Loew 1844) (Figure 29)

Specimens examined: Mersin, Silifke, Kocaoluk village, 36°39'N, 33°54'E, 1390 m, 19.07.2012, 2 ♀♀; Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 1 ♂.

3.30. *Tephritis merzi* Freidberg & Kütük 2002 (Figure 30)

Specimens examined: Mersin, Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 3 ♀♀, 1 ♂.

3.31. *Tephritis nigricauda* (Loew 1856) (Figure 31)

Specimens examined: Aksaray, Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 1 ♀; Güzelyurt, 38°15'N, 34°25'E, 1789 m, 27.05.2013, 10 ♀♀, 21 ♂♂; Güzelyurt, 38°15'N, 34°25'E, 1711 m, 04.07.2013, 3 ♀♀, 1 ♂.

3.32. *Tephritis postica* (Loew 1844) (Figure 32)

Specimens examined: Aksaray, Güzelyurt, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 5 ♀♀, 6 ♂♂; Ihlara, 38°16'N, 34°19'E, 1333 m, 26.06.2012, 1 ♀, 4 ♂♂; Selime, 38°19'N, 34°13'E, 1131 m, 21.06.2012, 1 ♀, 3 ♂♂; Çavdarlılar village, 38°37'N, 33°57'E, 1309 m, 27.06.2012, 1 ♀; Ortaköy, 38°45'N, 34°04'E, 1131 m, 27.06.2012, 1 ♀; Kızılcı, 37°50'N, 34°10'E, 1100 m, 07.05.2013, 1 ♂; Center, 38°24'N,

34°00'E, 1011 m, 07.05.2013, 1 ♀, 1 ♂; Ihlara, 38°16'N, 34°16'E, 1250 m, 08.05.2013, 1 ♀, 2 ♂♂; Center, 38°25'N, 33°57'E, 981 m, 08.05.2013, 1 ♂; Boyalı, 38°33'N, 34°59'E, 1106 m, 27.05.2013, 2 ♀♀, 9 ♂♂; Ihlara, 38°23'N, 34°07'E, 1135 m, 27.05.2013, 2 ♂♂; Ihlara, 38°19'N, 34°13'E, 1150 m, 27.05.2013, 7 ♀♀, 6 ♂♂; Güzelyurt, 38°18'N, 34°17'E, 1283 m, 27.05.2013, 4 ♀♀, 5 ♂♂; Güzelyurt, 38°19'N, 34°15'E, 1201 m, 03.07.2013, 2 ♀♀, 1 ♂; Mersin, Erdemli, Ayaş, 36°31'N, 34°10'E, 210 m, 08.05.2012, 1 ♀; Taşucu, 36°20'N, 33°54'E, 23 m, 08.05.2012, 1 ♂; Erdemli, 36°36'N, 34°16'E, 17 m, 09.05.2012, 1 ♂; Center, Tömük, 36°51'N, 34°35'E, 150 m, 31.03.2013, 3 ♀♀, 1 ♂; Taşucu, 36°20'N, 33°54'E, 73 m, 01.04.2013, 2 ♀♀, 4 ♂♂; Anamur, Bozyazı, 36°08'N, 34°10'E, 8 m, 01.04.2013, 2 ♀♀, 6 ♂♂; Anamur, Aydınçık, 36°09'N, 33°22'E, 16 m, 01.04.2013, 1 ♀, 3 ♂♂; Silifke, 36°21'N, 33°53'E, 57 m, 12.04.2013, 5 ♀♀, 1 ♂; Mut, 36°33'N, 33°26'E, 126 m, 12.04.2013, 3 ♀♀, 7 ♂♂; Mut, 36°29'N, 33°33'E, 91 m, 12.04.2013, 6 ♀♀, 4 ♂♂; Silifke, 36°35'N, 33°53'E, 1200 m, 05.07.2013, 1 ♀, 1 ♂.

3.33. *Tephritis praecox* (Loew 1844) (Figure 33)

Specimens examined: Aksaray, Çavdarlılar village, 38°37'N, 33°57'E, 1309 m, 27.06.2012, 1 ♀, 1 ♂; Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 1 ♀, 2 ♂♂; Ortaköy, 38°47'N, 34°12'E, 1211 m, 20.06.2013, 1 ♂; Mersin, Tarsus, 36°58'N, 34°55'E, 58 m, 08.05.2012, 1 ♀; Silifke, 36°27'N, 34°06'E, 142 m, 09.05.2012, 1 ♂; Silifke, Kapızlı, 36°24'N, 34°03'E, 33 m, 28.05.2012, 1 ♀; Tarsus, 36°55'N, 34°57'E, 19 m, 31.03.2013, 2 ♀♀, 3 ♂♂; Center, 36°48'N, 34°35'E, 52 m, 31.03.2013, 2 ♀♀, 1 ♂; Center, Tömük, 36°51'N, 34°35'E, 150 m, 31.03.2013, 3 ♀♀, 4 ♂♂; Taşucu, 36°20'N, 33°54'E, 73 m, 01.04.2013, 1 ♀; Anamur, Aydınçık, 36°09'N, 33°22'E, 16 m, 01.04.2013, 2 ♀♀, 5 ♂♂; Mut, 36°29'N, 33°33'E, 91 m, 12.04.2013, 6 ♀♀, 3 ♂♂; Erdemli, 36°39'N, 34°19'E, 92 m, 10.05.2013, 1 ♀, 1 ♂.

3.34. *Tephritis recurrens* Loew 1869 (Figure 34)

Specimens examined: Mersin, Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 1 ♀.

3.35. *Tephritis sauterina* Merz 1994 (Figure 35)

Specimens examined: Mersin, Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 1 ♂.

3.36. *Tephritis separata* Rondani 1871 (Figure 36)

