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Autor: Skuhravá, Marcela / Skuhravý, Václav

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Gall midges (Diptera: Cecidomyiidae) of Switzerland

MARCELA SKUHRAVÁ[1] & VÁCLAV SKUHRAVÝ[2]

[1] Czech Zoological Society, Viničná 7, CZ-128 00 Praha 2, Czech Republic
[2] Institute of Entomology, Branišovská 31, CZ-131 05 České Budějovice, Czech Republic

163 gall midge species were found from 1993–1996 at 56 localities in Switzerland, of which 101 are new records. The fauna of Switzerland includes 237 species. For each species, collection sites are given, together with zoogeographical and biological data. The gall midge fauna is evaluated from the point of view of zoogeography, conservation of nature, and economic importance. 31 % of the species occur solitarily, 28 % scarcely, 16 % moderately, 14 % considerably, 9 % abundantly, and 2 % commonly. *Dasineura fraxinea* is the most common species in Switzerland. Its galls were found at 36 localities. 12 types of similar vertical distribution of species were recognized. 20 species occur in the Alpine zone, 17 species in the sub-Alpine zone, 100 species in the lower part of the montane zone, 180 species in the sub-montane zone and 126 in the colline zone. Galls of *Hygrodiplosis vaccinii* were found in the Alpine zone and in the sub-nival zone at an altitude of 2555 m a.s.l. Galls of *Jaapiella alpina*, *Dasineura phyteumatis,* and *Geocrypta galii* were found at the highest altitude of 2300 m a.s.l. in the Alpine zone. 58 % of the species are European, 30 % Euro-Siberian, 4 % sub-Mediterranean and 8 % secondarily Holarctic or cosmopolitan. *Asphondylia coronillae* is the only Mediterranean species reaching Switzerland which is the northern boundary of its distribution area. Long-term changes in population dynamics were analyzed. Because of the easy detection of galls during the vegetative season and the close and relatively static relationships with plants, several species are useful bioindicators of ecological changes. Based on IUCN definitions, 18 species may be considered to be threatened. Five of them are also listed as threatened in the Czech Republic. During the 20th century 10 species occurred as pests of cultivated plants. *Mayetiola destructor* was the most serious pest on cereals in the past, *Contarinia pisi* is a serious pest on pea at present. *Plemeliella abietina* is a potential pest of spruce seed. A list of host plant species attacked by gall midge species is provided.

Keywords: Cecidomyiidae, faunistics, Switzerland, zoogeography, conservation of nature, economic importance.

INTRODUCTION

Gall midges forming the family Cecidomyiidae are usually very small flies, only 0.5–3 mm long, rarely up to 8 mm, and very delicate. They have long antennae, relatively large wings with reduced venation and long legs. This family includes three sub-families: Lestremiinae, Porricondylinae, and Cecidomyiinae. Larvae of the first two sub-families are mostly mycophagous, and those of the third sub-family are predominantly phytophagous (gall-forming or non-gall-forming), but larvae of some genera are zoophagous and mycophagous. In Europe, about 1500 species of Cecidomyiidae have been described (SKUHRAVÁ *et al.*, 1984a, b, SKUHRAVÁ, 1986, 1989).

The level of knowledge about gall midge faunas in Europe is uneven. Switzerland is one of the less explored countries, in spite of the work of J. J. BREMI, one of the founders of gall midge studies in Europe, who was born in Dübendorf near Zurich. He described many species. Nevertheless, various species have not been recorded and described yet, including many Cecidomyiinae, and most of the Lestremiinae and Porricondylinae.

A historical review of research on Swiss Cecidomyiidae is given by SKUHRAVÁ & SKUHRAVÝ (1997). At present there is no specialist for this group in Swit-

zerland. That was the reason why we were invited to collaborate on the preparation of a list of the family Cecidomyiidae for the "Check-list of Diptera of Switzerland."

In the course of our gall midge studies and in the process of summarization of scattered data about members of gall midge faunas of several European countries we found that there are only a few data about the distribution of gall midge species in Switzerland. We decided to try to improve this situation, and in 1993 we started to investigate the gall midge fauna in Switzerland. We continued our investigations in 1994, 1995 and 1996. In this paper we report results of our researches together with the evaluation of all published data about gall midges in Switzerland.

This paper is dedicated to the memory of two Swiss researchers who made important contributions to the knowledge of gall midges in Switzerland: To the memory of Johann Jacob BREMI-WOLF (1791–1857), the founder of gall midge studies not only in Switzerland but also in Europe. He gathered a large collection of insects and galls which is now deposited in the Entomological Collection of the Eidgenössische Technische Hochschule in Zurich. To the memory of M. MOREILLON (1870–1945), the inspector of forestry at Montcherand VD, who collected galls of insects and mites mainly in the canton Vaud. He gathered many data about the occurrence of gall-inducing arthropods and made important contributions to the knowledge of cecidogenous animals in Switzerland.

STUDY AREA

About 70 % of the surface of Switzerland is mountainous. The center part, the Central Plateau, extends north and northwest into a limestone area, the Jura mountains. Central Switzerland is the watershed of Europe; the river Rhine flows to the North Sea, the rivers Rhône and Ticino to the Mediterranean Sea, and the river Inn to the Black Sea. Many lakes of glacial origin occur. The climate is continental, under Atlantic and Mediterranean influences. The mean temperature changes with geographical position and altitude. For example, the mean temperature in July is 17.2 °C in Zurich and 21 °C in Locarno. About 75 % of the territory has annual mean precipitations of more than 1000 mm, with a maximum of 4140 mm.

About 25 % of Switzerland are covered with forests. Vegetation changes distinctly with increasing elevation: The broadleaf forests change into coniferous forests in the mountains, and above the timberline there are alpine meadows and pastures. Areas with only poor lichens change into the nival zone of perpetual ice and snow. The vegetation of lower situated altitudinal belts is rich in species composition and, therefore, many plant species may be host plants of gall midges.

UDVARDY (1972) includes Switzerland in the Central European Highlands Province of the western part of the Palaearctic Realm. TUTIN *et al.* (1964), based on the geographical distribution of plants, consider Switzerland as part of Central Europe with the exception of a small part in the west which they include in western Europe and the most southern part from Locarno to the south which they include in southern Europe.

In the present paper we use the faunistic division of Switzerland according to SAUTER (1968, 1992), the altitudinal zoning according to ELLENBERG (1978) and distribution of geoelements in Europe according to WALTER (1954).

LOCALITIES EXAMINED

Whilst previous researchers collected galls of gall midges in a few parts of Switzerland mainly in surroundings of towns where they lived or worked, we selected localities to collect galls throughout all of Switzerland, as far as it was possible (Fig. 1).

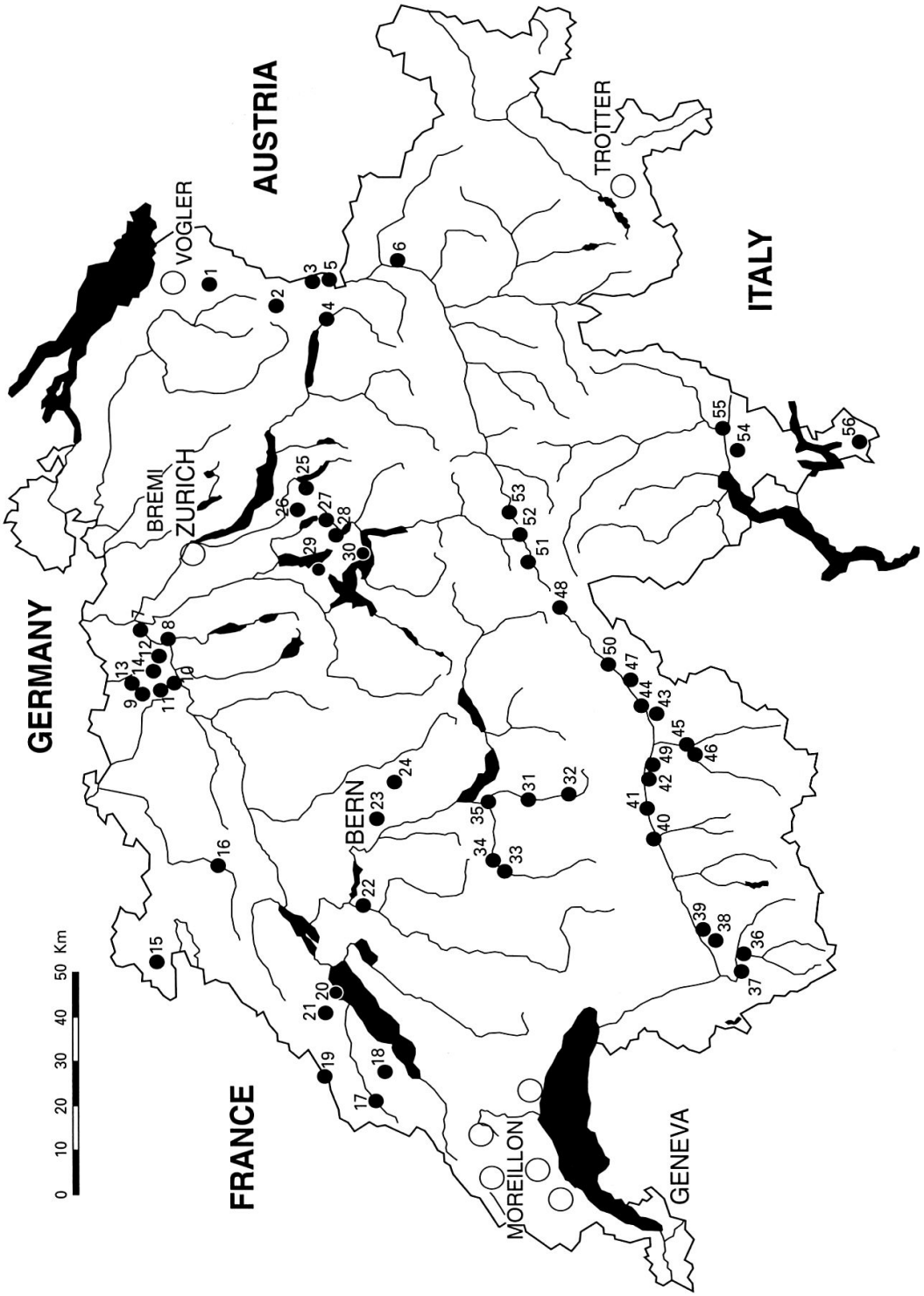

Fig. 1. Map of Switzerland with localities where previous researchers collected galls of gall insects and gall mites (white circles) and localities where we investigated the gall midge fauna from 1993–1996 (black circles): 1 Gais; 2 Gams; 3 Sevelen; 4 Flums; 5 Weite; 6 Zizers; 7 Brugg; 8 Wildegg; 9 Asp; 10 Erlinsbach; 11 Saalhöhe; 12 Thalheim; 13 Gipf-Oberfrick; 14 Wittnau; 15 Courgenay; 16 Moutier; 17 Buttes; 18 Champ-du-Moulin; 19 Col de la Tourne; 20 Neuchâtel; 21 Les Geneveys-sur-Coffrane; 22 Witteberg; 22 Worb; 24 Bowil; 25 Einsiedeln; 26 Biberbrugg; 27 Sattel; 28 Steinerberg; 29 Immensee; 30 Gersau; 31 Frutigen; 32 Kandersteg; 33 Boltigen; 34 Oberwil im Simmental; 35 Wimmis; 36 Sembrancher; 37 Bovernier; 38 Saxon; 39 Riddes; 40 Sierre; 41 Leuk; 42 Gampel-Steg; 43 Brig; 44 Bitsch; 45 Stalden; 46 Kalpetran; 47 Grengiols; 48 Oberwald; 49 Raron; 50 Fürgangen-Bellwald; 51 Realp; 52 Andermatt; 53 Oberalppass; 54 Cadenazzo; 55 Bellinzona; 56 Mendrisio-Borgo.

In 1993 we investigated 6 localities in eastern Switzerland, in lowlands along the river Rhine near the boundary of Liechtenstein. In 1994 we continued in 8 localities in northern Switzerland. In 1995 we carried out investigations in 7 localities in the Jura mountains near the boundary to France, in 3 localities situated in the Central Plateau, in 11 localities lying in the lower parts of the slopes of the North Alps and in 18 localities in the Wallis along the river Rhône in the southwestern part of Switzerland. In 1996, we finished our investigations by the study of the gall midge fauna in lowlands of the canton Ticino, the most southern part of Switzerland.

The localities examined are situated in various altitudinal zones from lowlands (planare zone) with the most low lying locality at Cadenazzo, 208 m a.s.l. up to high mountains where the highest locality studied was at the limits of the nival zone at Oberalppass, 2044 m a.s.l. in the central Alps.

In the following list the numbers ahead of the name of a locality are related to the numbers in the map (Fig. 1). For each locality we give the abbreviation of the canton, its altitude and a short ecological description.

Eastern Switzerland

1. Gais AR, 800 m a.s.l.: trees and shrubs on a hill not far from the Bodensee.
2. Gams SG, 500 m a.s.l.: trees and shrubs along a path.
3. Sevelen SG, 460 m a.s.l.: edge of woods with *Carpinus, Fagus, Fraxinus*, and *Acer campestre*.
4. Flums SG, 450 m a.s.l.: forest stand with *Quercus robur*.
5. Weite SG, 460 m a.s.l.: forest stands near the river Rhine.
6. Zizers GR, 530 m a.s.l.: forest stand with *Tilia* and *Ulmus*.

Northern Switzerland

7. Brugg AG, 500 m a.s.l.: edge of a broadleaf forest with *Carpinus*.
8. Wildegg AG, 600 m a.s.l.: stands near the river Aare; edge of a broadleaf forest with *Carpinus*.
9. Asp AG, 621 m a.s.l.: stands around a pasture on a hillside.
10. Erlinsbach AG/SO, 850 m a.s.l.: trees and shrubs along a brook in a gorge.
11. Saalhöhe AG, 880 m a.s.l.: forest stand in a mountain saddle.
12. Thalheim AG, 600 m a.s.l.: forest stands along a brook and along a forest path.
13. Gipf-Oberfrick AG, 344 m a.s.l.: forest stand with *Acer campestre, Tilia*, and *Taxus*.
14. Wittnau AG, 650 m a.s.l.: forest stands along a path; *Carpinus* and *Fagus*.

Jura Mountains

15. Courgenay JU, 500 m a.s.l.: forest with *Abies* and *Fagus*.
16. Moutier BE, 590 m a.s.l.: xerophilous stand on a hillside with *Fagus*.
17. Buttes NE, 550 m a.s.l.: meadow with dispersed shrubs and trees.
18. Champ-du-Moulin NE, 600 m a.s.l.: forest stands in a deep valley and along a river.
19. Col de la Tourne NE, 1166 m a.s.l.: mixed forest with *Picea, Abies, Acer*, and *Fraxinus*.
20. Neuchâtel NE, 500–550 m a.s.l.: forest stands along a path on a hillside.
21. Les Geneveys-sur-Coffrane NE, 700 m a.s.l.: mixed forest with *Abies* and *Fagus*.

Central Plateau (Mittelland)

22. Witteberg bei Gümmenen BE, 600 m a.s.l.: edge of a forest with *Fagus* and *Picea* on a hill.
23. Worb BE, 590 m a.s.l.: forest with *Fagus, Picea*, and *Acer pseudoplatanus*.
24. Bowil BE, 706 m a.s.l.: edge of a forest with *Fagus*.

North Alps (Nordalpen)

25. Einsiedeln SZ, 882 m a.s.l.: trees and shrubs along a brook, stands with *Alnus* and *Salix*.
26. Biberbrugg SZ, 830 m a.s.l.: trees and shrubs along pastures.
27. Sattel SZ, 932 m a.s.l.: trees and shrubs in a mountain saddle and along the river.

28. Steinerberg SZ, 450 m a.s.l.: trees and shrubs along pastures on hillsides.
29. Immensee SZ, 601 m a.s.l.: trees and shrubs along a brook on a hillside with *Corylus, Fraxinus,* and *Taxus.*
30. Gersau SZ, 840 m a.s.l.: forest stands along a brook, *Fagus* and *Fraxinus.*
31. Frutigen BE, 850 m a.s.l.: mixed forest stands along a brooklet with *Picea, Fraxinus, Cornus mas,* and *Alnus incana.*
32. Kandersteg BE, 1176 m a.s.l.: forest stands below a waterfall; *Picea, Fraxinus, Populus tremula,* and *Acer campestre.*
33. Boltigen BE, 1000 m a.s.l.: alpine meadows and spruce forest on hillsides.
34. Oberwil im Simmental BE, 840 m a.s.l.: forest stands along a brook; *Picea, Fraxinus,* and *Fagus.*
35. Wimmis BE, 628 m a.s.l.: stands on limestone rocks and at the beginning of a path through a very narrow valley in the mountains.

Wallis/Uri

36. Sembrancher VS, 716 m a.s.l.: shrubs on hillsides in a deep valley in mountains under the Saint-Bernard Pass.
37. Bovernier VS, 712 m a.s.l.: trees and shrubs along a river in a deep valley below the Saint-Bernard Pass.
38. Saxon VS, 465 m a.s.l.: trees and shrubs around vineyards below rocky areas.
39. Riddes VS, 470 m a.s.l.: trees and shrubs on rocky hillsides and in a deep valley.
40. Sierre VS, 554 m a.s.l.: trees and shrubs around vineyards.
41. Leuk VS, 560 m a.s.l.: trees and shrubs around vineyards.
42. Gampel-Steg VS, 580 m a.s.l.: trees and shrubs in the valley of the river Rhône.
43. Brig VS, 700 m a.s.l.: trees and shrubs along the river Rhône at the foot of mountains.
44. Bitsch VS, 730 m a.s.l.: xerotherm vegetation on limestone rocks with *Juniperus, Prunus,* and *Cornus sanguinea.*
45. Stalden VS, 800 m a.s.l.: trees and shrubs in a deep valley with *Larix, Fraxinus,* and *Cornus sanguinea.*
46. Kalpetran VS, 900 m a.s.l.: trees and shrubs in a deep valley with *Fraxinus* and *Alnus incana.*
47. Grengiols VS, 891 m a.s.l.: shrubs and trees on a rocky hillside with *Fraxinus, Corylus, Juniperus,* and *Pinus.*
48. Oberwald VS, 1365 m a.s.l.: vegetation at the timberline with scattered trees and shrubs of *Alnus incana, Corylus, Salix caprea, Picea,* and *Abies.*
49. Raron VS, 590 m a.s.l.: shrubs and trees on hillsides with *Juniperus communis, Berberis,* and *Salix.*
50. Fürgangen-Bellwald VS, 1120 m a.s.l.: shrubs and trees on rocky hillsides with *Fraxinus, Cornus sanguinea, Juniperus,* and *Corylus.*
51. Realp UR, 1538 m a.s.l.: shrubs on rocky hillsides with *Alnus viridis, Salix,* and *Sorbus aucuparia.*
52. Andermatt UR, 1436 m a.s.l.: vegetation in the town park with *Picea.*
53. Oberalppass UR/GR, 2044 m a.s.l.: vegetation at the limits of the nival zone with stands of *Rhododendron,* various species of *Vaccinium* and *Alnus viridis.*

South Alps (Südalpen)

54. Cadenazzo TI, 208 m a.s.l.: trees and shrubs at the edge of a forest with *Fraxinus, Castanea, Corylus,* and *Rubus.*
55. Bellinzona TI, 233 m a.s.l.: trees and shrubs in town parks and in surroundings of the town.
56. Mendrisio-Borgo TI, 360 m a.s.l.: trees and shrubs on hillsides, with xerothermic flora.

