

A LIST OF THE FRUITFLIES (DIPTERA: TEPHRITIDAE) OF ISRAEL  
AND NEARBY AREAS, THEIR HOST PLANTS AND DISTRIBUTION\*

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**A B S T R A C T**

A list of 77 species of Tephritidae (=Trypetidae) from Israel and surrounding areas is presented. The general distribution of each species, its distribution in Israel, adult occurrence throughout the year, and, for most species, the host plants in Israel and their infested parts are recorded, Zoogeographical elements are discussed.

**INTRODUCTION**

Research of Tephritidae in Israel has primarily focused on a small number of species which are injurious to cultivated plants. These include the Mediterranean fruit-fly, *Ceiatitis capitata*, the most important pest of fruits (Avidov and Harpaz, 1969); *Dacillus oleae*, the olive fly, (Moore, 1958); *Myiopaxdalis pardalina*, the melon fly (Gabrielith-Shpan, 1960) and species which develop in flower heads of safflower, *Carthamus tinctorius* L. (Bytinski-Salz, 1952; Avidov and Kotter, 1966).

The first local list of Tephritidae (=Trypetidae) was compiled by Bodenheimer (1937), who listed only 13 species. The collection of Professor O.Theodor (Hebrew University, Jerusalem) contains 35 identified species, among them two

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described as new by Hering: *Siticola theodori*\* (1953) and *Euribia phaeocera* (1961).

In order to increase the knowledge on the tephritid fauna of Israel, intensive collecting has been done throughout the country from 1970 to 1975. Flies were also reared in the laboratory from host plants obtained in the field. As a result, the number of known species increased to 77, among them several new to science. Six new species and one new subspecies have already been described (Freidberg, 1974). A list of Tephritidae from Mt. Hermon was also published (Freidberg, 1974a).

The present paper contains a list of the 77 species. For each species the following information is given:

1. Distribution in Israel, according to the regions in the map of the Fauna Palaestina Committee of the Israel Academy of Sciences and Humanities (Fig. 1).
2. Months of adult activity.
3. Host plants in Israel, mainly based on rearing by the authors.
4. General distribution, based on literature records (Efflatoun, 1924; Hendel, 1927; Munro, 1947 and 1957; Richter, 1970 and Seguy, 1934), on material checked in European museums, and on material collected during trips to Europe and Africa.

Host-fly relations and the zoogeographical elements of the flies are also discussed.

#### HOST PLANTS OF THE TEPHRITIDAE OF ISRAEL

Excluding *Ceratitis capitata*, which attacks plants of several families, all other local Tephritidae attack plants of a single family only. The hosts of most species belong to the Compositae.

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\* *S. theodori* is a synonym of *Katonaia aida* Hering (1937), also described from Israel.