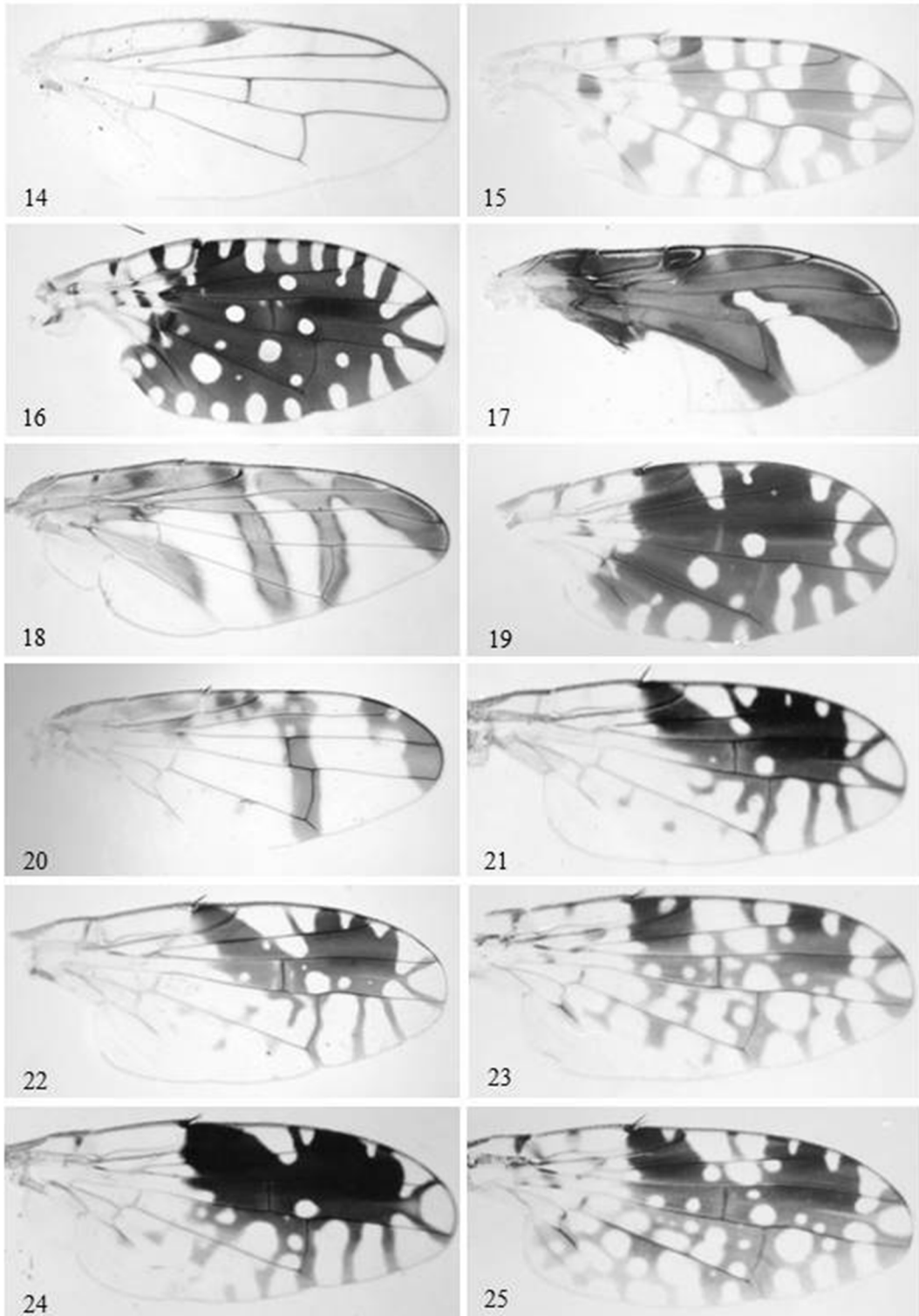
Specimens examined: Mersin, Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 1 ♂.

3.37. *Tephritis simplex* (Loew 1844) (Figure 37)

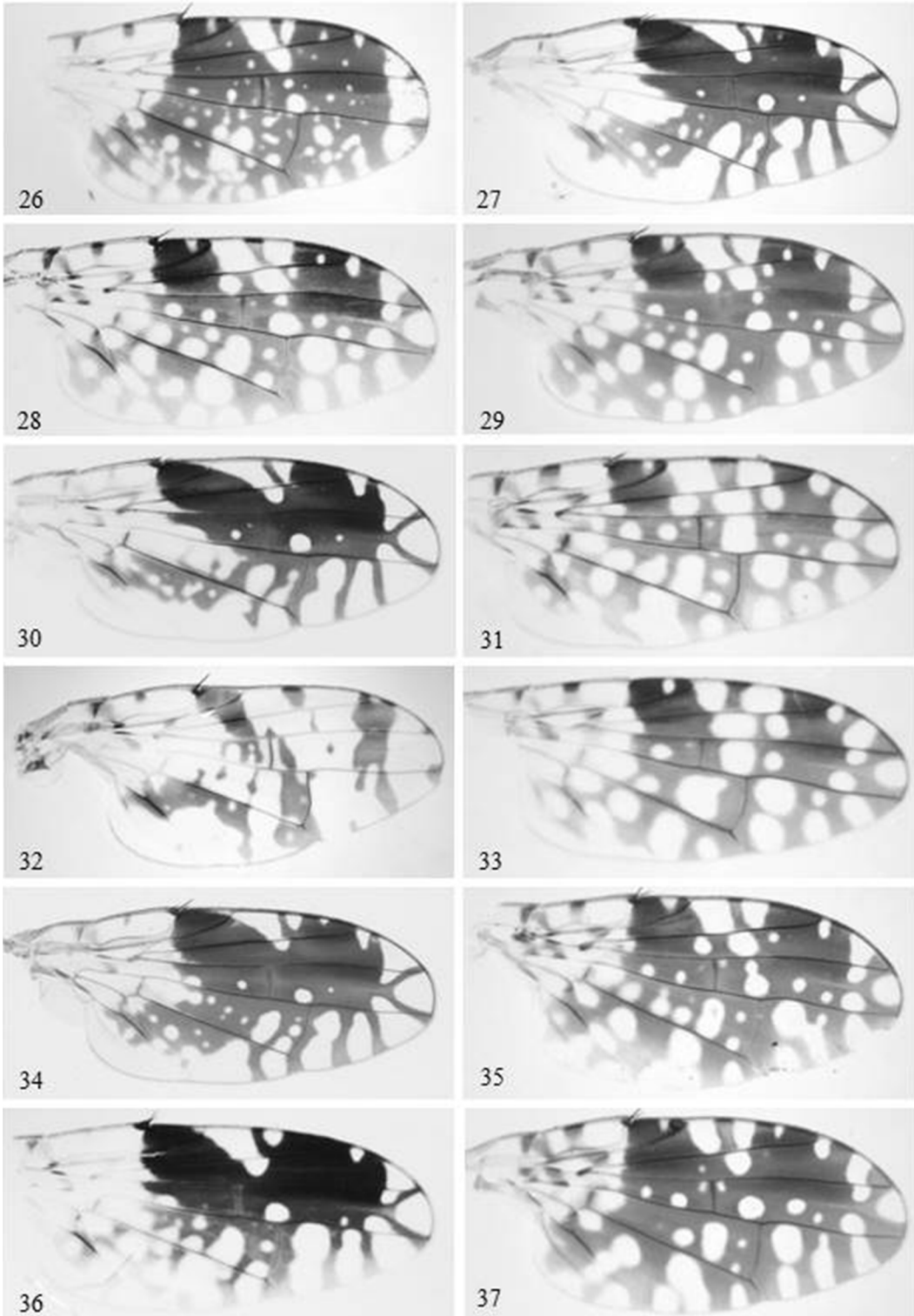
Specimens examined: Mersin, Silifke, 36°23'N, 33°59'E, 4 m, 01.04.2013, 1 ♀, 5 ♂♂.

3.38. *Tephritomyia lauta* (Loew 1869); (Figure 38)

Specimens examined: Aksaray, Center, 38°12'N, 34°18'E, 1342 m, 20.06.2013, 1 ♀; Center, 38°20'N, 34°13'E, 1150 m, 03.07.2013, 1 ♀; Mersin, Tarsus, 36°58'N, 34°55'E, 58 m, 08.05.2012, 1 ♂; Erdemli, Limonlu, 36°33'N, 34°14'E, 7 m, 08.05.2012, 1 ♀; Erdemli, Ayaş, 36°31'N, 34°11'E, 95



Figures 14–25. Wing patterns of fruit flies: **14.** *Ensina sonchi*, **15.** *Euaresta bullans*, **16.** *Heringina guttata*, **17.** *Hyphenidium roborowskii*, **18.** *Orellia falcata*, **19.** *Spathulina sicula*, **20.** *Sphenella marginata*, **21.** *Tephritis acanthiophilopsis*, **22.** *Tep. cometa*, **23.** *Tep. dioscurea*, **24.** *Tep. divisa*, **25.** *Tep. fallax*.



