

## GALL MIDGES (DIPTERA: CECIDOMYIIDAE) OF CÁDIZ PROVINCE (SOUTH-WESTERN SPAIN)

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**Abstract:** In the period 2004–2011 103 gall midge species of 37 genera were found at 63 localities in Cádiz province, south-western Spain, all of them belonging to the subfamily Cecidomyiinae. Together with 14 species found by earlier authors, the present gall midge fauna of Cádiz province includes 117 species, representing about 40% of the Iberian fauna of this group.

21 species are new to the Iberian Peninsula, whose known gall midge fauna thus includes 282 species. 11 species previously known only from Portugal are here recorded from Spain for the first time. The known Spanish fauna now includes 261 gall midge species. We also found nine undescribed species that we identified only to genus level and will be described in the future.

An analysis is made of the species' frequency: *Phyllodiplosis cocciferae* comes out as the most frequent species in Cádiz province. The distribution types of the species are also analysed; in this connection two species stand out: *Asphondylia salsolae*, a Euro-African species and the newest addition to the known gall midge fauna of the Iberian Peninsula, Spain and Europe, and *Dasineura gleditchiae*, the only alien species, of a Nearctic origin.

Gall midge gallswere found on 27 new host plant species, some of them endemic to Spain. An annotated list of gall midge species and a list of host plant species attacked by gall midges are given. Galls of 86 gall midge species on host plants are shown in colour photographs.

**Key words:** Diptera, Cecidomyiidae, faunistics, zoogeography, Cádiz province, Spain.

### Cecidómidos (Diptera: Cecidomyiidae) de la provincia de Cádiz (suroeste de España)

**Resumen:** En el presente trabajo se presentan los resultados de 8 años de estudio (2004–2011) de la fauna de cecidómidos de la provincia de Cádiz (suroeste de España). Se han muestreado 63 localidades, en las que se han registrado un total de 103 especies pertenecientes a 37 géneros de la subfamilia Cecidomyiinae. Sumando 14 especies citadas previamente por otros autores, la fauna de cecidómidos de Cádiz comprende actualmente 117 especies, que representan en torno al 40% de la fauna ibérica de este grupo.

Se citan 21 especies por primera vez de la Península Ibérica, cuya fauna conocida de mosquitos de las agallas se eleva así a 282 especies. 11 especies habían sido citadas anteriormente de Portugal, pero se aportan aquí sus primeras citas de territorio español. Con ellas, la fauna española conocida de cecidómidos comprende 261 especies. Se encontraron además nueve especies nuevas, que se citan aquí a nivel de género y serán descritas en el futuro.

Se realiza un análisis de la frecuencia de las especies, destacando en este sentido *Phyllodiplosis cocciferae*, que resultó la especie más frecuente en la provincia de Cádiz. Se analizan igualmente los tipos de distribución geográfica de las especies; por este concepto cabe destacar a *Asphondylia salsolae*, especie euroafricana y nuevo miembro de la fauna ibérica y europea de cecidómidos, y a la única especie exótica, *Dasineura gleditchiae*, procedente de la Región Neártica.

Se encontraron agallas de diferentes cecidómidos en 27 nuevos huéspedes vegetales, algunos de ellos endemismos ibéricos. Se aporta una lista anotada de especies y otra de sus plantas huésped. Se incluyen fotografías en color de las agallas producidas por 86 especies de cecidómidos.

**Palabras clave:** Diptera, Cecidomyiidae, faunística, provincia de Cádiz, España.

### Introduction

The gall midges (Cecidomyiidae) are one of the most speciose families of Diptera. Skuhravá (2006) gave 5657 species in 613 genera of living and fossil gall midges in the world. About 1800 species in 270 genera occur in Europe (Skuhravá & Skuhravý, 2010). The majority of gall midges are phytophagous; fewer species being zoophagous and mycophagous. Many larvae of phytophagous species are gall makers inducing galls on various plants, but some live free in flower heads or in stems of plants, without making galls. Some phytophagous species are serious pests of cultivated plants and forest trees but, on the other hand, several phytophagous species are used in biological control of weeds. The larvae of some species live as inquilines in galls of other gall midges or other insects. Zoophagous larvae are predators of other gall midges, aphids, mites, coccids or other small arthropods. Some of them are used in biological control of pests. Several species are endoparasites of aphids, psyllids and tingids. The biology of many species is completely unknown (Skuhravá et

al., 1984; Skuhravá, 1997; Darvas et al., 2000; Skuhravá & Roques, 2000).

The Iberian Peninsula, including Spain and Portugal, is evaluated as semi-explored for this group of insects (Skuhravá & Skuhravý, 2010). The gall midge fauna of the Iberian Peninsula was comprised of 261 gall midge species, of which 229 were recorded in Spain and 122 in Portugal (Skuhravá et al., 2006). Gall midges of the Iberian Peninsula were described and their occurrence was reported mainly by Tavares (1905, 1907) who prospected many areas in central Portugal and in several parts of Galicia (northwestern Spain). Skuhravá et al. (2006) summarized data and provided analyses of occurrence and distribution of gall midge species in Spain and Portugal. There are still many regions in Spain with gaps in the knowledge of this insect group. In Andalucía, which is one of the biggest regions of Spain, only 20 species of the subfamily Cecidomyiinae have been reported previously, and only three of them in Cádiz Province. On the other hand, 14 species (of

20 species known to occur in the Iberian Peninsula) belonging to the subfamily Lestremiinae were recorded in Cádiz Province by Jaschhof (1998).

## Study area

Cádiz Province is a part of Andalusia (Spain), situated between latitudes 37° 30'08'' N and 36° 04'00'' N (Fig. 87), is located in the southernmost part of the Iberian Peninsula and occupies 7,442 square kilometers at altitudes ranging from 0 to 1,654 metres above sea level, although 48% of land area is at less than 100 m in elevation. It is bordered by the Atlantic Ocean in the west and the Strait of Gibraltar and the Mediterranean Sea in the South. The climate is Mediterranean, with between 500 and 2500 mm of rainfall annually.

The eastern half of the province is occupied by mountain ranges with limestone formations in the northeast transformed to ravines, declines and caves that host an important forest of the endemic Spanish Fir (*Abies pinsapo*). In the south-western part is an area of low mountain range with acid soils densely covered by cork oak trees (*Quercus suber*).

The western half is quite flat and dominated by crops and small hills with isolated forests of wild olives (*Olea europaea* var. *sylvestris*), whereas the coastline is dominated by long beaches and sand dunes interrupted by marshland at the mouth of the Guadalquivir, Guadalete, Barbate, Palmores and Guadiaro rivers and small cliffs at coast of the Strait of Gibraltar.

## Material and methods

We searched for gall midge galls randomly at many different localities across Cádiz Province from 2004 to 2011 (see Fig. 87). All the species recorded in this paper were found collecting their galls on host plants species, except for some species that were located feeding on fungi or invertebrates (aphids or mites) on the plants.

Plant tissue collected with galls containing larvae or pupae were placed in emergence cages to obtain adults. Galls, larvae, pupae and adults were preserved in small vials with 75% ethanol.

Identification of gall midges galls was based on Tavares (1905, 1907), Houard (1908-1909), Buhr (1964-1965) and Dauphin & Aniotsbehere (1997); identification of larvae on Möhn (1955, 1966-1971) and of adults on Skuhravá (1997a). The nomenclature of gall midge species is based on Skuhravá (1986, 1989, 1997a) and Gagné (2004, 2010). The determination and nomenclature of host plant species is based on Castroviejo *et al.* (1986-2009) and for those families not yet included in the former work we have followed Valdés *et al.* (1997). We have added some synonymous plant names in those cases in which the gall midges were recorded in former bibliography using such names.

Data on gall midges gathered during investigations are analyzed and evaluated from the zoogeographical point of view using methods described by Skuhravá (1987, 1994 a, b, 1997 b).

Host plants with galls, larvae, pupae and adults reared from galls (voucher specimens) are deposited in the collection of Marcela Skuhravá, Praha, Czech Republic, and in the collection of Iñigo Sánchez, Zoobotánico de Jerez, Jerez, Spain.

## Results

### Species numbers

In the period 2004-2011 103 gall midge species of 39 genera were found at 63 localities in Cádiz Province, southwestern Spain, all of them belonging to the subfamily Cecidomyiinae. Together with 14 species of the subfamily Lestremiinae found by earlier authors and summarized in Skuhravá *et al.* (2006), the present gall midge fauna of Cádiz Province includes 117 species, representing 40% of the Iberian fauna for this group.

The most common genera are *Dasineura* with 23 species, *Asphondylia* with 18 species and *Contarinia* with 11 species. Nine species were identified to genus level only: *Asphondylia*, *Dasineura*, *Etsuhoa*, *Oligotrophus* and *Polygonomyia*, each with one species, and *Dasineura* with four species; they will be described in the future.

The following 21 species are new members of the gall midge fauna of the Iberian Peninsula: *Aphidoletes aphidimyza* (Rondani, 1847), *Asphondylia borzi* (Stefani, 1898), *Asphondylia salsolae* Rübsamen, 1908, *Asphondylia stefanii* Kieffer, 1898, *Asphondylia trabutii* Marchal, 1896, *Contarinia acerplicans* (Kieffer, 1889), *Contarinia ononidis* Kieffer, 1899, *Contarinia viburnorum* Kieffer, 1913, *Dasineura capsulae* (Kieffer, 1901), *Dasineura papaveris* Winnertz, 1853, *Dasineura tortrix* (F. Löw, 1877), *Drisina glutinosa* Giard, 1893, *Gephyraulus diplotaxis* (Solinas, 1982), *Lasiopelta thapsiae* Kieffer, 1898, *Lestodiplosis gracilis* Nijveldt, 1953, *Lestodiplosis pallidicornis* Kieffer, 1898, *Loewiola centaureae* (F. Löw, 1875), *Macrolabis lonicerae* Rübsamen, 1912, *Mycodiplosis gymnosporangii* Kieffer, 1904, *Mycodiplosis melampsorae* (Rübsamen, 1889) and *Sitodiplosis phalaridis* Abbass, 1986. The fauna of the Iberian Peninsula currently includes 261 species.

The following 10 species, previously known only from Portugal (Tavares, 1902, 1905), were recorded for the first time in Spain: *Asphondylia pterosparti* Tavares, 1902, *Blastomyia origani* (Tavares, 1902), *Clinodiplosis cilicrus*, *Contarinia anthobia* (F. Löw, 1877), *Contarinia loti* (De Geer, 1776), *Dasineura andrieuxi* (Tavares, 1902), *Dasineura coronillae* (Tavares, 1902), *Dasineura elegans* (Tavares, 1907), *Jaapiella bryoniae* (Bouché, 1847), *Psecstroema provinciale* Kieffer, 1912 and *Zeuxidiplosis giardi* (Kieffer, 1896). The present fauna of Spain includes 261 gall midge species.

### Gall midges and host plants

Gall midges in Cadiz Province are associated with 89 host plant species of 69 genera that belong to 31 families. 22 gall midge species are associated with Leguminosae, 8 with Ericaceae and 8 with Fagaceae. The majority of plant species host only one gall midge species. *Quercus coccifera*, *Quercus ilex*, *Juniperus oxycedrus* and *Salsola vermiculata*, each host three gall midge species. On average, one plant species hosts 1,30 species of gall midges. Four species of *Quercus*, viz. *Q. coccifera*, *Q. ilex*, *Q. suber*, *Q. faginea*, host seven gall midge species.

Galls of gall midges were found on 27 new host plant species, many of them endemic to Spain. *Cytisus arboreus* subsp. *baeticus* for *Asphondylia cytisi* Frauenfeld, 1873, *Dorycnium hirsutum* for *Asphondylia dorycnii* (Müller, 1870), *Genista hirsuta* for *Asphondylia genistae* H. Loew, 1850, *Ononis talaverae* for *Asphondylia ononidis* F. Löw, 1873,

*Hirschfeldia incana* for *Asphondylia stefanii* Kieffer, 1898, *Ulex baeticus* for *Asphondylia ulicis* Trail, 1873, *Sarcocornia fruticosa* for *Baldratia salicorniae* Kieffer, 1897, *Thymus granatensis* for *Bayeriola thymicola* (Kieffer, 1888), *Ori-ganum compactum* for *Blastomyia origani* (Tavares, 1902), *Lotus arenarius* for *Contarinia loti* (De Geer, 1776), *Ononis natrix* for *Contarinia ononidis* Kieffer, 1899, *Asparagus acutifolius* for *Dasineura asparagi* (Tavares, 1902), *Cru-cianella angustifolia* for *Dasineura asperulae* (F. Löw, 1875), *Euphorbia boetica* for *Dasineura capsulae* (Kieffer, 1901), *Coronilla juncea* for *Dasineura coronillae* (Tavares, 1902), *Halimium halimifolium* for *Dasineura herminii* (Tavares, 1902), *Rubus ulmifolius* for *Dasineura plicatrix* (Loew, 1850), *Asparagus aphyllus* for *Dasineura turionum* (Kieffer & Trotter, 1904), *Lotus parviflorus* for *Jaapiella loticola* (Rübsamen, 1899), *Medicago doliata* for *Jaapiella medi-caginis* (Rübsamen, 1912), *Elaeoselinum foetidum* for *Lasioptera thapsiae* Kieffer, 1898, *Centaurea sphaero-cephala* for *Loewiola centaureae* (F. Löw, 1875), *Hip-pocrepis rupestris* for *Macrolabis hippocrepidis* Kieffer, 1898, *Lonicera implexa* for *Macrolabis lonicerae* Rübsamen, 1912, *Juniperus navicularis* for *Oligotrophus valerii* (Tavares, 1904), *Tamarix canariensis* for *Psectrosema provinciale* Kieffer, 1912 and *Atriplex prostrata* for *Stefaniella trinacriae* Stefani, 1900.