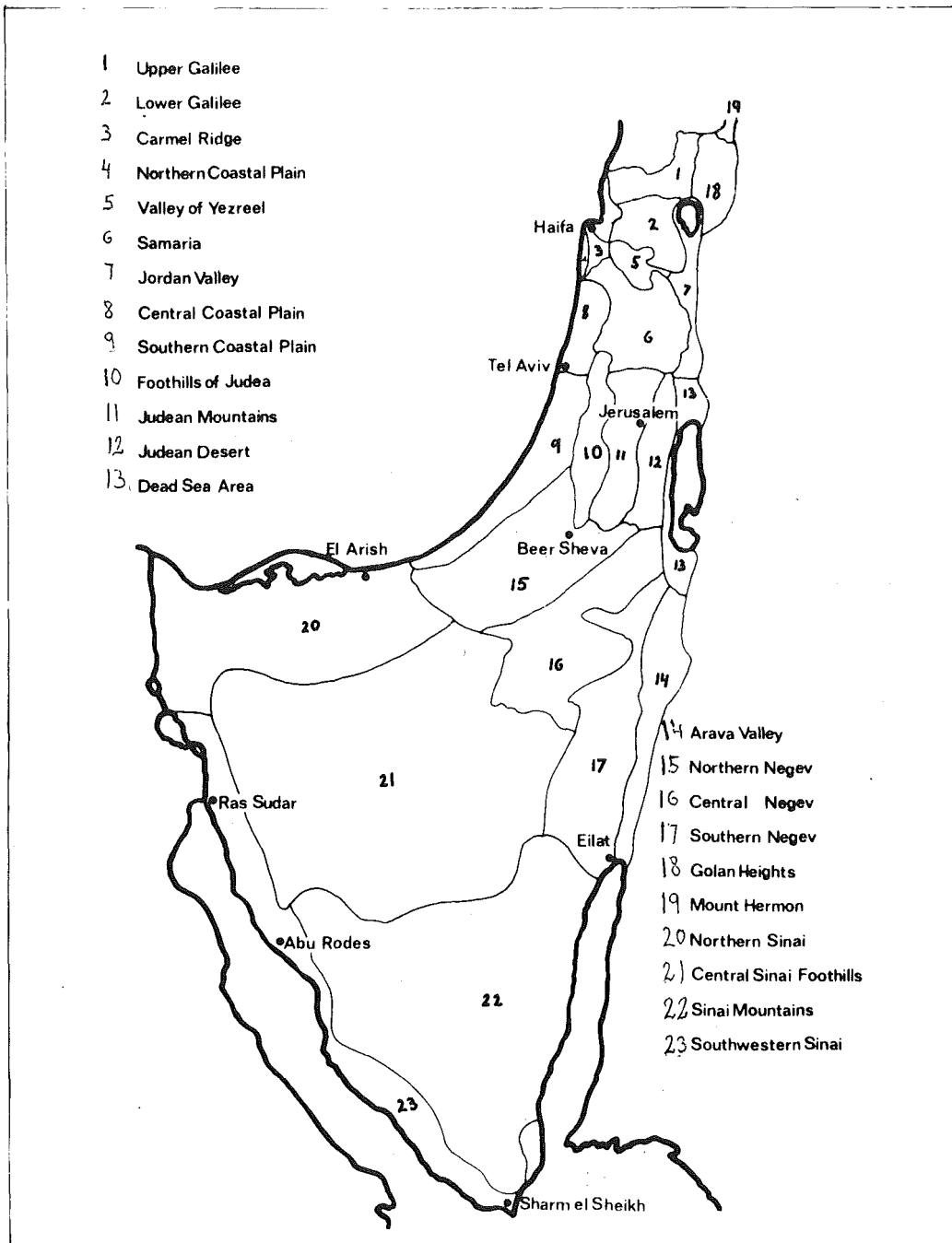


Fig. 1. The "Fauna Palaestina Committee" map of Israel and nearby areas.

Forty-six species of the Myopitinae, Terelliinae, Tephritinae and Schistopterinae have already been reared from Compositae. The other sixteen species of these subfamilies probably also develop in composite hosts; for some of them there are such records from other countries. In Israel species of *Urophora* infest only Cynareae, e.g. *Carthamus* and *Centaurea*. Most of the Terelliinae also infest Cynareae; only *Orellia falcata* develops in *Tragopogon* (Liguliflorae). Species of *Myopites* (related to *Urophora*) live in Inuleae (*Inula*, *Pulicaria*). The Tephritinae attack plants of different subfamilies of Compositae; many are genus or even species specific. The plant part mostly attacked in the Compositae is the flower head. Different parts of the capitulum may serve as food for the larvae of the different species, which sometimes cause the formation of galls (*Urophora*, *Myopites*). The introduced *Euaresta bullans* develops in burrs of *Xanthium spinosum*. *Spathulina tristis* causes the formation of galls in stems of *Phagnalon rupestre*. Pupation of the flies of these subfamilies always occurs in the plant.

Labiatae and Acanthaceae are hosts of the six recorded species of Aciurinae. Development and pupation take place in the flower.

Only a few species develop in fleshy fruits: *Ceratitidis capitata* (Ceratitinae) in fruits of various families, *Daculus oleae* (Dacinae) in olives; and four species of Trypetinae - *Myiopardalis pardalina* and *Gonioglossum wiedemanni* in Cucurbitaceae, *Carpomyia incompleta* in *Zizyphus* (Rhamnaceae) and *C. schineri* in *Rosa* (Rosaceae). The fully grown maggot usually leaves the fruit to pupate in the soil.

Plants of three additional families serve as hosts. The flower buds of *Capparis cartilaginea* (Capparidaceae), a desert species abundant in Sinai, are infested by *Capparimyia savastani*. In southern Europe this fly is known to infest flower buds of *C. spinosa*. Although *C. spinosa* is abundant in almost all parts of Israel, it was not found to be infested by *C. savastani*. Even in Sinai, plants of *C. spinosa* growing near *C. cartilaginea* were free of the fly. Pupation usually takes place in the ground. *Acacia raddiana* (Mimosaceae) in Sinai may be the host of *Notomma* sp.. *Philophylla heraclei*, bred from *Smyrnum olusatrum* (Umbelliferae), is the only species which mines in leaves. Pupation takes place in the ground.

## ZOOGEOGRAPHICAL ELEMENTS

The tephritid fauna of Israel is essentially (83.1%) Palaearctic (Table 1). Palaetropic elements also occur; for part of them Israel is the northern border of distribution, the others intrude further northwards into the Palaearctic Region. Two species, *Ceratitis capitata* and *Euaresta bullans* have a wide distribution in the Old as well as in the New World, and are therefore listed as Cosmopolitan. However, *C. capitata* is considered as having originated in the Ethiopian Region (Silvestri, 1913), and its recent occurrence in other areas is, at least partly, due to human transportation of fruits infested by its larvae. On the other hand the origin of *E. bullans* seems to be America, the only continent where other species of the genus are found. The larval development takes place in the hooked burrs of *Xanthium*, and McCarthy (1930) raised the possibility that infested burrs, attached to horses' tails, were carried out of America.