Figures 26–37. Wing patterns of fruit flies: 26. *Tephritis formosa*, 27. *Tep. hurvitzi*, 28. *Tep. mariannae*, 29. *Tep. matricariae*, 30. *Tep. merzi*, 31. *Tep. nigricauda*, 32. *Tep. postica*, 33. *Tep. praecox*, 34. *Tep. recurrens*, 35. *Tep. sauterina*, 36. *Tep. separata*, 37. *Tep. simplex*.

m, 08.05.2012, 1 ♀, 1 ♂; Taşucu, 36°19'N, 34°53'E, 2 m, 09.05.2012, 1 ♂; Erdemli, Kız Kalesi, 36°28'N, 34°09'E, 14 m, 09.05.2012, 2 ♀♀, 14 ♂♂; Erdemli, Akkum, 36°31'N, 34°12'E, 15 m, 09.05.2012, 2 ♀♀, 1 ♂; Toroslar, Gözne, 36°34'N, 34°33'E, 500 m, 27.05.2012, 1 ♀; Erdemli, Limonlu, 36°31'N, 34°12'E, 20 m, 28.05.2012, 1 ♀, 1 ♂; Silifke, Susanoğlu, 36°28'N, 34°09'E, 15 m, 28.05.2012, 6 ♀♀, 11 ♂♂; Erdemli, Ayaş, 36°31'N, 34°10'E, 210 m, 28.05.2012, 3 ♀♀, 1 ♂; Tarsus, 37°09'N, 34°45'E, 593 m, 11.07.2012, 1 ♀; Tarsus, 37°09'N, 34°48'E, 565 m, 11.07.2012, 1 ♂; Toroslar, Çağlarca village, 37°00'N, 34°27'E, 1242 m, 11.07.2012, 5 ♀♀, 5 ♂♂; Toroslar, Yavca village, 37°01'N, 34°19'E, 1242 m, 11.07.2012, 2 ♀♀, 1 ♂; Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 2 ♂♂; Silifke, Kocaoğluk village, 36°39'N, 33°54'E, 1390 m, 19.07.2012, 2 ♀♀, 1 ♂; Silifke, Kocaoğluk village, 36°42'N, 33°54'E, 1411 m, 19.07.2012, 1 ♀, 3 ♂♂; Silifke, Çömelek, 36°42'N, 33°39'E, 1127 m, 19.07.2012, 3 ♀♀, 4 ♂♂; Center, 36°51'N, 34°35'E, 150 m, 31.03.2013, 1 ♀, 1 ♂; Center, 36°48'N, 34°35'E, 52 m, 31.03.2013, 12 ♀♀, 12 ♂♂; Erdemli, 36°31'N, 34°12'E, 19 m, 31.03.2013, 5 ♀♀, 5 ♂♂; Silifke, 36°23'N, 33°59'E, 4 m, 01.04.2013, 1 ♀, 2 ♂♂; Erdemli, Ayaş, 36°31'N, 34°11'E, 73 m, 01.04.2013, 3 ♀♀, 3 ♂♂; Taşucu, 36°55'N, 34°57'E, 19 m, 01.04.2013, 7 ♀♀, 9 ♂♂; Anamur, Bozyazı, 36°08'N, 34°10'E, 8 m, 01.04.2013, 1 ♀; Anamur, Aydınçık, 36°09'N, 33°22'E, 16 m, 01.04.2013, 2 ♀♀; Silifke, 36°21'N, 33°55'E, 24 m, 12.04.2013, 3 ♀♀, 3 ♂♂; Mut, 36°29'N, 33°33'E, 91 m, 12.04.2013, 1 ♀; Erdemli, Kanlıdivane, 36°31'N, 34°13'E, 210 m, 13.04.2013, 3 ♀♀, 6 ♂♂; Erdemli, Kanlıdivane, 36°31'N, 34°11'E, 102 m, 10.05.2013, 1 ♀, 3 ♂♂.

3.39. *Terellia colon* (Meigen 1826) (Figure 39)

Specimens examined: Mersin, Erdemli, Akkum, 36°31'N, 34°12'E, 15 m, 09.05.2012, 1 ♂.

3.40. *Terellia gynaecochroma* (Hering 1937) (Figure 40)

Specimens examined: Aksaray, Center, 38°50'N, 34°11'E, 1092 m, 20.06.2012, 1 ♀, 3 ♂♂; Güzelyurt, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 18 ♀♀, 18 ♂♂; Ihlara, 38°16'N, 34°19'E, 1333 m, 26.06.2012, 3 ♀♀, 7 ♂♂; Selime, 38°19'N, 34°13'E, 1131 m, 21.06.2012, 3 ♀♀, 2 ♂♂; Çavdarlılar village, 38°37'N, 33°57'E, 1309 m, 27.06.2012, 1 ♀, 3 ♂♂; Ortaköy, 38°45'N, 34°04'E, 1131 m, 27.06.2012, 4 ♀♀, 7 ♂♂; Center, 38°25'N, 33°57'E, 981 m, 08.05.2013, 2 ♀♀; Center, 38°33'N, 33°59'E, 1086 m, 08.05.2013, 1 ♀; Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 1 ♂; Boyalı, 38°33'N, 34°59'E, 1106 m, 27.05.2013, 3 ♀♀; Ihlara, 38°23'N, 34°07'E, 1135 m, 27.05.2013, 1 ♀, 1 ♂; Ihlara, 38°19'N, 34°13'E, 1150 m, 27.05.2013, 2 ♀♀, 2 ♂♂; Güzelyurt, 38°18'N, 34°17'E, 1283 m, 27.05.2013, 1 ♀; Ortaköy, 38°47'N, 34°12'E, 1211 m, 20.06.2013, 1 ♂; Ortaköy, 38°44'N, 34°11'E, 1041 m, 20.06.2013, 3 ♀♀, 2 ♂♂; Ortaköy, 38°42'N, 34°00'E, 1334 m, 20.06.2013, 6 ♀♀, 9 ♂♂; Center, 38°25'N, 34°06'E, 1167 m, 20.06.2013,

1 ♀, 2 ♂♂; Center, 38°12'N, 34°18'E, 1342 m, 20.06.2013, 13 ♀♀, 9 ♂♂; Hasan Mountain, 38°06'N, 34°37'E, 2050 m, 20.06.2013, 2 ♀♀, 4 ♂♂; Güzelyurt, 38°19'N, 34°15'E, 1201 m, 03.07.2013, 6 ♀♀, 8 ♂♂; Center, 38°20'N, 34°13'E, 1150 m, 03.07.2013, 2 ♀♀; Mersin, Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 1 ♂; Mut, 36°29'N, 33°33'E, 91 m, 12.04.2013, 1 ♀; Erdemli, Kanlıdivane, 36°31'N, 34°11'E, 102 m, 10.05.2013, 1 ♂.

3.41. *Terellia ivannikovi* Korneyev et al. 2013 (Figure 41)
Specimens examined: Aksaray, Güzelyurt, 38°15'N, 34°25'E, 1711 m, 04.07.2013, 2 ♀♀, 2 ♂♂.