### Species density

Species density refers to the number of species per unit area. We used this term for the number of gall midge species calculated for each country or island in Europe per unit of 1000 km<sup>2</sup>, that is for a square with four equal sides each 31,62 km long (Skuhravá & Skuhravý, 2010). Species density for gall midge species occurring per 1000 km<sup>2</sup> may be calculated using the formula of MacArthur and Wilson (1967):  $S = x/a^{0.25}$  where S is the number of species per area of 1000 km<sup>2</sup>, x is the number of gall midge species found in the country and a is the whole area of the country expressed in 1000 km<sup>2</sup>. If we introduce to this formula data obtained in Cadiz Province - 103 gall midge species found and the area of Cadiz Province 7442 km<sup>2</sup> -  $S = 103/7442^{0.25}$ , we obtain the value 62,42. It means that 62 gall midge species occur at the unit area of 1000 km<sup>2</sup> in Cadiz Province. Cadiz Province may be evaluated as an area of Europe with medium gall midge species density, similar to the species density counted for Greece, Bosnia and Herzegovina and Macedonia (Skuhravá & Skuhravý 2010).

### Frequency

We evaluate the frequency of gall midge species in the area according to the number of localities. In the locality under study the gall midge species should be found only once (e.g. one gall on a host plant at one locality) and in such case the species is here very rare, or the species may occur in such locality in large amount and the species is evaluated as locally abundant.

In the Cadiz Province 103 gall midge species were found. Each of forty eighth (46) species was found only once, at only one locality, and is evaluated as occurring **very scarcely**, although some of them may occur locally very abundantly (e.g. *Asphondylia genistae* in Las Aguilillas).

Twenty five species occur scarcely, each of them was recorded at two localities. Twelve species occur medium frequently, each of them was found at three localities. Eight

species occur frequently, each of them was recorded at four localities, viz. *Asphondylia borzi*, *A. stefanii*, *A. verbasci*, *Braueriella phillyreae*, *Dasineura asparagi*, *D. crataegi*, *D. ericaescopariae* and *Lasioptera thapsiae*. Five species occur very frequently, each of them was recorded at five localities, viz. *Asphondylia menthae*, *Dryomyia lichensteinii*, *Kiefferia pericarpicola*, *Probruggmanniella phillyreae* and *Psectrosema provinciale*. Only one species, *Phyllocladus cocciferae* causing galls on *Quercus coccifera*, found at seven localities, is the most frequent species in Cádiz Province. *Dasineura plicatrix* on *Rubus ulmifolius* and *Dryomyia lichensteinii* on *Quercus ilex* were found to be locally abundant at localities where they occurred.

### Geographical distribution

The gall midge species occurring in Cadiz Province may be divided, according to their overall distribution in the world, into six zoogeographic units: European, Euro-Siberian, Mediterranean (including sub-Mediterranean), Palaearctic or Euro-Asian, Holarctic and cosmopolitan. In addition, species that penetrated into Europe from other continents and are members of the present European gall midge fauna are designated as alien (Skuhravá & Skuhravý, 2010).

In the Cadiz Province, Mediterranean and sub-Mediterranean gall midges are very abundant and include 59 species (57%), followed by 30 species (29%) with European distribution areas.

Only nine species (9%) have Euro-Siberian distribution areas and remaining five species (5%) occupy areas of other types: *Aphidoletes aphidimyza*, a zoophagous species preying on aphids is a Holarctic species, *Mayetiola destructor*, a pest of cereals, originated in the Palaearctics and secondarily has been transferred to the Nearctics. *Asphondylia salsolae* is an Euro-African species and is the new member of gall midge fauna of Iberian Peninsula, Spain and Europe. *Dasineura gleditchiae* on *Gleditsia triacanthos* is the only one alien species originated from the North America.

Several gall midge species are very interesting from the zoogeographical point of view. One of them is *Asphondylia salsolae* the galls of which were found on *Salsola vermiculata* in Cadiz Province. This species was described on the basis of material found in Central Africa.

Second interesting species is undescribed and belongs in *Polygonomyia*, the Central-Asian genus. Its galls - swollen flower buds on *Polygonum equisetiforme* - were found in Cadiz Province. Fedotova (1991) described two species belonging to the genus *Polygonomyia* that induce flower bud galls on *Polygonum* and *Atraphaxis* (both Polygonaceae) in Kazakhstan (Central Asia).

Other interesting species is *Oligotrophus valerii*, causing galls on *Juniperus oxycedrus* in southern Europe. In the Cadiz Province *O. valerii* is associated with *Juniperus navicularis*, the endemic plant to south-western Iberian Peninsula.

Larvae of *Dasineura papaveris*, developing in seed capsules of *Papaver rhoeas* were found now in Cadiz Province. It seems that this species gradually enlarge its distribution area from Central Europe in direction to the south-east. Damaged seed capsules were found in many countries of Central Europe in the past, in southern Europe (Skuhravá & Skuhravý 1997) and recently in Malta (Mifsud, 2011), Armenia (Mirumjan, 2011) and Sicily (material sent for identification from Prof. Bruno Massa, 2010).

## Annotated list of species

The following data are given for each species: species name, author and date of description, synonyms (if any), short description of the biology (if known), shape of the gall, host plant species and family, occurrence in Cádiz Province, coordinates, altitude, date of collection and character of distribution in the Palaearctic region.

### • *Acodiplosis pulicariae* Kieffer, 1913

Solitary white larvae cause galls on leaves of *Pulicaria odora* (Compositae) (fig.1). Occurrence: scarce: Chiclana de la Frontera, Loma del Puerco, 70 m a.s.l., 24.11. 2011; 29SQA52, La Barrosa, 29SQA52, 4 m a.s.l., 13.03. 2012; Grazalema, Campobuche, 30STF96, 807 m a.s.l., 13.02. 2011; San José del Valle, Dehesa Picado, 30STF65, 136 m a.s.l., 21.04. 2012. Distribution: Mediterranean.

### • *Aphidoletes aphidimyza* (Rondani, 1847)

Larvae feed predaciously on various species of Aphidae on different plants. (fig.2) Occurrence: medium frequent: Jerez, Zoobotánico, 29SQA56, 50 m a.s.l., 17.04.2007; Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 01.06. 2006; Jerez, Cuartillos, 29SQA66, 79 m a.s.l., 15.06. 2004. Distribution: Holarctic, cosmopolitan. First record for the Iberian peninsula.

### • *Arnoldiola quercus* (Binnie, 1877)

#### = *Arnoldia quercina* Tavares, 1920

Larvae live among young leaves in rosette-like deformations of the growing tips of *Quercus faginea* Lam. (Fagaceae) (fig.3). Occurrence: very scarce: Jerez, La Suara, 30STF35, 51 m a.s.l., 05.12. 2003. Distribution: European. New host plant of this species.

### • *Asphondylia adenocarpi* Tavares, 1902

Larvae cause bud galls on shoots of *Adenocarpus telonensis* (Lois.) (Leguminosae) (fig.4). Occurrence: scarce: Barbate, Sierra del Retín, 30STF40, 58 m a.s.l., 13.11. 2009. Distribution: Mediterranean, endemic to the Iberian peninsula. First record for Andalusia.

### • *Asphondylia borzi* (Stefani, 1898)

Larvae cause galls on fruits of *Rhamnus alaternus* L. (Rhamnaceae) (fig.5). Occurrence: very frequent: Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 27.09. 2003; Jerez, La Suara, 30STF35, 51 m a.s.l., 4.08. 2004; Jerez, Los Garciagos, 29SQA66, 40 m a.s.l., 22.04.2012; San José del Valle, Dehesa Picado, 30STF65, 138 m a.s.l., 12.10. 2005; Villaluenga, subida a los Llanos, 30STF96, 818 m a.s.l., 05.02. 2005. Distribution: Mediterranean. First records for peninsular Spain. Recorded in Mallorca (Skuhravá & Skuhravý, 2004).

### • *Asphondylia calycotomae* (Kieffer in Houard, 1912)

Larvae cause large galls on buds (hibernating generation) (fig.6a) or on pods (summer generation) (fig.6b) of *Calycotome villosa* (Poir.) Link (Leguminosae). Occurrence: frequent: Chiclana de la Frontera, Pinar del Hierro, 29SQA53, 25 m a.s.l., 05.06. 2005; Chiclana de la Frontera, Loma del Puerco, 70 m a.s.l., 24.11. 2011; 29SQA52; San Roque, La Alcaidesa, 30STF31, 57 m a.s.l., 12.04. 2006. Villaluenga del Rosario, 30STF96, 820 m a.s.l., 12.02. 2011. Distribution: Mediterranean. First records for Andalusia.

### • *Asphondylia conglomerata* Stefani, 1900

Asingle larvae cause galls on flower buds of *Atriplex halimus* L. (Chenopodiaceae) (fig.7). These galls are aggregated in big groups which are attached to the stems. Occurrence: scarce: Puerto Real, Cerro de Ceuta, 29SQA54. 14 m a.s.l., 30.05. 2011. Distribution: Mediterranean. Second record for Spain.

### • *Asphondylia cytisi* Frauenfeld, 1873

Larvae cause galls on buds and pods of *Cytisus arboreus* subsp. *baeticus* (Webb) Maire (Leguminosae), endemic to the south of the Iberian peninsula (fig.8). New host for the species. Occurrence: scarce: Villaluenga, subida a los Llanos, 30STF96, 818 m a.s.l., 05.02. 2005; San José del Valle, junto a Puente Picado, 30STF65,

125 m a.s.l., 02.03. 2006. Distribution: Euro-Siberian. Second record for Spain.

### • *Asphondylia dorycnii* (Müller, 1870)

Larvae cause galls on buds at vegetative tip of *Dorycnium hirsutum* (L.) Ser. in DC. (Leguminosae) (fig.9). New host for the species. Occurrence: scarce: San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 02.03. 2006. Distribution: Mediterranean. First records for Andalusia.

### • *Asphondylia genistae* H. Loew, 1850

This species is associated in Cadiz Province with *Genista hirsuta* Vahl. (Leguminosae). It has two generations in one year. Larvae of the first generation cause swellings on the pods (fig.10a), larvae of the second generation develop in buds (fig.10b). *A. genistae* was originally described from the host plant *Genista germanica* L. found in Poland by Loew (1850). Subsequently the galls were found also on other related species of *Genista* in various countries of Europe. *A. genistae* occupies a large distribution area in Europe.

Occurrence: frequent: Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 23.01.2007. Distribution: European. *A. genistae* occurs in Cadiz Province on *Genista hirsuta*, the plant species endemic to the Iberian Peninsula.

### • *Asphondylia menthae* Kieffer, 1901

Larvae change into galls the flower buds of *Mentha suaveolens* Ehrh. (=*M. rotundifolia* (L.) Huds.). (Labiatae) (fig.11). Occurrence: very frequent: Jerez, La Cartuja, 29SQA56, 46 m a.s.l., 23.08. 2004; Barbate, Sierra del Retín, 30STF40, 58 m a.s.l., 13.09. 2006; Ubrique, Tavizna, 30STF76, 304 m a.s.l., 19.08. 2006; Jerez, Los Garciagos, 29SQA66, 47 m a.s.l., 18.10. 2011; Jerez, La Suara, 30STF35, 40 m a.s.l., 20.10. 2011. Distribution: Mediterranean.

### • *Asphondylia ononidis* F. Löw, 1873

Larvae change into galls the axillar or terminal buds of *Ononis talaverae* Devesa & G. López (Leguminosae), endemic to the south of Spain (fig.12). Occurrence: scarce: Barbate, Pinar de la Breña, 30STF30, 107 m a.s.l., 12.12. 2004. Distribution: sub-Mediterranean. Second record for Spain.

### • *Asphondylia pterosparti* Tavares, 1902

Larvae change into galls the flower buds or axillary leaf buds on stem of *Pterospartum tridentatum* Willk. in Willk. & Lange (= *Chamaespartium tridentatum*) (Leguminosae) (fig.13). Occurrence: scarce: San Roque, La Alcaidesa, 30STF31, 57 m a.s.l., 24.02. 2008. Distribution: Mediterranean, endemic to the Iberian Peninsula. First record for Spain.

► **Fig. 1.** *Acodiplosis pulicariae* on *Pulicaria odora*; **2.** Larva of *Aphidoletes aphidimyza* eating aphids; **3.** *Arnoldia quercus* on *Quercus faginea*; **4.** *Asphondylia adenocarpi* on *Adenocarpus telonensis*; **5.** *Asphondylia borzi* on *Rhamnus alaternus*; **6a.** *Asphondylia calycotomae* on *Calycotome villosa* (hibernating generation); **6b.** *A. calycotomae* on *C. villosa* (spring generation); **7.** *Asphondylia conglomerata* on *Atriplex halimus*; **8.** *Asphondylia cytisi* on *Cytisus arboreus* subsp. *baeticus* **9.** *Asphondylia dorycnii* on *Dorycnium hirsutum*; **10a.** *Asphondylia genistae* on *Genista hirsuta* (first generation); **10b.** *Asphondylia genistae* on *G. hirsuta* (second generation); **11.** *Asphondylia menthae* on *Mentha suaveolens*; **12.** *Asphondylia ononidis* on *Ononis talaverae*; **13.** *Asphondylia pterosparti* on *Pterospartum tridentatum*; **14.** *Asphondylia rosmarini* on *Rosmarinus officinalis*; **15** *Asphondylia rutaе* on *Ruta montana*; **16** *Asphondylia salsolae* on *Salsola vermiculata*; **17.** *Asphondylia stefanii* on *Hirschfeldia incana*; **18.** Pupa of *Asphondylia trabutii* on *Solanum nigrum*; **19.** *Asphondylia ulicis* on *Ulex baeticus*; **20.** *Asphondylia verbasci* on *Verbascum sinuatum*; **21.** *Asphondylia* sp. on *Anthyllis cytisoides*; **22.** *Baldratia salicorniae* on *Sarcocornia perennis*.