MATERIAL AND METHODS

We summarized data about the occurrence of gall midges gathered by researchers who collected galls in Switzerland during the period 1847–1923, as well as data about the present occurrence of gall midges which we obtained during our investigations in Switzerland from 1993–1996 and compiled a list of species forming the present fauna of gall midges.

At each locality we walked slowly through various biotopes in the course of one to several hours, searching and collecting all galls on plants, or plants inhabited by mites and aphids, or rusts in which larvae of gall midges may develop. All findings were recorded, including notes about the local frequency of species.

In the course of such excursions, collected plants with galls were placed into small plastic bags, each host plant species in a separate one. After each excursion, in the evening, several specimens of each host plant with galls were preserved as herbarium specimens, several plants with galls were kept in plastic bags to obtain living larvae or adults, or several plants with galls were placed in small cages and finally several galls with larvae were put into glass tubes with 75% alcohol for future morphological studies.

We analyzed the gall midge fauna of Switzerland using methods of SKUHRAVÁ (1987, 1994). The frequency of occurrence of gall midge species in Switzerland is evaluated according to all gathered data using six scale levels and the following verbal denomination of occurrence: solitary, scarce, moderate, considerable, abundant, common (see Tab. 2). These terms are given for each species in the list.

For each species the general distribution in the Palaearctic Region and additional zoogeographical details are given.

RESULTS

Results of researches in the period 1847–1923

BREMI (1847) recorded the occurrence of 56 gall midge species which he collected mainly in localities situated in the Central Plateau in surroundings of Zurich. Later HIERONYMUS (1890) gave 16 species of which galls were collected mainly in Engadin. At the end of the 19th century about 70 species were known to occur in Switzerland.

Including the publications of CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922), and TROTTER (1923), a total of 136 species was known to occur in Switzerland.

Results of investigations in the period 1993–1996

At 56 localities throughout Switzerland we found a total of 163 species of which 101 are new records of the gall midge fauna of Switzerland.

At individual localities we found 2 to 29 species. The richest species composition (29 species) was found at Courgenay in the Jura mountains. In general, the number of species found at one locality decreased with increasing altitude, as shown in the chapter about vertical distribution. At localities situated in the high mountains at altitudes of about 2000 m a.s.l. it is possible to find only one or two species or none at all.

The average number of species per locality determined from all records from Switzerland is 16.7. This number is a little lower than in Vorarlberg with on the average 20 species (SKUHRAVÁ & SKUHRAVÝ, 1992, 1995) and in Liechtenstein with 19.5 species (SKUHRAVÁ & SKUHRAVÝ, 1993). This fact is probably connected to the higher altitudinal position of Switzerland in general.

The following three aspects are very important for the zoogeographical evaluation of a particular region as a part of a larger territory: (1) the number of species found at several localities inside a smaller area; (2) the average number of species of such an area; (3) the locality and its altitude where the richest species composition, that is the highest number of species, has been found.

In eastern Switzerland, where six localities situated at altitudes between 400 and 800 m a.s.l. in the colline and sub-montane zones were examined, 60 species

were found. The average number for one locality was 13 species. Sevelen, 460 m a.s.l. was the locality with the highest number of species (21).

In northern Switzerland eight localities situated at altitudes between 344 and 880 m a.s.l. in the colline and sub-montane zones were examined; 61 species were found. On the average, 19 species per locality were counted. Saalhöhe, 880 m a.s.l. with 26 species was the richest locality.

In the Jura mountains seven localities situated at altitudes between 500 and 1166 m a.s.l. in the sub-montane and in the lower part of the montane zones were explored; 78 species were recorded. Courgenay, 500 m a.s.l. with 29 species was the richest locality not only in the Jura mountains but also of all localities examined in Switzerland during our investigations from 1993–1996.

In the Central Plateau three localities at altitudes of 590–706 m a.s.l. in the lower part of the sub-montane zone were studied; 37 species were determined. The average number was 18 species per locality. Witteberg, 600 m a.s.l. with 25 species was the richest locality of that area.

In the North Alps eleven localities situated at altitudes of 450–1176 m a.s.l. in the sub-montane and lower part of the montane zones were investigated; 72 species were found. On the average, 17 species per locality were found. Sattel, 932 m a.s.l. with 26 species was the richest locality.

In the cantons Wallis and Uri we examined eighteen localities at altitudes between 465 and 2044 m a.s.l. from which 13 localities were situated in the sub-montane, three in the montane, one (Realp) in the sub-Alpine and one (Oberalppass) in the Alpine zone. We found 80 species altogether. The average number per locality was 11 species. Bovernier, 712 m a.s.l. was the richest locality where galls of 22 species were collected.

In the South Alps we collected galls only at three localities at altitudes of 208–360 m a.s.l. in the colline zone. The average number per locality was 8 species.

The highest average number of species of all regions was found at localities situated in the Jura mountains, where also the locality with the highest species composition was found.

Annotated list of species

For each species the following data are given: biology and the host plant species, references, all localities where the species was found during our investigations 1993–1996, a short zoogeographical diagnosis, its vertical range and the denomination of its frequency of occurrence in Switzerland (see Tab. 2). An asterisk (*) before the species' name indicates a new record for the fauna of Switzerland.

Lestremiinae

* *Aprionus inquisitor* MAMAEV, 1963

Biology unknown. M. JASCHHOF determined one male from the Vallée de la Brévine NE, 1050 m a.s.l., leg. BASSET. Material preserved in the collection of H. MEYER, Kiel, Germany. European. Single record for Switzerland.

* *Campylomyza flavipes* MEIGEN, 1818

Biology unknown. M. JASCHHOF determined one male from Robiei TI, N Locarno, Valle Maggia, 21.8.1992, leg. F. RÖSCHMANN. Material deposited in the collection of M. JASCHHOF, Greifswald, Germany. Holarctic. Single record for Switzerland.

* *Lestremia leucophaea* (MEIGEN, 1818)
Biology unknown. M. JASCHHOF determined three males from Cevio TI, 20 km NW Locarno, Valle Maggia, 24.8.1992, leg. F. RÖSCHMANN. Material preserved in the collection of M. JASCHHOF, Greifswald, Germany. Holarctic. Single record for Switzerland.

Porricondylinae

Asynapta strobi (KIEFFER, 1920)
On *Picea abies* (L.) Karst. Found in spruce cone samples from the five main geographic regions of Switzerland (WERMELINGER *et al.*, 1995). European; in Switzerland moderately from colline to Alpine zones. Altitudinal range: 370–2000 m a.s.l.

Camptomyia fenestralis (BREMI, 1847)
Biology unknown. Only one record of BREMI (1847). European, in Switzerland solitary.

Claspettomyia formosa (BREMI, 1847)
Biology unknown. Only one record of BREMI (1847). European, in Switzerland solitary.

Heteropeza pygmaea WINNERTZ, 1846
Larvae feed on fungal mycelium under decaying bark of *Quercus, Fagus, Betula, Tilia*, and other broad-leaved trees. Larvae may reproduce pedogenetically. Only two records of NIKOLEI (1958, 1961). Holarctic, in Switzerland scarce.

Miastor metraloas MEINERT, 1864
Larvae feed on fungal mycelium under decaying bark of *Quercus, Fagus, Betula, Tilia*, and other broad-leaved trees. Larvae may reproduce pedogenetically. Only two records of NIKOLEI (1958, 1961). Holarctic, in Switzerland scarce.

Porricondyla flava (MEIGEN, 1818)
Biology unknown. Only two records from BREMI (1847). European, in Switzerland scarce.

Cecidomyiinae

* *Aphidoletes aphidimyza* (RONDANI, 1847)
Larvae feed predaceously on various species of aphids. Locality: Rochefort NE, 780 m a.s.l., 3.7.1982, one male, from Malaise trap, leg. C. DUFOUR. *A. aphidimyza* is probably the commonest species of *Aphidoletes* preying on aphids in Europe (HARRIS, 1966). Found in several parts of the world, probably cosmopolitan.

* *Arthrocnodax coryligallarum* (TARGIONI-TOZZETTI, 1886)
Larvae feed predaceously on the gall mite *Phytoptus avellanae* NAL. (Eriophyiidae) in its galls on *Corylus avellana* L. Locality: Immensee. European, solitarily occurring species.

Arthrocnodax erianea (BREMI, 1847)
Larvae feed on gall mite *Aceria sanguisorbae* (CAN.) (Eriophyiidae) in its galls on *Sanguisorba minor* Scop. Only one record of BREMI (1847). European, in Switzerland solitary.

* *Aschistonyx carpinicolus* RÜBSAAMEN, 1917
Leaf gall on *Carpinus betulus* L. Locality: Witteberg, 600 m a.s.l. European, in Switzerland solitary.

Asphondylia bitensis KIEFFER, 1888
Pod gall of *Cytisus (Genistella) sagittalis* Kch. MOREILLON (1913). Sub-Mediterranean species. In Switzerland solitary, reaching the northern limits of its distribution area.

Asphondylia coronillae (VALLOT, 1829)
Bud galls and pod galls of *Coronilla emerus* L. MOREILLON (1916, 1922). The only Mediterranean species occurring in Switzerland, reaching the northern limits of its distribution area. Occurring moderately. Altitudinal range: 440–610 m a.s.l.

* *Asphondylia echii* (H. LOEW, 1850)
Flower bud galls on *Echium vulgare* L. Localities: Riddes, Raron, Saxon. European, in Switzerland scarce. Altitudinal range: 465–590 m a.s.l.

* *Asphondylia hornigi* WACHTL, 1880
Flower bud galls on *Origanum vulgare* L. Localities: Sattel, Gersau. European, in Switzerland scarce. Altitudinal range: 540–932 m a.s.l.

* *Asphondylia ononidis* F. LÖW, 1873
Leaf bud galls on *Ononis spinosa* L. Localities: Gais, Neuchâtel, Gampel-Steg. Sub-Mediterranean, in Switzerland scarce. Altitudinal range: 500–800 m a.s.l.

Asphondylia verbasci (VALLOT, 1827)
Flower bud galls on *Verbascum lychnitis* L. and other species. MOREILLON (1922). Localities: Gampel-Steg, Bitsch, Raron. Sub-Mediterranean and sub-Pontic, in Switzerland scarce. Altitudinal range: 580–730 m a.s.l.

* *Bayeriola salicariae* (KIEFFER, 1888)
Axillary bud galls on *Lythrum salicaria* L. Locality: Zizers, 530 m a.s.l. European, single record for Switzerland.

Bayeriola thymicola (KIEFFER, 1888)
Leaf gall on *Thymus serpyllum* L. HIERONYMUS (1890), PERRIRAZ (1909). Locality: Bitsch, 730 m a.s.l. European, with large distribution area extending to North Africa. In Switzerland occurring moderately.

Blastomyia origani (TAVARES, 1902)
Leaf bud galls on *Origanum vulgare* L. MOREILLON (1913). Sub-Mediterranean, in Switzerland scarce. Altitudinal range: 565–1110 m a.s.l.

Bremiola onobrychidis (BREMI, 1847)
Leaflet galls on *Onobrychis viciifolia* Scop. ssp. *sativa* (Lam.) Thell. Locality: Saalhöhe. European, at present occurring solitarily. It was very abundant in the past at Dübendorf (BREMI, 1847), at present very rare, population density decreasing. Altitudinal range: 450–780 m.

Cecidomyia pini (DE GEER, 1776)
Larvae solitary, each in a white cocoon on needles of *Pinus sylvestris* L. BREMI (1847). Locality: Sierre. European, scarce. Altitudinal range: 420–554 m a.sl.

* *Clinodiplosis botularia* (WINNERTZ, 1853)
Larvae inquilines in galls of *Dasineura fraxini* (WINNERTZ) on *Fraxinus excelsior* L. Locality: Gampel-Steg, 580 m a.s.l. European, single record for Switzerland.

* *Clinodiplosis cilicrus* (KIEFFER, 1889)
Larvae phyto-saprophagous in decaying plant matter. Localities: Moutier (unopened dried flower buds of *Paeonia officinalis* L.), Sembrancher (capitulum of *Centaurea scabiosa* L.). Euro-Siberian, in Switzerland occurring sporadically. Altitudinal range: 590–716 m a.s.l.

* *Contarinia acerplicans* (KIEFFER, 1889)
Leaf fold galls on *Acer pseudoplatanus* L. European, more abundant in southern parts of Europe. In Switzerland occurring solitarily; galls have been found only at Andermatt, 1436 m a.s.l.

Contarinia aconitifloris STELTER, 1962
Flower bud galls on *Aconitum lycoctonum* L. and *A. napellus* L. Euro-Siberian, known only from one locality: Morteys (APPEL, 1891). Single record for Switzerland.

* *Contarinia aequalis* KIEFFER, 1898
Bud galls on *Senecio nemorensis* L. ssp. *Fuchsii* (Gmel.) Dur. Localities: Champ-du-Moulin, Courgenay. Euro-Siberian, in Switzerland scarce. Altitudinal range: 500–600 m a.s.l.

* *Contarinia asclepiadis* (GIRAUD, 1863)
Larvae inside slightly swollen capsules of *Vincetoxicum officinale* Mönch. Locality: Thalheim, 600 m a.s.l. European, area restricted. Single record for Switzerland.

* *Contarinia baeri* (PRELL, 1931)
Larvae cause bending of needles of *Pinus sylvestris* L. Localities: Biberbrugg, Wimmis, Grengiols, Sierre. Euro-Siberian, in Switzerland moderate occurrence. Altitudinal range: 554–891 m a.s.l.

* *Contarinia barbichi* (KIEFFER, 1890)
Leaf bud galls on *Lotus corniculatus* L. Localities: Brugg, Andermatt. European, in Switzerland scarce. Altitudinal range: 500–1436 m a.s.l.

* *Contarinia campanulae* (KIEFFER, 1895)
Flower bud galls on *Campanula rapunculoides* L. Localities: Weite, Brugg. European, in Switzerland scarce. Altitudinal range: 460–500 m a.s.l.

* *Contarinia carpini* KIEFFER, 1897
Leaf fold galls on *Carpinus betulus* L. Localities: Brugg, Courgenay. European, in Switzerland scarce at about 500 m a.s.l.

Contarinia coryli (KALTENBACH, 1859) (syn. *C. corylina* F. LÖW, 1878)
Larvae cause swellings on catkins of *Corylus avellana* L. MOREILLON (1916). Localities: Gais, Biberbrugg, Erlinsbach, Saalhöhe, Les Geneveys. Euro-Siberian, moderate occurrence in Switzerland. Altitudinal range: 700–880 m a.s.l.

Contarinia craccae KIEFFER, 1897
Flower bud galls on *Vicia cracca* L. HIERONYMUS (1890, as *Diplosis loti*). Euro-Siberian, large distribution area. Single record for Switzerland at 1300 m a.s.l.

* *Contarinia cucubali* KIEFFER, 1909
Terminal stem gall on *Silene vulgaris* (Moench.) Garcke. Localities: Immensee, Oberwald. Euro-Siberian, in Switzerland scarce. Altitudinal range: 601–1365 m a.s.l.

* *Contarinia cybelae* GAGNÉ, 1972 (*Contarinia coryli* KIEFFER, 1909)
Larvae live in folded leaf parts of *Corylus avellana* L. Locality: Les Geneveys, 700 m a.s.l. European. Single record for Switzerland.

* *Contarinia fagi* RÜBSAAMEN, 1921
Damaged leaf buds of *Fagus sylvatica* L. Localities: Steinerberg, Gersau, Wittnau, Les Geneveys, Neuchâtel, Courgenay, Wimmis, Witteberg, Worb, Bowil. European, in Switzerland occurring considerably. Altitudinal range: 450–706 m a.s.l.

* *Contarinia galeobdolontis* KIEFFER, 1909
Terminal leaf gall on *Lamium galeobdolon* (L.) Nath. European, area restricted. Single record for Switzerland: Gersau, 540 m a.s.l.

Contarinia helia nthemi (HARDY, 1850)
Terminal leaf gall on *Helianthemum nummularium* (L.) Mill. MOREILLON (1913). European, sub-Alpine species, with large but disjunct area of distribution. In Switzerland galls were found sporadically at the altitude of 1220 m a.s.l.

* *Contarinia hyperici* BARNES, 1952
Swollen flower buds of *Hypericum perforatum* L. Localities: Sattel, Steinerberg. European, in Switzerland scarce. Altitudinal range: 450–932.

* *Contarinia hypochoeridis* (RÜBSAAMEN, 1891)
Larvae among flowers in the capitulum of *Hypochoeris* sp. European. Single record for Switzerland: Champ-du-Moulin, 600 m a.s.l.

* *Contarinia jaapi* RÜBSAAMEN, 1914
Leaf bud galls on *Lathyrus pratensis* L. European. Single record for Switzerland. Galls were found at Brugg, 500 m a.s.l.

* *Contarinia jacobaeae* (H. LOEW, 1850)
Larvae among flowers in capitulum of *Senecio jacobaea* L. Localities: Sattel, Saalhöhe, Sierre. Euro-Siberian, in Switzerland scarce. Altitudinal range: 554–932 m a.s.l.

Contarinia loti (DE GEER, 1776)
Flower bud galls on *Lotus corniculatus* L. BREMI (1847), VOGLER (1906), MOREILLON (1916, 1922). Locality: Buttes, 550 m a.s.l. European, large distribution area, occurring from sub-montane to Alpine zones. In Switzerland abundant in the past, at present sporadically. It may be considered as a disappearing species.

* *Contarinia lysimachiae* (RÜBSAAMEN, 1893)
Flower bud galls on *Lysimachia vulgaris* L. Localities: Gais, Raron. European, scarce in Switzerland. Altitudinal range: 590–800 m a.s.l.

* *Contarinia medicaginis* KIEFFER, 1895
Flower bud galls on *Medicago sativa* L. Localities: Gais, Thalheim, Brugg, Neuchâtel, Courgenay, Moutier, Witteberg, Worb, Stalden, Bitsch, Grengiols, Brig, Raron, Gampel-Steg, Leuk, Sierre, Sembrancher, Bovernier, Saxon, Riddes. Euro-Siberian, in Switzerland abundant, population density increasing. Altitudinal range: 465–891 m a.s.l.

Contarinia melanocera KIEFFER, 1904
Stem swellings on *Genista tinctoria* L. CORTI (1904), MOREILLON (1913). European, more abundant in southern parts of Europe. In Switzerland scarce. Altitudinal range: 575–637 m a.s.l.

* *Contarinia nasturtii* (KIEFFER, 1888)
Flower bud galls on *Raphanus* sp. Localities: Worb, Raron. European, spreading to Turkey. In Switzerland scarce at about 600 m a.s.l.