Description: **Head:** mostly yellow, occiput yellow, ocellar spot yellow, all of setae on the head yellow; preorbital setae longer than postorbital setae; antennae yellow; basal half on arista yellow, apical half brown. **Thorax:** ground color greenish-yellow; mesonotum as long as wide, with black lyrate pattern, little white setulae present on all parts of mesonotum; all of setae on thorax are yellow, apical scutellar setae yellow; scutellum yellow; halter yellow. **Wing:** mostly hyaline, just pterostigma yellow. **Abdomen:** ground color greenish with white hairs, oviscape brown and flat, apex of aculeus rounded; 3 small setulae present.

Measurements: Male adult: 4.0–4.5 mm; wing: 4.3–4.5 mm. Female adult: 4.7–4.9 mm; wing: 4.5–4.9 mm.

This species was recorded for the first time in Turkey with this study.

3.42. *Terellia luteola* (Wiedemann 1830) (Figure 42)

Specimens examined: Aksaray, Güzelyurt, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 1 ♀; Ihlara, 38°16'N, 34°16'E, 1250 m, 08.05.2013, 1 ♀; Güzelyurt, 38°18'N, 34°17'E, 1283 m, 27.05.2013, 1 ♂; Ortaköy, 38°44'N, 34°11'E, 1041 m, 20.06.2013, 3 ♀♀, 1 ♂; Ortaköy, 38°42'N, 34°00'E, 1334 m, 20.06.2013, 2 ♀♀, 4 ♂♂; Center, 38°12'N, 34°18'E, 1342 m, 20.06.2013, 1 ♂; Güzelyurt, 38°19'N, 34°15'E, 1201 m, 03.07.2013, 1 ♀, 1 ♂; Center, 38°20'N, 34°13'E, 1150 m, 03.07.2013, 1 ♀, 1 ♂; Mersin, Silifke, Kocaoğluk village, 36°39'N, 33°54'E, 1390 m, 19.07.2012, 1 ♀.

3.43. *Terellia nigripalpis* Hendel 1927 (Figure 43)

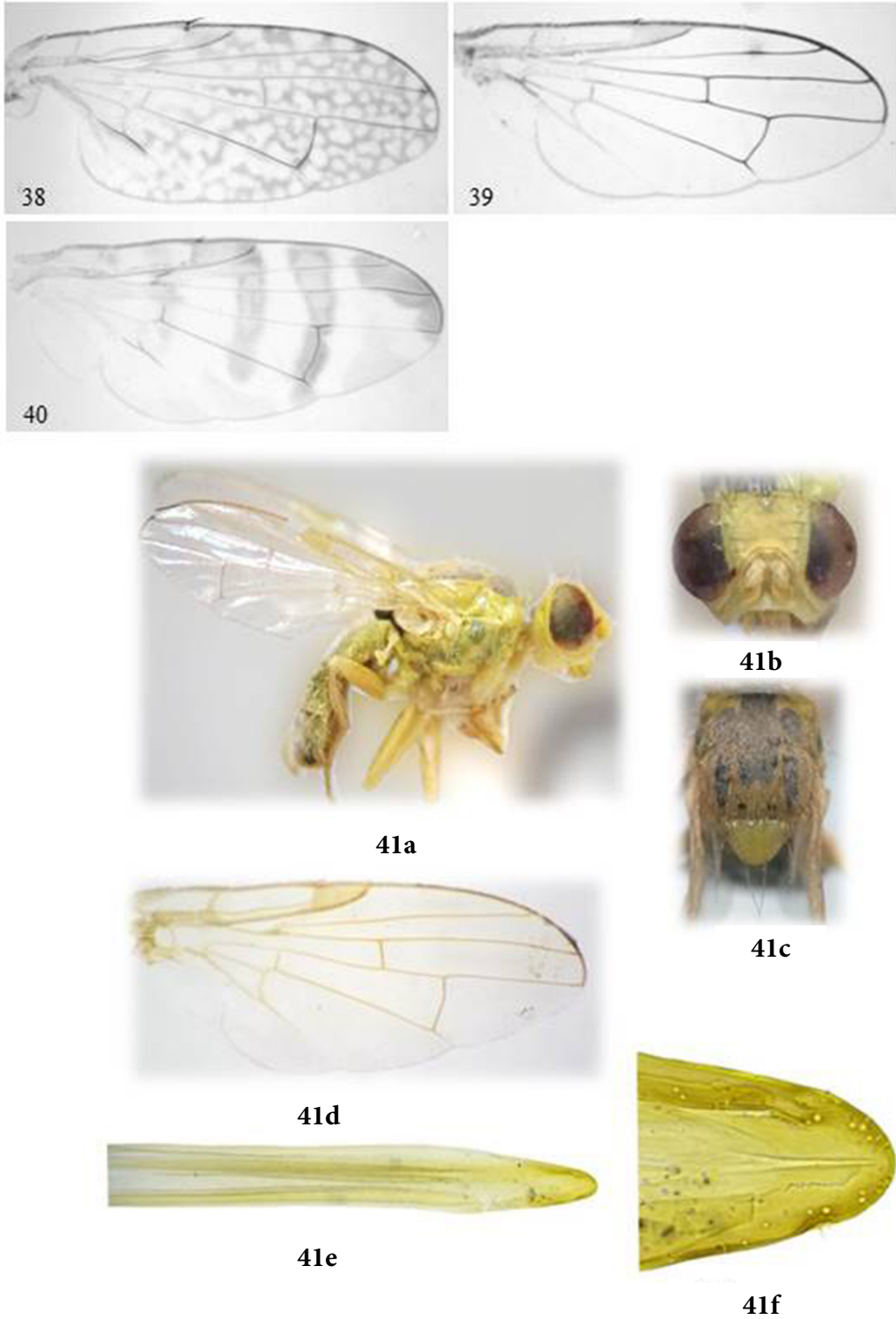
Specimens examined: Aksaray, Güzelyurt, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 1 ♀; Hasan Mountain, 38°08'N, 34°34'E, 1868 m, 20.06.2013, 1 ♀; Mersin, Fındıklı, 36°57'N, 34°18'E, 1845 m, 11.07.2012, 1 ♂; Silifke, 36°23'N, 33°59'E, 4 m, 01.04.2013, 1 ♂.

3.44. *Terellia quadratula* (Loew 1869) (Figure 44)

Specimens examined: Aksaray, Center, 38°31'N, 33°59'E, 1060 m, 27.06.2012, 2 ♀♀, 1 ♂; Ortaköy, 38°47'N, 34°12'E, 1211 m, 20.06.2013, 5 ♀♀, 4 ♂♂; Center, 38°20'N, 34°13'E, 1150 m, 03.07.2013, 2 ♀♀, 9 ♂♂.

3.45. *Terellia serratulae* (Linnaeus 1758) (Figure 45)

Specimens examined: Aksaray, Güzelyurt, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 6 ♀♀, 4 ♂♂; Ihlara, 38°16'N, 34°19'E, 1333 m, 26.06.2012, 1 ♀, 1 ♂; Center, 38°31'N,



Figures 38–41. Wing patterns of fruit flies: **38.** *Tephritomyia lauta*, **39.** *Terellia colon*, **40.** *Ter. gynaecochroma*. **41.** *Ter. ivannikovi*: **a)** male adult, **b)** male head, **c)** male thorax, **d)** wing, **e)** aculeus, **f)** apex of aculeus (enlarged).

