

A TAXONOMIC REVISION OF LAMIUM

(*Lamiaceae*)

BY

J. MENNEMA



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Aan de nagedachtenis van mijn vader en Anneke,
Aan mijn moeder,
Aan Adrienne,
Aan Olle en Mark Jaap.

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I. GENERAL CHAPTER

I.1. INTRODUCTION

This taxonomic revision of the genus *Lamium* is mainly based on the study of herbarium collections, and to a smaller degree on field observations and abstracts from the literature.

In all c. 10,000 collections were examined. The most important quantitative characters were measured in 2700 collections, representing specimens from the entire distribution area of individual taxa.

Field observations were necessary to collect data on the colours of the corolla and of pollen. As habitat descriptions were very often missing on the labels of the herbarium collections, additional field observations were also indispensable in this respect. Unfortunately not all taxa could be investigated in the field (or in botanical gardens). Abstracts from the literature therefore completed the field observations and also provided information about chemistry and cytology.

Special attention is paid to the history of the taxonomy of the genus, in which the general history of plant systematics can be traced. Finally an intuitive phylogenetic reconstruction of the genus *Lamium*, based on the mutual relationships of the taxa, is presented.

I.2. TAXONOMIC HISTORY OF LAMIUM

In the *Species Plantarum* (1753) Linnaeus distinguished five species and one variety belonging to the genus *Lamium* as conceived here. These six taxa were distributed over three genera, viz. *Lamium* (*album*, *album* var. *maculatum*, *amplexicaule*, *purpureum*), *Galeopsis* (*galeobdolon*), and *Orvala* (*garganica*). One other species, designated by Linnaeus to *Lamium*, viz. *Lamium multifidum*, was transferred by Bentham (1848) to *Wiedemannia*, described in 1837 by Fischer & C. Meyer. In the second edition of the *Species Plantarum* (1763) Linnaeus distinguished eight species in *Lamium*, viz. the three mentioned in the first edition, *Lamium multifidum*, *Lamium maculatum* (as species), *Lamium garganicum*, *Lamium laevigatum* (in my opinion a synonym of *Lamium maculatum*), and *Lamium orvala*. It is striking, that Linnaeus erroneously maintained the genus *Orvala* (with the species *Orvala garganica*) next to *Lamium orvala* and that he placed his *Lamium galeobdolon* (transferred to *Lamium* in 1759) again in the genus *Galeopsis*. Willdenow, in the fourth edition of the *Species Plantarum* (1800), classified this species *Lamium galeobdolon* neither in the genus *Lamium*, nor in the genus *Galeopsis*, but in the genus *Leonurus*.

In the genus *Lamium* Willdenow distinguished 13 species: besides the eight, mentioned by Linnaeus in the second edition of the *Species Plantarum*, he listed *Lamium rugosum* (in my opinion a synonym of *Lamium maculatum*), *Lamium molle* (in my opinion a synonym of *Lamium purpureum*), Cirillo's *Lamium bifidum* and two new species described by himself: *Lamium incisum* (in my opinion *Lamium purpureum* var. *incisum*) and *Lamium tomentosum*.

Up till that period the important botanists wanted to treat all the species of the world in one publication (of various volumes). Bentham in De Candolle's *Prodromus Systematis Naturalis* (1848) is the last representative of this era: he mentioned that the genus *Lamium* comprised 35 species, included *Lamium galeobdolon* and excluded two dubious species. In 'Die natürlichen Pflanzenfamilien' Briquet (1897) noted 40 *Lamium* species; the genus was divided into three subgenera (*Eulamium*, *Galeobdolon*, and *Orvala*) and subgenus *Eulamium* was split into two sections: *Pollichia* (= *Lamiopsis*) and *Lamiotypus*. Briquet divided the section *Pollichia* into four subsections: *Romboidea*, *Garganica*, *Amplexicaulia*, and *Purpurea*.

During the last ninety years from time to time new species have been described. Now, as far as I could determine, a number of 162 names of *Lamium* species and a more or less equal number of names of infraspecific taxa are known, but I cannot vouch for the completeness of these lower-ranked taxa.