Species listed in the Table as West Palaearctic, have, as a rule, a wide distribution in Europe, North Africa and West Asia. *Myiopardalis pardalina* ranging from northern India to Turkey and Egypt was, nevertheless, included in this category. Forty-four out of 188 species, recorded from western U.S.S.R. (Richter, 1970), also occur in Israel, comprising 57.1% of the Israeli fauna.

The rest of the Palaearctic species are more restricted, and were listed as: Circumediterranean, south or east Mediterranean, Eremic and Endemic. Eremic species were considered those restricted in Israel to the desert area, and also known from North Africa or Arabia. The thirteen species, known so far from Israel only, are listed as endemic. Some might be eventually found in the poorly investigated neighbouring countries. Twenty-eight of the 43 species listed from Egypt (Steyskal and El-Bialy, 1967), occur in Israel; that is 36.5% of the Israeli fauna and 65.1% of the Egyptian. Five species are known until now from Egypt and Israel or Egypt and Sinai only: *Myopites variofasciata*, *Paraspheniscus debskii*, *Urelliosoma pulcherrima*, *U. desertorum* and *Tephritis planiscutellata*. Most endemic species were found in the southern parts of the investigated area, and some have clear Ethiopian or Eremic affinities. For instance, *Notomma* sp. near *mutila* was collected in Sinai. This is the northernmost location recorded for *Notomma*, the seven known species of which are distributed from South Africa to Ethiopia. The suspected host, *Acacia*

*raddiana*, is a Sudanian element in Israel. *Isoconia negeviana* is also the northernmost recorded species of its genus, which is represented by many species all over Africa, and by 2 species in India. The desert species *Euarestella kugleri* was bred from *Iphiona scabra*, a Sudanian element in Israel. Its closest relative is *E. iphionae*, known from the desert parts of Egypt, Israel and Arabia.

TABLE 1  
Zoogeographical elements of the Tephritidae  
of Israel

Element	No. of Species	%		
Cosmopolitan	2	2.6		
Palaeartic	West Palaeartic	30	38.9	
	Mediterranean	Circumediterranean	9	11.7
		South & East Mediterranean	7	9.1
	Eremic	5	6.5	
	Endemic	13	16.9	
	Palaeartic + Palaeotropic (Eth. + Orient.)	3	3.9	
West Palaeartic + Ethiopian	3	3.9		
Palaeotropic (Eth. + Orient.) + Australian	1	1.3		
Ethiopian	4	5.2		
Total	77	100.0		

## LIST OF SPECIES

Species	Occurrence in Israel	Period of activity	Host plants in Israel	Distribution
<i>DACINAE</i>				
<i>Daculus oleae</i> (Gmelin, 1788)	Mainly northern and central areas, s. to Makhtesh Ramon (C. Negev), e. to En Gedi (Dead Sea Area).	Year round	Important pest of olives, <i>Olea europaea</i> L. (Oleaceae)	S. Europe, W. Asia, Canary Is., Africa.
<i>MYOPITINAE</i>				
<i>Hypenidium novaki</i> (Strobl, 1893)	Mt. Hermon, Upper Galilee, Judean Mts.	July-Oct.	Not known.	Portugal, Yugoslavia, Hungary, Crimea, Israel.
<i>Urophora affinis</i> (Frauenfeld, 1856)	All parts of the country north of Beer-Sheva.	Feb.-Aug.	Flower heads of <i>Centaurea iberica</i> Trev. (Compositae)	C. Europe, E. Europe, Mediterranean countries, W. Asia, e. to Afghanistan.
<i>Urophora hermonis</i> Freidberg 1974	Mt. Hermon (1600-2300 m).	May-July	Flower head galls on <i>Cousinia hermonis</i> Boiss. (Compositae).	Known only from Mt. Hermon.
<i>Urophora macrura</i> (Loew, 1855)	All parts of the country north of Beer-Sheva.	Mar.-Sep.	Flower head galls on <i>Carthamus tenuis</i> (Boiss.) Bornm. (Compositae).	S. Europe, Asia Minor, Caucasus, Israel, N. Africa.
<i>Urophora</i> sp. nr. <i>macrura</i> (Loew, 1855)	Judean Desert.	Aug.-Sep.	Flower heads of <i>Carthamus tenuis</i> (Boiss.) Bornm. (Compositae).	Israel; probably an undescribed species.