• *Asphondylia rosmarini* Kieffer, 1896

A single larva causes small hairy pouch galls on the underside of leaves of *Rosmarinus officinalis* L. (Labiatae) (fig. 14). Occurrence: very frequent: Sanlúcar de Barrameda, Pinar de la Algaida, 29SQA48, 7 m a.s.l., 28.05. 2011; Puerto Real, Pinar de Las Yeguas, 29SQA54, 8 m a.s.l., 20.06. 2011; Puerto Real, Cañada de Camino Ancho, 29SQA54, 40 m a.s.l., 07.02. 2012; San José del Valle, Dehesa Picado, 30STF65, 112 m a.s.l., 10.02. 2012; Barbate, Pinar de la Breña, 30STF30, 103 m a.s.l., 11.03.2012. Distribution: Mediterranean. Second record for Spain.

• *Asphondylia rutaæ* Kieffer, 1909

Larvae deform fruits of *Ruta montana* Clus. (Rutaceae) and change them into galls (fig.15). Occurrence: medium frequent: El Puerto de Santa María, Sierra de San Cristobal, 29SQA55, 37 m a.s.l., 30.07. 2006. Distribution: Mediterranean. First record for Andalusia.

• *Asphondylia salsolæ* Rübsaamen, 1908

Larvae cause small ovoid hairless galls on twigs of *Salsola vermiculata* L. (= *S. microphylla*) (Chenopodiaceae). (Fig. 16). Occurrence: scarce: Puerto de Santa María, Los Toruños, 29SQA44, 2 m a.s.l., 04.02.2005. Distribution: South-European and African. The hairless ovoid galls of *Asphondylia salsolæ* on *Salsola aphylla* were found in Gaiaub Desert, Namibia, in Central Africa, and the species was described by Rübsaamen (1908) on the basis of larva and pupa. The shape of the gall on *Salsola vermiculata* found in Cadiz Province fully responds to the shape of the gall *A. salsolæ* as it is figured in Houard (1922-1923: page 236, Fig. 469 and 470). Only one male emerged from the gall collected in Puerto de Santa María on 27.3. 2008 (sample 279). It is the new record for Iberian Peninsula, Spain and Europe.

• *Asphondylia stefanii* Kieffer, 1898

A solitary orange larva develops in swollen siliques of *Hirschfeldia incana* (L.) (= *Sinapis incana* L.) Lagrèze-Fossat (Cruciferae) (Fig. 17). New host for the species. Kieffer (1898) described this species from siliques of *Diplotaxis tenuifolia*. Occurrence: frequent: Jerez, El Portal, 29SQA55, 16 m a.s.l., 11.07. 2004; Jerez, Montealegre, 29SQA56, 54 m a.s.l., 07.07. 2006; Tarifa, Atlanterra, 30STE49, 20 m a.s.l., 15.07. 2004; Vejer, molinos, 30STF31, 183 m a.s.l., 12.06. 2005. Distribution: Mediterranean. First record for the Iberian Peninsula.

• *Asphondylia trabutii* Marchal, 1896

Larvae live within the fruits of *Solanum nigrum* L. (Solanaceae) (Fig. 18). Several generations may develop per year. Occurrence: scarce: Jerez, La Grederuela, 29SQA66, 9 m a.s.l., 19.10. 2009. Distribution: Mediterranean. First record for the Iberian Peninsula although previously reported for Baleares (Traveset & Mas, 1999).

• *Asphondylia ulicis* Trail, 1873

Solitary larvae cause swollen flower buds of *Ulex baeticus* (Boiss.) (Leguminosae) (Fig. 19). New host for the species. Occurrence: frequent: Villaluenga del Rosario, Llanos del Republicano, 30STF96, 750 m a.s.l., 20.09. 2008. Distribution: Mediterranean. First record for Andalusia.

• *Asphondylia verbasci* (Vallot, 1827)

Larvae change into galls the flower buds of *Verbascum sinuatum* L. (Scrophulariaceae) (Fig. 20). Occurrence: very frequent: Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 27.09. 2003; Jerez, El Portal, 29SQA55, 16 m a.s.l., 11.07. 2004; Jerez, La Suara, 30STF35, 40 m a.s.l., 20.10. 2011; Vejer, molinos, 30STF31, 183 m a.s.l., 12.06. 2005. Distribution: Mediterranean. First records for Andalusia.

• *Asphondylia* sp. (on *Anthyllis* spp)

Undeterminate gall-midge collected from larvae cause galls from leaf buds of *Anthyllis polyccephala* Desf. and *A. cytisoides* L. (Leguminosae) (Fig. 21). Occurrence: medium frequent: Barbate, Pinar de la Breña, 30STF30, 107 m a.s.l., 12.12.2004; Grazalema, pinsapar, 30STF87, 1050 m a.s.l., 13.10. 2003; Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 24.12. 2003.

• *Baldratia salicorniae* Kieffer, 1897

=*Baldratia hyalina* Kieffer, 1912

Larvae cause swellings on stems of *Sarcocornia fruticosa* (L.) A. J. Scott (= *Arthrocnemum fruticosum* (L.) Moq.) (Fig. 22) and *Sarcocornia perennis* (Miller) A.J. Scott (Chenopodiaceae). New host for the species. Occurrence: medium frequent: El Puerto de Santa María, Marismas secas del Guadalete, 29SQA55, 3 m a.s.l., 05.03. 2004; Conil, Playa de la Fontanilla, 29SQA61, 2 m a.s.l., 5.03. 2011. Distribution: Mediterranean.

• *Baldratia suaedae* Möhn, 1969

Larvae cause small ovoid swellings on the shoots of *Suaeda vera* J. F. Gmel. (Chenopodiaceae) (Fig. 23). Occurrence: medium frequent: El Puerto de Santa María, Marismas secas del Guadalete, 29SQA55, 3 m a.s.l., 05.03. 2004; Conil, Playa de la Fontanilla, 29SQA61, 2 m a.s.l., 5.03. 2011. Distribution: Mediterranean. First record for Andalusia.

• *Bayeriola salicariae* (Kieffer, 1888)

Orange larvae induce leaf or flower bud galls on the shoots of *Lythrum salicaria* L. (Lythraceae) (Fig. 24). Occurrence: scarce: Jerez, La Suara, 30STF35, 45 m a.s.l., 20.10. 2011. Distribution: European. First record for Andalusia.

• *Bayeriola thymicola* (Kieffer, 1888)

Larvae cause large hairy galls (Fig. 25) on vegetative tips of *Thymus granatensis* Boiss. (Labiatae), endemic to the south of Spain. Villaluenga del Rosario, Sierra del Caillo, 30STF86, 1166 m a.s.l., 07.02. 2004. Occurrence: medium frequent. New host for the species. Distribution: European. First record for Andalusia.

• *Blastomyia origani* (Tavares, 1902)

=*Oligotrophus origani* Tavares, 1902

Larvae cause large galls on *Origanum compactum* Bentham (Labiatae). The gall is formed of aggregated leaves (Fig. 26). Occurrence: scarce: San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 08.05. 2005; San Roque, La Alcaidesa, 30STF31, 50 m a.s.l., 10.11.2011. New host for the species. Distribution: Mediterranean. First record for Spain.

• *Braueriella phillyreæ* (F. Löw, 1877)

Larvae cause pustule galls on leaves of *Phillyrea angustifolia* L. and *Phillyrea latifolia* L. (= *P. media* L.) (Oleaceae) (Fig. 27). Occurrence: very frequent: Puerto Real, Pinar de Las Yeguas, 29SQA54, 9 m a.s.l., 05.11.2004; Alcalá de los Gazules, El Picacho, 30STF64, 400 m a.s.l., 18.12. 2004; San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 08.05. 2005; Sanlúcar de Barrameda, Pinar de la Algaida, 29SQA48, 7 m a.s.l., 08.01. 2004. Distribution: Mediterranean. First records for Andalusia.

• *Clinodiplosis cilicrus* (Kieffer, 1889)

Larvae are phytophagous and live in various decaying plant matter. We have found them in dry *Phlomis purpurea* L. (Labiatae) inflorescences and in old blossom flower head of *Carthamus lanatus* L. (Compositae). Occurrence: scarce: San José del Valle, Dehesa Picado, 30STF35, 98 m a.s.l., 13.02. 2005; Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 12.04. 2006 and 12.10. 2004. Distribution: Euro-Siberian. First record for Spain.

• *Contarinia acerpllicans* (Kieffer, 1889)

White larvae cause leaf folds on *Acer monspessulanus* L. (Aceraceae) (Fig. 28). Occurrence: scarce: Villaluenga del Rosario, 30STF96, 800 m a.s.l., 30.03. 2008. Distribution: Euro-Asian. First record for the Iberian Peninsula.

• *Contarinia anthobia* (F. Löw, 1877)

Larvae change into galls the flower buds of *Crataegus monogyna* Jaq. (Rosaceae). (Fig. 29). Occurrence: scarce: San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 17.04. 2005; Paterna de Ribera, Loma de las vacas, 30STF44, 137 m a.s.l., 04.03. 2011. Distribution: European. First record for Spain.

• *Contarinia ilicis* Kieffer, 1898

Larvae cause small galls on leaves of *Quercus ilex* L. (Fig. 30a) and

*Q. coccifera* (Fagaceae) (Fig. 30b). Occurrence: medium frequent: Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 10.10.2003; Villaluenga, Sierra del Peralto, 30STF86, 919 m a.s.l., 08.02. 2004; Zahara de la Sierra, 30STF97, 464 m a.s.l., 10.11. 2007. Distribution: Mediterranean. First record for Andalusia.

• *Contarinia loti* (De Geer, 1776)

Larvae change into galls the flower buds of *Lotus arenarius* Brot. (Leguminosae). Occurrence: scarce: Chiclana, Llano de las Maravillas, 29SQA52, 26 m a.s.l., 29.05. 2004. New host for the species. Distribution: European. First record for Spain.

• *Contarinia luteola* Tavares, 1902

Larvae cause small cylindrical galls on branches of *Quercus ilex* L. (Fagaceae). Occurrence: frequent: Villaluenga, Sierra del Peralto, 30STF86, 919 m a.s.l., 8.02. 2004; Jerez, La Suara, 30STF35, 51 m a.s.l., 21.03. 2005. Distribution: Mediterranean.

• *Contarinia ononidis* Kieffer, 1899

Swollen shoot tips of *Ononis natrix* L. (=*O. hispanica* L.) (Leguminosae) contain several yellow larvae. New host for the species. Occurrence: scarce: El Bosque, Tavizna, 30STF76, 304 m a.s.l., 20.07. 2007. Distribution: European. First record for the Iberian Peninsula.

• *Contarinia viburnorum* Kieffer, 1913

Several white larvae inside flower buds of *Viburnum tinus* L. (Caprifoliaceae) (Fig. 31). Occurrence: medium frequent: San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 30.03. 2005. Distribution: European. First record for the Iberian Peninsula.

• *Contarinia* sp. (on *Diplotaxis catholica*)

Undeterminate gall-midge collected from larvae develop in unopened flower buds of *Diplotaxis catholica* (L.) DC. (Cruciferae) (Fig. 32). Occurrence: medium frequent: Jerez, Chapín, 29SQA56, 37 m a.s.l., 12.01. 2006; San Isidro del Guadalete, 30STF35, 125 m a.s.l., 24.02. 2011. Distribution: Unknown. Adults are very similar to *Contarinia nasturtii* (Kieffer, 1888), a widespread species and may be identical with it. Stokes (1953) mentioned *Contarinia* species associated with *Diplotaxis tenuifolia* the identity could not be solved because of only few material was at disposal.

• *Contarinia* sp. (on *Genista hirsuta*)

Undeterminate gall-midge collected from larvae develop in swollen flower buds of *Genista hirsuta* Vahl. (Leguminosae). Occurrence: scarce: Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 02.03. 2004.

• *Contarinia* sp. (on *Juniperus oxycedrus*)

Undeterminate gall-midge collected from larvae that live in very small terminal bud galls of *Juniperus oxycedrus* subsp. *oxycedrus* L. (Cupressaceae) (Fig. 33). The galls are formed by one whorl of new needles that remain closed with the middle area of the needles getting violet and slightly swollen (see fig. 32). Only one larva develops in the gall. Occurrence: medium frequent: Puerto Real, Cañada de Camino Ancho, 29SQA54, 42 m a.s.l., 7.04. 2006.

• *Contarinia* sp. (on *Stauracanthus genistoides*)

Undeterminate gall-midge collected from larvae that cause irregular swellings on stems of *Stauracanthus genistoides* (Brot.) Samp. (Leguminosae) (Fig. 34), endemic to south-western part of the Iberian Peninsula. Many small red larvae develop under the bark. Occurrence: scarce: Chiclana, La Barrosa, 29SQA52, 4 m a.s.l., 08.01. 2004; Puerto Real, Pinar de las Yeguas, 29SQA54, 9 m a.s.l., 26.12. 2003; Sanlúcar de Barrameda, Pinar de la Algaida, 29SQA48, 8 m a.s.l., 08.01. 2004.

• *Dasineura acrophila* (Winnertz, 1853)

Larvae cause pod-like galls on young leaflets of *Fraxinus angustifolia* Vahl. (Oleaceae) (Fig. 35). Grazalema, Los Naranjos, 30STF87, 719 m a.s.l., 08.03. 2009; Paterna de Ribera, Loma de las vacas, 30STF44, 137 m a.s.l., 04.03. 2011. Occurrence: scarce. Distribution: European. Second record for Spain.

• *Dasineura affinis* (Kieffer, 1886)

Larvae cause galls on *Viola suavis* M. Bieb. (*V. odorata* subsp. *suavis* (M. Bieb) Nyman) (Violaceae). The gall is formed of rolled and thickened leaf margin mainly of very young leaves (Fig. 36). Occurrence: medium frequent: Jerez, Zoobotánico, 29SQA56, 50 m a.s.l., 27.01. 2003. Distribution: European.