Contarinia onobrychidis KIEFFER, 1895
Flower bud galls on *Onobrychis viciifolia* Scop. ssp. *sativa* (La.) Thell. CORTI (1904), MOREILLON (1913, 1922). Euro-Siberian, in Switzerland scarce in the past; not found since 1922. It seems to be a disappeared species. Altitudinal range: 660–900 m a.s.l.

Contarinia petioli (KIEFFER, 1898)
Galls on petioles of *Populus tremula* L. HIERONYMUS (1890), CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922). Locality: Bovernier. Euro-Siberian, large distribution area. In Switzerland at present sporadically, more abundant in the past. It belongs to the species with decreasing population density. Altitudinal range: 565–1150 m a.s.l.

Contarinia pisi (WINNERTZ, 1854)
Galls on vegetative tips, on flower buds and on pods of *Pisum sativum* L. This species is a serious pest of pea since a long time in Switzerland. KUTTER & WINTERHALTER (1933), KUTTER (1934, 1936), BOLLINGER (1968), VALLATON (1969), KELLER (1989), KELLER & SCHWEIZER (1992, 1994). Euro-Siberian.

* *Contarinia polygonati* RÜBSAAMEN, 1921
Damaged fruits of *Polygonatum multiflorum* (L.) All. Localities: Sevelen, Weite, Wildegg, Les Geneveys. European, distribution area relatively small. Moderate occurrence in Switzerland. Altitudinal range: 460–700 m a.s.l.

* *Contarinia populi* (RÜBSAAMEN, 1917)
Small globular galls on the leaves of *Populus tremula* L. Localities: Gais, Kandersteg, Boltigen, Sembrancher, Bovernier. Euro-Siberian, large distribution area. Moderate occurrence in Switzerland. Altitudinal range: 712–1176 m a.s.l.

Contarinia pyrivora (RILEY, 1886)
Damaged fruits of *Pyrus communis* L. Serious pest of pear fruits in Switzerland since a long time. HOFER (1910), FAES & STAEHELIN (1929), ANTONIN (1984). European, secondarily a Holarctic pest.

* *Contarinia quercina* (RÜBSAAMEN, 1890)
Leaf bud galls on *Quercus robur* L. Localities: Neuchâtel, Bowil, Sierre, Saxon. European; moderate occurrence in Switzerland. Altitudinal range: 465–706 m a.s.l.

* *Contarinia rubicola* KIEFFER, 1909
Unopened flower buds of *Rubus caesius* L. Localities: Sattel, Frutigen, Boltigen. European, in Switzerland scarce. Altitudinal range: 850–1000 m a.s.l.

Contarinia sambuci (KALTENBACH, 1873) (*C. lonicerearum* F. LÖW, 1877)
Flower bud galls on *Lonicera xylosteum* L. VOGLER (1906), MOREILLON (1916). European; in Switzerland scarce. Altitudinal range: 650–710 m a.s.l.

* *Contarinia schlechtendaliana* (RÜBSAAMEN, 1893)
Swollen flower buds of *Sonchus arvensis* L. Locality: Frutigen. European, in Switzerland occurring solitarily at 850 m a.s.l. *

* *Contarinia solani* (RÜBSAAMEN, 1891)
Swollen flower buds of *Solanum dulcamara* L. Localities: Kalpetran, Saxon. European, in Switzerland scarce. Altitudinal range: 465–900 m a.s.l.

* *Contarinia steini* (KARSCH, 1881)
Unopened flower buds of *Silene alba* (Mill.) Kr. Localities: Bitsch, Brig, Saxon. Euro-Siberian, large distribution area, in Switzerland scarce. Altitudinal range: 465–730 m a.s.l.

Contarinia tiliarum (KIEFFER, 1890)
Globular swellings on petioles of *Tilia platyphyllos* Scop. and *T. cordata* Mill. MOREILLON (1913, 1916, 1922). Localities: Gais, Les Geneveys, Col de la Tourne, Courgenay. European, secondarily Holarctic. In Switzerland occurring moderately, with stable population density, in sub-montane and lower montane zones. Altitudinal range: 500–1166 m a.s.l.

Contarinia tritici (KIRBY, 1798)
Larvae develop in spikes of *Triticum vulgare* L. AFFOLTER (1990). Primarily European, secondarily Holarctic. Pest.

* *Contarinia vincetoxici* KIEFFER, 1909
Unopened, slightly swollen flower buds of *Vincetoxicum officinale* Moench. Localities: Gais, Sevelen, Steinerberg. European, area of distribution restricted. In Switzerland scarce. Altitudinal range: 450–800 m a.s.l.

Craneiobia corni (GIRAUD, 1863)
Large galls on leaves of *Cornus sanguinea* L. Each gall with several cavities with a single larva. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922). Localities: Gampel-Steg, Leuk, Saxon, Riddes. Sub-Mediterranean species extending, but less abundantly, up to northern Europe. In Switzerland occurring moderately, with decreasing population density. More abundant in the past than at present. Altitudinal range: 465–860 m a.s.l.

Cystiphora leontodontis (BREMI, 1847)
BREMI (1847) gave the name *Cecidomyia leontodontis* to pustule galls caused on *Leontodon taraxacum* and made an illustration of this gall but did not give a description of adults. BREMI's *Leontodon taraxacum* is, based on present botanical nomenclature, *Taraxacum officinale* Web. His species is doubtlessly identical with the species later described by KIEFFER (1888) as *Cecidomyia taraxaci*.

Cystiphora sanguinea (BREMI, 1847) (*C. hieracii* F. LÖW, 1874; *C. pilosellae* KIEFFER, 1892)
Pustule galls on *Hieracium murorum* L. and *H. pilosella* L. BREMI (1847). Locality: Col de la Tourne. European, in Switzerland occurring solitarily. Altitudinal range: 600–1166 m a.s.l.

Cystiphora sonchi (BREMI, 1847)
Pustule galls on *Sonchus asper* All. CORTI (1904), MOREILLON (1913, 1916). Localities: Gais, Frutigen. Euro-Siberian, in Switzerland scarce. Altitudinal range: 520–850 m a.s.l.

Cystiphora taraxaci (KIEFFER, 1888)
Pustule galls on *Taraxacum officinale* Web. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916). Localities: Sevelen, Immensee, Erlinsbach, Wittnau, Brugg, Gipf-Oberfrick, Les Geneveys, Col de la Tourne, Champ-du-Moulin, Buttes, Courgenay, Moutier, Boltigen, Fürgangen-Bellwald, Brig, Sembrancher, Bovernier, Saxon. Euro-Siberian. In Switzerland abundant, population density increasing. Altitudinal range: 344–1166 m a.s.l.

* *Dasineura acrophila* (WINNERTZ, 1853)
Pod-like galls on leaflets of *Fraxinus excelsior* L. Localities: Gais, Weite, Sattel, Saalhöhe, Champ-du-Moulin, Buttes, Courgenay, Brig. European, large distribution area. In Switzerland occurring considerably. Altitudinal range: 460–880 m a.s.l.

Dasineura affinis (KIEFFER, 1886)
Curled and thickened leaf margins of *Viola reichenbachiana* Jord. (=*V. sylvestris* Lam.). CLAUSEN (1950). Localities: Gais, Leuk. European, large distribution area. In Switzerland scarce. Altitudinal range: 430–800 m a.s.l.

Dasineura alpestris (KIEFFER, 1909) (*D. schneideri* RÜBSAAMEN, 1917)
Leaf galls on *Arabis alpina* L. and *A. hirsuta* (L.) Scop. Bases of attacked leaves swollen, enlarged and drawn together, forming a compact open gall. VOGLER (1906), PERRIRAZ (1909), MOREILLON (1916). DESHUSSES & DESHUSSES (1936) recorded this species as a pest in environs of Genève. Localities: Boltigen, Witteberg. European, montane species, secondarily occurring in lower altitudinal zones (in gardens). In Switzerland scarce. Altitudinal range: 430–1000 m a.s.l.

* *Dasineura auritae* (RÜBSAAMEN, 1915)
Marginal leaf rolls on *Salix aurita* L. Locality: Gais, 800 m a.s.l. European. Single record for Switzerland.

Dasineura axillaris (KIEFFER, 1896)
Larvae cause oval galls on *Trifolium medium* L. MOREILLON (1913). European. Single record for Switzerland.

* *Dasineura berberidis* (KIEFFER, 1909)
Rolled leaf margin of *Berberis vulgaris* L. Locality: Gampel-Steg, 580 m a.s.l. European. Single record for Switzerland.

Dasineura bistortae (KIEFFER, 1909)
Loosely rolled leaf margins on *Polygonum bistorta* L. HIERONYMUS (1890) recorded galls on *P. bistorta* as *Cecidomyia persicariae*. MOREILLON (1922). European, montane, sub-Alpine and Alpine, in Switzerland scarce. Altitudinal range: 1600–1775 m a.s.l.

Dasineura bupleuri (WACHTL, 1883)
Deformations of the growing tops or of a single leaf of *Bupleurum falcatum* L. MOREILLON (1922). European, distribution area restricted. Single record for Switzerland.

Dasineura centaureae (KIEFFER, 1909)
Leaf bud gall on *Centaurea montana* L. Galls were found by THOMAS (1892) at Berner Oberland, 1340– 1500 m a.s.l. European, sub-Alpine. Single record for Switzerland.

Dasineura clausilia (BREMI, 1847)
Narrowly and shortly rolled leaf margins of *Salix alba* L. MOREILLON (1916). STELTER (1993) mentioned that galls are caused by mites, not by gall midges. This problem needs a study. Unfortunately, BREMI's original material is probably lost, it is not present in his collection.

Dasineura crataegi (WINNERTZ, 1853)
Larvae live gregariously among deformed leaves in terminal rosette on *Crataegus oxyacantha* L. HIERONYMUS (1890), VOGLER (1906), MOREILLON (1916). Localities: Asp, Erlinsbach, Brugg, Champ-du-Moulin, Buttes, Frutigen, Courgenay, Moutier, Boltigen, Witteberg, Sierre, Saxon. European, in Switzerland with considerable occurrence and stable population density. Altitudinal range: 465–1000 m a.s.l.

Dasineura cytisi (KIEFFER, 1909)
Terminal leaf bud galls on *Cytisus (Genistella) sagittalis* L. MOREILLON (1913, 1922). Sub-Mediterranean. In Switzerland scarce. Altitudinal range: 610–1000 m a.s.l.

Dasineura daphnephila (KIEFFER, 1909)
Swollen flower buds of *Daphne striata* Tratt. Galls were found at St. Moritz GR, 2000 m a.s.l. and described by THOMAS (1892). European, Alpine. Single record for Switzerland.

Dasineura daphnes (KIEFFER, 1901)
Terminal leaf bud galls on *Daphne laureola* L. European, very rare, in Switzerland only at Sihlwald ZH, 700 m a.s.l. (MOREILLON, 1913).

Dasineura engstfeldi (RÜBSAAMEN, 1889)
Larvae live in depressions on the lower surface of the leaf of *Filipendula ulmaria* (L.) Maxim. VOGLER (1906), MOREILLON (1913, 1916). Localities: Biberbrugg, Einsiedeln, Champ-du-Moulin, Oberwil, Wimmis. Euro-Siberian, large distribution area. In Switzerland occurring moderately. Altitudinal range: 550–882 m a.s.l.

* *Dasineura excavans* (KIEFFER, 1909)
Larvae cause small excavations on leaves of *Lonicera xylosteum* L. Localities: Gams, Les Geneveys, Kandersteg, Frutigen, Courgenay, Moutier. European, in Switzerland occurring moderately. Altitudinal range: 500–1176 m a.s.l.

* *Dasineura fraxinea* (KIEFFER, 1907)
Larvae produce parenchyme galls on leaflets of *Fraxinus excelsior* L. Localities: Gams, Sevelen, Weite, Sattel, Steinerberg, Immensee, Gersau, Einsiedeln, Wildegg, Thalheim, Erlinsbach, Saalhöhe, Wittnau, Les Geneveys, Neuchâtel, Col de la Tourne, Champ-du-Moulin, Buttes, Kandersteg, Frutigen, Courgenay, Boltigen, Oberwil, Witteberg, Worb, Bowil, Kalpetran, Bitsch, Brig, Cadenazzo, Raron, Gampel-Steg, Leuk, Sembrancher, Bovernier, Riddes. European; at present the most common species in Switzerland. Altitudinal range: 208–1176 m a.s.l.

Dasineura fraxini (BREMI, 1847)
Larvae cause swellings of the mid-vein on leaflets of *Fraxinus excelsior* L. VOGLER (1906), MOREILLON (1913, 1916, 1922). Localities: Sattel, Gersau, Thalheim, Wittnau, Buttes, Witteberg, Kalpetran, Bitsch, Brig, Cadenazzo, Raron, Gampel-Steg, Leuk, Sembrancher, Bovernier, Riddes. European, in Switzerland abundant, population density increasing. Altitudinal range: 208–932 m a.s.l.

* *Dasineura glechomae* (KIEFFER, 1889)
Leaf galls on growing tops of *Glechoma hederacea* L. Locality: Gams, 500 m a.s.l. European. Single record for Switzerland.

Dasineura hyperici (BREMI, 1847)
Leaf bud galls on *Hypericum perforatum* L. Localities: Sattel, Les Geneveys, Kalpetran, Fürgangen-Bellwald, Grengiols, Bovernier. European, in Switzerland occurring moderately, population density increasing. Altitudinal range: 408–1120 m a.s.l.

Dasineura irregularis (BREMI, 1847) (*D. acercrispans* KIEFFER, 1888)
Wrinkled leaves of *Acer pseudoplatanus* L. Attacked leaves are curled and unregularly rolled upwards, veins are hypertrophied and slightly swollen. VOGLER (1906), MOREILLON (1916). Localities: Weite, Einsiedeln, Wildegg, Erlinsbach, Saalhöhe, Wittnau, Brugg, Gipf-Oberfrick, Les Geneveys, Neuchâtel, Courgenay, Witteberg, Worb. European. In Switzerland occurring considerably, population density increasing. Altitudinal range: 344–882 m a.s.l.

Dasineura jaapi (RÜBSAAMEN, 1914)
Terminal leaf bud gall on *Veronica fruticans* Jacq. MOREILLON (1922). European, distribution area restricted. In Switzerland sporadically at 1850 m a.s.l.

* *Dasineura kellneri* (HENSCHEL, 1875) (*D. laricis* F. LÖW, 1878)
A single larva changes the lateral bud of *Larix decidua* Mill. into a gall which is covered with resin. Localities: Brig, Sembrancher, Bovernier. Euro-Siberian, extending up to Western Siberia (SKUHRAVÁ & SKUHRAVÝ, 1993). In Switzerland scarce. Altitudinal range: 700–716 m a.s.l.

Dasineura kiefferiana (RÜBSAAMEN, 1891)
Rolled leaf margins of *Epilobium angustifolium* L. MOREILLON (1922). Euro-Siberian. Single record for Switzerland. Galls were found at 960 m a.s.l.

* *Dasineura lamiicola* (MIK, 1888)
Swollen axillar or terminal leaf buds on *Lamium maculatum* L. Locality: Bowil, 706 m a.s.l. European, distribution area small. Single record for Switzerland.

* *Dasineura lathyri* (KIEFFER, 1909)
Pod-like galls formed by leaflets of *Lathyrus pratensis* L. Locality: Brugg, 500 m a.s.l. Euro-Siberian. Single record for Switzerland.

* *Dasineura lathyricola* (RÜBSAAMEN, 1890)
Galls formed by two terminal discoloured stipules, including deformed leaves, on *Lathyrus pratensis* L. Localities: Gams, Sattel, Wildegg, Brugg, Frutigen, Boltigen, Kalpetran. Euro-Siberian. In Switzerland occurring considerably. Altitudinal range: 500–1000 m a.s.l.

* *Dasineura lupulinae* (KIEFFER, 1891)
Pea-sized oval or round galls on stems of *Medicago lupulina* L., densely covered with white hairs. Locality: Moutier, 590 m a.s.l. European. Single record for Switzerland.

Dasineura mali (KIEFFER, 1904)
Galls are formed by red coloured, rolled leaf margins of *Malus sylvestris* Mill. and cultivars. CARL (1978, 1980) mentioned this species as a pest. Localities: Gipf-Oberfrick, Moutier. European, secondarily Holarctic. At present scarce in nature. Altitudinal range: 344–590 m a.s.l.

Dasineura medicaginis (BREMI, 1847) (*D. ignorata* WACHTL, 1884)
Onion-shaped bud galls on the main or side shoots of *Medicago sativa* L. and *M. falcata* L. MOREILLON (1913, 1922). Localities: Thalheim, Neuchâtel, Courgenay, Moutier, Witteberg, Worb, Gampel-Steg, Leuk, Sierre, Bovernier, Saxon. Euro-Siberian, in Switzerland occurrence considerable, population density increasing. Altitudinal range: 465–712 m a.s.l.

* *Dasineura periclymeni* (RÜBSAAMEN, 1889)
Rolled leaf margins of *Lonicera periclymenum* L. Locality: Steinerberg, Gersau. European, in Switzerland scarce. Altitudinal range: 450–540 m a.s.l.

Dasineura phyteumatis (F. LÖW, 1885)
Swollen, unopened flower buds of *Phyteuma orbiculare* L. and *P. spicatum* L. HIERONYMUS (1890), CORTI (1904), MOREILLON (1913, 1922), TROTTER (1923). Locality: Oberalppass. European, sub-Alpine and Alpine, with typical islet-formed occurrence. In Switzerland scarce. Altitudinal range: 920–2300 m a.s.l.

Dasineura plicatrix (H. LOEW, 1850)
Contorted and twisted leaves of *Rubus caesius* L. VOGLER (1906). Localities: Sevelen, Sattel, Steinerberg, Immensee, Gersau, Wildegg, Thalheim, Erlinsbach, Saalhöhe, Gipf-Oberfrick, Les Geneveys, Neuchâtel, Champ-du-Moulin, Buttes, Courgenay, Moutier, Witteberg, Worb, Bowil, Kalpetran, Brig, Cadenazzo, Raron, Sembrancher, Bovernier, Saxon, Riddes. European, distribution area large. It belongs to the three most common species in Switzerland. Altitudinal range: 208–932 m a.s.l.

* *Dasineura populeti* (RÜBSAAMEN, 1889)
Rolled leaf margins of *Populus tremula* L. Localities: Biberbrugg, Saalhöhe, Col de la Tourne, Kandersteg, Frutigen, Bowil. Euro-Siberian, distribution area large. In Switzerland occurring moderately. Altitudinal range: 706–1176 m a.s.l.

Dasineura pseudococcus (THOMAS, 1890)
A single larva develops under the epidermis of the leaf of *Salix aurita* L. THOMAS (1890). European. Single record for Switzerland.

* *Dasineura pustulans* (RÜBSAAMEN, 1889)
A single larva developes in a small depression on the leaf of *Filipendula ulmaria* (L.) Maxim. Localities: Gams, Biberbrugg, Sattel, Immensee, Einsiedeln, Erlinsbach, Saalhöhe, Wittnau, Thalheim, Champ-du-Moulin, Buttes. European, distribution area large. In Switzerland occurring considerably. Altitudinal range: 500–932 m a.s.l.