<i>Urophora phaeocera</i> (Hering, 1961)	Mt. Hermon (2000 m), Sinai Mts.	June-Aug.
<i>Urophora quadri- fasciata</i> (Meigen, 1826)	All parts of the country north of Beer-Sheva. Arava Valley.	Mar.-Aug.
<i>Urophora stylata</i> (Fabricius, 1775)	Mt. Hermon, Upper Galilee, Carmel Ridge, Judean Mts.	Apr.-Oct.
<i>Urophora syriaca</i> (Hendel, 1927)	Mt. Hermon, Golan Heights, Upper Galilee, Carmel Ridge, C. Coastal Plain.	May-June
<i>Myopites cypriaca</i> Hering, 1938	Northern and central parts of the country north of Qiryat-Gat (S. Coastal Plain).	Apr.-Nov.
<i>Myopites stylata</i> (Fabricius, 1794)	Northern and central parts of the country, as far south as S. Coastal Plain.	July-Nov.



Flower heads of <i>Cousinia hermonis</i> Boiss. (Compositae).	Israel, Afghanistan.
Flower heads of <i>Centaurea iberica</i> Trev. and <i>C. calci-</i> <i>trapella</i> Bornm. et Dinsm. (Compositae).	Europe, Asia Minor, Caucasus, Kazakhstan, Israel, N. Africa.
Flower head galls on <i>Cirsium phylloce-</i> <i>phalum</i> Boiss. et Bl. (Compositae).	Europe, Asia as east as W. Siberia, Kazakh- stan and Pakistan, Israel.
Flower heads of <i>Echinops</i> sp. (Com- positae).	Syria, Israel.
Flower head galls on <i>Pulicaria arabica</i> (L.) Cass. and <i>Inula</i> <i>graveolens</i> (L.) Desf. (Compositae).	Cyprus, Israel.
Flower head galls on <i>Pulicaria dysenterica</i> (L.) Gaerth. and <i>Inula viscosa</i> (L.) Ait. (Compositae).	S. Europe, Israel, N. Africa.

<p><i>Myopites variofasciata</i> Becker, 1903</p>	<p>N. and C. Coastal Plain, C. Negev.</p>
<p><i>CERATITINAE</i></p>	
<p><i>Ceratitis capitata</i> (Wiedemann, 1824)</p>	<p>Mainly in the central and northern parts of the country.</p>
<p><i>Capparimya savastani</i> (Martelli, 1911)</p>	<p>Southwestern Sinai and Sinai Mts..</p>
<p><i>TRYPETINAE</i></p>	
<p><i>Gonioglossum wiedemanni</i> (Meigen, 1826)</p>	<p>Mt. Hermon, Upper Galilee, Jordan Valley, S. Coastal Plain, Foothills of Judea.</p>
<p><i>Myiopardalis pardalina</i> (Bigot, 1891)</p>	<p>Samaria, Judean Mts.</p>

Aug.-Jan.	Flower head galls on <i>Inula crithmoides</i> L. (Compositae).	Egypt, Israel.
Year round	An important pest of various fruits, such as citrus fruits, peaches, apricots, guavas etc.	Tropical and subtropical regions of the Old and New World.
Sep.-Oct.	Flower buds of <i>Capparis cartilaginea</i> Decne. (Capparidaceae)	S. France, S. Italy, Sicily, Israel, Tunisia.
Feb.-July	Fruits of <i>Bryonia syriaca</i> Boiss. and <i>B. multiflora</i> Boiss. et Heldr. (Cucurbitaceae).	C. Europe, S. Europe, W. Asia, N. Africa.
May-Oct.	Pest in fruits of <i>Cucumis melo</i> L. (sweet melon) and <i>C. melo</i> var. <i>flexuosus</i> (snake cucumber) (Cucurbitaceae).	W. Asia from India to Asia minor and Israel, Egypt, ? Kenya.

<p><i>Carpomyia incompleta</i> (Becker, 1903)</p>	<p>Jordan Valley, Dead Sea Area, Arava Valley, C. Sinai Foothills, Sinai Mts.</p>
<p><i>Carpomyia schineri</i> (Loew, 1856)</p>	<p>Mt. Hermon (1650-2000 m).</p>
<p><i>Philophylla heraclei</i> (Linnaeus, 1758)</p>	<p>Most parts of the country n. of Jerusalem.</p>
<p><i>Notomma</i> sp. nr. <i>mutila</i> (Bezzi, 1923)</p>	<p>Sinai Mts.</p>
<p>ACIURINAE</p>	
<p><i>Spheniscomyia filiola</i> (Loew, 1869)</p>	<p>Dead Sea Area, Arava Valley, S. Negev, Sinai Mts.</p>
<p><i>Paraspheniscus debskii</i> (Eflatoun, 1923)</p>	<p>Sinai Mts., SW. Sinai.</p>
<p><i>Aciura coryli</i> (Rossi, 1792)</p>	<p>Mt. Hermon, Golan Heights, Upper Galilee, Jordan Valley, Carmel Ridge, C. Coastal Plain.</p>