• *Dasineura andrieuxi* (Tavares, 1902)

Larvae change into galls terminal or axial buds on stem of *Halimium calycinum* (L.) K. Koch (=*H. commutatum* Pau = *H. libanotis* (L.) Lge.) (Fig. 37). (Cistaceae). Occurrence: medium frequent: Sanlúcar de Barrameda, Pinar de la Algaida, 29SQA48, 7 m a.s.l., 08.01. 2004; Puerto Real, Pinar de las Yeguas, 29SQA54, 9 m a.s.l., 02.02. 2005. Distribution: Mediterranean. First record for Spain.

• *Dasineura aparines* (Kieffer, 1889)

Larvae cause large galls on the growing tips of *Galium aparine* L. (Rubiaceae) (Fig. 38). Occurrence: medium frequent: Jerez, Zoo-botánico, 29SQA56, 50 m a.s.l., 23.01. 2004; Jerez, Cuartillos, 29SQA66, 79 m a.s.l., 15.01. 2007. Distribution: European. Second record for Spain.

• *Dasineura asparagi* (Tavares, 1902)

=*Perrisia asparagi* Tavares, 1902

Larvae cause galls at tips of young branches of *Asparagus aphyllus* L. and *A. acutifolius* L. (Liliaceae). The thorns remain small, are swollen and adpressed to swollen shortened stem (Fig. 39). One white larva develops under deformed thorns. Barbate, Pinar de la Breña, 30STF30, 107 m a.s.l., 12.12. 2004; Jerez, La Suara, 30STF35, 51 m a.s.l., 05.12. 2003; San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 02.03.2006; Villamartín, Castillo de Matrera, 30STF77, 450 m a.s.l., 07.02. 2011. Occurrence: very frequent. New host for the species. Distribution: Mediterranean, endemic to the Iberian Peninsula.

• *Dasineura asperulae* (F. Löw, 1875)

Larvae cause rounded reddish spongy swellings on stems of *Crucianella angustifolia* L. (*Rubeola angustifolia* (L.) Fourr.) (Rubiaceae) (Fig. 40). Puerto de Santa María, Pinar de la Piedad, 29SQA55, 19 m a.s.l., 15.04. 2004. Occurrence: very scarce. Distribution: European. Second record for Spain.

• *Dasineura broteri* (Tavares, 1902)

Larvae cause oval or cone-shaped galls on *Erica ciliaris* L. (Ericaceae) (Fig. 41). The gall is formed of many scale-shaped leaves and is similar to the gall of *Dasineura ericaescopariae*. Occurrence: scarce: Alcalá de los Gazules, El Picacho, 30STF64, 400 m a.s.l., 10.05. 2006. Distribution: Mediterranean. First record for Andalusia.

• *Dasineura capsulae* (Kieffer, 1901)

Larvae produce hard galls on the growing points of *Euphorbia boetica* Boiss. (Euphorbiaceae) (Fig. 42), endemic to the south of the Iberian Peninsula. Inside the gall is a chamber where many larvae develop together. New host for the species. Barbate, Pinar de la Breña, 30STF30, 110 m a.s.l., 11.03.2012; Chiclana, Pinar del Hierro, 29SQA53, 25 m a.s.l., 06.05. 2004. Occurrence: very scarce. Distribution: European. First record for peninsular Spain. Recorded from Mallorca (Skuhravá & Skuhravý, 2004).

• *Dasineura coronillae* (Tavares, 1902)

Red larvae cause irregular agglomeration of swollen leaves at vegetative tips of *Coronilla juncea* L. (Leguminosae) (Fig. 43). Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 10.10. 2003; Jerez, Los Garciagos, 29SQA66, 40 m a.s.l., 22.04.2012; San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 20.04.2012. New host for the species. Occurrence: scarce. Distribution: Mediterranean, endemic to the Iberian Peninsula. First record for Spain.

• *Dasineura crataegi* (Winnertz, 1853)

Larvae produce terminal rosette leaf galls on *Crataegus monogyna* Jaq. (Rosaceae). Among deformed leaves many orange larvae de-

velop (Fig. 44). San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 10.04. 2004; Grazalema, Río Guadalete, 30STF87, 1012 m a.s.l., 06.02. 2005, Campobuche, 30STF96, 807 m a.s.l., 13.02. 2011; Jerez, La Suara, 30STF35, 51 m a.s.l., 26.05. 2007. Occurrence: medium frequent. Distribution: European. First records for Andalusia.

• *Dasineura elegans* (Tavares, 1907)

Larvae cause rosette leaf galls at tips of branches of *Erica australis* L. (Ericaceae). Inside the gall is one chamber with only one yellow larva. Alcalá de los Gazules, El Picacho, 30STF64, 400 m a.s.l., 10.05. 2006. Occurrence: very scarce. Distribution: Mediterranean, endemic to the Iberian Peninsula. First record for Spain.

• *Dasineura ericaescopariae* (Dufour, 1837)

Larvae cause large galls at the tips of shoots of *Erica scoparia* L. (Ericaceae). The gall consists of many shorted thickened leaves with many larvae (Fig. 45). Occurrence: very frequent: Puerto Real, Pinar de las Yeguas, 29SQA54, 9 m a.s.l., 26.12. 2003; Chiclana, La Barrosa, 29SQA52, 2 m a.s.l., 08.01. 2004; Alcalá de los Gazules, El Picacho, 30STF64, 400 m a.s.l., 10.05. 2006; Jerez, La Suara, 30STF35, 51 m a.s.l., 05.12. 2003. Distribution: Mediterranean. First records for Andalusia.

• *Dasineura gleditchiae* (Osten Sacken, 1866)

Larvae change into galls the leaflets of *Gleditsia triacanthos* L. (Caesalpiniaceae) (Fig. 46). Occurrence: medium frequent: Jerez, Zoobotánico, 29SQA56, 50 m a.s.l., 20.06. 2008; Jerez, La Grederuela, 29SQA66, 10 m a.s.l., 19.05. 2010. Distribution: Nearctic, immigrant and alien in Europe.

• *Dasineura herminii* (Tavares, 1902)

Orange coloured larvae cause globular galls on stem tips of *Halimium halimifolium* (L.) Willk. in Willk. & Lange (Cistaceae). The gall is formed of many deformed leaves (Fig. 47) and is inhabited by many larvae. New host for the species. Occurrence: medium frequent: Jerez, La Suara, 30STF35, 51 m a.s.l., 05.10. 2004; Puerto Real, Pinar de las Yeguas, 29SQA54, 9 m a.s.l., 18.09. 2004. Distribution: Mediterranean, endemic to the Iberian Peninsula. First records for Andalusia.

• *Dasineura oxyacanthalae* (Rübsaamen, 1914)

=*Dasyneura oyensis* Tavares, 1922

Red larvae develop into swollen flower buds of *Crataegus monogyna* Jaq. (Rosaceae). It is not quite clear wheather this species is a gall producer or an inquiline in galls caused by *Contarinia anthobia* (F. Löw). Occurrence: scarce. San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 17.04. 2005; Jerez, Laguna de Medina, 29SQA66, 35 m a.s.l., 19.03. 2008. Distribution: European. First records for Andalusia.

• *Dasineura papaveris* (Winnertz, 1853)

Orange larvae live in seed capsules of *Papaver rhoeas* L. (Papaveraceae) (Fig. 48). Occurrence: scarce. Jerez, San Isidro del Guadalete, 30STF35, 125 m a.s.l., 24.04. 2008. Distribution: European. New record for the Iberian Peninsula.

• *Dasineura plicatrix* (Loew, 1850)

Larvae change in galls young leaves of *Rubus ulmifolius* L. (Rosaceae). Attacked leaves are unregularly twisted, folded along veins and deformed (Fig. 49). New host for the species. Occurrence: most frequent: Jerez, Cuartillos, 29SQA66, 79 m a.s.l., 15.01. 2007; San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 17.04. 2005; Barbate, Pinar de la Breña, 30STF30, 107 m a.s.l., 12.12. 2004. Distribution: Euro-Siberian. First record for Andalusia.

• *Dasineura rosae* (Bremi, 1847)

=*Cecidomyia rosarum* Hardy, 1850

=*Wachtliella rosarum* (Hardy, 1850)

Larvae live gregariously in swollen, pod-like folded leaflets of *Rosa canina* L. (Rosaceae) (Fig. 50). Several generation a year. Pupation takes place in the soil. Occurrence: scarce: Villaluenga del Rosario, 30STF96, 800 m a.s.l., 27.02. 2010; Grazalema, Campobuche,

30STF96, 807 m a.s.l., 13.02. 2011; Jerez, San Isidro del Guadalete, 30STF35, 125 m a.s.l., 20.03. 2010. Distribution: Euro-Siberian. First record for Andalusia.

• *Dasineura rosmarini* (Tavares, 1902)

=*Dasyneura rosmarini* Tavares, 1902

=*Perrisia rosmarini* (Tavares, 1902)

Larvae change in galls flower buds of *Rosmarinus officinalis* L. (Labiatae) (Fig. 51). Occurrence: very scarce. Barbate, Pinar de la Breña, 30STF30, 107 m a.s.l., 12.12. 2004. Distribution: Mediterranean. First record for Andalusia.

• *Dasineura sisymbrii* (Schrank, 1803)

Larvae cause whitish spongy swellings on flower buds of *Sisymbrium irio* L. (Brassicaceae). Occurrence: very scarce: Jerez, Sierra de Gibalbín, 30STF37, 168 m a.s.l., 07.05. 2005. Distribution: European. Second record for Spain.

• *Dasineura tortrix* (F. Löw, 1877)

White larvae live gregariously in terminal leaves massed and rolled together on *Prunus spinosa* L. (Rosaceae) (Fig. 52). Occurrence: scarce: Villaluenga del Rosario, 30STF96, 800 m a.s.l., 30.03. 2008. Distribution: European. First record for the Iberian Peninsula.

• *Dasineura turionum* (Kieffer & Trotter, 1904)

Larvae are known to cause galls of two forms on *Asparagus aphyllus* L. (Liliaceae) (Fig. 53). The first gall form is consisted of many deformed small swollen leaves at the tip of the shoots which include inside red larvae; the second form of he gall is presented by the whole shoot which is swollen and deformed and under each of deformed thorns one larva develops. Occurrence: medium frequent: Jerez, Cuartillos, 29SQA66, 79 m a.s.l., 26.12. 2003; San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 13.02. 2004. New host for the species. Distribution: Mediterranean. Second record for Spain.

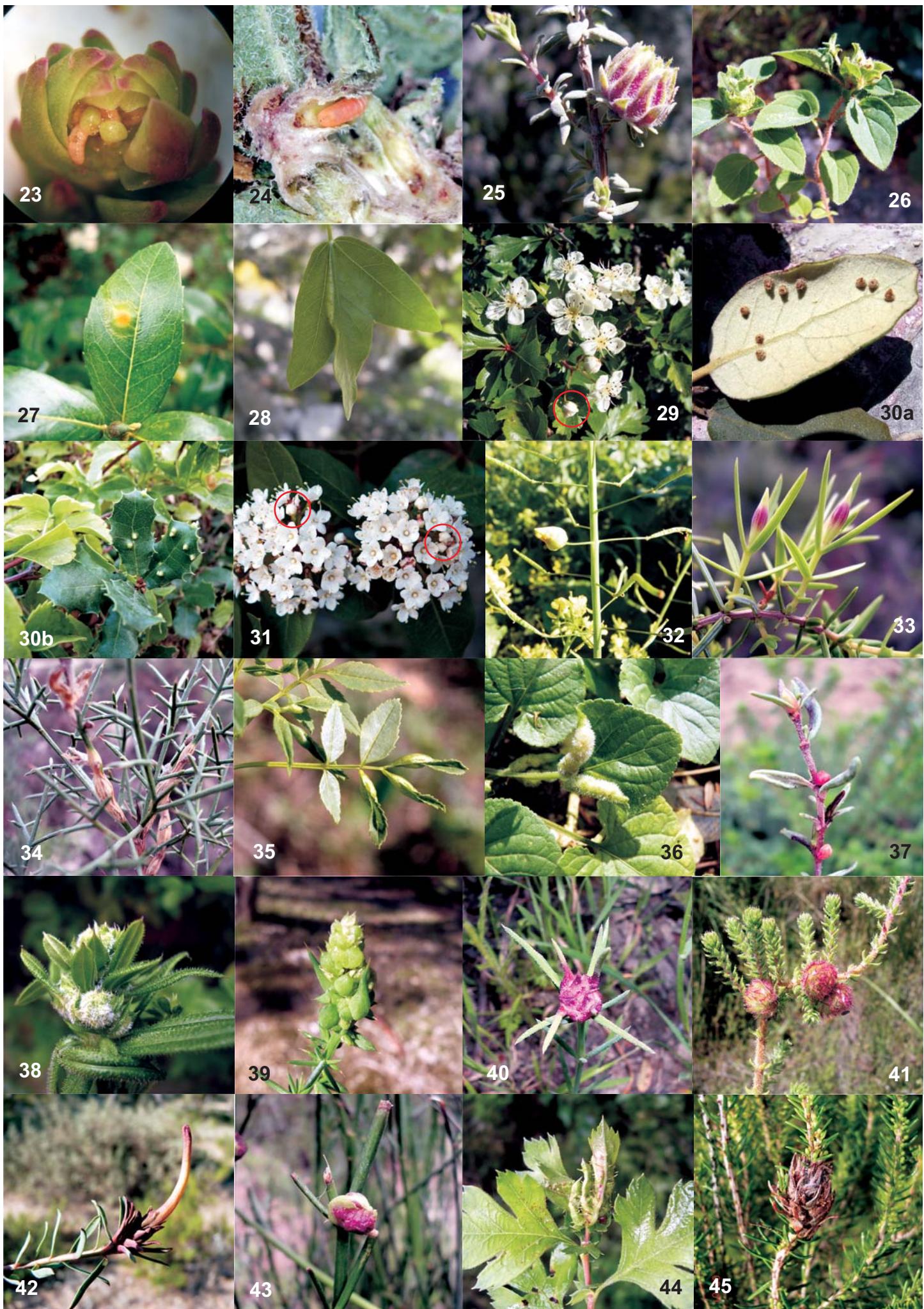
• *Dasineura zimmermanni* (Tavares, 1902)

A solitary red larva produces a small gall on the terminal leaf bud of *Erica arborea* L. (Ericaceae) (Fig. 54). Occurrence: scarce: Alcalá de los Gazules, El Picacho, 30STF64, 400 m a.s.l., 10.05. 2006; Barbate, Pinar de la Breña, 30STF30, 110 m a.s.l., 11.03.2012. Distribution: Mediterranean. First record for Andalusia.