33°59'E, 1060 m, 27.06.2012, 4 ♀♀, 2 ♂♂; Ihlara, 38°16'N, 34°16'E, 1250 m, 08.05.2013, 1 ♂; Center, 38°25'N, 33°57'E, 981 m, 08.05.2013, 6 ♀♀, 6 ♂♂; Center, 38°33'N, 33°59'E, 1086 m, 08.05.2013, 1 ♂; Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 1 ♀, 2 ♂♂; Boyalı, 38°33'N, 34°59'E, 1106 m, 27.05.2013, 1 ♀; Ihlara, 38°23'N, 34°07'E, 1135 m, 27.05.2013, 3 ♀♀, 2 ♂♂; Ihlara, 38°19'N, 34°13'E, 1150 m, 27.05.2013, 1 ♀, 2 ♂♂; Güzelyurt, 38°18'N, 34°17'E, 1283 m, 27.05.2013, 6 ♀♀, 7 ♂♂; Ortaköy, 38°47'N, 34°12'E, 1211 m, 20.06.2013, 4 ♀♀, 5 ♂♂; Ortaköy, 38°42'N, 34°00'E, 1334 m, 20.06.2013, 1 ♂; Center, 38°12'N, 34°18'E, 1342 m, 20.06.2013, 1 ♂; Hasan Mountain, 38°08'N, 34°34'E, 1868 m, 20.06.2013, 3 ♀♀, 5 ♂♂; Hasan Mountain, 38°06'N, 34°37'E, 2050 m, 20.06.2013, 5 ♀♀, 13 ♂♂; Center, 38°20'N, 34°13'E, 1150 m, 03.07.2013, 7 ♀♀, 8 ♂♂; Güzelyurt, 38°15'N, 34°25'E, 1711 m, 04.07.2013, 9 ♀♀, 29 ♂♂; Mersin, Fındıklı, 36°57'N, 34°18'E, 1845 m, 11.07.2012, 1 ♂; Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 1 ♀, 3 ♂♂; Silifke, Kocaoluk village, 36°39'N, 33°54'E, 1390 m, 19.07.2012, 2 ♀♀, 13 ♂♂; Silifke, Kocaoluk village, 36°42'N, 33°54'E, 1411 m, 19.07.2012, 1 ♂; Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 1 ♂; Taşucu, 36°20'N, 33°54'E, 73 m, 01.04.2013, 1 ♂; Anamur, Bozyazı, 36°08'N, 34°10'E, 8 m, 01.04.2013, 2 ♂♂; Silifke, 36°21'N, 33°55'E, 24 m, 12.04.2013, 1 ♂; Mut, 36°33'N, 33°26'E, 126 m, 12.04.2013, 1 ♀; Silifke, 36°35'N, 33°53'E, 1200 m, 05.07.2013, 1 ♀, 2 ♂♂.

3.46. *Terellia virens* (Loew 1846) (Figure 46)

Specimens examined: Aksaray, Güzelyurt, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 1 ♀; Center, 38°23'N, 33°59'E, 956 m, 21.06.2012, 6 ♀♀, 11 ♂♂; Center, 38°24'N, 34°00'E, 1011 m, 07.05.2013, 1 ♀, 3 ♂♂; Ihlara, 38°20'N, 34°13'E, 1135 m, 07.05.2013, 1 ♀, 4 ♂♂; Center, 38°25'N, 33°57'E, 981 m, 08.05.2013, 1 ♀, 2 ♂♂; Center, 38°33'N, 33°59'E, 1086 m, 08.05.2013, 1 ♀; Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 1 ♀; Ihlara, 38°19'N, 34°13'E, 1150 m, 27.05.2013, 1 ♂; Güzelyurt, 38°19'N, 34°15'E, 1201 m, 03.07.2013, 1 ♂; Güzelyurt, 38°15'N, 34°25'E, 1711 m, 04.07.2013, 1 ♀, 2 ♂♂; Mersin, Toroslar, Çağlarca village, 37°00'N, 34°27'E, 1242 m, 11.07.2012, 4 ♀♀; Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 3 ♀♀, 1 ♂.

3.47. *Terellia yukseli* Kütük 2009 (Figure 47)

Specimens examined: Aksaray, Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 1 ♀; Güzelyurt, 38°18'N, 34°17'E, 1283 m, 27.05.2013, 1 ♀.

3.48. *Trupanea amoena* (Frauenfeld 1857) (Figure 48)

Specimens examined: Aksaray, Selime, 38°19'N, 34°13'E, 1131 m, 21.06.2012, 1 ♀; Mersin, Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 1 ♀; Silifke, Kocaoluk village, 36°39'N, 33°54'E, 1390 m, 19.07.2012,

1 ♂; Silifke, 36°28'N, 34°10'E, 4 m, 31.03.2013, 2 ♂♂; Erdemli, Limonlu, 36°33'N, 34°13'E, 131 m, 01.04.2013, 2 ♂♂; Anamur, Bozyazı, 36°08'N, 34°10'E, 8 m, 01.04.2013, 1 ♂; Silifke, 36°21'N, 33°55'E, 24 m, 12.04.2013, 1 ♂; Mut, 36°37'N, 33°26'E, 310 m, 12.04.2013, 1 ♂.

3.49. *Trupanea stellata* (Fuesslin 1775) (Figure 49)

Specimens examined: Aksaray, Çavdarlılar village, 38°37'N, 33°57'E, 1309 m, 27.06.2012, 1 ♀; Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 1 ♀, 1 ♂; Güzelyurt, 38°18'N, 34°17'E, 1283 m, 27.05.2013, 1 ♂; Güzelyurt, 38°15'N, 34°25'E, 1789 m, 27.05.2013, 1 ♂; Ortaköy, 38°47'N, 34°12'E, 1211 m, 20.06.2013, 1 ♀; Mersin, Erdemli, 36°37'N, 34°19'E, 12 m, 08.05.2012, 1 ♀; Toroslar, Gözne, 36°49'N, 34°34'E, 58 m, 27.05.2012, 1 ♂; Center, Tömük, 36°51'N, 34°35'E, 150 m, 31.03.2013, 2 ♀♀; Erdemli, 36°31'N, 34°12'E, 19 m, 31.03.2013, 1 ♀; Taşucu, 36°20'N, 33°54'E, 73 m, 01.04.2013, 2 ♂♂; Silifke, 36°21'N, 33°55'E, 24 m, 12.04.2013, 2 ♀♀; Silifke, 36°21'N, 33°53'E, 57 m, 12.04.2013, 1 ♀; Mut, 36°29'N, 33°33'E, 91 m, 12.04.2013, 3 ♀♀.

3.50. *Urophora affinis* (Frauenfeld 1857) (Figure 50)

Specimens examined: Aksaray, Ulukışla, 38°36'N, 34°32'E, 1513 m, 20.06.2012, 1 ♀, 2 ♂♂; Center, 38°23'N, 33°59'E, 956 m, 21.06.2012, 1 ♀, 1 ♂; Güzelyurt, 38°18'N, 34°17'E, 1283 m, 27.05.2013, 1 ♀, 1 ♂; Hasan Mountain, 38°08'N, 34°34'E, 1868 m, 20.06.2013, 10 ♀♀, 37 ♂♂; Hasan Mountain, 38°06'N, 34°37'E, 2050 m, 20.06.2013, 2 ♂♂; Güzelyurt, 38°15'N, 34°25'E, 1711 m, 04.07.2013, 1 ♀, 4 ♂♂; Niğde, Çamardı, 37°57'N, 35°05'E, 1751 m, 04.07.2013, 4 ♀♀, 8 ♂♂; Mersin, Toroslar, Gözne, 36°55'N, 34°33'E, 398 m, 27.05.2012, 1 ♂; Tarsus, 37°09'N, 34°45'E, 593 m, 11.07.2012, 1 ♀.