Year round	Fruits of <i>Zizyphus spina christi</i> (L.) Willd. (Rhamnaceae).	Italy, Israel, Africa.
July-Aug.	Fruits of <i>Rosa glutinosa</i> Sibth. et Smith (Rosaceae).	C. Europe, Caucasus, Kazakhstan, C. Asia, Israel.
Nov.-June	Mines in leaves of <i>Smyrniolum olusatrum</i> L. (Umbelliferae).	Europe, W. Asia as east as Afgha- nistan, Algeria, Morocco.
August	Probably <i>Acacia raddiana</i> Savi (Mimosaceae).	Sinai.
Mar.-Sep.	Flowers of <i>Lavandula coronopifolia</i> Poir. (Labiatae).	Spain, Canary Is., Egypt, Israel, Ethiopia.
Apr.-Aug.	Flowers of <i>Stachys aegyptiaca</i> Pers. (Labiatae)	Egypt, Israel.
Mar.-Aug.	Collected on <i>Phlomis viscosa</i> Poir. and <i>P. brevilabris</i> Ehrenb. (Labiatae).	S. Europe, Asia as east as C. Asia, Canary Islands, N. Africa.

<p><i>Isoconia negeviana</i> Freidberg, 1974</p>	<p>Jordan Valley, Judean Desert, N. and C. Negev</p>	<p>May-July, rarely November.</p>
<p><i>Oxyaciura tibialis</i> (Robineau- Desvoidy, 1830)</p>	<p>Upper Galilee, Judean Mts., Judean Desert, Dead Sea Area, Arava Valley, N. Negev, Sinai Mts.</p>	<p>Mar.-Oct.</p>
<p><i>Katonaia aida</i> Hering, 1937</p>	<p>Mt. Hermon, Upper Galilee, Judean Mts., Judean Desert, N. Negev, Sinai Mts.</p>	<p>May-Aug.</p>
<p>TERELLIINAE</p>		
<p><i>Chaetorellia carthami</i> Stackelberg, 1929</p>	<p>All parts of the country n. of the C. Negev, Sinai Mts.</p>	<p>Mar.-Sep.</p>
<p><i>Chaetorellia jaceae</i> (Robineau-Desvoidy, 1830)</p>	<p>All parts of the country n. of Sede Boqer (C. Negev), C. Sinai Foothills.</p>	<p>Mar.-July</p>

<p>Seeds of <i>Blepharis attenuata</i> Naper (Acanthaceae).</p>	<p>Israel.</p>
<p>Flowers of <i>Nepeta septemcrenata</i> Ehrenb. (Labiatae).</p>	<p>S. Europe, W. Asia as far east as Afghanistan, N. Africa.</p>
<p>Flowers of <i>Ballota undulata</i> (Fresen.) Bth. (Labiatae).</p>	<p>Israel, Sinai.</p>
<p>Pest in flower heads of <i>Carthamus tinctorius</i> L. (Safflower), also bred from flower heads of <i>C. tenuis</i> (Boiss.) Bornm. (Compositae)..</p>	<p>Turkestan, Israel; according to Zwölfer (1972) probably in W. Asia and S. Europe.</p>
<p>Flower heads of <i>Centaurea iberica</i> Trev., <i>C. calcitrapella</i> Bornm. et Dinem., <i>C. lanulata</i> Eig and <i>C. negeviana</i> Eig (Compositae).</p>	<p>Europe, Asia minor, Caucasus, Iran, Israel, Egypt.</p>

<i>Chaetorellia loricata</i> (Rondani, 1870)	All parts of the country n. of Beer-Sheva.	Jan.-June
<i>Chaetostomella onotrophes</i> (Loew, 1846)	Mt. Hermon, Golan Heights, Upper Galilee, Carmel Ridge, Samaria, Jordan Val- ley, Judean Mts.	Mar.-Aug.
<i>Terellia fuscicornis</i> (Loew, 1844)	Central and northern parts of the country.	Mar.-Nov.
<i>Terellia serratulae</i> (Linnaeus, 1758)	Mt. Hermon, Golan Heights, Upper Galilee, Carmel Ridge, Judean Mts., N.Negev.	Apr.-Oct.
<i>Terellia virens</i> (Loew, 1846)	All parts of the country n. of Beer- Sheva.	Mar.-Aug.