Dasineura pyri (BOUCHÉ, 1847)
Rolled leaf margins of *Pyrus communis* L. CORTI (1904), MOREILLON (1913). CARL (1982) and ANTONIN (1984) mentioned this species as a pest of pear trees. Localities: Gipf-Oberfrick, Bovernier, Saxon. European, secondarily Holarctic. In Switzerland scarce in nature at present. Altitudinal range: 344–712 m a.s.l.

Dasineura ranunculi (BREMI, 1847)
Cornet-shaped rolled leaves of *Ranunculus bulbosus* L. and *R. acris* L. VOGLER (1906), MOREILLON (1916). Localities: Biberbrugg, Immensee, Erlinsbach, Brugg, Einsiedeln, Thalheim, Champ-du-Moulin, Buttes, Kandersteg, Moutier, Boltigen, Oberwil, Wimmis, Witteberg, Sembrancher, Bovernier. Euro-Siberian, distribution area large. In Switzerland abundant, population density increasing. Altitudinal range: 550–1176 m a.s.l.

Dasineura rhododendri (KIEFFER, 1909)
Leaf bud galls on *Rhododendron ferrugineum* L. MOREILLON (1922). Locality: Oberalppass. European, sub-Alpine and Alpine, distribution area disjunctive. In Switzerland scarce. Altitudinal range: 950–2044 m a.s.l.

Dasineura rubella (KIEFFER, 1896)
Wrinkled and curled young leaves of *Acer campestre* L. VOGLER (1906), MOREILLON (1916, 1922). Localities: Gams, Sevelen, Steinerberg, Gersau, Thalheim, Asp, Erlinsbach, Wittnau, Brugg, Gipf-Oberfrick, Champ-du-Moulin, Kandersteg, Courgenay, Moutier, Witteberg, Sierre, Sembrancher. Euro-Siberian. In Switzerland abundant, population density increasing. Altitudinal range: 344–1176 m a.s.l.

* *Dasineura senecionis* (RÜBSAAMEN, 1916)
Larvae develop among flowers inside the capitulum of *Senecio jacobaea* L. Locality: Les Geneveys. European. Single record for Switzerland.

Dasineura strumosa (BREMI, 1847) (*D. galeobdolontis* WINNERTZ, 1853)
Leaf bud galls on *Lamium galeobdolon* (L.) Nath. MOREILLON (1913). Localities: Sevelen, Weite, Champ-du-Moulin. European, in Switzerland scarce. Altitudinal range: 460–600 m a.s.l.

Dasineura subpatula (BREMI, 1847)
Larvae among leaves at the stem tip of *Euphorbia amygdaloides* L. MOREILLON (1922). European. In Switzerland scarce. Altitudinal range: 427–800 m a.s.l.

* *Dasineura tetensi* (RÜBSAAMEN, 1891)
Crumpled leaves on terminal shoots of *Ribes nigrum* L. Locality: Col de la Tourne, 1166 m a.s.l. Euro-Siberian. Single record for Switzerland.

* *Dasineura teucrii* (TAVARES, 1903)
Deformed leaf buds of *Teucrium chamaedrys* L. Localities: Bitsch, Saxon. Sub-Mediterranean. In Switzerland scarce. Altitudinal range: 465–730 m a.s.l.

Dasineura thomasi (KIEFFER, 1909)
Rolled leaf margin of *Campanula cochlearifolia* Lam. THOMAS (1892). Locality: Col de la Tourne. European, montane, sub-Alpine, and Alpine. In Switzerland scarce. Altitudinal range: 1000–1166 m a.s.l.

* *Dasineura thomasiana* (KIEFFER, 1888)
Larvae induce leaf bud galls of *Tilia platyphyllos* Scop. and *T. cordata* Mill. Localities: Gams, Erlinsbach, Saalhöhe, Brugg, Gipf-Oberfrick, Les Geneveys, Neuchâtel, Col de la Tourne, Buttes, Kandersteg, Frutigen, Courgenay, Moutier, Boltigen, Witteberg, Cadenazzo, Raron, Riddes, Andermatt. European, in Switzerland abundant, population density increasing. Altitudinal range: 208–1436 m a.s.l.

Dasineura tiliae (SCHRANK, 1803) (*D. tiliamvolvens* RÜBSAAMEN, 1889)
Rolled swollen leaf margins of *Tilia platyphyllos* Scop. and *T. cordata* Mill. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922). Localities: Thalheim, Les Geneveys, Neuchâtel. Euro-Siberian, distribution area large. In Switzerland occurring moderately, population density decreasing. Altitudinal range: 500–800 m a.s.l.

Dasineura tortilis (BREMI, 1847) (*D. alni* F. LÖW, 1877)
Folded leaves with thickened veins on *Alnus incana* (L.) Moench. and *A. rotundifolia* Miller. MOREILLON (1922). Localities: Biberbrugg, Sattel, Saalhöhe, Thalheim, Kandersteg, Frutigen, Oberwil, Kalpetran, Bitsch, Oberwald. European, in Switzerland occurring considerably, population density increasing. Altitudinal range: 440–1176 m a.s.l.

* *Dasineura tortrix* (F. LÖW, 1877)
Terminal leaf bud galls on *Prunus spinosa* L. Localities: Gams, Sevelen, Les Geneveys. European . In Switzerland scarce. Altitudinal range: 460–700 m a.s.l.

* *Dasineura trifolii* (F. LÖW, 1874)
Folded leaflets of *Trifolium repens* L. Localities: Gams, Sevelen, Biberbrugg, Immensee, Thalheim, Brugg, Gipf-Oberfrick, Col de la Tourne, Kandersteg, Courgenay, Boltigen, Oberwil, Wimmis, Witteberg, Worb, Bowil, Bitsch, Fürgangen-Bellwald, Brig, Bovernier, Riddes. Euro-Siberian, secondarily Holarctic. In Switzerland abundant, population density increasing. Altitudinal range: 344–1176 m a.s.l.

* *Dasineura tympani* (KIEFFER, 1909)
Circular parenchymous galls on leaves of *Acer campestre* L. Localities: Gams, Sevelen, Weite, Steinerberg, Immensee, Thalheim, Asp, Erlinsbach, Wittnau, Brugg, Gipf-Oberfrick, Neuchâtel, Champ-du-Moulin, Kandersteg, Moutier, Sierre, Sembrancher, Saxon. European, more abundant in southern parts. In Switzerland abundant, population density increasing. Altitudinal range: 450–1176 m a.s.l.

Dasineura ulmaria (BREMI, 1847)
Small hemispherical galls on leaves of *Filipendula ulmaria* (L.) Maxim. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922). Localities: Biberbrugg, Immensee, Einsiedeln, Erlinsbach, Saalhöhe, Wittnau, Sattel, Thalheim, Champ-du-Moulin, Buttes, Oberwil, Wimmis, Cadenazzo. Euro-Siberian, distribution area large. In Switzerland occurring considerably. Altitudinal range: 208–932 m a.s.l.

Dasineura urticae (PERRIS, 1840)
Unilocular small swellings on leaves and flowers of *Urtica dioica* L. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922). Localities: Immensee, Les Geneveys, Col de la Tourne, Frutigen, Courgenay, Bowil, Kalpetran, Cadenazzo, Saxon, Andermatt. Euro-Siberian, distribution area large. In Switzerland occurring considerably, population density stable. Altitudinal range: 208–1645 m a.s.l.

* *Dasineura viciae* (KIEFFER, 1888)
Pod-loke galls formed by leaflets of *Vicia sepium* L. Localities: Einsiedeln, Wildegg, Wittnau, Champ-du-Moulin, Boltigen, Oberwil, Wimmis, Witteberg. Euro-Siberian, distribution area large. In Switzerland occurring considerably. Altitudinal range: 600–1000 m a.s.l.

Dasineura violae (F. LÖW, 1880)
Larvae cause rosette leaf gall on *Viola tricolor* L. ssp. *arvensis* Murr. DESHUSSES & DESHUSSES (1934). European. Single record for Switzerland.

* *Dasineura virgaeaureae* (LIEBEL, 1889)
Leaf bud galls at the growing tips of *Solidago virgaurea* L. Localities: Neuchâtel, Col de la Tourne. European, in Switzerland scarce. Altitudinal range: 500–1166 m a.s.l.

* *Dasineura xylostei* (KIEFFER, 1909)
Small parenchymous leaf galls on *Lonicera xylosteum* L. Locality: Sevelen. European. Single record for Switzerland.

Didymomyia tiliacea (BREMI, 1847) (*D. reaumuriana* F. LÖW, 1878)
Woody galls on the leaves of *Tilia platyphyllos* Scop. and *T. cordata* Mill. CORTI (1904), MOREILLON (1913, 1922). Localities: Sevelen, Thalheim, Erlinsbach, Brugg, Gipf-Oberfrick, Saalhöhe, Neuchâtel, Frutigen, Riddes. Euro-Siberian, distribution area large. In Switzerland occurring considerably, population density stable. Altitudinal range: 344–950 m a.s.l.

* *Drisina glutinosa* GIARD, 1893
A single larva lives in small depression on the lower surface of the leaf of *Acer pseudoplatanus* L. Localities: Flums, Saalhöhe, Biberbrugg, Sattel, Steinerberg, Immensee, Wildegg, Thalheim, Asp, Erlinsbach, Wittnau, Brugg, Gipf-Oberfrick, Les Geneveys, Neuchâtel, Col de la Tourne, Champ-du-Moulin, Kandersteg, Frutigen, Courgenay, Moutier, Boltigen, Oberwil, Wimmis, Worb, Gampel-Steg, Andermatt. European. One of the three most common species in Switzerland. Altitudinal range: 344–1436 m a.s.l.

* *Geocrypta braueri* (HANDLIRSCH, 1884)
Leaf bud galls on underground parts of shoots of *Hypericum perforatum* L. Locality: Les Geneveys, 700 m a.s.l. European, more abundant in southern parts of Europe. Single record for Switzerland.

Geocrypta galii (H. LOEW, 1850)
Swellings on stems of *Galium mollugo* L. MOREILLON (1913, 1916, 1922); TROTTER (1923) recorded galls on *Galium asperum* Schreb. at Bernina Hospiz GR, 2300 m a.s.l. Localities: Sevelen, Sattel, Steinerberg, Asp, Saalhöhe, Wittnau, Brugg, Gipf-Oberfrick, Col de la Tourne, Champ-du-Moulin. Euro-Siberian, distribution area large. In Switzerland occurring considerably, population density increasing, largest known altitudinal span: 344–2300 m a.s.l.

Geocrypta trachelii (WACHTL, 1885)
Terminal or axillary bud galls on *Campanula rotundifolia* L. MOREILLON (1913, 1922). European. In Switzerland scarce. Since 1922 galls have not been observed. Probably a disappeared species.

* *Gephyraulus raphanistri* (KIEFFER, 1886)
Swollen unopened flower bud galls of *Raphanus raphanistrum* L. Locality: Raron, 590 m a.s.l. European. Single record for Switzerland.

Harmandia cavernosa (RÜBSAAMEN, 1888)
A solitary larva produces a large, thick walled gall on the leaf of *Populus tremula* L. with an opening on the upper leaf surface. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922). Localities: Kandersteg, Bovernier. Euro-Siberian, distribution area large. In Switzerland scarce at present, more abundant at the beginning of the 20th century. Belongs to species with decreasing population density. Altitudinal range: 570–1176 m a.s.l.

Harmandia globuli KIEFFER, 1909
A solitary larva causes a small, thin walled gall on the upper surface of the leaf of *Populus tremula* L. with an opening on the lower leaf surface. CORTI (1904), MOREILLON (1913, 1916). Localities: Flums, Bovernier. Euro-Siberian, distribution area large. In Switzerland scarce. Altitudinal range: 450–840 m a.s.l.

* *Harmandia populi* RÜBSAAMEN, 1917
A solitary larva produces a small, thin walled gall on the lower surface of the leaf of *Populus tremula* L. with an opening on the upper leaf surface. Localities: Flums, Kandersteg, Bovernier. Euro-Siberian. In Switzerland scarce. Altitudinal range: 450–1176 m a.s.l.

Harmandia pustulans KIEFFER, 1909
Pustule-like galls with very thin walls on the leaf of *Populus tremula* L. MOREILLON (1916). European, distribution area restricted. Single record for Switzerland.

Harmandia tremulae (WINNERTZ, 1853) (*H. loewi* RÜBSAAMEN, 1892)
A single larva produces a large, thick walled globular gall on the upper surface of the leaf of *Populus tremula* L. HIERONYMUS (1890). European, distribution area large. Single record for Switzerland.

* *Harrisomyia vitrina* (KIEFFER, 1909)
A single larva causes a small pustule gall on the leaf of *Acer pseudoplatanus* L. Localities: Biberbrugg, Sattel, Immensee, Gersau, Einsiedeln, Asp, Les Geneveys. Central European, mountain species (SKUHRAVÁ, 1987). In Switzerland occurring considerably. Altitudinal range: 540–932 m a.s.l.

Hartigiola annulipes (HARTIG, 1839)
Cylindrical galls on the upper surface of the leaves of *Fagus sylvatica* L. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916). Localities: Sattel, Gersau, Thalheim, Asp, Saalhöhe, Brugg, Wildegg, Les Geneveys, Neuchâtel, Col de la Tourne, Champ-du-Moulin, Buttes, Courgenay, Moutier, Oberwil, Wimmis, Witteberg, Worb, Bowil. European. In Switzerland abundant, population density stable. Altitudinal range: 500–1300 m a.s.l.

Hygrodiplosis vaccinii (KIEFFER, 1897)
Rolled leaf galls on *Vaccinium uliginosum* L. THOMAS (1902) mentioned that this species was in his time a very abundant species in the Alpine and in the sub-nival zones. He found galls at nine localities in Switzerland in altitudes between 1882–2555 m a.s.l. European, Alpine.

Iteomyia capreae (WINNERTZ, 1853)
Small globular galls visible on both surfaces of the leaf on *Salix caprea* L. and *S. aurita* L. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922), HOUARD (1919). Localities: Einsiedeln, Asp, Saalhöhe, Buttes, Grengiols, Sembrancher, Riddes. Euro-Siberian, distribution area large. In Switzerland occurring considerably, population density decreasing. Altitudinal range: 485–1780 m a.s.l.

Jaapiella alpina (F. LÖW, 1885)
Larvae produce galls on the top of a stem of *Silene alpina* (L.) Jacq. HIERONYMUS (1890) reported galls found at an altitude of 2300 m at a glacier field near Zermatt VS. Alpine and sub-Alpine species with disjunct area of distribution in mountains of the western part of the Euro-Siberian subregion (SKUHRAVÁ, 1987).

Jaapiella bryoniae (BOUCHÉ, 1847)
Larvae develop gregariously among swollen, deformed young leaves of the growing top of *Bryonia dioica* L. MOREILLON (1913). Locality: Neuchâtel. European. In Switzerland scarce.

* *Jaapiella cirsiicola* RÜBSAAMEN, 1915
Larvae live in flower heads of *Cirsium arvense* (L.) Scop. Localities: Buttes, Col de la Tourne. Euro-Siberian. In Switzerland scarce. Altitudinal range: 550–1166 m a.s.l.

* *Jaapiella compositarum* (KIEFFER, 1888)
Larvae live in flower heads of *Hieracium* sp. Locality: Bowil, 706 m a.s.l. European. Single record for Switzerland.

Jaapiella floriperda (F. LÖW, 1888)
Larvae develop in swollen flower buds of *Silene vulgaris* (Moench.) Garcke. CORTI (1904), MOREILLON (1913, 1922). Localities: Kalpetran, Bitsch, Grengiols. European. In Switzerland occurring moderately. Altitudinal range: 450–1150 m a.s.l.

Jaapiella genisticola (F. LÖW, 1877)
Larvae cause leaf galls on the growing top of *Genista tinctoria* L. HIERONYMUS (1890), MOREILLON (1916). Euro-Siberian. Single records for Switzerland.

* *Jaapiella hedickei* RÜBSAAMEN, 1921
Larvae develop in swollen leaf sheaths of *Pimpinella saxifraga* L. Localities: Neuchâtel, Fürgangen-Bellwald. Euro-Siberian. In Switzerland scarce. Altitudinal range: 500–1120 m a.s.l.

* *Jaapiella knautiae* RÜBSAAMEN, 1917
Leaf bud gall at the growing top of *Knautia arvensis* (L.) Coult. and other species of the genus *Knautia*. Localities: Gersau, Les Geneveys, Realp. European. In Switzerland scarce. Altitudinal range: 540–1538 m a.s.l.

* *Jaapiella loticola* (RÜBSAAMEN, 1889)
Leaf bud galls on stem of *Lotus corniculatus* L. Localities: Flums, Einsiedeln, Brugg, Neuchâtel, Buttes, Boltigen, Bitsch, Realp. Euro-Siberian, distribution area large. In Switzerland occurring considerably. Altitudinal range: 450–1538 m a.s.l.

* *Jaapiella medicaginis* (RÜBSAAMEN, 1912)
Folded leaflets of *Medicago sativa* L. and *M. falcata* L. Localities: Neuchâtel, Courgenay, Moutier, Witteberg, Worb, Gampel-Steg, Leuk, Sierre, Bovernier. Euro-Siberian. In Switzerland occurring considerably. Altitudinal range: 500–712 m a.s.l.

* *Jaapiella schmidti* (RÜBSAAMEN, 1912)
Larvae live in the seed capsules of *Plantago lanceolata* L. Localities: Flums, Immensee, Wildegg, Erlinsbach, Champ-du-Moulin. European. In Switzerland occurring moderately. Altitudinal range: 450–850 m a.s.l.

Jaapiella veronicae (VALLOT, 1827)
Leaf galls on the growing top of *Veronica chamaedrys* L. Attacked leaves are densely covered with white hairs. BREMI (1847), VOGLER (1906), MOREILLON (1913, 1916, 1922). Localities: Sevelen, Biberbrugg, Sattel, Immensee, Les Geneveys, Neuchâtel, Col de la Tourne, Champ-du-Moulin, Buttes, Kandersteg, Courgenay, Moutier, Boltigen, Worb, Grengiols, Oberwil, Wimmis, Witteberg, Kalpetran, Bovernier, Sembrancher. European. In Switzerland abundant, population density stable, from colline to Alpine zones. Altitudinal range: 408–1810 m a.s.l.

* *Jaapiella volvens* RÜBSAAMEN, 1917
Larvae develop in rolled edges of the leaflets of *Lathyrus pratensis* L. Localities: Flums, Sattel, Wildegg, Frutigen. Euro-Siberian. In Switzerland occurring moderately. Altitudinal range: 450–932 m a.s.l.

Janetiella thymi (KIEFFER, 1888)
Leaf bud galls at the growing top of *Thymus serpyllum* L. VOGLER (1906), MOREILLON (1916). Euro-Siberian. In Switzerland scarce. Altitudinal range: 850–910 m a.s.l.

Kaltenbachiola strobi (WINNERTZ, 1853)
Larvae cause slight swellings on the scales in the cones of *Picea abies* (L.) Karsten. MADZIARA-BORUSIEWICZ (1963). WERMELINGER *et al.* (1995) found that *K. strobi* was present in cone samples obtained from the five main geographic regions of Switzerland at 370–2000 m a.s.l. European species, occurring in Switzerland moderately from colline to Alpine zones.