• *Dasineura* sp. (on *Cistus libanotis*)

Undeterminate gall-midge collected from larvae. Orange larvae develop among densely haired leaves of *Cistus libanotis* L. (Cistaceae) (Fig. 55), endemic to the south-western part of the Iberian Peninsula. Occurrence: scarce: Puerto Real, Pinar de las Yeguas, 29SQA54, 9 m a.s.l., 29.08. 2004.

► Fig. 23. *Baldratia suaedae* on *Suaeda vera*; 24. *Bayeriola salicariae* on *Lythrum salicaria*; 25. *Bayeriola thymicola* on *Thymus granatensis*; 26. *Blastomyia origani* on *Origanum compactum*; 27. *Braueriella phillyreae* on *Phillyrea angustifolia*; 28. *Contarinia acerplicans* on *Acer monspessulanus*; 29. *Contarinia anthobia* on *Crataegus monogyna*; 30a. *Contarinia ilicis* on *Quercus ilex*; 30b. *Contarinia ilicis* on *Quercus coccifera*; 31. *Contarinia viburnorum* on *Viburnum tinus*; 32. *Contarinia* sp. on *Diplotaxis catholica*; 33. *Contarinia* sp. on *Juniperus oxycedrus* subsp. *oxycedrus*; 34. *Contarinia* sp. on *Stauracanthus genistoides*; 35. *Dasineura acrophila* on *Fraxinus angustifolia*; 36. *Dasineura affinis* on *Viola suavis*; 37. *Dasineura andrieuxi* on *Halimium calycinum*; 38. *Dasineura aparines* on *Galium aparine*; 39. *Dasineura asparagi* on *Asparagus aphyllus*; 40. *Dasineura asperulae* on *Crucianella angustifolia*; 41. *Dasineura broteri* on *Erica ciliaris*; 42. *Dasineura capsulae* on *Euphorbia boetica*; 43. *Dasineura coronillae* on *Coronilla juncea*; 44. *Dasineura crataegi* on *Crataegus monogyna*; 45. *Dasineura ericaescopariae* on *Erica scoparia*.



• *Drisina glutinosa* Giard, 1893

Solitary white larvae under small dimple surrounded by a pale zone in leaf blade of *Acer monspessulanus* L. (Aceraceae) (Fig. 56). Occurrence: scarce; Villaluenga del Rosario, 30STF96, 800 m a.s.l., 30.03. 2008. Distribution: European. First record for the Iberian Peninsula.

• *Dryomyia cocciferae* (Marchal, 1897)

Larvae cause pouch galls on lower side of the leaf of *Quercus coccifera* L. (Fagaceae), with an opening on the upper side of the leaf (Fig. 57). Occurrence: frequent; Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 11.11. 2003; Jerez, La Suara, 30STF35, 45 m a.s.l., 20.10. 2011; San José del Valle, Dehesa Picado, 30STF65, 135 m a.s.l., 07.02.2012. Distribution: Mediterranean.

• *Dryomyia lichtensteinii* (F. Löw, 1878)

Larvae cause galls on leaves of *Quercus ilex* L. (Fig. 58) and *Q. suber* L. (Fagaceae). The gall is ovoid, situated on the lower side, thick-walled, inside with one chamber and with a slit opening on the upper side of the leaf. Occurrence: most frequent; Skuhrová et al. (2006); Jerez, 29SQA56, 42 m a.s.l., 29.01. 2004; Jerez, La Suara, 30STF35, 51 m a.s.l., 05.12. 2003; Vejer, 30STF31, 120 m a.s.l., 21.05. 2005; Grazalema, 30STF87, 1023 m a.s.l., 06.02. 2005; Villaluenga, subida a los Llanos, 30STF96, 818 m a.s.l., 23.11. 2003. Distribution: Mediterranean.

• *Etsuhoa* sp. (on *Juniperus phoenicea*)

Undeterminate gall-midge collected from larvae cause enlarged cone-shaped galls on terminal parts of shoots of *Juniperus phoenicea* L. (Cupressaceae) (Fig. 59). Occurrence: medium frequent; Barbate, Pinar de la Breña, 30STF30, 107 m a.s.l., 12.12.04; Sanlúcar de Barrameda, Pinar de la Algaida, 29SQA48, 8 m a.s.l., 08.01. 2004; Puerto Real, Pinar de las Yeguas, 29SQA54, 9 m a.s.l., 02.02. 2005.

• *Geocrypta galii* (Loew, 1850)

=*Cecidomyia galii* Loew, 1850

=*Perrisia galii* (Loew, 1850)

Larvae cause smooth fleshy swellings on stems and flower stalks of *Galium verrucosum* Huds. (= *G. saccharatum* All.) (Rubiaceae) (Fig. 60). Jerez, Dehesa Los Potros, 29SQA55, 4 m a.s.l., 05.03. 2004; Grazalema, 30STF87, 1023 m a.s.l., 06.02. 2005; Paterna de Ribera, Loma de las vacas, 30STF44, 137 m a.s.l., 26.04. 2012. Villaluenga, 30STF96, 800 m a.s.l., 30.03. 2008. Occurrence: medium frequent. Distribution: Euro-Siberian. First record for Andalusia.

• *Gephyraulus diplotaxis* (Solinis, 1982)

Larvae develop gregariously in swollen unopened flower buds of *Diplotaxis catholica* (L.) DC. (Fig. 61). Occurrence: medium frequent; Jerez, parque Glez. Hontoria, 29SQA56, 39 m a.s.l., 29.01. 2004; Cuartillos, 29SQA66, 79 m a.s.l., 13.02. 2006. Distribution: European. First record for the Iberian Peninsula.

• *Gephyraulus raphanistri* (Kieffer, 1896)

=*Cecidomyia raphanistri* Kieffer, 1896

White larvae change in galls the flower buds of *Raphanus raphanistrum* L. (Brassicaceae) (Fig. 62). Occurrence: frequent; Puerto de Santa María, Laguna de San Bartolomé, 29SQA45, 30 m a.s.l., 12.05. 2004; Jerez, Cuartillos, 29SQA66, 79 m a.s.l., 16.02. 2005; Chapín, 29SQA56, 37 m a.s.l., 08.02. 2010. Distribution: European.

• *Jaapiella bryoniae* (Bouché, 1847)

Larvae cause large leaf bud galls on *Bryonia cretica* subsp. *dioica* L. (Cucurbitaceae) (Fig. 63). Occurrence: medium frequent; San José del Valle, Dehesa Picado, 30STF65, 120 m a.s.l., 10.04. 2004; Barbate, Pinar de la Breña, 30STF30, 107 m a.s.l., 01.05. 2005. Distribution: European. First record for Spain.

• *Jaapiella loticola* (Rübsaamen, 1899)

Larvae cause leaf bud galls on *Lotus parviflorus* Desf. (Leguminosae). New host for the species. Occurrence: scarce; Chiclana, La Espartoza, 29SQA53, 40 m a.s.l., 28.05. 2004. Distribution: Euro-Siberian. First record for Andalusia.

• *Jaapiella medicaginis* (Rübsaamen, 1912)

Larvae develop in folded leaflets of *Medicago sativa* Carmign. (Leguminosae). New host for the species. Occurrence: medium frequent; Puerto de Santa María, Valdelagrana, 29SQA45, 1 m a.s.l., 13.03. 2004; Alcalá de los Gazules, Peña Arpada, 30STF44, 145 m a.s.l., 13.05. 2007. Distribution: Euro-Siberian. First record for Andalusia.

• *Jaapiella parvula* (Liebel, 1899)

Larvae develop in swollen flower buds of *Bryonia cretica* subsp. *dioica* L. (Cucurbitaceae) (Fig. 64). Occurrence: scarce; Jerez, Los Garciagos, 29SQA66, 40 m a.s.l., 22.04. 2012; San José del Valle, Dehesa Picado, 30STF65, 120 m a.s.l., 10.04. 2004. Distribution: European. First record for Andalusia.

• *Kiefferia pericarpicola* (Bremi, 1847)

=*Asphondylia pimpinellae* F. Löw, 1877

Larvae change in galls the fruits of *Foeniculum vulgare* Mill. (Umbelliferae) (Fig. 65). Occurrence: very frequent; Grazalema, pinsapar, 30STF87, 1050 m a.s.l., 13.10. 2003; El Puerto de Santa María, Laguna Salada, 29SQA45, 34 m a.s.l., 11.09. 2004; Jerez, las Aguilillas, 29SQA66, 36 m a.s.l., 29.10. 2004; Jerez, Cartuja, 29SQA56, 46 m a.s.l., 24.12. 2004; Villaluenga, subida a los Llanos, 30STF96, 818 m a.s.l., 23.11. 2003. Distribution: Euro-Siberian. First records for Andalusia.

• *Lasioptera berlesiana* Paoli, 1907

Larvae are associated with olive flies (*Bactrocera oleae* (Gmel.) (=*Dacus oleae*) (Diptera: Tephritidae) which damage fruits of *Olea europaea* L. (Oleaceae) (Fig. 66). Occurrence: scarce; Jerez, Cartuja, 29SQA56, 46 m a.s.l., 01.09. 2011. Distribution: Mediterranean. Second record for the Iberian Peninsula.

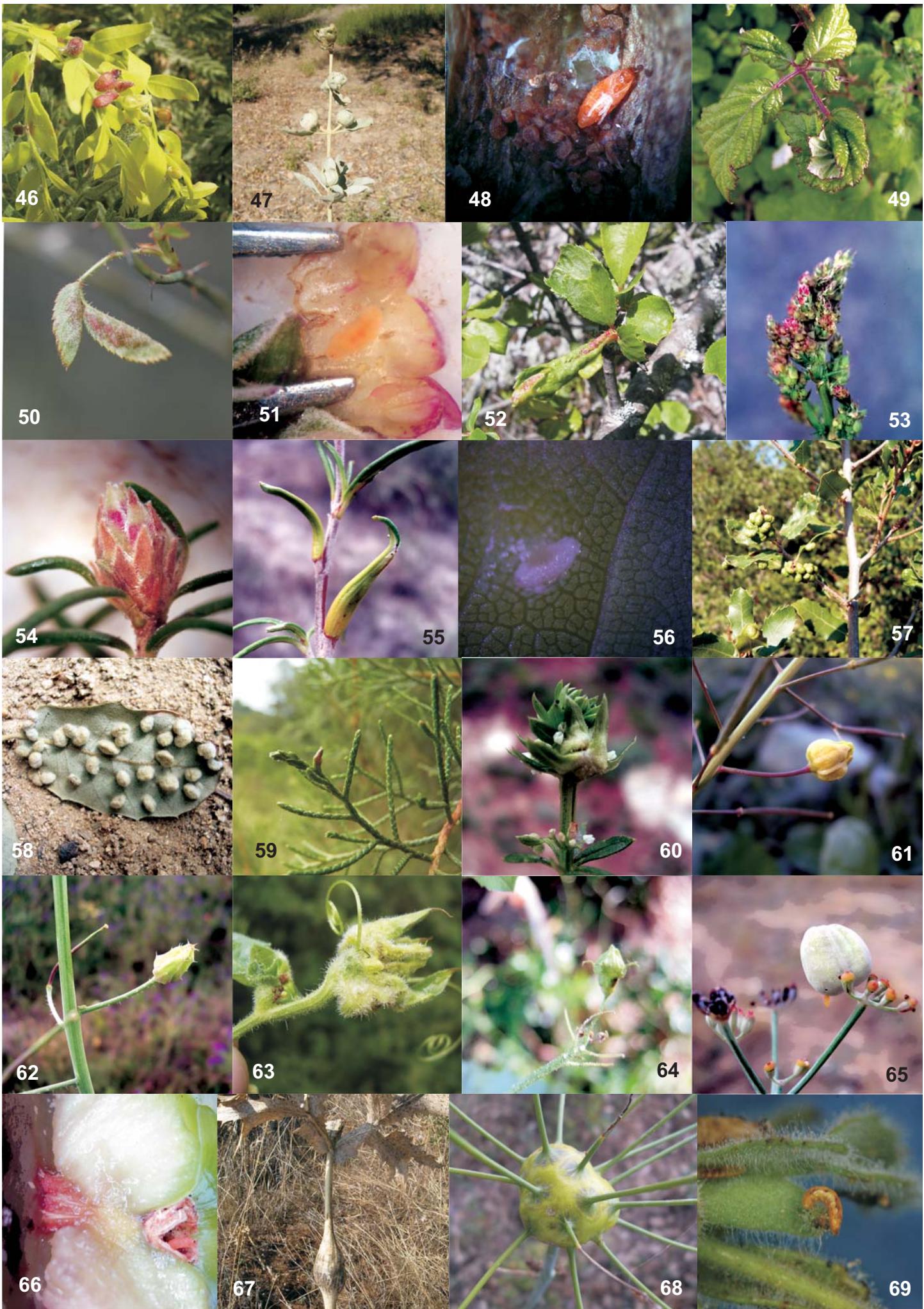
• *Lasioptera eryngii* (Vallot, 1829)

Larvae produce plurilocular swellings of stems on *Eryngium campestre* L. (Umbelliferae) (Fig. 67). Occurrence: medium frequent; Grazalema, Campobuche, 30STF96, 464 m a.s.l., 29.03.08; Puerto de Santa María, Pinar de la Piedad, 29SQA55, 19 m a.s.l., 25.04.2009. Distribution: sub-Mediterranean. First records for Andalusia.