<p>Flower heads of <i>Centaurea calcitrapella</i> Bornm. et Dinsm. and <i>C. negeviana</i> Eig (Compositae).</p>	<p>C. Europe, S. Europe, Crimea, Kazakhstan, W. Siberia, Israel.</p>
<p>Flower heads of <i>Cousinia hermonis</i> Boiss. and <i>Onopordon floccosum</i> Boiss. Collected but not bred, on other <i>Onopordon</i> spp. and <i>Cirsium acarna</i> (L.) Moench. (all Compositae).</p>	<p>Europe, Asia minor, Caucasus, Kazakhstan, Afghanistan, Israel, Algeria.</p>
<p>Flower heads of <i>Cynara scolymus</i> L. (Artichok) and <i>C. syriaca</i> Boiss. (Compositae).</p>	<p>S. Europe, Israel, N. Africa.</p>
<p>Flower heads of <i>Cirsium phyllocephalum</i> Boiss. et Bl. (Compositae).</p>	<p>Europe, Caucasus, Kazakhstan, Iran, Syria, Israel, N. Africa.</p>
<p>Flower heads of <i>Centaurea iberica</i> Trev. (Compositae).</p>	<p>C. Europe, S. Europe, Asia minor, Afghanistan, Kazakhstan, Israel, N. Africa.</p>

<i>Orellia colon</i> (Meigen, 1826)	Central and northern parts of the country.	Apr.-Aug.
<i>Orellia falcata</i> (Scopoli, 1763)	Golan Heights, Upper Galilee.	April
<i>Orellia lappae</i> (Cederhielm) 1798)	Mt. Hermon (above 1650 m).	May-June
<i>Orellia quadratula</i> (Loew, 1869)	Mt. Hermon (1400-1800 m )	June
<i>TEPHRITINAE</i>		
<i>Spathulina tristis</i> (Loew, 1869)	Upper Galilee, Carmel Ridge, C. Coastal Plain, Samaria, N. and C. Negev.	Nov.-May
<i>Urelliosoma desertorum</i> (Efllatoun, 1927)	Sinai Mts.	September

<p>Flower heads of <i>Carthamus tinctorius</i> L., <i>C. tenuis</i> (Boiss.) Bornm., <i>C. glaucus</i> M.B. and <i>C. lanatus</i> L. (Compositae).</p>	<p>Europe, W. Asia as east as W. Siberia and Kazakhstan, N. Africa.</p>
<p>Stems of <i>Tragopogon longirostre</i> Bisch. (Compositae).</p>	<p>Europe, W. and C. Asia.</p>
<p>Flower heads of <i>Onopordon floccosum</i> Boiss. (Compositae).</p>	<p>C. Europe, S. Europe, Crimea, Caucasus, Israel.</p>
<p>Collected, but not bred, on <i>Echinops</i> sp. (Compositae)</p>	<p>Caucasus, Libanon, Israel.</p>
<p>Stem galls on <i>Phagnalon rupestre</i> (L.) DC. (Compositae).</p>	<p>Portugal, Spain, S. France, Italy, Yugoslavia, Canary Islands, N.Africa, Israel.</p>
<p>Not found; in Egypt: flower heads of <i>Launaea spinosa</i> Sch. Bip. (Compositae).</p>	<p>Egypt, Sinai.</p>

<i>Urelliosoma pulcherrima</i> (Efflatoun, 1924)	Dead Sea Area, Arava Valley, N., C. and S. Negev, SW. Sinai.	Mar.-June	Flower heads of <i>Launaea nodicaulis</i> (L.) Hook. f. (Compositae).	Egypt, Israel.
<i>Dioxyna sororcula</i> (Wiedemann, 1830)	Most parts of the country n. of Beer-Sheva.	Year round	Seeds of <i>Bidens tripartita</i> L. (Compositae).	Tropical and subtropical regions of the Old World
<i>Paroxyna absinthii</i> (Fabricius, 1805)	Upper Galilee.	October	Not known.	Europe, Asia Minor, C. Asia, Israel, N. Africa.
<i>Paroxyna tessellata</i> (Loew, 1844)	All parts of the country n. of Qiryat-Gat (S.Coastal Plain).	Year round	Flower heads of <i>Bellis silvestris</i> Cyr. (Compositae).	Europe, Asia Minor, W. Asia as far as Afghanistan, Canary Islands, N. Africa.
<i>Oxyyna nebulosa</i> (Wiedemann, 1817)	N. and C. Negev.	Mar.-Apr.	Collected, but not bred, on <i>Achillea fragrantissima</i> (Forsk.) Sch. Bip. (Compositae).	C. Europe, S.Europe, U.S.S.R., Israel.
<i>Oxyyna superflava</i> Freidberg, 1974	Sinai Mts. (Mt. Katharina, above 2000 m ).	July	Not known.	Sinai.
<i>Sphenella marginata</i> (Fallén, 1820)	Central and northern parts of the country, N. Sinai, Sinai Mts..	Year round	Flower heads of <i>Senecio vernalis</i> W.K. and <i>S. coronopifolius</i> Desf. (Compositae).	Europe, Asia Minor, Kazakhstan, Turkmenia, Afghanistan, Israel, Canary Islands, Africa, Australia.