In the short survey of the taxonomic history of the genus *Lamium* the general history of taxonomy and its changing emphasis on different geographical regions can be recognized. The taxa, described by the Swede Linnaeus (1753) occur predominantly in (North-)Western Europe; the only Submediterranean species (*Orvala garganica*) was based on an illustration in a work by Micheli (1729). A diagram picturing the taxonomic history of *Lamium* is given in Fig. 1. After the

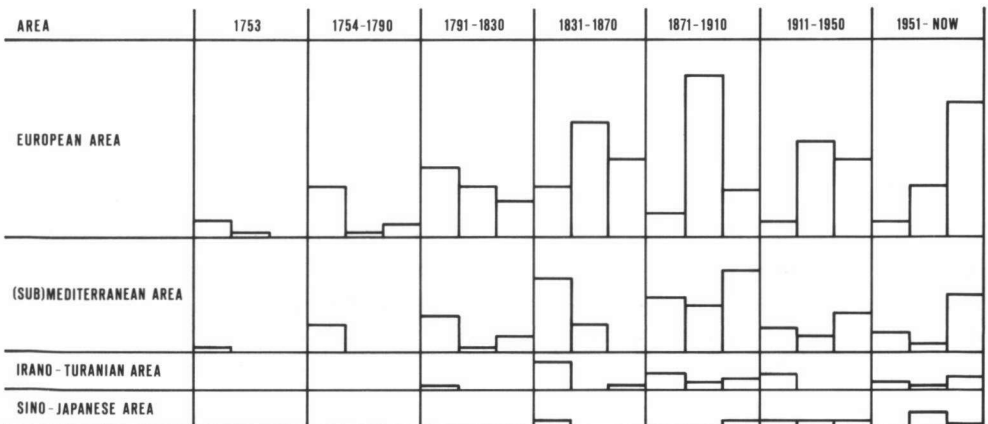


Fig. 1. The newly described species (first column), the newly described infraspecific taxa (second column), and the combinations (third column) in the genus *Lamium*, divided into time periods, each of about 40 years.

first publications of Linnaeus attention was focussed on new taxa in the European area and to a lesser degree on taxa in the (Sub)Mediterranean area, the latter ones sometimes cultivated in botanical gardens in Western Europe (Miller, 1768; Aiton, 1789). Linnaeus' system inspired the writing of local floras in Europe, e.g. by Jenkinson (1775) 'A Generic and Specific description of British Plants, translated from the Genera and Species Plantarum of the celebrated Linnaeus'. In these local floras Linnean names sometimes are replaced by new names (e.g. Crantz, 1769), committed to synonymy after introduction of the International Code of Botanical Nomenclature. In the same period (1753–1790) the first new combinations and transfers from one level in the taxonomic hierarchy to another have been made, particularly with regard to *Lamium galeobdolon*, described by Linnaeus as *Galeopsis galeobdolon* with the added remark '... vix tamen distincto genero nominari meretur' (Linnaeus, 1759; Scopoli, 1771; Hudson, 1778; Willdenow, 1787).

In the period 1790–1830 the first species in the Irano-Turanian area was published (Willdenow, 1800). The main interest, however, was still focussed on the European and (Sub)Mediterranean area (Sibthorp & Smith, 1809, 1827): the number of newly described species in the European area culminated in this period and the number of new infraspecific taxa (i.a. Dumortier, 1827; Wimmer & Grabowski, 1829; Gaudin, 1829) in this area exceeded the new combinations.

The next period (1830–1870) can be characterized by the exploration of the Mediterranean and Irano-Turanian area (Bentham, 1836; Boissier, 1844, 1846, 1853, 1859; Grisebach, 1844; Kotschy, 1858) and the increasing number of infraspecific taxa by various authors in Europe (i.a. Opiz, 1852) and the (Sub)Mediterranean area (i.a. Tenore, 1831). In 1846 Von Siebold & Zuccarini described for the first time the one and only 'species' of the Sino-Japanese area (*Lamium barbatum*), but this species was originally already mentioned by Linnaeus' pupil Thunberg (1784), erroneously as *Lamium garganicum*.