Kiefferia pericarpiicola (BREMI, 1847) (*K. pimpinellae* F. LÖW, 1874)
Larvae change fruits of *Pimpinella saxifraga* L. and *Daucus carota* L. into galls. BREMI (1847), HIERONYMUS (1890). Localities: Weite, Fürgangen-Bellwald. Euro-Siberian, distribution area large. In Switzerland scarce. It seems to be a disappearing species. Altitudinal range: 460–1120 m a.s.l.

* *Lasioptera arundinis* SCHINER, 1854
Larvae produce a thickening and shortening of lateral shoots of *Phragmites australis* (Cav.) Trin. Locality: Raron, 590 m a.s.l. European. Single record for Switzerland.

* *Lasioptera carophila* F. LÖW, 1874
Larvae cause swellings at the point of insertion of the umbellules in inflorescences of *Pimpinella saxifraga* L. Localities: Fürgangen-Bellwald, Gampel-Steg. European, distribution area large. In Switzerland scarce. Altitudinal range: 580–1120 m a.s.l.

Lasioptera rubi (SCHRANK, 1803)
Larvae produce swellings on stems of *Rubus idaeus* L., *R. caesius* L. and other species of the genus *Rubus*. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1922), DESHUSSES & DESHUSSES (1934). Localities: Sevelen, Weite, Gersau, Thalheim, Erlinsbach, Saalhöhe, Gipf-Oberfrick, Neuchâtel, Champ-du-Moulin, Frutigen, Courgenay, Moutier, Oberwil, Fürgangen-Bellwald, Cadenazzo, Riddes. Euro-Siberian, distribution area large. In Switzerland abundant, population density increasing. Altitudinal range: 208–1120 m a.s.l.

Lestodiplosis coni (KIEFFER, 1920)
Larvae feed predaceously on insect larvae developing in spruce cones (*Picea abies* (L.) Karst. Three males were determined in material sent to us by WERMELINGER *et al.* (1995). European. Single record for Switzerland.

Lestodiplosis holstei KIEFFER, 1920
Larvae together with *L. coni*. Four females were determined in material of WERMELINGER *et al.* (1995). European. Single record for Switzerland.

Loewiola centaureae (F. LÖW, 1875)
Larvae produce blister-like galls on the leaves of *Centaurea scabiosa* L. European. In Switzerland the galls were found by HIERONYMUS (1890) only once at Schuls (=Scuol), 1244 m a.s.l. in Unter-Engadin.

Macrodiplosis dryobia (F. LÖW, 1877)
Larvae cause marginal leaf galls (downwards folded leaf lobe) on *Quercus robur* L. and *Q. petraea* (Matt.) Liebl. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922). Localities: Neuchâtel, Courgenay, Witteberg, Bowil. European, colline species (SKUHRAVÁ, 1987). In Switzerland occurring moderately, population density stable. Altitudinal range: 500–1120 m a.s.l.

Macrodiplosis volvens KIEFFER, 1895
Larvae cause leaf galls (upwards rolled leaf margin situated between two lobes) on *Quercus robur* L. and *Q. petraea* (Matt.) Liebl. CORTI (1904), MOREILLON (1913, 1922). Localities: Courgenay, Witteberg. European. In Switzerland occurring moderately. Altitudinal range: 500–780 m a.s.l.

* *Macrolabis heraclei* (KALTENBACH, 1862) (*M. corrugans* F. LÖW, 1877)
Larvae live in crinkled, folded and unopened young leaves of *Heracleum sphondylium* L. Localities: Flums, Weite, Erlinsbach, Col de la Tourne, Champ-du-Moulin, Buttes, Kandersteg, Courgenay, Boltigen, Oberwil, Wimmis, Worb, Kalpetran, Fürgangen-Bellwald, Oberwald, Grengiols, Sembrancher, Bovernier. Euro-Siberian. In Switzerland abundant, population density increasing. Altitudinal range: 450–1365 m a.s.l.

Macrolabis hieracii RÜBSAAMEN, 1917
Larvae live in deformations at the top of the stem of *Hieracium umbellatum* L. MOREILLON (1913). Localities: Kandersteg, Wimmis, Fürgangen-Bellwald, Brig. European. In Switzerland occurring moderately. Altitudinal range: 550–1176 m a.s.l.

* *Macrolabis lamii* RÜBSAAMEN, 1915
Larvae develop in leaf bud galls at the growing top of *Lamium album* L. Locality: Flums, 450 m a.s.l. European. Single record for Switzerland.

* *Macrolabis luceti* KIEFFER, 1899
Larvae live as inquilines in galls of *Wachtliella rosarum* (Hardy) on *Rosa canina* L. Locality: Brugg, 500 m a.s.l. European. Single record for Switzerland.

* *Macrolabis podagrariae* STELTER, 1962
Larvae cause galls (folded, deformed leaflets) of *Aegopodium podagraria* L. European. In Switzerland solitarily; the galls were found only at Flums, 450 m a.s.l.

* *Macrolabis ruebsaameni* HEDICKE, 1938
Larvae cause galls at growing tops of *Prunella grandiflora* (L.) Schol. Localities: Kandersteg, Frutigen. European. In Switzerland scarce. Altitudinal range: 850–1176 m a.s.l.

* *Macrolabis stellariae* (LIEBEL, 1889)
Larvae develop in galls on vegetative top of *Myosoton aquaticum* (L.) Moench. European. Single record for Switzerland at Brig, at 700 m a.s.l.

Mayetiola destructor (SAY, 1817)
Larvae cause swellings on lower parts of stems of *Triticum vulgare* L. and other cereals. This species was a serious pest in Switzerland (ZOGG *et al.*, 1949, 1950, 1951). Probably primarily European, secondarily Holarctic (SKUHRAVÁ *et al.*, 1984a, b).

Mayetiola poae (BOSC, 1817)
Larvae produce swellings above nodes on the stem of *Poa nemoralis* L. which are covered by numerous root-like white filaments. CORTI (1904), MOREILLON (1913, 1922), TROTTER (1923). European. In Switzerland occurring considerably from colline up to Alpine zones in the past, at present it has not been found. Seems to be a disappeared species. Altitudinal range: 440–1890 m a.s.l.

Microlasioptera flexuosa (WINNERTZ, 1853)
Larvae inside stems of *Phragmites australis* Trin. MOREILLON (1916). European. Single record for Switzerland.

Mikiola fagi (HARTIG, 1839)
Larvae cause pointed, hard, woody galls on leaves of *Fagus sylvatica* L. In each gall only one larva develops. HIERONYMUS (1890), CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922). Localities: Sevelen, Weite, Sattel, Gersau, Einsiedeln, Wildegg, Thalheim, Asp, Wittnau, Brugg, Les Geneveys, Neuchâtel, Col-de-la-Tourne, Champ-du-Moulin, Buttes, Courgenay, Moutier, Oberwil, Wimmis, Witteberg, Worb, Bowil. Central European, montane (SKUHRAVÁ, 1987). In Switzerland abundantly, population density stable. Altitudinal range: 460–1300 m a.s.l.

* *Mikomya coryli* (KIEFFER, 1901)
Larvae cause parenchymous galls on leaves of *Corylus avellana* L. Localities: Zizers, Sevelen, Biberbrugg, Sattel, Erlinsbach, Steinerberg, Immensee, Gersau, Wildegg, Thalheim, Saalhöhe, Wittnau, Col de la Tourne, Champ-du-Moulin, Kandersteg, Moutier, Oberwil, Bowil, Bitsch, Fürgangen-Bellwald, Leuk. European. In Switzerland abundant, population density increasing. Altitudinal range: 450–1176 m a.s.l.

Monarthropalpus flavus (SCHRANK, 1776) (*M. buxi* LABOULENE, 1873)
Larvae cause blister-like galls on leaves of *Buxus sempervirens* L. MOREILLON (1922), DESHUSSES & DESHUSSES (1934). Localities: Weite, Buttes, Sierre. European, secondarily Holarctic. In Switzerland scarce. Altitudinal range: 460–550 m a.s.l.

* *Mycodiplosis melampsorae* (RÜBSAAMEN, 1889)
Larvae mycophagous, feed on uredospores of *Melampsora salicina* Lév. on *Salix caprea* L. Localities: Sattel, Asp, Oberwil. Euro-Siberian. In Switzerland scarce. Altitudinal range: 621–840 m a.s.l.

* *Mycodiplosis saundersi* BARNES, 1927
Larvae mycophagous on rusts on *Cirsium arvense* L. Locality: Zizers, 530 m a.s.l. Euro-Siberian. Single record for Switzerland.

Oligotrophus juniperinus (LINNÉ, 1758)
Galls on terminal or lateral buds of *Juniperus communis* L. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1922). Localities: Grengiols, Bitsch, Raron, Riddes. European (SKUHRAVÁ, 1987; SKUHRAVÁ & SKUHRAVÝ, 1993). In Switzerland occurring moderately, population density stable, from colline to Alpine zones. Altitudinal range: 450–1750 m a.s.l.

Oligotrophus panteli KIEFFER, 1898
Galls on terminal or lateral buds of *Juniperus communis* L. MOREILLON (1916). Locality: Raron. European. In Switzerland scarce, at 590 m a.s.l.

Oligotrophus sabinae KIEFFER, 1898
Galls on terminal buds of *Juniperus sabina* L. THOMAS (1892) mentioned galls of this species found at Zermatt VS, 1880 m a.s.l. European, Alpine.

* *Ozirhincus millefolii* (WACHTL, 1884)
A single larva develops in a swollen achene of *Achillea millefolium* L. Localities: Sevelen, Les Geneveys. Euro-Siberian, distribution area large, secondarily Holarctic. In Switzerland scarce. Altitudinal range: 460–700 m a.s.l.

* *Parallelodiplosis galliperda* (F. LÖW, 1889)
Larvae live as inquilines below the galls of *Neuroterus quercusbaccarum* L. (= *N. lenticularis* Oliv.) (Cynipidae, Hymenoptera) on lower surface of the leaf of *Quercus robur* L. Localities: Zizers, Witteberg, Sierre, Saxon. European. In Switzerland occurring moderately. Altitudinal range: 465–600 m a.s.l.

Physemocecis hartigi (LIEBEL, 1892)
Larvae cause parenchymous galls on the leaves of *Tilia platyphyllos* Scop. and *T. cordata* Mill. CORTI (1904), MOREILLON (1913). Localities: Zizers, Steinerberg, Gersau, Saalhöhe, Brugg, Neuchâtel, Frutigen, Moutier, Cadenazzo. European. In Switzerland occurring considerably. Altitudinal range: 208–850 m a.s.l.

* *Physemocecis ulmi* (KIEFFER, 1909)
Larvae cause small pustule galls on the leaves of *Ulmus minor* Mill. and other *Ulmus* species. Localities: Zizers, Sattel, Wildegg, Thalheim, Neuchâtel, Champ-du-Moulin, Moutier, Wimmis, Raron. European. In Switzerland occurring considerably. Altitudinal range: 500–932 m a.s.l.

* *Placochela ligustri* (RÜBSAAMEN, 1899)
Larvae change flower buds of *Ligustrum vulgare* L. into galls. Localities: Zizers, Sevelen, Steinerberg, Buttes, Riddes. Central European, planare and colline (SKUHRAVÁ, 1987). In Switzerland occurring moderately. Altitudinal range: 450–550 m a.s.l.

* *Placochela nigripes* (F. Löw, 1877)
Larvae develop in unopened swollen flower buds of *Sambucus nigra* L. Localities: Weite, Champ-du-Moulin. European. In Switzerland scarce. Altitudinal range: 460–600 m a.s.l.

Planetella bremii (KIEFFER, 1898)
Biology unknown. European, known from only one record of BREMI (1847).

Planetella brunnea (RÜBSAAMEN, 1892)
Biology unknown. European, known only from the description of RÜBSAAMEN (1892).

Planetella cornuta (BREMI, 1847)
Biology unknown. European, known only from the description of BREMI (1847). The extant specimen in the collection of ETHZ is damaged: without wings, legs, and antennae.

Planetella grandis (MEIGEN, 1804)
Biology unknown. European, known to occur in Switzerland based on a record of BREMI (1847). Very damaged males were found in the collections of the Musée d'Histoire naturelle, Neuchâtel.

Plemeliella abietina SEITNER, 1908
Larvae develop in seeds of *Picea abies* (L.) Karsten. MADZIARA-BORUSIEWICZ (1963) considered *P. abietina* to be the most important species of spruce cones in Switzerland. WERMELINGER *et al.* (1995) found this species in cones samples from the South Alps. European. In Switzerland occurring moderately from montane to Alpine zones. Altitudinal range: 950–1900 m a.s.l.

Plemeliella betulicola (KIEFFER, 1889)
Larvae develop in young deformed terminal leaves of *Betula pubescens* Ehrh. and *B. pendula* Roth. ROSKAM (1979). Euro-Siberian. Single record for Switzerland.

Putoniella pruni (KALTENBACH, 1872) (*P. marsupialis* F. LÖW, 1889)
Larvae produce pouch-shaped swellings along the middle or side veins of *Prunus spinosa* L. VOGLER (1906), MOREILLON (1916). European, sub-Pontic and colline (SKUHRAVÁ, 1987). In Switzerland scarce in the past, not found during our investigations 1993–1996. It seems to be a disappeared species. Altitudinal range: 600–780 m a.s.l.

Rabdophaga degeerii (BREMI, 1847)
Swellings on branches of *Salix purpurea* L. STELTER (1988, 1993) considered this species to be not identical with *R. salicis* (SCHRANK, 1803). European. Single record for Switzerland.

Rabdophaga heterobia (H. LOEW, 1850)
Swollen deformed male catkins of *Salix triandra* L. CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922). Euro-Siberian, distribution area large. In Switzerland it occurred considerably in the past, at present the galls have not been found. It seems to be a disappeared species. Altitudinal range: 400–850 m a.s.l.

Rabdophaga iteobia (KIEFFER, 1890)
Larvae live among leaves, covered with white hairs, forming loose rosette galls at the branch tops of *Salix caprea* L. VOGLER (1906). Localities: Einsiedeln, Wildegg, Saalhöhe, Buttes, Frutigen, Worb, Bovernier. Euro-Siberian, distribution area large. In Switzerland occurring considerably. Altitudinal range: 550–882 m a.s.l.

Rabdophaga marginemtorquens (BREMI, 1847)
Larvae live in rolled leaf margins of *Salix viminalis* L. CORTI (1904), MOREILLON (1913). Localities: Einsiedeln, Wildegg, Thalheim, Erlinsbach, Oberwil, Witteberg. Euro-Siberian, distribution area large. In Switzerland occurring moderately. Altitudinal range: 470–882 m a.s.l.

* *Rabdophaga paliumparens* STELTER, 1977
Slender, pod-like gall on the vegetative tip of *Salix aurita* L. Locality: Sattel, 932 m a.s.l. European. Single record for Switzerland.

Rabdophaga rosaria (H. LOEW, 1850)
Large rosette leaf galls on *Salix alba* L. VOGLER (1906), MOREILLON (1913, 1916, 1922), TROTTER (1923). Localities: Biberbrugg, Einsiedeln, Asp, Oberwil, Bovernier. Euro-Siberian, distribution area large. In Switzerland occurring moderately, population density stable. Altitudinal range: 430–1700 m a.s.l.

Rabdophaga saliciperda (DUFOUR, 1841)
Larvae develop under the bark of the twigs of *Salix alba* L. GANGOLF (1886) mentioned that attacked willows were abundant in lowlands along the river Rhein and in several Swiss cantons. Euro-Siberian, distribution area large. In Switzerland abundant in the past, no records at present. It seems to be a disappeared species.

Rabdophaga salicis (SCHRANK, 1803)
Large swellings on branches of *Salix cinerea* L. and *S. aurita* L. CORTI (1904), MOREILLON (1913, 1916, 1922). Locality: Witteberg. Primarily Euro-Siberian, distribution area large, secondarily Holarctic. In Switzerland occurring moderately in the past, sporadically at present. Seems to be a disappearing species. Altitudinal range: 470–612 m a.s.l.

Rabdophaga strobilina (BREMI, 1847)
Large, cone-shaped galls on *Salix purpurea* L. situated at the end of a branch. BREMI (1847) gave a colour illustration of this gall. Locality: Buttes, 550 m a.s.l. European. Single record for Switzerland.

* *Rabdophaga terminalis* (H. LOEW, 1850)
Larvae develop among terminal, deformed leaves, forming galls on *Salix fragilis* L. Locality: Gams, 500 m a.s.l. Euro-Siberian, distribution area large. Single record for Switzerland.

Resseliella theobaldi (BARNES, 1927)
Larvae develop under the bark of *Rubus idaeus* L. It was pest in Switzerland (BACHMAN, 1950; BAGGIOLINI, 1960). European.

* *Rhopalomyia artemisiae* (BOUCHÉ, 1834)
Large, round or ovoid galls at the top or in the axils of *Artemisia campestris* L. Localities: Bitsch, Stalden, Fürgangen-Bellwald, Raron, Brig, Leuk, Sembrancher, Saxon, Riddes, Gampel-Steg. Sub-Mediterranean, colline (SKUHRAVÁ, 1987). In Switzerland occurring considerably. Altitudinal range: 465–1120 m a.s.l.

Rhopalomyia chrysanthemi (AHLBERG, 1939)
Small galls on the leaves of cultivated forms of *Chrysanthemum* sp. HÄFLINGER (1945) reported on damages caused by this species in Switzerland. It probably originates from eastern Asia (Japan) and was introduced to Europe. At present it has a Holarctic distribution.

* *Rhopalomyia foliorum* (H. LOEW, 1850)
Small ovoid galls on the leaves of *Artemisia vulgaris* L. Localities: Stalden, Brig, Gampel-Steg, Sierre, Saxon, Riddes. Euro-Siberian. In Switzerland occurring moderately. Altitudinal range: 465–800 m a.s.l.

Rhopalomyia hypogaea (F. LÖW, 1885)
Oval, subterranean bud galls, leaf bud galls or stem galls on *Chrysanthemum leucanthemum* L. MOREILLON (1922). Locality: Oberwald. European, montane. In Switzerland scarce. Altitudinal range: 650– 1365 m a.s.l.

Rhopalomyia ptarmicae (VALLOT, 1849)
Larvae change flower heads of *Achillea ptarmica* L. into galls. MOREILLON (1913). European. Single record for Switzerland.

Rhopalomyia ruebsaameni THOMAS, 1893
Larvae produce spongious galls at the base of leaves of *Erigeron uniflorus* L. Galls were found at Arosa GR, at altitudes of 2000–2300 m a.s.l. (THOMAS, 1893). European, Alpine. Single record for Switzerland.

Rhopalomyia tubifex (BOUCHÉ, 1847)
Larvae produce tubular galls at the growing top of *Artemisia campestris* L. MOREILLON (1913, 1922). Euro-Siberian. In Switzerland scarce. Altitudinal range: 460–830 m a.s.l.