<i>Ensina sonchi</i> (Linnaeus, 1767)	Central and northern parts of the country.	Apr.-Nov.	Flower heads of <i>Helminthia echioides</i> (L.) Gaertn. and <i>Lactuca</i> sp. (Compositae).	Europe, Asia Minor, Caucasus, Kazakhstan, Israel, Ethiopia.
<i>Euarestella iphionae</i> (Eflatoun, 1923)	Judean Desert, N. and C. Negev, Sinai Mts., SW. Sinai.	Apr.-Nov.	Collected, but not bred, on <i>Iphiona mucronata</i> (Forsk.) Asch. et Schw., <i>Varthemia iphionoides</i> Boiss. et Bl. (Compositae).	Egypt, Sudan, Israel, Arabia.
<i>Euarestella kugleri</i> Freidberg, 1974	Arava Valley (southmost part), Sinai Mts., SW. Sinai.	Mar.-Sep.	Seeds of <i>Iphiona scabra</i> DC. (Compositae).	Israel, Sinai.
<i>Euaresta bullans</i> (Wiedemann, 1830)	S. Coastal Plain, Judean Mts., Jordan Valley, Dead Sea Area, N. Negev.	Mar.-Oct.	Burrs of <i>Xanthium spinosum</i> L. (Compositae).	S. America, California, Hungary, Crimea, S. Europe, Asia Minor, Israel, S. Africa, Australia.
<i>Tephritis cometa israelis</i> Freidberg, 1974	Upper Galilee (Tel-Dan).	June	Flower heads of <i>Cirsium gaillardoti</i> Boiss. (Compositae).	Israel. The nominate subspecies is known from Europe, Asia Minor, W. Asia and C. Asia.
<i>Tephritis conjuncta</i> (Loew, 1862)	Mainly northern parts of the country, also Jordan Valley.	Mar.-Oct.	Flower heads of <i>Helminthia echioides</i> (L.) Gaertn. (Compositae).	Europe, Southern U.S.S.R., Kazakhstan, Israel.

<i>Tephritis</i> sp. nr. <i>dioscurea</i> (Loew, 1856)	Mt. Hermon, N. and C. Negev, Sinai Mts., SW. Sinai.
<i>Tephritis formosa</i> (Loew, 1844)	Golan Heights.
<i>Tephritis nigricauda</i> (Loew, 1856)	Sinai Mts.
<i>Tephritis</i> sp. a nr. <i>nigricauda</i> (Loew, 1856)	1 ♀, near Qiryat-Gat (S. Coastal Plain).
<i>Tephritis</i> sp. b nr. <i>nigricauda</i> (Loew, 1856)	1 ♀, Gedera (S.Coastal Plain).
<i>Tephritis planis-</i> <i>cutellata</i> (Becker, 1903)	N. and C. Coastal Plain, Jordan Valley, Dead Sea area.
<i>Tephritis poecilura</i> Loew, 1869	N. and c. parts of the country as far south as the N. Negev.
<i>Tephritis postica</i> (Loew, 1844)	Mt. Hermon (1650-2000m), Upper Galilee.

June-Sep.	Not known.	Israel, Sinai.
July	Not known.	Europe, Caucasus, Israel.
July	Not known.	Europe, N. and C. Asia, Syria, Israel, N. Africa.
April	Not known.	Israel.
June	Not known.	Israel.
Year round	Flower heads of <i>Conyza dioscoridis</i> (L.) Desf. (Compositae).	Egypt, Israel.
Dec.-June	Not known.	S. Europe, Afghani- stan, Israel, N. Africa.
June-Aug.	Not known.	C. Europe, S. Europe, Asia Minor, Crimea, Caucasus, Iran, Kazakhstan, Israel, N. Africa.

<i>Tephritis praecox</i> (Loew, 1844)	All parts of the country n. of Beer-Sheva.	Nov.-May	Flower heads of <i>Calendula</i> <i>arvensis</i> L. (Compositae).	Europe, Asia Minor, Afghanistan, Israel, Canary Islands, N. Africa.
<i>Tephritis recurrens</i> Loew, 1869	Mt. Hermon, Upper and Lower Galilee.	Apr.-Sep.	Not known.	S. Europe, Crimea, Asia Minor, Caucasus, Kazakh- stan, Israel.
<i>Tephritis simplex</i> (Loew, 1844)	Mt. Hermon (2000 m), Upper Galilee.	June	Not known.	S. Europe, Asia Minor, Israel, Tunisia, Algeria.
<i>Trupanea amoena</i> (Fraunfeld, 1856)	All parts of the country, Sinai.	Year round	Flower heads of <i>Carthamus</i> <i>tinctorius</i> L. and <i>Lactuca</i> <i>scariola</i> L. (Compositae)	Europe, Asia, Canary Islands, N. Africa, Ethiopia.
<i>Trupanea erigeroni</i> Freidberg, 1974	Dead Sea Area.	July-Sep.	Flower heads of <i>Erigeron</i> <i>bovei</i> (DC.) Boiss. (Compositae).	Israel.
<i>Trupanea pseudoamoena</i> Freidberg, 1974	All parts of the Negev, Sinai Mts., SW. Sinai.	Apr.-July	Collected, but not bred, on <i>Pulicaria crispa</i> (Forsk.) Bth. et Hook. f. (Compositae).	Israel, Sinai.
<i>Trupanea stellata</i> (Fuessly, 1775)	All parts of the country, Sinai.	Year round	Flower heads of <i>Senecio</i> <i>vernalis</i> W.K., <i>S. coron-</i> <i>pifolius</i> Desf., <i>Carthamus</i> <i>tinctorius</i> L., <i>Aaronsohnia</i> <i>faktorovskyi</i> Warb. et Eig. <i>Artemisia judaica</i> L. (Compositae).	Europe, W. Asia, C. Asia, Canary Islands, N. Africa, E. Africa.