• *Lasioptera thapsiae* Kieffer, 1898

Larvae produce large swellings (up to 30 mm in diameter) at the base of primary or secondary umbels on *Elaeoselinum foetidum* (L.) Boiss. (=*Thapsia foetida* L.) (Umbelliferae) (Fig. 68). Each gall includes many chambers and in each chamber only one orange larva develops. New host for the species. Occurrence: frequent; Chiclana, La Barrosa, 29SQA52, 4 m a.s.l., 08.01. 2004; Chiclana, Pinar del Hierro, 29SQA53, 25 m a.s.l., 05.06. 2005; Puerto Real, Pinar de las Yeguas, 29SQA54, 9 m a.s.l., 12.04. 2005; Jerez, Laguna de Medina, 29SQA66, 36 m a.s.l., 16.03. 2006. Distribution: Mediterranean. First record for the Iberian Peninsula.

► Fig. 46. *Dasineura gleditchiae* on *Gleditsia triacanthos*; 47. *Dasineura herminii* on *Halimium halimifolium*; 48. Pupa of *Dasineura papaveris* on *Papaver rhoeas*; 49. *Dasineura plicatrix* on *Rubus ulmifolius*; 50. *Dasineura rosae* on *Rosa canina*; 51. Larva of *Dasineura rosmarini* on *Rosmarinus officinalis*; 52. *Dasineura tortrix* on *Prunus spinosa*; 53. *Dasineura turionum* on *Asparagus aphyllus*; 54. *Dasineura zimmermanni* on *Erica arborea*; 55. *Dasineura* sp. on *Cistus libanotis*; 56. *Drisina glutinosa* on *Acer monspessulanus*; 57. *Dryomyia cocciferae* on *Quercus ilex*; 58. *Dryomyia lichtensteinii* on *Quercus ilex*; 59. *Etsuhoa* sp. on *Juniperus phoenicea*; 60. *Geocrypta galii* on *Galium verrucosum*; 61. *Gephyraulus diplotaxis* on *Diplotaxis catholica*; 62. *Gephyraulus raphanistri* on *Raphanus raphanistrum*; 63. *Jaapiella bryoniae* on *Bryonia cretica* subsp. *dioica*; 64. *Jaapiella parvula* on *Bryonia cretica* subsp. *dioica*; 65. *Kiefferia pericarpicola* on *Foeniculum vulgare*; 66. Larva of *Lasioptera berlesiana* on *Olea europaea*; 67. *Lasioptera eryngii* on *Eryngium campestre*; 68. *Lasioptera thapsiae* on *Elaeoselinum foetidum*; 69. Larva of *Lestodiplosis pallidicornis* on *Ononis natrix*.



• *Lestodiplosis gracilis* Nijveldt, 1953

Three adults (2 males, 1 female) were reared from the gall of *Lipara lucens* (Diptera: Chloropidae) on *Phragmites australis* (Poaceae). Larvae of this species are predators of other gall midge or dipteran larvae on this plant. Occurrence: very scarce: El Puerto de Santa María, Hato de la Carne, 29SQA56, 21 m a.s.l., 26.02. 2009. Distribution: European. First record for the Iberian Peninsula.

• *Lestodiplosis pallidicornis* Kieffer, 1898

Larvae were found in leaf buds of *Ononis natrix* L. (=*O. hispanica* L.) (Leguminosae) (Fig. 69). They probably preyed on some other gall midge larvae. Occurrence: very scarce: Puerto Real, Pinar de Las Yeguas, 29SQA54, 9 m a.s.l., 20.07.2007. Distribution: European. First record for the Iberian Peninsula.

• *Lestodiplosis* sp. (on *Plantago coronopus*)

Adults reared from *Plantago coronopus* L. (Plantaginaceae) inflorescences galled by Eryophyid mites (Fig. 70). Occurrence: very scarce: Barbate, Playa de Pajares, 30STF40, 3 m a.s.l., 03.08.2011.

• *Loewiola centaureae* (F. Löw, 1875)

Yellow larvae cause blister-like galls on leaves of *Centaurea sphaerocephala* L. (Fig. 71). Occurrence: scarce: Conil, Castilnovo, 29SQA61, 2 m a.s.l., 18.04. 2004. Distribution: European. First record for the Iberian Peninsula.

• *Macrolabis hippocrepidis* Kieffer, 1898

Larvae develop in folded leaflets of *Hippocrepis rupestris* Laza (Leguminosae) (Fig. 72), endemic from South-western Spain. New host for the species. Occurrence: scarce: Villaluenga, Sierra del Caillo, 30STF86, 1150 m a.s.l., 07.02. 2004; Bornos, Sierra del Calvario, 30STF57, 216 m a.s.l., 15.03.07. Distribution: European. First records for Andalusia.

• *Macrolabis lonicerae* Rübsaamen, 1912

Creamy-white larvae cause marginal leaf rolls of *Lonicera implexa* Aiton (Fig. 73) and *L. etrusca* Santi (Caprifoliaceae). New host for the species. Occurrence: medium frequent: Puerto Real, Pinar de Las Canteras, 29SQA54, 16 m a.s.l., 18.02. 2004; Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 16.03. 2006; Villaluenga del Rosario, 30STF96, 800 m a.s.l., 30.03.2008. Distribution: European. First record for the Iberian Peninsula.

• *Mayetiola destructor* (Say, 1817)

Larvae live on lower part of stems on *Triticum vulgare* L. (Poaceae) and cause swellings. This species is an important pest of cereals. Occurrence: scarce: Jerez, San José de Prunes, 29SQA47, 40 m a.s.l., 21.05. 2008. Distribution: Palaearctic, widespread in Europe, western Asia and northern Africa; immigrant in North America and New Zealand (Skuhravá *et al.*, 1984).

• *Mycodiplosis gymnosporangii* Kieffer, 1904

Redish larvae develops in deformities caused by the rust *Gymnosporangium fuscum* De Candolle = *G. sabinae* (Dick.) on the branches of *Juniperus phoenicea* L. Occurrence: very scarce: San José del Valle, Fuensequilla, 30STF65, 309 m a.s.l., 13.03. 2005. Distribution: European. First record for the Iberian Peninsula.

• *Mycodiplosis melampsorae* (Rübsaamen, 1889)

Pink larvae feed on fungus under the leaves of *Erophaca baetica* L. (Boiss.) (=*Astragalus lusitanicus* Lam.) and *Astragalus boeticus* L. (Leguminosae). *M. melampsorae* has a quite broad host range of rust fungi (Holte 1970). Occurrence: medium frequent: San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 08.05. 2005; Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 23.01. 2007; Jerez, Cartuja, 29SQA56, 46 m a.s.l., 01.03. 2008. Distribution: Mediterranean. Both host plant species are endemic to the Iberian Peninsula. First record for the Iberian Peninsula.

• *Myricomyia mediterranea* (F. Löw, 1885)

Larvae produce small galls on branches (Fig. 74a) or small rosette leaf galls (Fig. 74b) of *Erica scoparia* L. (Ericaceae). Each gall contains only one larva. Occurrence: medium frequent: Puerto Real,

Pinar de las Yeguas, 29SQA54, 9 m a.s.l., 26.12. 2004; Barbate, Pinar de la Breña, 30STF30, 107 m a.s.l., 12.12. 2004; Jerez, La Suara, 30STF35, 51 m a.s.l., 05.12. 2003. Distribution: Mediterranean. First records for Andalusia.

• *Oligotrophus valerii* (Tavares, 1904)

*Arceuthomyia valerii* Tavares, 1904

Syn. *Oligotrophus oxycedri* Rübsaamen, 1916

A single larva causes an ovoid, pointed bud gall on *Juniperus oxycedrus* L. (Fig. 75a) and *Juniperus navicularis* Gand. (Cupressaceae) (Fig. 75b). The gall is 10-12 mm high, 6 mm broad (Houard 1908-1909, Nr.135). Larvae hibernate in galls where they pupate in the spring. Only one generation develops per year. *O. valerii* was described by Tavares (1904) who found galls on *J. oxycedrus* in Portugal, at Portas do Rodão near Setubal. Later this species was described once more by Rübsaamen (1916) on the basis of adults reared from galls on *Juniperus oxycedrus* found in Yugoslavia by O. Jaap.

In Cadiz Province *Oligotrophus valerii* is associated with *Juniperus navicularis* Gand. The galls are very similar in shape to galls of *O. valerii* as illustrated in Houard (1922-1923) and adults reared from galls on *J. navicularis* are identical in morphological characters with adults of *O. valerii*. Occurrence: medium frequent: Puerto Real, Pinar de Las Yeguas, 29SQA54, 9 m a.s.l., 26.12.2003 (on *J. navicularis*). Sierra de Líjar, Algodonales, 30STF88, 650m a.s.l., 26.05.2010 (on *J. oxycedrus*). Distribution: Mediterranean. *O. valerii* associated with *J. oxycedrus* occupies a larger distribution area in southern Europe and northern Africa and in Spain it occurs also on *J. navicularis*, the endemic plant species to Iberian Peninsula.

• *Oligotrophus* sp. (on *Juniperus oxycedrus*)

Undeterminate gall-midge collected from larvae. Small terminal bud gall on *Juniperus oxycedrus* L. (Cupressaceae). The last whorl of needles shortens and gets pinkish-brownish and harder and joins in a slender tube 3-6 mm long. The following set of needles get shorter and attached to the base of the gall (Fig. 76). Occurrence: medium frequent: Puerto Real, Cañada de Camino Ancho, 29SQA54, 40 m a.s.l., 30.12.2004.

• *Parallelodiplosis galliperda* (F. Löw, 1889)

Larvae live as inquilines under the galls of *Neuroterus quercusbaccarum* (L.) (Hymenoptera: Cynipidae) on leaves of *Quercus faginea* Lam. (Fagaceae). Occurrence: scarce: Jerez, La Suara, 30STF35, 51 m a.s.l., 03.10. 2007. Distribution: European. First records for Andalusia.

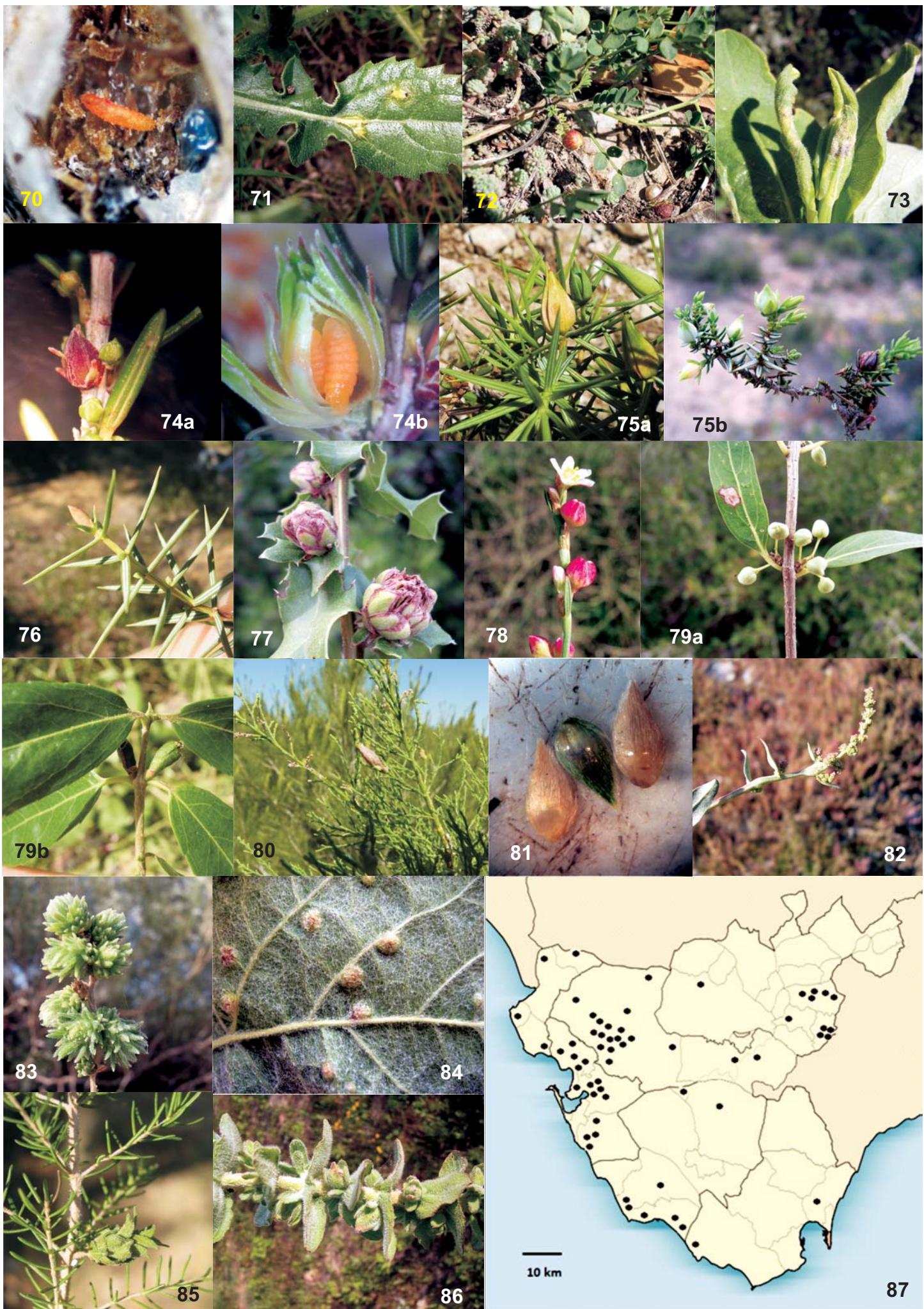
• *Phyllodiplosis cocciferae* (Tavares, 1902)

=*Contarinia cocciferae* Tavares, 1902

=*Blastodiplosis cocciferae* (Tavares, 1902)

Larvae cause large cone-shaped galls on branches of *Quercus coccifera* L. (Fagaceae) (Fig. 77). Occurrence: very frequent: Puerto Real,

► Fig. 70. Larva of *Lestodiplosis* sp. on *Plantago coronopus*; 71. *Loewiola centaureae* on *Centaurea sphaerocephala*; 72. *Macrolabis hippocrepidis* on *Hippocrepis rupestris*; 73. *Macrolabis lonicerae* on *Lonicera etrusca*; 74a. *Myricomyia mediterranea* on *Erica scoparia*; 74b. Larva of *Myricomyia mediterranea* in *Erica scoparia*; 75a. *Oligotrophus valerii* on *Juniperus oxycedrus* subsp. *oxycedrus*; 75b. *O. valerii* on *J. navicularis*; 76. *Oligotrophus* sp. on *Juniperus oxycedrus* subsp. *oxycedrus*; 77. *Phyllodiplosis cocciferae* on *Quercus coccifera*; 78. *Polygonomyia* sp. on *Polygonum equisetiforme*; 79a. *Probruggmanniella phillyreae* on *Phillyrea latifolia* (first generation?); 79b. *P. phillyreae* on *P. latifolia* (second generation?); 80. *Psectrosema provinciale* on *Tamarix canariensis*; 81. Larvae of *Sitodiplosis phalaridis* on *Phalaris minor*; 82. *Stefaniola trinacriae* on *Atriplex prostrata*; 83. *Stefaniola salsolae* on *Salsola vermiculata*; 84. *Vitisella oenephila* on *Vitis vinifera*; 85. *Wachtiella ericina* on *Erica arborea*; 86. *Zeuxidiplosis giardi* on *Hypericum tomentosum*; 87. Cádiz province with 63 localities where the investigations were carried out from 2008-2011.