Rondaniola bursaria (BREMI, 1847)
Larvae produce cylindrical galls on the leaves of *Glechoma hederacea* L. Localities: Weite, Sattel, Wildegg, Neuchâtel, Champ-du-Moulin, Moutier. European. In Switzerland occurring moderately. Altitudinal range: 460–932 m a.s.l.

Sackenomyia reaumurii (BREMI, 1847) (*Phlyctidobia solmsii* KIEFFER, 1906)
Larvae produce circular pustule galls on the leaves of *Viburnum lantana* L. CORTI (1904), MOREILLON (1913, 1916, 1922). Localities: Asp, Saalhöhe, Col de la Tourne, Oberwil, Saxon. European. In Switzerland it occurs moderately at present, but was more abundant in the past. Altitudinal range: 400–1166 m a.s.l.

* *Schizomyia galiorum* KIEFFER, 1889
Larvae change flower buds of *Galium mollugo* L. into galls. Localities: Zizers, Sattel, Asp, Saalhöhe, Moutier. Euro-Siberian, distribution area large. In Switzerland occurring moderately. Altitudinal range: 530–932 m a.s.l.

* *Semudobia betulae* (WINNERTZ, 1853)
Larvae induce galls on the seeds in catkins of *Betula pubescens* Ehrh. and *B. pendula* Roth. Locality: Weite, 460 m a.s.l. Euro-Siberian, distribution area large, secondarily Holarctic. Single record for Switzerland.

Sitodiplosis mosellana (GÉHIN, 1856)
Larvae feed on the developing grains in the ears of *Triticum vulgare* L. AFFOLTER (1990) reported it to be a pest. European, secondarily Holarctic.

Spurgia capitigena (BREMI, 1847)
Larvae cause large globular leaf galls on vegetative top of *Euphorbia cyparissias* L. HIERONYMUS (1890), CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922), TROTTER (1923). Localities: Zizers, Bitsch, Brig. European, extending to the Mediterranean area. At present it occurs mainly in lower situated localities, in the past it was more abundant and galls were found in localities situated in high mountains. Altitudinal range: 530–1890 m a.s.l.

* *Spurgia esulae* GAGNÉ, 1990
Larvae cause galls on vegetative top of *Euphorbia esula* L. Locality: Sevelen, 460 m a.s.l. European. Single record for Switzerland.

Taxomyia taxi (INCHBALD, 1861)
Artichoke-shaped galls on shoots of *Taxus baccata* L. HIERONYMUS (1890), CORTI (1904), VOGLER (1906), MOREILLON (1913, 1916, 1922), TROTTER (1923). Localities: Immensee, Gipf-Oberfrick. European. In Switzerland abundant in the past, scarce at present. Its population density seems to be decreasing. Altitudinal range: 344–1160 m a.s.l.

* *Thecodiplosis brachyntera* (SCHWÄGRICHEN, 1835)
Larvae develop in a chamber at the base of the pair of needles of *Pinus sylvestris* L. Localities: Biberbrugg, Riddes. Euro-Siberian. In Switzerland scarce. Altitudinal range: 470–830 m a.s.l.

* *Tricholaba trifolii* RÜBSAAMEN, 1917
Larvae live in folded leaflets of *Trifolium pratense* L. Localities: Zizers, Wildegg, Saalhöhe, Wittnau, Kandersteg, Courgenay, Oberwil. Euro-Siberian. In Switzerland occurring considerably. Altitudinal range: 500–1176 m a.s.l.

Wachtliella rosarum (HARDY, 1850)
Larvae produce galls (folded leaflets) on *Rosa canina* L. and other species of *Rosa*. VOGLER (1906), MOREILLON (1916). Localities: Gersau, Saalhöhe, Wittnau, Brugg, Asp, Erlinsbach, Neuchâtel, Buttes, Frutigen, Courgenay, Moutier, Oberwil, Witteberg, Kalpetran, Fürgangen-Bellwald, Brig, Gampel-Steg, Leuk, Sierre, Raron, Bovernier, Saxon. Euro-Siberian, distribution area large. In Switzerland abundant, population density increasing. Altitudinal range: 465–1120 m a.s.l.

Wachtliella stachydis (BREMI, 1847)
Larvae cause large leaf and flower bud galls on *Stachys sylvatica* L. MOREILLON (1922). Localities: Sevelen, Biberbrugg, Einsiedeln, Champ-du-Moulin, Courgenay, Oberwil, Worb. European. In Switzerland occurring considerably. Altitudinal range: 460–882 m a.s.l.

* *Zeuxidiplosis giardi* (KIEFFER, 1896)
Globular galls formed by the terminal leaf pair on *Hypericum perforatum* L. Only one larva develops inside a chamber. Locality: Saalhöhe, 779 m a.s.l.. European, distribution area disjunct (SKUHRAVÁ *et al.*, 1984a, b). *Z. giardi* has been introduced as an agent for biological control against *Hypericum perforatum* to North America and New Zeeland. Single record for Switzerland.

Zygiobia carpini (F. LÖW, 1874)
Larvae produce swellings along the median vein of the leaves of *Carpinus betulus* L. European, distribution area large. Galls were found only once by MOREILLON (1913) at Zurich ZH, 460 m a.s.l.

Unplaced species

Cecidomyia bicolora KIEFFER, 1913
(new name for *C. bicolor* BREMI, 1847, nec *bicolor* MEIGEN, 1818)
BREMI (1847) described only female which he obtained from flies on *Carpinus betulus* ("aus Mücken von *Carpinus betulus*"). Only debris of two specimens is preserved in BREMI's collection in ETHZ.

Cecidomyia frischii BREMI, 1847
BREMI (1847) gave this name to an unnamed and undescribed species; according to BREMI (1847), its damages on willow branches were illustrated by FRISCH (1720). Based on BREMI's information, red larvae damaged the willow bud. This species is probably identical with later described species. The material has been lost.

Cecidomyia gemini BREMI, 1847

BREMI (1847) described this species based on gall only and figured the galls on the main vein of *Hieracium pilosella* L. Galls are ovoid, always two and two galls closely behind each other develop on one leaf. Material is probably lost.

Cecidomyia grisea BREMI, 1847

Biology unknown. BREMI (1847) described a male very shortly, mainly the colour of the body. He caught it in the Botanical garden in Zurich in the middle of May. Material is probably lost.

Cecidomyia limbitorquens BREMI, 1847

Biology unknown. BREMI (1847) described a male and made an illustration of its head. It has a cone-shaped pubescent projection on the frons. This character makes the determination of adults possible. Only debris of three specimens is preserved in BREMI's collection in ETHZ.

Cecidomyia polymorpha BREMI, 1847

BREMI (1847) gave this name to galls of various forms (therefore: "polymorpha") which he observed on the leaves and petioles of *Populus tremula* L. Based on his illustration, it is possible to determine them. Such galls are caused by two later described species: *Harmandia cavernosa* (RÜBSAAMEN, 1888) which causes galls on the leaves, and *Contarinia petioli* (KIEFFER, 1898) on petioles.

Cecidomyia varicolor BREMI, 1847

BREMI (1847) described a male and a female, mainly based on colouration of the body parts. At the end of the description he mentioned that he obtained both adults from moist soil. Material is probably lost.

Number of species forming the present fauna

The present fauna of gall midges of Switzerland, including 237 species, is formed predominantly by phytophagous species (Tab. 1). Larvae cause galls on various host plant species (trees, shrubs and herbaceous plants), or develop in organs of host plants without making galls, or live as inquilines in galls of other gall midges, as *Clinodiplosis botularia* and *Macrolabis luceti* do, and in galls of other insects, for example in galls of gall wasps (Cynipidae, Hymenoptera), as *Parallelodiplosis galliperda* does.

Among the phytophagous gall midges, 80 species cause galls on about 40 species of trees and shrubs, and 126 species induce galls on about 100 herbaceous plant species.

Five species recorded in Switzerland are zoophagous in the larval stage: *Aphidoletes aphidimyza*, *Lestodiplosis holstei*, *L. coni*, *Arthrocnodax coryligallarum*, and *A. erianea*; they feed by sucking lymph on small insects and mites.

Tab. 1. Composition of the gall midge fauna of Switzerland according to biological groups.

Phytophagous species		
gall-making species associated with trees and shrubs	80	34 %
gall-making species associated with herbaceous plants	126	54 %
inquilines	3	1 %
Zoophagous species	5	2 %
Mycophagous species	8	3 %
Species with unknown biology	15	6 %
Total	237	100 %

Eight mycophagous species are in the larval stage associated with rusts and fungi, or develop in various decaying plant matter. *Mycodiplosis melampsorae*, *M. saundersi*, *Clinodiplosis cilicrus* as well as species of the subfamilies Porricondylinae and Lestremiinae belong to mycophagous gall midges.

The biology of the remaining species is unknown. The majority of them was described very briefly by BREMI (1847) on adults caught in nature. Some of them are placed under the genus *Planetella*; several species remain "unplaced" and are, by usage, associated with the genus *Cecidomyia* although they do not belong to this genus in its recent conception.

The number of species of Switzerland is comparable with the gall midge fauna of Slovenia, also a mountainous country, with 219 species (SIMOVA-TOŠIČ *et al.*, 1996), but it is lower than in Italy with 324 species (SKUHRAVÁ & SKUHRAVÝ, 1994), and in Austria whith 384 species. In the latter area the investigations were carried out at 250 localities (SKUHRAVÁ & SKUHRAVÝ, 1992, 1995).

It can be assumed that further investigations in Switzerland will discover other species. Much more needs to be done, especially on non-galling groups of the subfamilies Lestremiinae and Porricondylinae.

Horizontal distribution

The horizontal distribution of the species is analyzed according to their overall occurrence throughout Switzerland. The basis for such an analysis is the number of localities at which a particular species was found, without regarding the local abundance of the species.

In the following part the species found by us are divided into six groups using a logarithmic scale adapted to the total number of collection sites (Tab. 2). For species lacking in our collections, we use data about the occurrence published by earlier researchers.

1. Solitarily occurring species

Galls of 50 species (31 %) have been found at one locality only. About two thirds of them cause galls on various herbaceous plants, the rest is associated with trees and shrubs. Such rare species in the Alpine zone are: *Jaapiella alpina*, *Dasineura jaapi*, *Contarinia helianthemi*, and *C. aconitifloris*. Interesting was finding galls caused by *Dasineura daphnes* (MOREILLON, 1913), *Loewiola centaureae* (HIERONYMUS, 1890) and *Zeuxidiplosis giardi* (our investigations). Galls of *Bremiola onobrychidis*, which were noted by BREMI (1847) as being very abundant, were found at only one locality at present.

Tab. 2. Classes of frequencies used.

Species found at ... localities	Verbal denomination of characters of occurrence
1	solitary
2-3	scarce
4-6	moderate
7-13	considerable
14-26	abundant
27-56	common

2. Scarcely occurring species

Galls of 45 species (28 %) have been found at 2 or 3 localities. More than two thirds of them cause galls on herbaceous plants, the rest is associated with trees and shrubs. *Dasineura bistortae* and *Dasineura thomasi* occur on high mountains. Among coniferous trees, galls of *Cecidomyia pini*, *Dasineura kellneri*, and *Taxomyia taxi* are at present less scarce than they were in the past. *Contarinia aequalis*, *Contarinia melanocera*, and *Spurgia capitigena* occur in Switzerland scarcely although they are relatively abundant in other European countries.

3. Moderately occurring species

Galls of 26 species (16 %) have been found at 4–6 localities. Larvae of 16 species induce galls on shrubs and trees and 10 species develop in galls on herbaceous plants. The most interesting species is *Asphondylia coronillae*, which is the only Mediterranean species known to occur in Switzerland. Galls of *Craneiobia corni* and *Sackenomyia reaumurii* occur at present here and there mostly in lower situated localities. Galls of *Oligotrophus juniperinus* occur scattered on hillsides along the river Rhône in the Wallis. At present the galls of *Macrodiplosis dryobia* occur sporadically, whereas in the past they were more abundant. On the herbaceous plants, the most interesting species was *Rondaniola bursaria* which we found at six localities, the first record 150 years after description of this species by BREMI (1847).

4. Considerably occurring species

Galls of 23 species (14 %) were found at 7–13 localities. About one half cause galls on trees and shrubs, the other half on herbaceous plants. *Rhopalomyia artemisiae* is the most interesting species, found scattered on warm hillsides along the river Rhône in the Wallis. *Geocrypta galii* occurs sporadically from lowlands up to the limits of the Alpine zone and belongs to species with a very broad ecological adaptability, enabling it to inhabit quite different altitudinal zones.

5. Abundantly occurring species

Galls of 15 species (9 %) were found at 14–26 localities. The following 9 species cause galls on trees and shrubs: *Mikiola fagi, Hartigiola annulipes*, *Mikomya coryli*, *Dasineura fraxini*, *Dasineura thomasiana*, *Dasineura rubella*, *D. tympani*, *Lasioptera rubi*, and *Wachtliella rosarum*. Six species develop on herbaceous plants: *Contarinia medicaginis*, *Cystiphora taraxaci*, *Dasineura ranunculi*, *Dasineura trifolii*, *Jaapiella veronicae*, and *Macrolabis heraclei*.

6. Commonly occurring species

Only three species (2 %) were found at 27 and more localities: *Dasineura fraxinea* is the most common species in Switzerland. Galls were found at 36 localities in the period of 1993–1996. Galls of *Drisina glutinosa* and *Dasineura plicatrix* were each found at 27 localities.

Vertical distribution

The composition of the vegetation, including the host plant species for phytophagous gall midges, changes with rising altitude. Therefore, we analyzed the distribution of the species according to the altitudinal zones proposed by ELLENBERG (1978).

In the colline zone (200–500 m a.s.l.) 126 species were found, in the sub-montane zone (500–900 m a.s.l.) 180 species, in the montane zone (900–1500 m a.s.l.) 100 species, in the sub-Alpine zone (1500–1700 m a.s.l.) 17 species, and in the

Alpine zone (1700–2400 m a.s.l.) 20 species (see Fig. 4). Galls of *Hygrodiplosis vaccinii* were found in the Alpine zone and in the sub-nival zone at an altitude of 2555 m a.s.l. Galls of *Jaapiella alpina*, *Dasineura phyteumatis*, and *Geocrypta galii* were found at the highest altitude of 2300 m a.s.l. in the Alpine zone.

The vertical distribution of gall midges in Switzerland is shown by the average numbers of species recorded at localities in separate successive altitudinal belts by 100 meters (Fig. 2). The number of species in altitudinal belts of colline, sub-

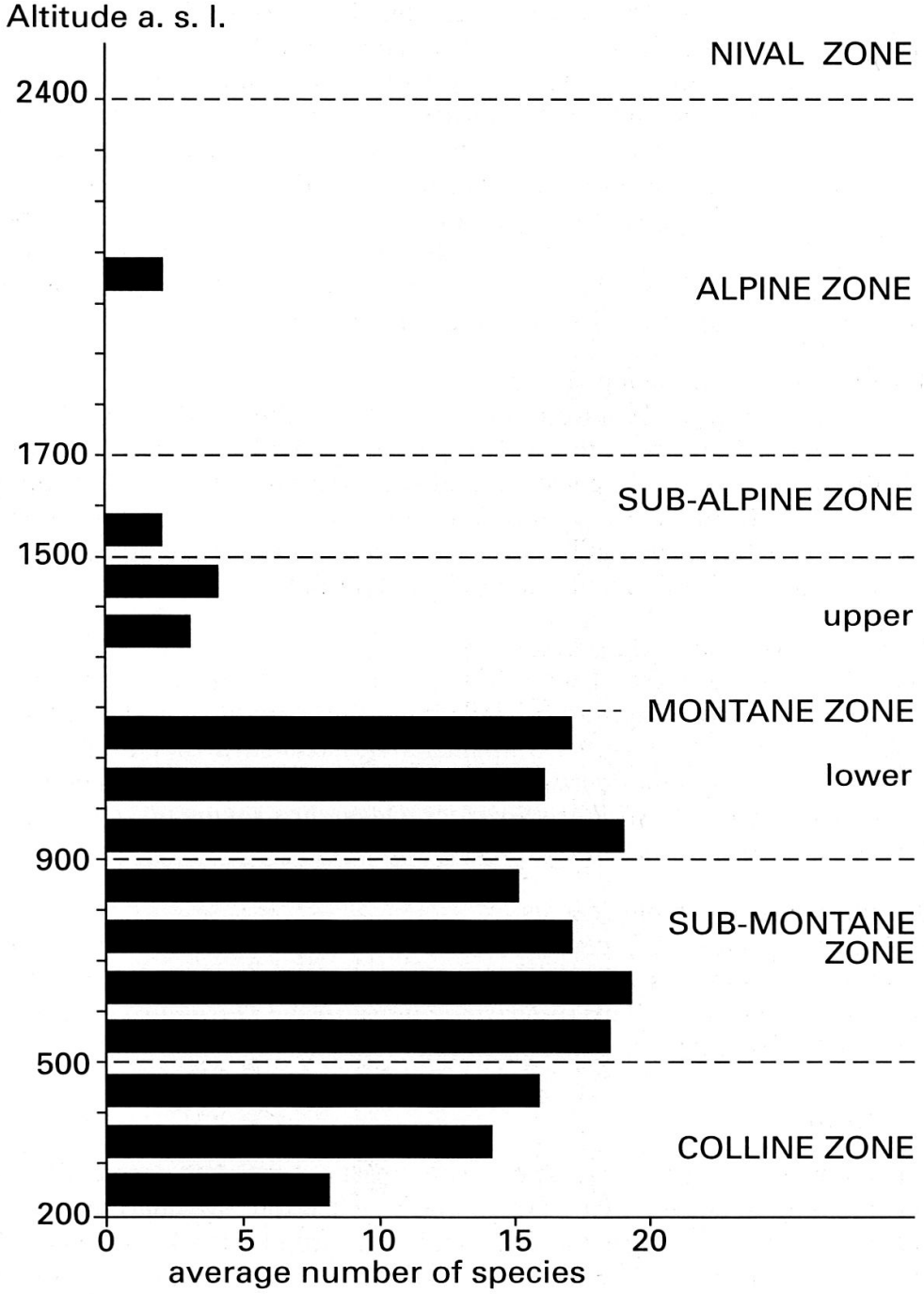

Fig. 2. Vertical distribution of gall midges shown on average species numbers in belts by 100 meters in altitudinal zones of Switzerland. Span of altitudinal zones according to ELLENBERG (1978).

montane and lower part of montane zones is relatively high, with average numbers between 14 to 19. At an altitude of 1200 m a.s.l. it abruptly falls and only two to four species occur in the higher zones. However, these results might be biased by uneven numbers of collections made at the respective altitudes.

The highest average amount, 19 species, was found between 600 and 700 m in the sub-montane zone and between 900 and 1000 m in the lower part of the montane zone.