3.51. *Urophora aprica* (Fallen 1814) (Figure 51)

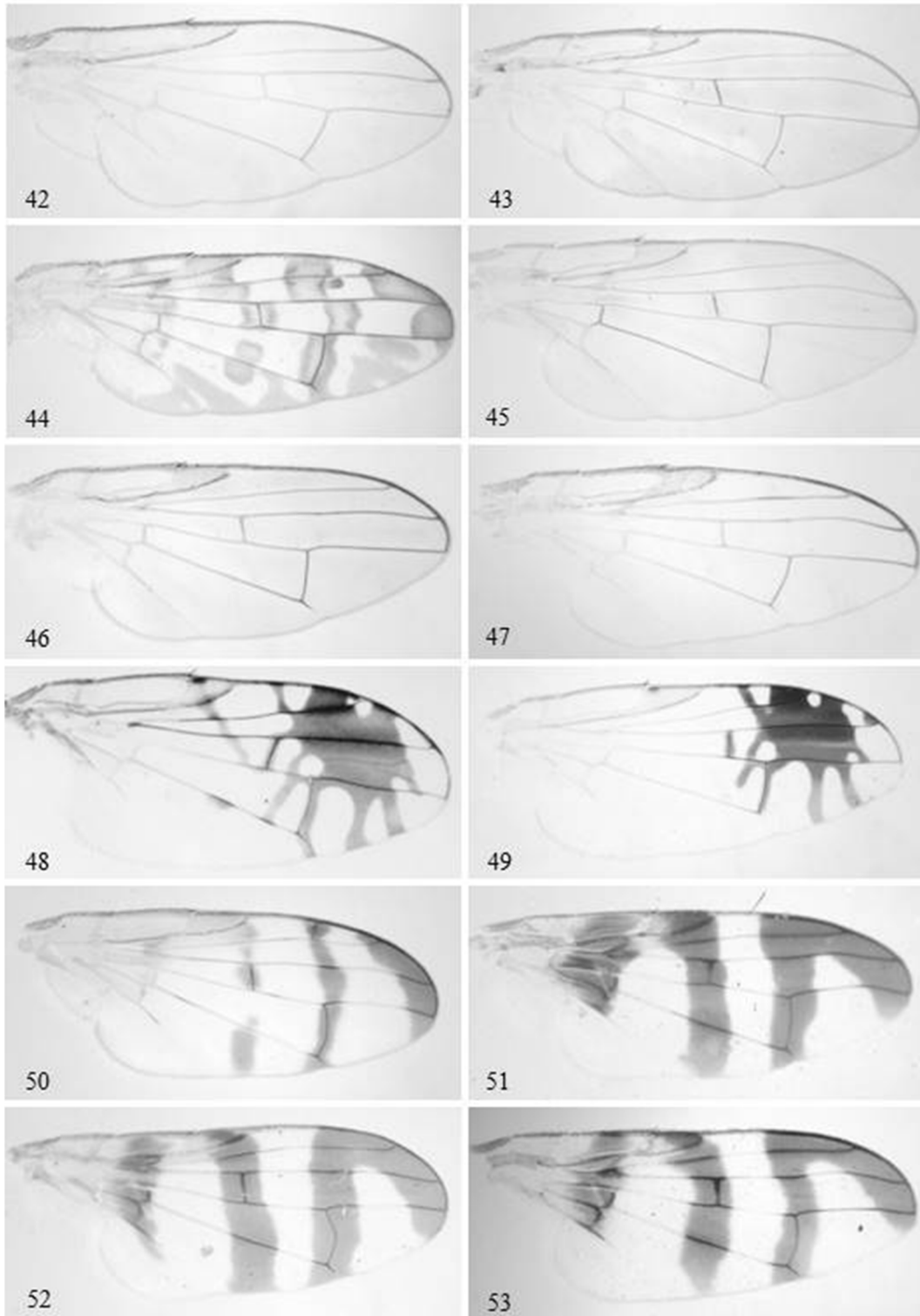
Specimens examined: Mersin, Center, 36°51'N, 34°35'E, 147 m, 27.05.2012, 1 ♀; Toroslar, Gözne, 36°49'N, 34°34'E, 58 m, 27.05.2012, 1 ♂; Anamur, Aydıncık, 36°09'N, 33°22'E, 16 m, 01.04.2013, 1 ♂.

3.52. *Urophora congrua* Loew 1862 (Figure 52)

Specimens examined: Aksaray, Ortaköy, 38°45'N, 34°04'E, 1131 m, 27.06.2012, 7 ♂♂; Mersin, Center, 36°51'N, 34°35'E, 147 m, 27.05.2012, 6 ♂♂.

3.53. *Urophora cuspidata* (Meigen 1826) (Figure 53)

Specimens examined: Aksaray, Center, 38°50'N, 34°11'E, 1092 m, 20.06.2012, 1 ♀; Çavdarlılar village, 38°37'N, 33°57'E, 1309 m, 27.06.2012, 6 ♂♂; Boyalı, 38°33'N, 34°59'E, 1106 m, 27.05.2013, 1 ♀; Mersin, Taşucu, 36°19'N, 34°53'E, 2 m, 09.05.2012, 1 ♀; Erdemli, Limonlu, 36°33'N, 34°13'E, 150 m, 09.05.2012, 1 ♂; Center, 36°51'N, 34°36'E, 142 m, 27.05.2012, 1 ♀, 1 ♂; Center, 36°51'N, 34°35'E, 147 m, 27.05.2012, 1 ♀, 1 ♂; Erdemli, Kumkuyu, 36°31'N, 34°11'E, 52 m, 28.05.2012, 1 ♀; Anamur, Aydıncık, 36°09'N, 33°22'E, 16 m, 01.04.2013, 1 ♀.



Figures 42–53. Wing patterns of fruit flies: 42. *Terellia luteola*, 43. *Ter. nigripalpis*, 44. *Ter. quadratula*, 45. *Ter. serratulae*, 46. *Ter. virens*, 47. *Ter. yukseli*, 48. *Trupanea amoena*, 49. *Trup. stellata*, 50. *Urophora affinis*, 51. *U. aprica*, 52. *U. congrua*, 53. *U. cuspidata*.

3.54. *Urophora jaceana* (Hering 1935) (Figure 54)

Specimens examined: Aksaray, Güzelyurt, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 1 ♀, 1 ♂; Çavdarlılar village, 38°37'N, 33°57'E, 1309 m, 27.06.2012, 1 ♂; Ortaköy, 38°47'N, 34°12'E, 1211 m, 20.06.2013, 1 ♀; Hasan Mountain, 38°08'N, 34°34'E, 1868 m, 20.06.2013, 1 ♀; Hasan Mountain, 38°06'N, 34°37'E, 2050 m, 20.06.2013, 11 ♀♀, 5 ♂♂; *Specimens examined:* Mersin, Erdemli, Limonlu, 36°33'N, 34°13'E, 150 m, 09.05.2012, 1 ♂; Mersin, Toroslar, Çağlarca village, 37°00'N, 34°27'E, 1242 m, 11.07.2012, 1 ♀, 1 ♂; Fındıklı, 36°57'N, 34°18'E, 1845 m, 11.07.2012, 1 ♂.