<i>Trupanea augur</i> * (Frauenfeld, 1856)	All parts of the Negev, Arava Valley and Sinai.	Mar.-Aug.	Flower heads of <i>Pulicaria</i> <i>crispa</i> (Forsk.) Bth. et Hook. f. (Compositae).	Israel, Egypt, Sudan.
<i>Trupanea</i> sp. 1**	Judean Desert, Dead Sea Area, Arava Valley, all parts of the Negev and most of Sinai.	Mar.-July	Flower heads of <i>Pulicaria</i> <i>undulata</i> (L.) Kostel (Compositae).	Israel, Ethiopia, Kenya, South Africa.
<i>Trupanea</i> sp. 2**	S. Coastal Plain, Judean Mts., Dead Sea Area, N. Negev, Sinai Mts. and SW. Sinai.	Feb.-Nov.	Flower heads of <i>Pulicaria</i> <i>arabica</i> (L.) Cass. (Compositae).	Cyprus, Israel, Egypt, Ethiopia.
<i>Trupanea</i> sp. 3**	All parts of Israel and Sinai.	Mar.-Oct.	<i>Pallenis spinosa</i> (L.) Cass. (Compositae).	Iraq, Israel, North Africa.
Genus A sp. 1**	1♂, Eilat Mts. (S.Negev). 1♀, Kalia (Dead Sea Area).	August, February	Not known.	Israel.

\* This species, mentioned in the literature as *Trypanea kingi* Bezzi (1924), *T. (Goniurellia) ensina* Hendel (1927), *T. (Goniurellia) rostrata* Hendel (1931), and considered by Efflatoun (1924) as an abnormal form of *T. augur* auct., is the real *Trypeta augur* Frauenfeld (1856).

\*\* With Hendel's keys (1927) *Trupanea* spp. 1,2,3, lead erroneously to *Trypanea augur*. Each of the three species was reared from different host plants. Their genitalia also show remarkable differences, justifying their separation into distinct species. Genus A species 1 does not fit into any key. It agrees with the above species in chaetotaxy, but differs in the genitalia and has a reticulate wing pattern instead of an elongate rayed spot. The taxonomic status of these four species will be dealt with separately.

<p><i>Acanthiophilus helianthi</i> (Rossi, 1790)</p>	<p>All parts of the country, Sinai.</p>
<p><i>Acanthiophilus ramulosus</i> (Loew, 1844)</p>	<p>Most parts of the country and Sinai. Not found in S. Negev, Arava Valley and N. Sinai.</p>
<p><i>Tephritomyia lauta</i> (Loew, 1869)</p>	<p>Northern and central parts of the country, as far south as Sede-Boqer (C. Negev), C. Sinai Foothills, Sinai Mts.</p>
<p><i>SCHISTOPTERINAE</i></p>	
<p><i>Schistopterus moebiusi</i> Becker, 1903</p>	<p>C. Coastal Plain, Jordan Valley, Dead Sea Area.</p>

Year round	Pest in flower heads of <i>Carthamus tinctorius</i> L.. Also reared from flower heads of <i>C. glaucus</i> M.B., <i>C. tenuis</i> (Boiss.) Bornm., <i>Centaurea negeviana</i> Eig, <i>C. iberica</i> Trev., <i>C. verutum</i> L., <i>Silybum marianum</i> (L.) Gaertn., <i>Tripteris vaillanthii</i> Decne. and <i>Carduus</i> sp. (Compositae).	Europe, Asia Minor, W. Asia as far east as Kazakhstan and Afghanistan, Canary Islands, N.Africa, Ethiopia.
Year round	Flower heads of <i>Phagnalon rupestre</i> (L.) DC. (Compositae).	Italy, Yugoslavia, Syria, Israel, Egypt, Algeria, Canary Islands.
Mar.-Nov.	Flower heads of <i>Echinops</i> sp. (Compositae).	Morocco, Rhodes, Asia Minor, Israel, Egypt, Iran.
Year round	Flower heads of <i>Conyza dioscoridis</i> (L.) Desf. (Compositae).	Most of Africa, Israel.

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