We recognized 12 types of similar vertical distribution of gall midges, as shown in Fig. 3. Attention has been paid above all to the vertical distribution of spe-

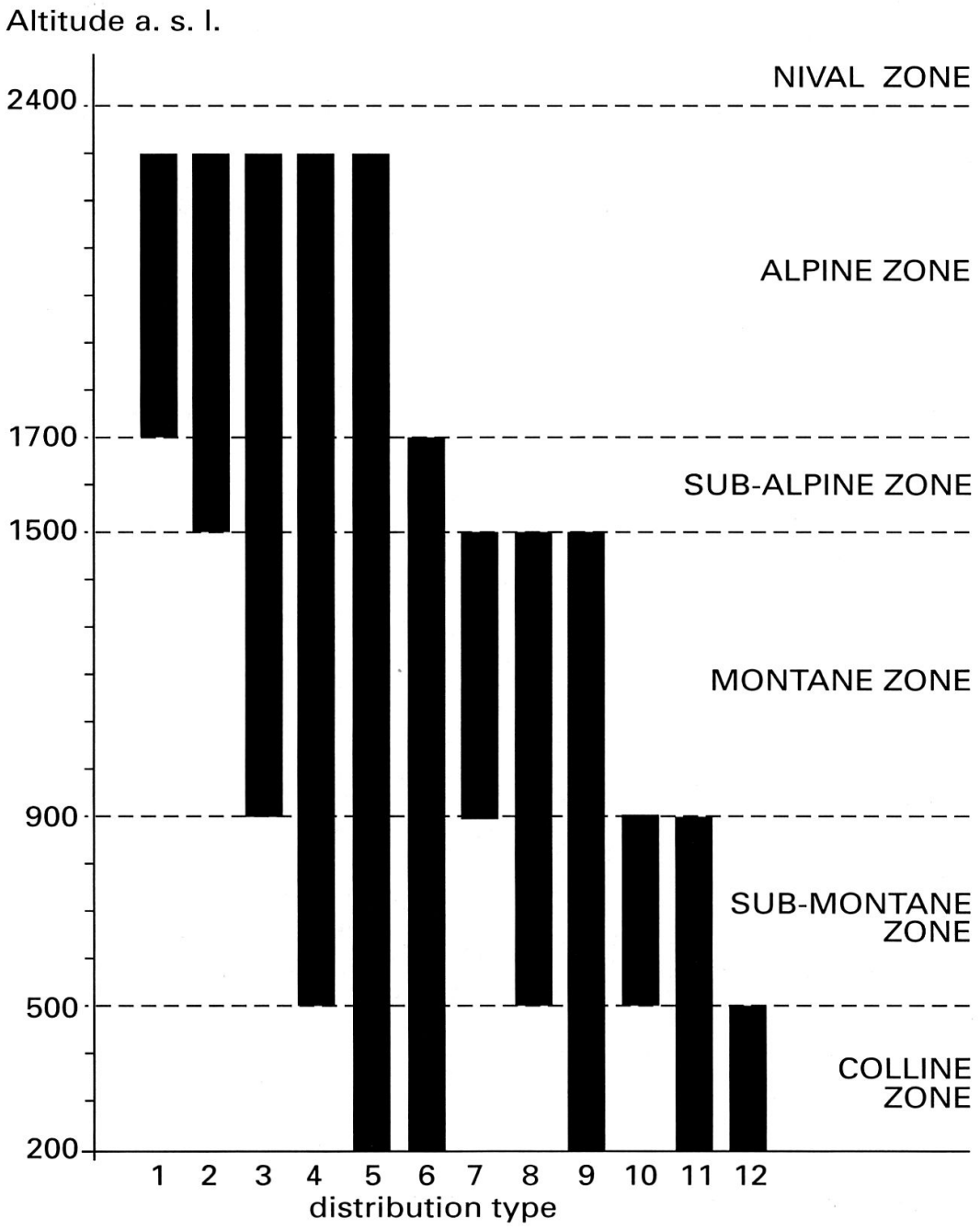

Fig. 3. Diagram of twelve types of vertical distribution recognized in the gall midge fauna of Switzerland. Explanation in the text.

cies associated with trees and shrubs as their host plants. In Fig. 4, we show the vertical distribution range of certain species, representing examples of distribution types 1 to 5 and 8 to 11. Distribution type 6 (colline to sub-Alpine type) is represented by *Dasineura urticae* and *Jaapiella loticola*. Eight species belong to type 7 (montane type), among them *Contarinia aconitifloris* and *C. helianthemi*. In type 12 (colline type) we found *Zygiobia carpini* and 11 additional species at a single locality.

Gall midges as members of zoogeographical units in the Palaearctic Region

The species occurring in Switzerland may be divided, according to their overall distribution, into five groups: European, Euro-Siberian, Mediterranean, sub-Mediterranean, and Holarctic. Sometimes it is difficult to determine the character of a certain species.

About 130 species (58 %) have the centres of distribution in Europe. Their areas may range from very small to large. About 15 species which were decribed by BREMI (1847) are known to occur only in Switzerland. Several species have small areas of distribution, occurring in Switzerland and in one or two adjacent countries. Some species occur abundantly in Switzerland and other countries of Central Europe

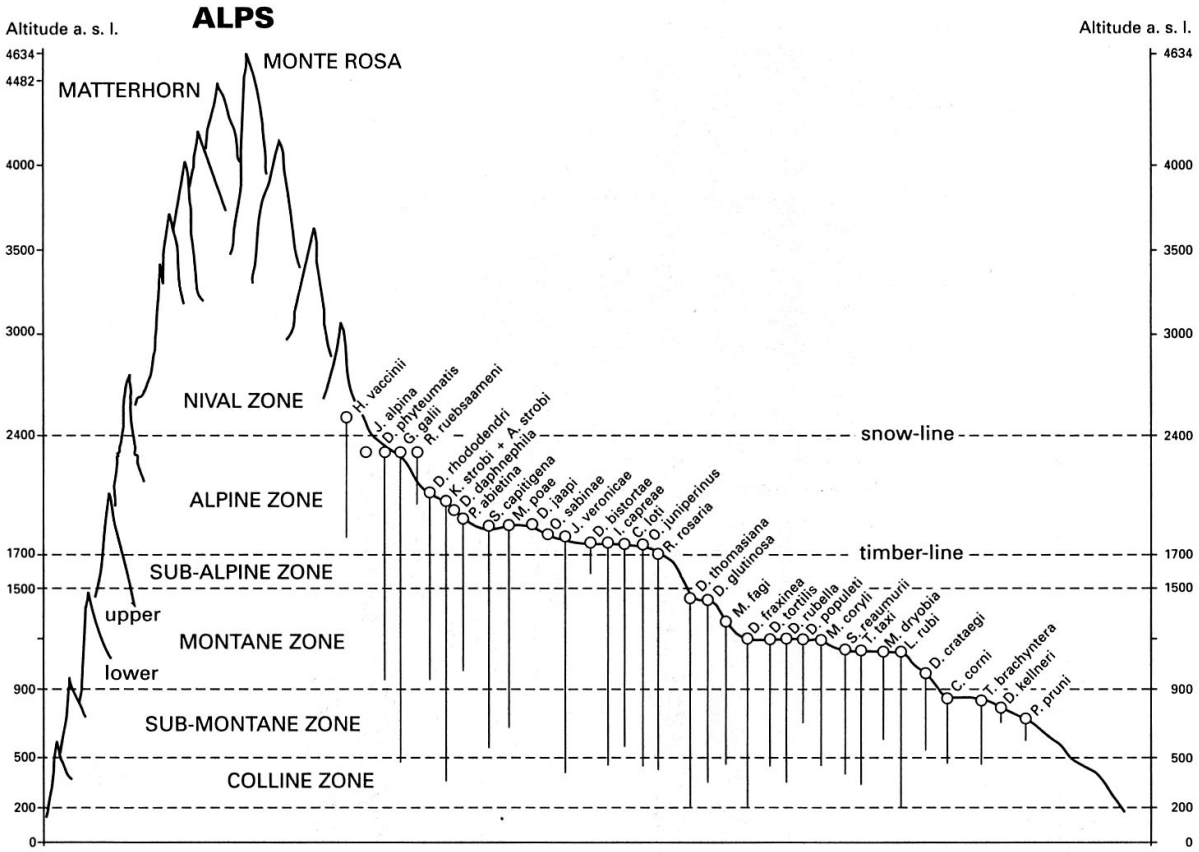

Fig. 4. Scheme of the altitudinal zonation of Switzerland demonstrated on the slope of the highest Swiss mountain, Monte Rosa, 4634 m a.s.l. Of the Alpine zone, all species are mentioned, of the other zones those associated with trees and shrubs. For each species, vertical lines show the altitudinal span found at Swiss localities.

and extend southwards to the Mediterranean and even to North Africa, others extend to the south-east or to western Turkey or the Caucasus. Typical representatives are *Mikiola fagi*, *Taxomyia taxi*, *Macrodiplosis dryobia*, and *Zygiobia carpini*.

Taxomyia taxi is an interesting species. Its host plant, *Taxus baccata*, has a disjunct distribution in Europe, occuring in Asia (Caucausus) and in North Africa. It is a declining species and therefore under strong protection in the Czech and Slovak Republics. *T. taxi* occurs sporadically in Europe. In Switzerland it was abundant in the past and seems to be rare at present.

About 70 species (30%) may be regarded as Euro-Siberian. They occur abundantly in Europe, extend at least to Western Siberia, and few species reach up to the most eastern part of the Palaearctic Region. Typical representatives of Euro-Siberian species are *Harmandia cavernosa*, *H. globuli*, *H. populi*, *Lasioptera rubi*, *Iteomyia capreae*, *Geocrypta galii*, and *Dasineura urticae*.

Nine species (4%) may be considered to be Mediterranean or sub-Mediterranean. They reach the northern limits of their distribution areas in Switzerland. The only true Mediterranean species is probably *Asphondylia coronillae*. In the most southern parts of Switzerland it reaches the northern limit of its area. *Blastomyia origani* and *Dasineura teucrii* may be considered to be sub-Mediterranean elements. *Asphondylia ononidis* occupies a large distribution area and is found in Europe and the Mediterranean; its galls were found also in Libya. *Asphondylia verbasci* reaches the Black and Caspian Seas; it is a sub-Mediterranean and sub-Pontic species.

Two interesting species are associated with *Cytisus (Genistella) sagittalis*. This plant species is extinct in Eastern Europe (MEUSEL *et al.*, 1965). Larvae of *Asphondylia bitensis* change pods into galls, and larvae of *Dasineura cytisi* cause galls on tips of non-flowering stems. Galls of both species are very rare and known to occur, each at only one locality, in France, Switzerland, Austria, the former Yugoslavia, and Rumania, respectively. In Switzerland both species reach the northern limits of their distribution areas.

Rhopalomyia artemisiae and *R. tubifex* may also be regarded as sub-Mediterranean species. Both species occupy relatively large distribution areas in Europe from Denmark in the north to Spain, Italy and Greece in the south, and *R. tubifex* reaches even North Africa. Both species manifest an expressive tendency to inhabit very hot and dry biotopes. This applies also for both species along the river Rhône.

The distribution of 19 species (8%) extends beyond the limits of the Palaearctic Region; they occur in the Nearctic Region as well. Such species are usually named Holarctic although they belong, according to their origin, to the Palaearctic Region. The majority of them has been secondarily transferred or introduced with their host plants, for example with cereal crops, seedlings or similar materials, to other regions. At present, some of them seem even to have a cosmopolitan distribution.

Mayetiola destructor, *Contarinia tritici,* and *Sitodiplosis mosellana*, regarded as Holarctic, are pests, even serious pests, of cereal crops in various parts of the world (SKUHRAVÁ *et al.*, 1984a, b). Three species develop on fruit crops: *Dasineura mali*, *D. pyri,* and *Contarinia pyrivora*; they cause damage to their host plants in orchards and gardens, mainly in North America and in New Zealand. Two species develop on ornamental plants: *Rhopalomyia chrysanthemi* (Asian species) and *Monarthropalpus flavus* (European species), they were probably transferred to North America with seedlings. *Zeuxidiplosis giardi* was introduced to North America and New Zealand to suppress the growth of its host plant, *Hypericum perforatum*, which occurred there as a weed.

Wachtliella rosarum, *Rabdophaga salicis* and *Contarinia tiliarum* were probably unintentionally brought to North America with their host plants, *Ozirhincus millefolii* and *Semudobia betulae* with seeds of their host plants.

The following four species, belonging to phylogenetically old groups, *Campylomyza flavipes* and *Aprionus inquisitor* (Lestremiinae) as well as *Heteropeza pygmaea* and *Miastor metraloas* (Porricondylinae), seem to be truly Holarctic.

Long-term changes in population dynamics

By comparing already published data with those obtained by us, it is possible to recognize changes in population dynamics of particular species. We classify the frequency of occurrence of species found by earlier researchers by means of the frequency scale given in Tab. 2. According to the type of long-term changes in population dynamics in Switzerland, we distinguish six groups of species as shown below.

In the following parentheses after the species' name, the number before the fraction line stands for the number of localities where the species was found in the past, the one after the fraction line for 1993–1996.

1. Species with stable density

The population density of such species is approximately at the same level as it was in the past. Species with stable density may have high, middle and low level frequencies, respectively, in the past as well as at present. Ten species may belong to this group. Three species had a relatively high level of density in the past and they occur abundantly at present: *Mikiola fagi* (20/22), *Hartigiola annulipes* (14/19) and *Jaapiella veronicae* (13/21). BREMI (1847) wrote about *Jaapiella veronicae*: "everywhere in the canton Zurich, quite common." Also VOGLER (1906) mentioned this species to be abundant at St. Gallen.

Three species which had a middle level frequency in the past occur in considerable numbers at present: *Dasineura crataegi* (12/12), *Dasineura urticae* (10/10), and *Didymomyia tiliacea* (9/9). Four species with relatively low density in the past occur in moderate numbers at present: *Rabdophaga rosaria* (7/5), *Contarinia tiliarum* (6/4), *Macrodiplosis dryobia* (6/4), and *Oligotrophus juniperinus* (5/4).

2. Species with increasing density

There are gall midges whose population density rose during the second half of the 20th century. Sometimes species with such levels of density may become pests, as has happened in the Czech Republic with *Thecodiplosis brachyntera* (SKUHRAVÝ, 1991) and *Drisina glutinosa* and *Harrisomyia vitrina* (SKUHRAVÁ & SKUHRAVÝ, 1986).

About 20 species may be included here. Two of them described by BREMI (1847) were in the past locally common or abundant: The density of *D. medicaginis* increased slightly (5/11) and that of *D. fraxini* rather more (11/16).

Eight species, which occurred sporadically in the past, are at present more abundant: *Dasineura tortilis* (2/10), *D. ranunculi* (3/16), *Geocrypta galii* (4/10), *Cystiphora taraxaci* (4/18), *Lasioptera rubi* (4/16), *Dasineura irregularis* (4/13), *Wachtliella rosarum* (3/22), and *Dasineura rubella* (6/17). *Dasineura hyperici* (1/6) and *D. plicatrix* (1/27) each were known from only one record of BREMI

(1847); the latter belongs at present even to the three most common species in Switzerland.

Eight species were not observed in the past: *Dasineura tympani* (0/18), *Macrolabis heraclei* (0/18), *Dasineura thomasiana* (0/19), *Contarinia medicaginis* (0/20), *Mikomya coryli* (0/21), *Dasineura trifolii* (0/21), *Drisina glutinosa* (0/27), and *Dasineura fraxinea* (0/36). At present they occur abundantly, or even commonly. The last two are among the most common ones.

3. Species with decreasing density

Some species were abundant in the past; their population density sank during the second half of the 20th century. Nine species may be included into this group. Five of them were relatively abundant in the past. BREMI (1847) mentioned in the description of *Bremiola onobrychidis* that its galls were so abundant at Dübendorf that all attacked plants were quite destroyed. During the period 1993–1996 we found at one locality in that area only one plant with several galls of *B. onobrychidis*. Also galls of *Sackenomyia reaumurii* occurred according to BREMI (1847) abundantly ("in Masse"). That was in the middle of the 19th century. They were relatively abundant at the beginning of the 20th century, but at present they occur only sporadically.

Similarly, the population density of the following species sank, sometimes markedly: *Taxomyia taxi* (16/2), *Contarinia petioli* (15/1), *Spurgia capitigena* (14/3), *Iteomyia capreae* (12/7), *Craneiobia corni* (10/4), *Harmandia cavernosa* (8/2), and *Dasineura tiliae* (6/3). VOGLER (1906) mentioned that *D. tiliae* occurred commonly at his time.

4. Disappearing species

Disappearing species occurred in the past and their population density fell significantly during the 20th century. Presently they are known only from one or two localities. Three species may be considered to be disappearing. Galls of *Contarinia loti* were abundant in the past. VOGLER (1906) wrote that they occurred everywhere commonly, and also MOREILLON (1922) found them at 12 localities. At present we found galls of *C. loti* only at Buttes NE. Galls of *Kiefferia pericarpiicola* occurred sporadically in the past, having been found at 5 localities; at present we found them only at two localities where only one or two galls were observed. Galls of *Rabdophaga salicis* (6/1) were found here and there in the past, but at present only at Witteberg BE.

5. Disappeared species

Some species, which occurred in the past, were no more recorded by us. It is possible that small populations of such species could survive in hidden places and may be rediscovered in the future. Six species seem to have disappeared from natural habitats: *Contarinia onobrychidis* (3/0), *Mayetiola poae* (10/0), *Rabdophaga heterobia* (7/0), *R. saliciperda* (1/0), *Geocrypta trachelii* (2/0), and *Putoniella pruni* (3/0). About the last one VOGLER (1906) mentioned that at his time it occurred even abundantly at St. Gallen SG.

6. Species insufficiently known

About 180 species cannot be classified because too few data are available; we suppose that they belong to the first or second frequency groups.

Threatened gall midge species

From the point of view of conservation of nature, 18 species may be considered to be vulnerable, endangered or extinct (Tab. 3). However, the evaluation is not as simple as for other animals because gall midges are bound to their host plants which may be injured or even stunted by their attacks. For example, larvae of *Rabdophaga saliciperda* develop under the bark of several species of *Salix*. When this species is locally abundant, it may injure willow stands and become a pest.

Six species completely disappeared and may be considered to be extinct, based on the IUCN definition of this category: "species not definitely located in the wild during the past 50 years."

Three species, regarded as disappearing, may be considered to be endangered, based on IUCN definition: "species in danger of extinction whose survival is unlikely if causal factors continue operating."

Nine species with decreasing population density may be considered to be vulnerable, based on the IUCN definition: "species believed likely to move into the category 'Endangered' in the future if the causal factors continue operating."

Five of the species considered to be threatened in Switzerland are also listed in the categories of threatened species in the Czech Republic (SKUHRAVÁ, 1994): *Contarinia onobrychidis*, *Bremiola onobrychidis*, *Geocrypta trachelii*, *Sackenomyia reaumurii*, and *Craneiobia corni*.

Tab. 3. Threatened gall midge species in Switzerland and their status in the Czech Republic (CR).