Pinar de Las Yeguas, 29SQA54, 9 m a.s.l., 26.12. 2003; Jerez, La Suara, 30STF35, 51 m a.s.l., 05.12. 2003; Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 27.09. 2003; San José del Valle, Dehesa Picado, 30STF65, 138 m a.s.l., 12.10. 2005; Chiclana, La Barrosa, 29SQA52, 4 m a.s.l., 08.01. 2004; Barbate, Pinar de la Breña, 30STF30, 107 m a.s.l., 01.05. 2005; Villamartín, Castillo de Matrera, 30STF77, 450 m a.s.l., 07.02. 2011. Distribution: Mediterranean.

• *Polygonomyia* sp. (on *Polygonum equisetiforme*)

Orange coloured larvae develop in flower buds of *Polygonum equisetiforme* Sm. (Polygonaceae) (Fig. 78). Occurrence: frequent: Puerto Real, Arroyo Salado, 29SQA54, 10 m a.s.l., 29.08. 2004; Rota, Viveros El Lago, 29SQA45, 33 m a.s.l., 15.07. 2006; Chipiona, Laguna de Regla, 29SQA26, 4 m a.s.l., 03.10. 2007. Distribution: Unknown.

It is the first record of occurrence of the species belonging to the genus *Polygonomyia* Fedotova, 1991 in Europe. Two species, associated with flower buds of *Polygonum* and *Atraphaxis* (Polygonaceae), were discovered and described in Kazakhstan by Fedotova (2000) but without adults is not possible to determine the species.

• *Probruggmanniella phillyreae* (Tavares, 1907)

=*Schizomyia phillyreae* Tavares, 1907b

Larvae change into galls the fruits of *Phillyrea angustifolia* L. and *Phillyrea latifolia* L. (=*P. media* L.) (Oleaceae). (Fig. 79a) They also produce small bud galls on the twigs of the second species (Fig. 79b). Occurrence: frequent: Jerez, Montes de Propio, 30STF75, 298 m a.s.l., 20.11. 2004; Alcalá de los Gazules, El Picacho, 30STF64, 400 m a.s.l., 10.05. 2006; Sanlúcar de Barrameda, Pinar de La Algaida, 29SQA48, 11 m a.s.l., 12.10. 2006; San José del Valle, Dehesa Picado, 30STF65, 125 m a.s.l., 10.10. 2005; Barbate, Pinar de la Breña, 30STF30, 107 m a.s.l., 01.05. 2005. Distribution: Mediterranean. Second record for Spain.

• *Psectrosema provinciale* Kieffer, 1912

Larvae cause fusiform swellings on young shoots of *Tamarix canariensis* Wild. (Tamaricaceae) (Fig. 80). Only one red larva develops in each chamber. New host for the species. Occurrence: frequent: Jerez, Las Aguilillas, 29SQA66, 36 m a.s.l., 01.06. 2006; Jerez, El Portal, 29SQA55, 16 m a.s.l., 11.07. 2004; El Puerto de Santa María, Marismas secas del Guadalete, 29SQA55, 3 m a.s.l., 05.03. 2004; Sanlúcar de Barrameda, Pinar de la Algaida, 29SQA48, 7 m a.s.l., 08.01. 2004; Puerto Real, Arroyo Salado, 29SQA54, 10 m a.s.l., 29.08. 2004. Distribution: Mediterranean. First record for Spain.

• *Rhopalomyia santolinae* Tavares, 1902

Larvae cause galls on stems of *Santolina rosmarinifolia* L. (Compositae). Occurrence: scarce: Grazalema, Puerto de las Palomas, 30STF87, 1178 m a.s.l., 05.02. 2005. Distribution: Mediterranean. First record for Andalusia.

• *Sitodiplosis phalaridis* Abbass, 1986

Orange larvae feeds solitarily on the developing grains of *Phalaris minor* Retz. (Gramineae) (Fig. 81). Occurrence: scarce: Jerez, Chapín, 29SQA56, 37 m a.s.l., 19.04. 2005. Distribution: European. First record for the Iberian Peninsula.

• *Stefaniella trinacriae* Stefani, 1900

Larvae cause fusiform woody galls, till the size of 20 mm, on *Atriplex prostrata* DC. (Chenopodiaceae). Each gall includes many chambers, in each chamber only one yellow-whitish larva develops (Fig. 82). New host for the species. Occurrence: medium frequent: El Puerto de Santa María, Laguna Salada, 29SQA45, 34 m a.s.l., 11.09. 2004; Puerto Real, Pinar de las Yeguas, 29SQA54, 9 m a.s.l., 18.09. 2004; Jerez, Los Garciagos, 29SQA66, 47 m a.s.l., 05.12. 2004. Distribution: Mediterranean. First record for Andalusia.

• *Stefaniola parva* (Tavares, 1919)

=*Salsolomyia parva* Tavares, 1919

Very small larvae are inquilines in galls caused by *Stefaniola salsolae* (Tavares, 1904) on *Slasola vermiculata* L. (Chenopodiaceae). Occurrence: scarce: El Puerto de Santa María, Marisma de los Toruños, 29SQA44, 2 m a.s.l., 04.02. 2005. Distribution: Mediterranean. Second record for Spain.

• *Stefaniola salsolae* (Tavares, 1904)

=*Stefaniella salsolae* Tavares, 1904

Larvae cause large hairy galls with bud changed into rosa-shaped fleshy gall, up to the size of 15-18 mm, inside with a chamber (Fig. 83) on *Slasola vermiculata* L. (=*S. microphylla* Mocq.) (Chenopodiaceae). The surface of the gall is covered with many small, hairy leaves. Occurrence: medium frequent: El Puerto de Santa María, Marisma de los Toruños, 29SQA44, 2 m a.s.l., 04.02. 2005. Distribution: Mediterranean, endemic to the Iberian Peninsula. First record for Andalusia.

• *Vitisella oenephila* (Haimhoffen, 1875)

=*Cecidomyia oenephila* Haimhoffen 1875

=*Janetiella oenephila* (Haimhoffen, 1875) (combination after Gagné 2009: 407)

Orange to salmon pink larvae cause galls on leaves of *Vitis vinifera* L. (Vitaceae) (Fig. 84). The gall is round or oval, hard and visible on both surfaces of the leaf. Only one larva develops in a gall. Occurrence: very scarce: Jerez, Viña El Majuelo, 29SQA46, 33 m a.s.l., 04.05. 2005. Distribution: Mediterranean. First record for Andalusia.

• *Wachtliella ericina* (F. Löw, 1885)

Larvae cause large rosette or artichoke leaf galls at tips of branches of *Erica arborea* L. (Ericaceae) (Fig. 85). The gall is up 10 mm in size. Each gall with only one red larva. Occurrence: scarce: Jerez, Montes de Propio, 30STF75, 256 m a.s.l., 20.11. 2004. Distribution: sub-Mediterranean. First record for Andalusia.

• *Zeuxidiplosis giardi* (Kieffer, 1896)

Larvae cause spherical bud galls on stems of *Hypericum tomentosum* L. (Hypericaceae). In the chamber of the gall one red larva develops (Fig. 86). Occurrence: scarce: El Puerto de Santa María, Sierra de San Cristobal, 29SQA55, 42 m a.s.l., 16.04. 2004; Paterna de Ribera, Loma de las vacas, 30STF44, 187 m a.s.l., 04.03. 2011. Distribution: European. First record for Spain.

## References

- BUHR, H. 1964-1965. *Bestimmungstabellen der Gallen (Zoo- und Phytoceciden) an Pflanzen Mittel- und Nordeuropas*. Vol. 1+2. Gustav Fischer Verlag Jena, 1572 pp.
- CASTROVIEJO, S. et al. (Eds). 1986-2009. *Flora Iberica. Plantas vasculares de la Península Ibérica e Islas Baleares*. (vols. I-VIII, X, XII-XV, XVIII y XXI). Ed. Real Jardín Botánico C.S.I.C. Madrid.
- COGOLLUDO, J. 1921. Contribución al conocimiento de las zococecidias de España. *Trab. Mus. Nac. Cienc. Nat.*, Ser. Bot. **16**: 1-117.
- DARVAS, B., M. SKUHRAVÁ & A. ANDERSEN 2000. Agricultural dipteran pests of the Palaearctic region. Pp. 565-650. In: Papp L. & B. Darvas (editors): *Contributions to a Manual of Palaearctic Diptera*. Vol. 1. General and Applied Diptero-logy. Science Herald, Budapest, 978 pp.
- DAUPHIN, P. & J.C. ANIOTSBEHERE 1993. *Les Galles de France*. Mémoires de la Societe Linneenne de Bordeaux. Tome 2, 1993.
- FEDOTOVA, Z. 2000. *Plant-feeding gall midges (Diptera, Cecidomyiidae) of the deserts and mountains of Kazakhstan: Morpho-*