3.55. *Urophora mauritanica* Macquart 1851 (Figure 55)

Specimens examined: Mersin, Taşucu, 36°19'N, 34°53'E, 2 m, 09.05.2012, 1 ♀; Erdemli, Limonlu, 36°33'N, 34°13'E, 150 m, 09.05.2012, 2 ♂♂; Toroslar, Gözne, 36°55'N, 34°33'E, 398 m, 27.05.2012, 1 ♂; Silifke, Kapızlı, 36°24'N, 34°03'E, 33 m, 28.05.2012, 1 ♀; Anamur, Aydıncık, 36°10'N, 33°21'E, 42 m, 01.04.2013, 5 ♀♀, 14 ♂♂; Anamur, Aydıncık, 36°09'N, 33°22'E, 16 m, 01.04.2013, 1 ♂; Silifke, 36°21'N, 33°55'E, 24 m, 12.04.2013, 3 ♀♀, 7 ♂♂; Silifke, 36°22'N, 33°55'E, 30 m, 10.05.2013, 1 ♀, 10 ♂♂.

3.56. *Urophora phalolepidis* Merz & White 1991 (Figure 56)

Specimens examined: Aksaray, Güzelyurt, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 1 ♀, 1 ♂; Center, 38°24'N, 34°00'E, 1011 m, 07.05.2013, 1 ♀; Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 1 ♂; Boyalı, 38°33'N, 34°59'E, 1106 m, 27.05.2013, 1 ♂; Mersin, Erdemli, Akkum, 36°31'N, 34°12'E, 15 m, 09.05.2012, 1 ♀; Toroslar, Çağlarca village, 37°00'N, 34°27'E, 1242 m, 11.07.2012, 1 ♂.

3.57. *Urophora quadrifasciata* (Meigen 1826) (Figure 57)

Specimens examined: Aksaray, Center, 38°50'N, 34°11'E, 1092 m, 20.06.2012, 1 ♀; Güzelyurt, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 1 ♀; Aksaray, Ortaköy, 38°35'N, 34°02'E, 1393 m, 27.05.2013, 2 ♀♀, 1 ♂; Boyalı, 38°33'N, 34°59'E, 1106 m, 27.05.2013, 1 ♀; Güzelyurt, 38°18'N, 34°17'E, 1283 m, 27.05.2013, 1 ♀, 2 ♂♂; Mersin, Silifke, Uzuncaburç village, 36°34'N, 33°54'E, 1146 m, 19.07.2012, 1 ♂.

3.58. *Urophora solstitialis* (Linnaeus 1758) (Figure 58)

Specimens examined: Aksaray, Güzelyurt, 38°13'N, 34°28'E, 1623 m, 21.06.2012, 1 ♂; Mersin, Erdemli, Limonlu, 36°31'N, 34°12'E, 20 m, 28.05.2012, 1 ♂.

3.59. *Urophora stylata* (Fabricius 1775) (Figure 59)

Specimens examined: Aksaray, Hasan Mountain, 38°08'N, 34°34'E, 1868 m, 20.06.2013, 2 ♀♀, 2 ♂♂; Mersin, Erdemli, 36°36'N, 34°16'E, 17 m, 09.05.2012, 1 ♂.

3.60. *Urophora tenuior* Hendel 1910 (Figure 60)

Specimens examined: Aksaray, Center, 38°12'N, 34°18'E, 1342 m, 20.06.2013, 1 ♀.

3.61. *Urophora terebrans* (Loew 1850) (Figure 61)

Specimens examined: Aksaray, Çavdarlılar village, 38°37'N, 33°57'E, 1309 m, 27.06.2012, 1 ♀, 1 ♂; Boyalı, 38°33'N, 34°59'E, 1106 m, 27.05.2013, 2 ♀♀; Mersin, Taşucu, 36°20'N, 33°54'E, 23 m, 08.05.2012, 1 ♂; Taşucu, 36°19'N, 34°53'E, 2 m, 09.05.2012, 3 ♀♀, 1 ♂; Erdemli, Limonlu, 36°33'N, 34°13'E, 150 m, 09.05.2012, 1 ♀, 3 ♂♂; Center, 36°51'N, 34°36'E, 142 m, 27.05.2012, 10 ♀♀, 13 ♂♂; Center, 36°51'N, 34°35'E, 147 m, 27.05.2012, 3 ♀♀, 10 ♂♂; Toroslar, Gözne, 36°52'N, 34°33'E, 259 m, 27.05.2012, 2 ♂♂; Toroslar, Gözne, 36°55'N, 34°33'E, 398 m, 27.05.2012, 1 ♂; Toroslar, Gözne, 36°49'N, 34°34'E, 58 m, 27.05.2012, 2 ♂♂; Erdemli, 36°37'N, 34°19'E, 16 m, 28.05.2012, 1 ♀, 7 ♂♂; Erdemli, Limonlu, 36°31'N, 34°12'E, 20 m, 28.05.2012, 2 ♂♂; Erdemli, Kumkuyu, 36°31'N, 34°11'E, 52 m, 28.05.2012, 1 ♀, 6 ♂♂; Silifke, Kapızlı, 36°24'N, 34°03'E, 33 m, 28.05.2012, 1 ♀, 5 ♂♂; Fındıklı, 36°57'N, 34°18'E, 1845 m, 11.07.2012, 3 ♂♂; Silifke, Kocaoğuz village, 36°39'N, 33°54'E, 1390 m, 19.07.2012, 6 ♂♂; Silifke, Kocaoğuz village, 36°42'N, 33°54'E, 1411 m, 19.07.2012, 2 ♂♂; Erdemli, Kanlıdivane, 36°31'N, 34°11'E, 102 m, 10.05.2013, 2 ♀♀, 7 ♂♂.

3.62. *Xyphosia miliaria* (Schrank 1781) (Figure 62)