Species	Number of localities	Status in the CR in the past (or type of population density)
1. Extinct (disappeared) species with number of localities at which they were found in the past		
Contarinia onobrychidis	3	vulnerable
Mayetiola poae	10	decreasing
Putoniella pruni	3 (abundant)	stable
Rabdophaga heterobia	7	decreasing
R. saliciperda	1 (abundant)	decreasing
Geocrypta trachelii	2	disappearing
2. Endangered (disappearing) species with number of localities at which they were found in the past (first number) and at present (second number)		
Contarinia loti	12 / 1	increasing
Kiefferia pericarpiicola	5 / 2	stable
Rabdophaga salicis	6 / 1	stable
3. Vulnerable species (species with decreasing density) with number of localities at which they were found in the past (first number) and at present (second number)		
Bremiola onobrychidis	1 (abundant) / 1	extinct
Sackenomyia reaumurii	15 / 5	endangered
Taxomyia taxi	16 / 2	scarce
Contarinia petioli	15 / 1	increasing
Spurgia capitigena	14 / 3	increasing
Iteomyia capreae	12 / 7	abundant, stable
Craneiobia corni	10 / 4	disappearing
Harmandia cavernosa	8 / 2	increasing
Dasineura tiliae	6 / 3	stable

Also in England, *Sackenomyia reaumurii* and *Craneiobia corni* have disappeared from local habitats during the past twenty years although their host plants are still there (K. M. HARRIS, pers. comm.).

To establish reasons for the decrease of population density of gall midges in their biotopes is difficult. Obviously many species of plants and animals are flourishing.

Because of their close and relatively static relationships with their host plants, and because of the easy detection of many galls during the whole vegetative season from spring to autumn, gall midges are useful bioindicators of long-term changes of the environment.

Economic importance

During the 20th century, ten species were recorded as pests of cultivated plants in Switzerland.

Among cereal crops, *Mayetiola destructor* was a serious pest in the middle of the 20th century. ZOGG *et al.* (1949, 1950, 1951) reported outbreaks of this species in the cantons Bern, Solothurn and Aargau, where substantial damage was observed both on summer and winter wheat. After that outbreak, damaged cereals were not observed again and it seems that this species disappeared. AFFOLTER (1990) studied the bionomics and parasitoids of *Contarinia tritici* and *Sitodiplosis mosellana* on wheat.

Among fruit crops, CARL (1978, 1980) investigated *Dasineura mali* and its damage on apple trees. He advised on possibilities to control this pest by the use of parasitoids. Later he studied the bionomics of *Dasineura pyri*, a pest of pear (CARL, 1982). The most important pear fruits pest, *Contarinia pyrivora*, was first reported by HOFER (1910) as a pest. Later it was studied by FAES & STAEHELIN (1929) and by ANTONIN (1984).

Among vegetable crops, three species occurred as pests, two on raspberry (*Rubus idaeus*) and one on pea (*Pisum sativum*). BACHMANN (1950) and BAGGIOLINI (1960) investigated possibilities of applying chemicals to control *Resseliella theobaldi* on raspberry growing in plantations. DESHUSSES & DESHUSSES (1934, 1936) reported *Lasioptera rubi* in surroundings of Geneva, Berne and Fribourg where it damaged shrubs in plantations and gardens.

Contarinia pisi has been the most serious gall midge pest in Switzerland for more than sixty years. Serious losses have occurred in the canton St. Gallen to peas grown for canning in 1931–1932. KUTTER (1934, 1936) and KUTTER & WINTERHALTER (1933) studied its bionomics. BOLLINGER (1968) investigated this pest in eastern Switzerland from various points of view. VALLATON (1969) studied the biology and diapause. KELLER (1989) summarized information on the occurrence of *C. pisi* since 1959 and came to the conclusion that only in areas where peas are intensively planted *C. pisi* occurs as a pest. KELLER & SCHWEIZER (1992, 1994) studied population dynamics and parasitoids of *C. pisi* in northern Switzerland during the period 1981–1992.

Among ornamental shrubs, HÄFLINGER (1945) reported *Rhopalomyia chrysanthemi* as a new pest which occurred at that time on cultivated chrysanthemums in Switzerland.

Only a few observations about gall midges developing on forest trees have been recorded. MADZIARA-BORUSIEWITZ (1963) considered *Plemeliella abietina* to be the most important pest of spruce cones in Switzerland. In three samples (from

18), about 30 % of seed obtained from cone samples from altitudes of 1050–1500 m a.s.l. were attacked by *P. abietina*. WERMELINGER *et al.* (1995) reported the spectrum of the spruce cone inhabiting fauna and mentioned that *Kaltenbachiola strobi* was the most numerous species in 1989.

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APPENDIX

List of host plant species attacked by gall midge species

Acer campestre L.	*Dasineura rubella* (KIEFFER)
	Dasineura tympani (KIEFFER)
Acer pseudoplatanus L.	*Contarinia acerplicans* (KIEFFER)
	Dasineura irregularis (BREMI)
	Drisina glutinosa GIARD
	Harrisomyia vitrina (KIEFFER)
Achillea millefolium L.	*Ozirhincus millefolii* (WACHTL)
Achillea ptarmica L.	*Rhopalomyia ptarmicae* (VALLOT)
Aconitum lycoctonum L.	*Contarinia aconitifloris* STELTER
Aegopodium podagraria L.	*Macrolabis podagrariae* STELTER
Alnus incana (L.) Moench.	*Dasineura tortilis* (BREMI)
Arabis alpina L., *A. albida* St.	*Dasineura alpestris* (KIEFFER)
Artemisia campestris L.	*Rhopalomyia artemisiae* (BOUCHÉ)
	Rhopalomyia tubifex (BOUCHÉ)
Artemisia vulgaris L.	*Rhopalomyia foliorum* (H. LOEW)
Berberis vulgaris L.	*Dasineura berberidis* (KIEFFER)
Betula pendula Roth	*Plemeliella betulicola* (KIEFFER)
	Semudobia betulae (WINNERTZ)
Bryonia dioica L.	*Jaapiella bryoniae* (BOUCHÉ)
Bupleurum falcatum L.	*Dasineura bupleuri* (WACHTL)
Buxus sempervirens L.	*Monarthropalpus flavus* (SCHRANK)
Campanula cochleariifolia Lam.	*Dasineura thomasi* (KIEFFER)
Campanula rapunculoides L.	*Contarinia campanulae* (KIEFFER)
Campanula rotundifolia L.	*Geocrypta trachelii* (WACHTL)
Carpinus betulus L.	*Aschistonyx carpinicolus* RÜBSAAMEN
	Contarinia carpini KIEFFER
	Zygiobia carpini (F. LÖW)
Centaurea montana L.	*Dasineura centaureae* (KIEFFER)
Centaurea scabiosa L.	*Loewiola centaureae* (F. LÖW)
	Clinodiplosis cilicrus (KIEFFER)
Chrysanthemum leucanthemum L.	*Rhopalomyia hypogaea* (F. LÖW)
Chrysanthemum (cultivated)	*Rhopalomyia chrysanthemi* (AHLBERG)
Cirsium arvense (L.) Scop.	*Jaapiella cirsiicola* RÜBSAAMEN
	Mycodiplosis saundersi BARNES
Cornus sanguinea L.	*Craneiobia corni* (GIRAUD)
Coronilla emerus L.	*Asphondylia coronillae* (VALLOT)
Corylus avellana L.	*Contarinia coryli* (KALTENBACH)
	Contarinia cybelae GAGNÉ
	Mikomya coryli (KIEFFER)
	Arthrocnodax coryli (KIEFFER)
Crataegus oxyacantha L.	*Dasineura crataegi* (WINNERTZ)
Cytisus sagittalis Kch.	*Asphondylia bitensis* KIEFFER
	Dasineura cytisi (KIEFFER)
Daphne laureola L.	*Dasineura daphnes* (KIEFFER)
Daphne striata Tratt.	*Dasineura daphnephila* (KIEFFER)
Daucus carota L.	*Kiefferia pericarpiicola* (BREMI)
Echium vulgare L.	*Asphondylia echii* (H. LOEW)
Epilobium angustifolium L.	*Dasineura kiefferiana* (RÜBSAAMEN)
Erigeron uniflorus L.	*Rhopalomyia ruebsaameni* THOMAS
Euphorbia amygdaloides L.	*Dasineura subpatula* (BREMI)
Euphorbia cyparissias L.	*Spurgia capitigena* (BREMI)
Euphorbia esula L.	*Spurgia esulae* GAGNÉ
Fagus sylvatica L.	*Contarinia fagi* RÜBSAAMEN
	Hartigiola annulipes (HARTIG)
	Mikiola fagi (HARTIG)
Filipendula ulmaria (L.) Maxim.	*Dasineura engstfeldi* (RÜBSAAMEN)
	Dasineura pustulans (RÜBSAAMEN)
	Dasineura ulmaria (BREMI)

Fraxinus excelsior L.	*Dasineura acrophila* (WINNERTZ)
	Dasineura fraxinea (KIEFFER)
	Dasineura fraxini (BREMI)
	Clinodiplosis botularia (WINNERTZ)
Galium mollugo L.	*Geocrypta galii* (H. LOEW)
	Schizomyia galiorum KIEFFER
Genista tinctoria L.	*Contarinia melanocera* KIEFFER
	Jaapiella genisticola (F. LÖW)
Glechoma hederacea L.	*Dasineura glechomae* (KIEFFER)
	Rondaniola bursaria (BREMI)
Helianthemum nummularium (L.) Mill.	*Contarinia helianthemi* (HARDY)
Heracleum sphondylium L.	*Macrolabis heraclei* (KALTENBACH)
Hieracium murorum L.	*Cystiphora sanguinea* (BREMI)
Hieracium umbellatum L.	*Macrolabis hieracii* RÜBSAAMEN
Hieracium sp.	*Jaapiella compositarum* (KIEFFER)
Hypericum perforatum L.	*Contarinia hyperici* BARNES
	Dasineura hyperici (BREMI)
	Geocrypta braueri (HANDLIRSCH)
	Zeuxidiplosis giardi (KIEFFER)
Hypochoeris sp.	*Contarinia hypochoeridis* (RÜBSAAMEN)
Juniperus communis L.	*Oligotrophus juniperinus* (LINNÉ)
	Oligotrophus panteli KIEFFER
Juniperus sabina L.	*Oligotrophus sabinae* KIEFFER
Knautia sp.	*Jaapiella knautiae* RÜBSAAMEN
Lamium album L.	*Macrolabis lamii* RÜBSAAMEN
Lamium galeobdolon (L.)Nath.	*Contarinia galeobdolontis* KIEFFER
	Dasineura strumosa (BREMI)
Lamium maculatum L.	*Dasineura lamiicola* (MIK)
Larix decidua Mill.	*Dasineura kellneri* (HENSCHEL)
Lathyrus pratensis L.	*Contarinia jaapi* RÜBSAAMEN
	Dasineura lathyri (KIEFFER)
	Dasineura lathyricola (RÜBSAAMEN)
	Jaapiella volvens RÜBSAAMEN
Ligustrum vulgare L.	*Placochela ligustri* (RÜBSAAMEN)
Lonicera periclymenum L.	*Dasineura periclymeni* (RÜBSAAMEN)
Lonicera xylosteum L.	*Contarinia sambuci* (KALTENBACH)
	Dasineura excavans (KIEFFER)
	Dasineura xylostei (KIEFFER)
Lotus corniculatus L.	*Contarinia barbichi* (KIEFFER)
	Contarinia loti (DE GEER)
	Jaapiella loticola (RÜBSAAMEN)
Lysimachia vulgaris L.	*Contarinia lysimachiae* (RÜBSAAMEN)
Lythrum salicaria L.	*Bayeriola salicariae* (KIEFFER)
Malus sylvestris Mill.	*Dasineura mali* (KIEFFER)
Medicago lupulina L.	*Dasineura lupulinae* (KIEFFER)
Medicago sativa L.	*Contarinia medicaginis* KIEFFER
	Dasineura medicaginis (BREMI)
	Jaapiella medicaginis (RÜBSAAMEN)
Myosoton aquaticum (L.) Moench	*Macrolabis stellariae* (LIEBEL)
Onobrychis viciifolia Scop.	*Bremiola onobrychidis* (BREMI)
	Contarinia onobrychidis KIEFFER
Ononis spinosa L.	*Asphondylia ononidis* F. LÖW
Origanum vulgare L.	*Asphondylia hornigi* WACHTL
	Blastomyia origani (TAVARES)
Paeonia officinalis L.	*Clinodiplosis cilicrus* (KIEFFER)
Phragmites australis Trin.	*Lasioptera arundinis* SCHINER
	Microlasioptera flexuosa (WINNERTZ)
Phyteuma spp.	*Dasineura phyteumatis* (F. LÖW)
Picea abies (L.) Karst.	*Plemeliella abietina* SEITNER
	Kaltenbachiola strobi (WINNERTZ)
	Asynapta strobi (KIEFFER)
	Lestodiplosis coni (KIEFFER)

	Lestodiplosis holstei KIEFFER
Pimpinella saxifraga L.	*Jaapiella hedickei* RÜBSAAMEN
	Kiefferia pericarpiicola (BREMI)
	Lasioptera carophila F. LÖW
Pinus sylvestris L.	*Cecidomyia pini* (DE GEER)
	Contarinia baeri (PRELL)
	Thecodiplosis brachyntera (SCHWÄGRICHEN)
Pisum sativum L.	*Contarinia pisi* (WINNERTZ)
Plantago lanceolata L.	*Jaapiella schmidti* (RÜBSAAMEN)
Poa nemoralis L.	*Mayetiola poae* (BOSC)
Polygonatum multiflorum (L.) All.	*Contarinia polygonati* RÜBSAAMEN
Polygonum bistorta L.	*Dasineura bistortae* (KIEFFER)
Populus tremula L.	*Contarinia petioli* (KIEFFER)
	Contarinia populi (RÜBSAAMEN)
	Dasineura populeti (RÜBSAAMEN)
	Harmandia cavernosa (RÜBSAAMEN)
	Harmandia globuli KIEFFER
	Harmandia populi RÜBSAAMEN
	Harmandia pustulans KIEFFER
	Harmandia tremulae (WINNERTZ)
Prunella grandiflora (L.)	*Macrolabis ruebsaameni* HEDICKE
Prunus spinosa L.	*Dasineura tortrix* (F. LÖW)
	Putoniella pruni (KALTENBACH)
Pyrus communis L.	*Contarinia pyrivora* (RILEY)
	Dasineura pyri (BOUCHÉ)
Quercus robur L.	*Contarinia quercina* (RÜBSAAMEN)
Q. petraea (Matt.) Liebl.	*Macrodiplosis dryobia* (F. LÖW)
	Macrodiplosis volvens KIEFFER
	Parallelodiplosis galliperda (F. LÖW)
Ranunculus bulbosus L.	*Dasineura ranunculi* (BREMI)
Raphanus sp.	*Contarinia nasturtii* (KIEFFER)
	Gephyraulus raphanistri (KIEFFER)
Rhododendron ferrugineum L.	*Dasineura rhododendri* (KIEFFER)
Ribes nigrum L.	*Dasineura tetensi* (RÜBSAAMEN)
Rosa canina L.	*Wachtliella rosarum* (HARDY)
	Macrolabis luceti KIEFFER
Rubus caesius L.	*Contarinia rubicola* KIEFFER
	Dasineura plicatrix (H. LOEW)
Rubus idaeus L.	*Lasioptera rubi* (SCHRANK)
	Resseliella theobaldi (BARNES)
Salix alba L.	*Dasineura clausilia* (BREMI)
	Rabdophaga rosaria (H. LOEW)
	Rabdophaga saliciperda (DUFOUR)
Salix aurita L.	*Dasineura auritae* (RÜBSAAMEN)
	Dasineura pseudococcus (THOMAS)
	Rabdophaga paliumparens STELTER
	Rabdophaga salicis (SCHRANK)
Salix caprea L.	*Iteomyia capreae* (WINNNERTZ)
	Rabdophaga iteobia (KIEFFER)
	Mycodiplosis melampsorae (RÜBSAAMEN)
Salix fragilis L.	*Rabdophaga terminalis* (H. LOEW)
Salix purpurea L.	*Rabdophaga degeerii* (BREMI)
	Rabdophaga strobilina (BREMI)
Salix triandra L.	*Rabdophaga heterobia* (H. LOEW)
Salix viminalis L.	*Rabdophaga marginemtorquens* (BREMI)
Sambucus nigra L.	*Placochela nigripes* (F. LÖW)
Sanguisorba minor Scop.	*Arthrocnodax erianea* (BREMI)
Senecio jacobaea L.	*Contarinia jacobaeae* (H. LOEW)
	Dasineura senecionis (RÜBSAAMEN)
Senecio nemorensis ssp. *Fuchsii*	*Contarinia aequalis* KIEFFER
Silene acaulis (L.) Jacq.	*Jaapiella alpina* (F. LÖW)
Silene alba (Mill.) Kr.	*Contarinia steini* (KARSCH)

Silene vulgaris (Moench) Gar.	*Contarinia cucubali* KIEFFER
	Jaapiella floriperda (F. LÖW)
Solanum dulcamara L.	*Contarinia solani* (RÜBSAAMEN)
Solidago virgaurea L.	*Dasineura virgaeaureae* (LIEBEL)
Sonchus arvensis L.	*Contarinia schlechtendaliana* (RÜBSAAMEN)
	Cystiphora sonchi (BREMI)
Stachys sylvatica L.	*Wachtliella stachydis* (BREMI)
Taraxacum officinale Web.	*Cystiphora leontodontis* (BREMI)
	Cystiphora taraxaci (KIEFFER)
Taxus baccata L.	*Taxomyia taxi* (INCHBALD)
Teucrium chamaedrys L.	*Dasineura teucrii* (TAVARES)
Thymus serpyllum L.	*Bayeriola thymicola* (KIEFFER)
	Janetiella thymi (KIEFFER)
Tilia platyphyllos Scop.	*Contarinia tiliarum* (KIEFFER)
Tilia cordata Mill.	*Dasineura thomasiana* (KIEFFER)
	Dasineura tiliae (SCHRANK)
	Didymomyia tiliacea (BREMI)
	Physemocecis hartigi (LIEBEL)
Trifolium medium L.	*Dasineura axillaris* (KIEFFER)
Trifolium repens L.	*Dasineura trifolii* (F. LÖW)
Trifolium sp.	*Tricholaba trifolii* RÜBSAAMEN
Triticum vulgare L.	*Contarinia tritici* (KIRBY)
	Sitodiplosis mosellana (GÉHIN)
	Mayetiola destructor (SAY)
Ulmus minor Mill.	*Physemocecis ulmi* (KIEFFER)
Urtica dioica L.	*Dasineura urticae* (PERRIS)
Vaccinium uliginosum L.	*Hygrodiplosis vaccinii* (KIEFFER)
Verbascum lychnitis L.	*Asphondylia verbasci* (VALLOT)
Veronica chamaedrys L.	*Jaapiella veronicae* (VALLOT)
Veronica fruticans Jacq.	*Dasineura jaapi* (RÜBSAAMEN)
Viburnum lantana L.	*Sackenomyia reaumurii* (BREMI)
Vicia cracca L.	*Contarinia craccae* KIEFFER
Vicia sepium L.	*Dasineura viciae* (KIEFFER)
Vincetoxicum officinale Moench.	*Contarinia asclepiadis* (GIRAUD)
	Contarinia vincetoxici KIEFFER
Viola reichenbachiana Jord.	*Dasineura affinis* (KIEFFER)
Viola tricolor L.	*Dasineura violae* (F. LÖW)