- logy, biology, distribution, phylogeny and systematics.* Sarma, 803 pp. (in Russian).
- GAGNÉ, R. J. 2004. A Catalog of the Cecidomyiidae (Diptera) of the World. *Memoirs of the Entomological Society of Washington*, **25**: 1-408.
- GAGNÉ, R. J. 2009. Taxonomy of *Janetiella thymi* (Kieffer) (Diptera: Cecidomyiidae) and of the species formerly in *Janetiella* that feed on *Vitis* (Vitaceae). *Proceedings of the Entomological Society of Washington*, **111**(2): 399-409.
- GAGNÉ R. J. 2010. *Update for a Catalog of the Cecidomyiidae (Diptera) of the World.* Digital version 1. 545 pp. Available from URL: <http://www.ars.usda.gov/>
- HARRIS K. M., S. SATO, N. UECHI & J. YUKAWA 2006. Redefinition of Oligotrophus (Diptera: Cecidomyiidae) based on morphological and molecular attributes of species from galls on *Juniperus* (Cupressaceae) in Britain and Japan. *Entomological Science*, **9**: 411-421.
- HOLZ, B. 1970. *Revision in Mitteleuropa vorkommender mykophaiger Gallmücken der Mycodiplosis-Gruppe (Diptera, Cecidomyiidae) unter Berücksichtigung ihrer Wirtsspezifität*. Dissertation, Stuttgart, 238 pp.
- HOUARD, C. 1908-1909. *Les Zoocécidies des Plantes d'Europe et du Bassin de la Méditerranée.* Vol. 1+2. A. Hermann et Fils, Paris, 1247 pp.
- HOUARD, C. 1922-1923. *Les Zoocécidies des Plantes d'Afrique, d'Asie et d'Océanie.* Vols 1+2. Paris: J. Hermann, 1056 pp., 1909 figs.
- JASCHHOF, M. 1998. Revision der "Lestremiinae" (Diptera, Cecidomyiidae) der Holarktis. *Studia Dipterologica*, Suppl. **4**: 1-552.
- KIEFFER, J. J. 1898. Synopse des Cécidomyies d'Europe et d'Algérie décrites jusqu'à ce jour. *Bull. Soc. Hist. nat. Metz*, **2**, 8: 1-64.
- LOEW, H. 1850. *Dipterologische Beiträge.* IV. Posen, 40 pp.
- MACARTHUR, R. & E. O. WILSON 1967. *Island Biogeography.* Princeton: Princeton University Press, 203 pp.
- MIFSUD, D. 2011. *Dasineura papaveris* (Winnertz, 1853) – new record of a gall midge from Malta (Diptera, Cecidomyiidae). *Bulletin of the Entomological Society of Malta*, **4**: 129.
- MIRUMJAN, L. 2011. Phytophagous gall midges (Diptera: Cecidomyiidae) of Armenia. *Acta Societatis Zoologicae Bohemicae*, **75**: 87-105.
- MÖHN, E. 1955. Beiträge zur Systematik der Larven der Itonidiae (=Cecidomyiidae, Diptera). 1. Teil: Porricondylinae und Itonidinae Mitteleuropas. *Zoologica*, **38**(105): 1-247.
- MÖHN, E. 1966-1971. Cecidomyiidae (=Itonididae). In Lindner E. (ed.): *Die Fliegen der palaearktischen Region.* 2. Lieferung 269: 1-48 (1966), 273: 49-96 (1968), 274: 97-160 (1968), 277: 161-200 (1969), 288: 201-248 (1971).
- OCETE, R. & M. SKUHRAVÁ 1996. Nota sobre la presencia de *Arthrocnodax vitis* Rübsamen (Diptera, Cecidomyiidae) en eríneos de poblaciones de vid silvestre de la región subbética. *Bol. San. Veg. Plagas*, **22**: 465-468.
- RÜBSAAMEN E. H. 1908. Sciariden und Zoocecidiens. Zoologische und anthropologische Ergebnisse einer Forschungsreise im westlichen und zentralen Südafrika ausgeführt in den Jahren 1903-1905. *Denkschr. Med.-Nat. Ges. Jena*, **13**: 247-256.
- RÜBSAAMEN, E. H. 1916. Cecidomyidenstudien IV. Revision der deutschen Oligotropharien und Lasiopterarien nebst Beschreibung neuer Arten. *S. B. Ges. Naturf. Fr. Berlin*, **1915**: 485-567.
- SKUHRAVÁ M. 1986. Cecidomyiidae. Pp.: 72-297. In: Soós Á. & L. Papp (eds): *Catalogue of Palaearctic Diptera.* Vol. 4. Sciadidae-Anisopodidae. Amsterdam: Elsevier Science Publishers & Budapest: Akadémiai Kiadó, 441 pp.
- SKUHRAVÁ, M. 1987. Analysis of areas of distribution of some Palaearctic gall midge species (Cecidomyiidae, Diptera). *Cecidologia Internationale*, **8**(1+2): 1-48.
- SKUHRAVÁ, M. 1994a. The zoogeography of gall midges (Diptera: Cecidomyiidae) of the Czech Republic. I. Evaluation of faunistic researches in the 1855-1990 period. *Acta Societatis Zoologicae Bohemicae*, **57**(1993): 211-293.
- SKUHRAVÁ, M. 1994b. The zoogeography of gall midges (Diptera: Cecidomyiidae) of the Czech Republic. II. Review of gall midge species including zoogeographical diagnoses. *Acta Societatis Zoologicae Bohemicae*, **58**: 79-126.
- SKUHRAVÁ, M. 1997a. Cecidomyiidae, pp. 71-204. In: Papp, L. & B. Darvas (editors): *Contributions to a Manual of Palaearctic Diptera (with special reference to flies of economic importance)* Vol. 2. Nematocera and Lower Brachycera. Budapest, 592 pp.
- SKUHRAVÁ, M. 1997b. Gall midges (Diptera, Cecidomyiidae) of the Czech and Slovak Republics as members of zoogeographical units in the Palaearctic Region. In Vaňhara J. & R. Rozkošný (eds): *Dipterologica bohemoslovaca 8: 149-171. Folia Facultatis Scientiarum Naturalium Universitatis Masarykianae Brunensis, Biologia*, **95**.
- SKUHRAVÁ M. 2006. Species richness of gall midges (Diptera: Cecidomyiidae) in the main biogeographical regions of the world. *Acta Soc. Zool. Bohemicae*, **69**: 327-372.
- SKUHRAVÁ M. & A. ROQUES 2000. Palaearctic dipteran forest pests. Pp.651-692. In: Papp L. & B. Darvas (editors): *Contributions to a Manual of Palaearctic Diptera.* Vol. 1. General and Applied Dipterology. Science Herald, Budapest, 978 pp.
- SKUHRAVÁ, M. & V. SKUHRAVÝ 1997. Gall midges (Diptera, Cecidomyiidae) of Greece. *Entomologica*, Bari, **31**: 13-75.
- SKUHRAVÁ M. & V. SKUHRAVÝ 2004. Gall midges (Diptera: Cecidomyiidae) of Mallorca (Balearic Islands, Spain). *Boln. Asoc. Esp. Entomol.*, **28**(1-2): 105-119.
- SKUHRAVÁ M. & V. SKUHRAVÝ 2010. Species richness of gall midges (Diptera, Cecidomyiidae) in Europe (West Palaearctic): biogeography and coevolution with host plants. *Acta Soc. Zool. Bohem.*, **73**(2009): 87-156.
- SKUHRAVÁ M., J. BLASCO-ZUMETA & J. PUJADE-VILLAR 2002. Cecidomyiidae. Pp.: 21-25. In: Carles-Tolrá Hjorth-Andersen (editor): *Catálogo de los Diptera de España, Portugal y Andorra (Insecta). Monografías Soc. Entomol. Aragonesa* **8**: 1-323.
- SKUHRAVÁ, M., V. SKUHRAVÝ, J. BLASCO-ZUMETA & J. PUJADE-VILLAR 1996. Gall midges (Diptera: Cecidomyiidae) of the Iberian Peninsula. *Boln. Asoc. Esp. Entomol.*, **20**: 41-61.
- SKUHRAVÁ, M., V. SKUHRAVÝ, J. BLASCO-ZUMETA & J. PUJADE-VILLAR 2006. Gall midges (Diptera: Cecidomyiidae) of the Iberian Peninsula. 2. Zoogeographical analysis of the gall midge fauna *Boln. Asoc. Esp. Entomol.*, **30**: 93-159.
- SKUHRAVÁ, M., V. SKUHRAVÝ & J. W. BREWER 1984. Biology of gall midges. Pp. 169-222. In: Ananthakrishnan T. N. (editor): *Biology of Gall Insects.* Oxford + IBH Publishing Company, New Delhi, Bombay, Calcutta, 362 pp.
- STOKES, B. M. 1953. Biological investigations into the validity of *Contarinia* species living on the Cruciferae, with special reference to the Swede midge, *Contarinia nasturtii* (Kieffer). *Annals of Applied Biology*, **40**: 726-741.
- STROBL, G. 1900. Spanische Dipteren. X. Theil. *Wien. Entomol. Ztg.*, **19**: 92-100.
- STROBL, G. 1906. Spanische Dipteren. II. Beitrag. *Mem. Real Soc. Esp. Hist. Nat.*, **3**(5): 271-422.
- TAVARES, J. S. 1904. Descripçao de duas Cecidomyias novas. *Brotéria*, **3**: 298-301.
- TAVARES, J. S. 1905. Synopse das zoocecidiás Portuguezas. *Brotéria*, **4**: 1-123.
- TAVARES, J. S. 1907. Primeiro appendice a synopse das zoocecidiás Portuguezas. *Brotéria*, **6**: 109-134.
- TRAVESET, A. & R. MAS 1999. Presència de gal·les induïdes per cecidòmids, *Asphondylia trabutii* Marchal 1896, en els fruits de *Solanum nigrum* L. 1753 a Mallorca. *Boll. Soc. Hist. Nat. Balears*, **42**: 27-31
- VALDÉS, B., S. TALAVERA & F. GALIANO 1987. *Flora vascular de Andalucía occidental*, 3 vols. Ed. Ketres. Barcelona.

## List of host plants attacked by gall midges

● Host plant species ○ Gall midge species

- *Acer monspessulanus*
  - *Contarinia acerplicans*
  - *Drisina glutinosa*
- *Adenocarpus telonensis*
  - *Asphondylia adenocarpi*
- *Anthyllis cytisoides*
  - *Asphondylia* sp.
- *Anthyllis polyccephala*
  - *Asphondylia* sp.
- *Asparagus acutifolius*
  - *Dasineura asparagi*
- *Asparagus aphyllus*
  - *Dasineura asparagi*
  - *Dasineura turionum*
- *Astragalus boeticus*
  - *Mycodiplosis melampsorae*,  
mycophagous
- *Atriplex halimus*
  - *Asphondylia conglomerata*
- *Atriplex prostrata*
  - *Stefaniella trinacriae*
- *Bryonia cretica*
  - *Jaapiella bryoniae*
  - *Jaapiella parvula*
- *Calycotome villosa*
  - *Asphondylia calycotomae*
- *Centaurea sphaerocephala*
  - *Loewiola centaureae*
- *Cistus libanotis*
  - *Dasineura* sp.
- *Coronilla juncea*
  - *Dasineura coronillae*
- *Crataegus monogyna*
  - *Contarinia anthobia*
  - *Dasineura crataegi*
  - *Dasineura oxyacanthae*
- *Crucianella angustifolia*
  - *Dasineura asperulae*
- *Cytisus arboreus* subsp. *baeticus*
  - *Asphondylia cytisi*
- *Diplotaxis catholica*
  - *Contarinia* sp.
  - *Gephyraulus diplotaxis*
- *Dorycnium hirsutum*
  - *Asphondylia dorycnii*
- *Elaeoselinum foetidum*
  - *Lasioptera thapsiae*
- *Erica arborea*
  - *Dasineura zimmermanni*
  - *Wachtliella ericina*
- *Erica australis*
  - *Dasineura elegans*
- *Erica ciliaris*
  - *Dasineura broteri*
- *Erica scoparia*
  - *Dasineura ericaescopariae*
  - *Myricomyia mediterranea*
- *Erophaca baetica*
  - (= *Astragalus lusitanicus*)
    - *Mycodiplosis melampsorae*,  
mycophagous
- *Eryngium campestre*
  - *Lasioptera eryngii*
- *Euphorbia boetica*
  - *Dasineura capsulae*
- *Foeniculum vulgare*
  - *Kiefferia pericarpicola*
- *Fraxinus angustifolia*
  - *Dasineura acrophila*
- *Galium aparine*
  - *Dasineura aparines*
- *Galium verrucosum*
  - (= *G. saccharatum*)
    - *Geocrypta galii*
- *Genista hirsuta*
  - *Asphondylia genistae*
  - *Contarinia* sp.
- *Gleditsia triacanthos*
  - *Dasineura gleditchiae*
- *Halimium halimifolium*
  - *Dasineura herminii*
- *Halimium calycinum*
  - (= *H. commutatum*, *H. libanotis*)
    - *Dasineura andrieuxi*
- *Hirschfeldia incana*
  - *Asphondylia stefanii*
- *Hippocratea rupestris*
  - *Macrolabis hippocrepidis*
- *Hypericum tomentosum*
  - *Zeuxidiplosis giardi*
- *Juniperus navicularis*
  - *Oligotrophus valerii*
- *Juniperus oxycedrus* subsp. *oxycedrus*
  - *Oligotrophus valerii*
  - *Oligotrophus* sp.
  - *Contarinia* sp.
- *Juniperus phoenicea*
  - *Etsuhoa* sp.
  - *Mycodiplosis gymnosporangii*,  
mycophagous
- *Lonicera implexa*
  - *Macrolabis lonicerae*
- *Lonicera etrusca*
  - *Macrolabis lonicerae*
- *Lotus arenarius*
  - *Contarinia loti*
- *Lotus parviflorus*
  - *Jaapiella loticola*
- *Lythrum salicaria*
  - *Bayeriola salicariae*
- *Medicago dolia*
  - *Jaapiella medicaginis*
- *Mentha suaveolens*
  - (= *M. rotundifolia*)
    - *Asphondylia menthae*
- *Olea europaea*
  - *Lasioptera berlesiana*
- *Ononis talaverae*
  - *Asphondylia ononidis*
- *Ononis natrix*
  - (= *O. hispanica*)
    - *Contarinia ononidis*
    - *Lestodiplosis pallidicornis*,  
zoophagous
- *Origanum compactum*
  - *Blastomyia origani*
- *Papaver rhoes*
  - *Dasineura papaveris*
- *Phalaris minor*
  - *Sitodiplosis phalaridis*
- *Phillyrea angustifolia*
  - *Braueriella phillyreae*
- *Phillyrea latifolia*
  - (= *P. media*)
    - *Braueriella phillyreae*
    - *Probruggmanniella phillyreae*
- *Phlomis purpurea*
  - *Clinodiplosis cilicrus*,  
phytosaprophagous
- *Plantago coronopus*
  - *Lestodiplosis* sp.
- *Polygonum equisetiforme*
  - *Polygonomyia* sp.
- *Phragmites australis*
  - *Lestodiplosis gracilis*
- *Prunus spinosa*
  - *Dasineura tortrix*
- *Pterospartum tridentatum*
  - (= *Chamaespartium tridentatum*)
    - *Asphondylia pterosparti*
- *Pulicaria odora*
  - *Acodiplosis pulicariae*
- *Quercus coccifera*
  - *Contarinia luteola*
  - *Phylloidiplosis cocciferae*
  - *Dryomyia cocciferae*
- *Quercus faginea*
  - *Arnoldiola quercus*
  - *Parallelodiplosis galliperda*
- *Quercus ilex*
  - *Contarinia ilicis*
  - *Contarinia luteola*
  - *Dryomyia lichtensteinii*
- *Quercus suber*
  - *Dryomyia lichtensteinii*
- *Raphanus raphanistrum*
  - *Gephyraulus raphanistri*
- *Rhamnus alaternus*
  - *Asphondylia borzi*
- *Rosa canina*
  - *Dasineura rosae*
- *Rosmarinus officinalis*
  - *Dasineura rosmarini*
  - *Asphondylia rosmarini*
- *Rubus ulmifolius*
  - *Dasineura plicatrix*
- *Ruta montana*
  - *Asphondylia rutae*
- *Salsola vermiculata*
  - (= *S. microphylla*)
    - *Asphondylia salsolae*
    - *Stefaniola parva*
    - *Stefaniola salsolae*
- *Santolina rosmarinifolia*
  - *Rhopalomyia santolinae*
- *Sarcocornia fruticosa*
  - (= *Arthrocnemum fruticosum*)
    - *Baldratia salicorniae*
- *Sarcocornia perennis*
  - *Baldratia salicorniae*
- *Sisymbrium irio*
  - *Dasineura sisymbrii*
- *Solanum nigrum*
  - *Asphondylia trabutii*
- *Stauracanthus genistoides*
  - *Contarinia* sp.
- *Suaeda vera*
  - *Baldratia suaedae*
- *Tamarix canariensis*
  - *Psectrosema provinciale*
- *Thymus granatensis*
  - *Bayeriola thymicola*
- *Triticum vulgare*
  - *Mayetiola destructor*
- *Ulex baeticus*
  - *Asphondylia ulicis*
- *Verbascum sinuatum*
  - *Asphondylia verbasci*
- *Viburnum tinus*
  - *Contarinia viburnorum*
- *Viola suavis*
  - *Dasineura affinis*
- *Vitis vinifera*
  - *Vitisella oenephila*