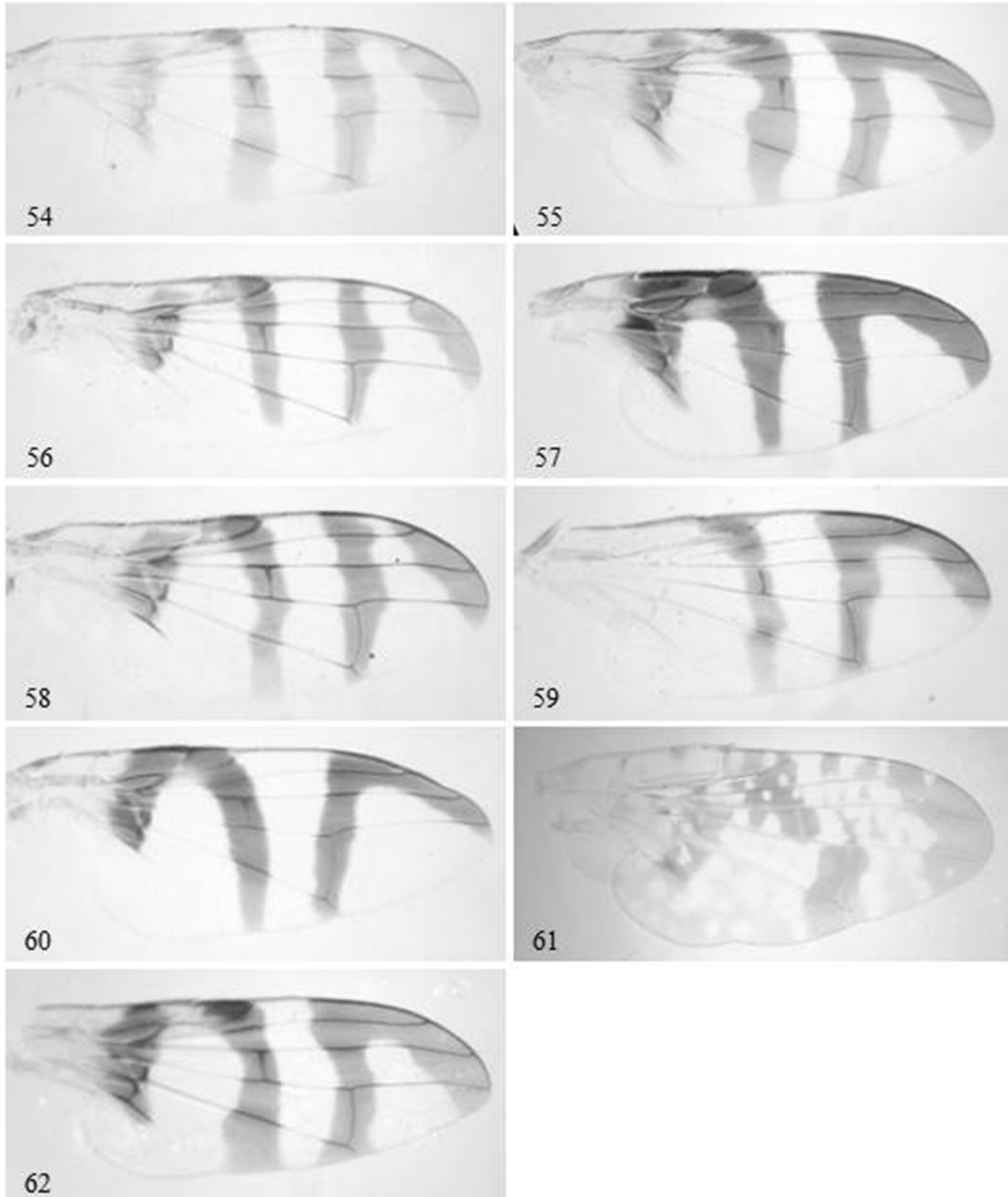
Specimens examined: Mersin, Silifke, Kirobası, 36°43'N, 33°45'E, 1284 m, 19.07.2012, 1 ♀, 1 ♂.

4. Discussion

In this study, 62 species belonging to 21 genera in 5 subfamilies of Tephritidae were determined from Aksaray (38 species) and Mersin (54 species) provinces. *Dioxyyna sororcula* (Wiedemann 1830) (from Mersin) and *Terellia ivannikovii* Korneyev et al. 2013 (from Aksaray) are recorded for the first time from Turkey. Thus, the number of Turkish fruit fly species has increased to 158.

In the study region, 62 species of fruit fly were successfully obtained by careful scanning, and these results demonstrate an abundance of fruit flies in the study region. Mersin is located on the coast of the Mediterranean; its elevation is approximately between 0 and 2000 m, and it has more climatic differences than Aksaray. The climatic and geographic conditions of Mersin affect the flora and have raised the number of fruit flies. Aksaray is located in the central Anatolian region and the elevation has a smaller range (1000–2100 m) than Mersin; it has fewer climatic differences than Mersin. The climatic and geographic conditions of Aksaray also affect the flora (especially distribution of Asteraceae), and have thus reduced the number of fruit flies.

In the study region, the most widespread species is *Tephritomyia lauta*, which was collected in 33 locations; *Acanthiophilus helianthi* follows it from 31 locations, and then *Terellia serratulae* from 28 locations. Thirteen species (*Ceratitidis capitata*, *Hypenidium roborowskii*, *Orellia falcata*, *Tephritis cometa*, *Tep. merzi*, *Tep. recurrens*, *Tep. sauterina*,



Figures 54–62. Wing patterns of fruit flies: 54. *Urophora jaceana*, 55. *U. mauritanica*, 56. *U. phalolepidis*, 57. *U. quadrifasciata*, 58. *U. solstitialis*, 59. *U. stylata*, 60. *U. tenuior*, 61. *U. terebrans*, 62. *Xyphosia miliaria*.

Tep. separata, *Tep. simplex*, *Ter. colon*, *Ter. ivannikovi*, *Urophora tenuior*, *Xyphosia miliaria*) were collected from just one location.

The current study's results demonstrate similarities with the results of previous studies and give new data about the biodiversity of Aksaray and Mersin provinces.

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References

- Carroll LE, White IM, Freidberg A, Norrbom AL, Dallwitz MJ, Thompson FC (2002). Pest Fruit Flies of the World. Available online at <http://delta-intkey.com>.
- Freidberg A (2006). Preface - biotaxonomy and Tephritoidea. *Isr J Zool* 35-36: 1-7.
- Freidberg A, Kugler J (1989). Fauna Palaestina Insecta IV. Diptera: Tephritidae. Jerusalem, Israel: Keterpress Enterprises.
- Hendel F (1927). 49. Trypetidae die Fliegen der Palaerktischen Region. Stuttgart, Germany: E. Schweizerbart'sche Verlagsbuchhandlung (in German).
- Koçak AÖ, Kemal M (2013). Tephritidae in Turkey: an evaluation of its status from various standpoints (Diptera). *Centre for Entomological Studies Ankara (CESA)* 84: 1-50.
- Korneyev VA (2003). New and little known Tephritidae (Diptera, Cyclorrhapha) from Europe. *Vestnik Zoologii* 37: 3-12.
- Korneyev VA (2006). A revision of the *quadratura* group of the genus *Terellia* Robineau-Desvoidy (Diptera: Tephritidae). *Isr J Zool* 35-36: 341-366.
- Korneyev VA, Evstigneev DA, Karimpour, Y, Kütük M, Namin MS, Koyuncu MÖ, Yaran M (2013). Revision of the *Terellia virens* group (Diptera, Tephritidae) with description of three species. *Vestnik Zoologii* 47: 3-25.
- Korneyev VA, White IM (1993). Fruit flies of the genus *Urophora* R.-D. (Diptera, Tephritidae) of East Palaearctic. II. Review of species of the subgenus *Urophora* s. str. (Communication 2). *Entomologicheskoe Obozrenie* 72: 232-247 (in Russian).
- Korneyev VA, White IM (1999). Fruit flies of the genus *Urophora* R.-D. (Diptera, Tephritidae) of East Palaearctic. III. Key to Palaearctic species. *Entomologicheskoe Obozrenie* 78: 464-482 (in Russian).
- Kütük M (2003). Güney Batı Anadolu bölgesi Tephritidae faunası ve sistematığı üzerine araştırmalar. PhD, Çukurova University, Adana, Turkey (in Turkish).
- Kütük M (2006). The fauna and systematics of the genus *Tephritis* Latreille, 1804 (Diptera: Tephritidae) with a key to the species of *Tephritis* in Turkey. *Turk J Zool* 30: 345-356.
- Merz B (1994). Diptera, Tephritidae. *Insecta Helvetica Fauna*. Geneva, Switzerland: HGE Press.
- White IM (1988). Tephritid Flies (Diptera: Tephritidae). Handbook for the Identification of British Insects. London, UK: Dorset Press.