In the period 1870–1910 the first large floras from outside the 'European' area were printed. Willkomm & Lange (1870) published the *Labiatae*-volume of the Prodrromus Florae Hispanicae, mainly based on the collections of the famous European herbaria, Boissier (1879) finished the *Labiatae*-volume of his magnum opus Flora Orientalis, and from the hands of Battandier & Trabut (1905) the Flore Analytique et Synoptique de l'Algérie et de la Tunisie appeared. Especially Boissier (l.c.) described a number of new species for the Mediterranean and Irano-Turanian area. In the European area other botanists continued to create infraspecific taxa (i.a. Beck, 1893; Briquet, 1893; Ascherson & Graebner, 1898–99), leading to a peak in this period. Also in the local floras in the Mediterranean area (Béguinot, 1903; Fiori & Paoletti, 1907; Lojacono, 1907) a new number of infraspecific taxa were created.

In the period 1910–1950 the general trend continues. The production of publications is, however, less than in other periods, due to World War II. The

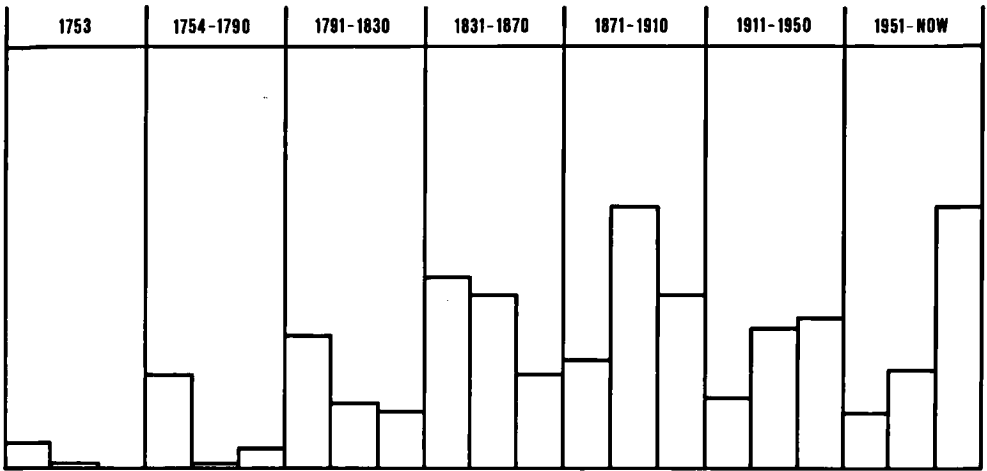


Fig. 2. The number of all newly described species (first column), the newly described infraspecific taxa (second column), and the combinations (third column) in the genus *Lamium*, divided into time periods, each of about 40 years.

Labiatae-volume of Hegi's *Illustrierte Flora von Mittel-Europa* (Gams, 1927) appeared; other large floras in this period are the *Prodromus Florae Peninsulae Balcanicae* (Hayek, 1929) and the *Flora Aegaea* (Rechinger, 1943). Especially Gams (l.c.) and Hayek (l.c.) published a great number of infraspecific names and new combinations. These new transfers were mainly infraspecific: subspecies became varieties and vice versa, varieties formae, and so on. In the European area (small) publications contained new infraspecific taxa and putative hybrids, particularly in Sweden (i.a. Nilsson, 1925; Segerström, 1928; Sylvén, 1931), in Great-Britain (i.a. Druce 1924, 1929; Britton, 1926), and in the Netherlands (i.a. Danser, 1926; Jansen, 1930; van Ooststroom, 1940, 1947).

In the last period (1950–now) all mentioned developments are recognizable. New editions of (traditional) local floras and original new floras in Europe were published. New publications of large floras 'outside Europe', written by European botanists, appeared: the *Labiatae*-volumes of Davis' *Flora of Turkey* (Mill, 1982) and of Rechinger's *Flora Iranica* (Mennema, 1982), mainly with new combinations, and i.a. the *Flora of Cyprus* (Meikle, 1985). However, with the appearance of the *Flora of Japan* (Ohwi, 1953), the *Labiatae*-volume of the *Flora U.S.S.R* (Gorshkova, 1954), the *Iconographia Cormophytorum Sinicorum* (Anon., 1974), the *Flora Reipublicae Popularis Sinicae* (Anon., 1977 a and b), the *Flora Palestinae* (Feinbrun, 1978) and the *Labiatae*-volume of Takhtajan's *Flora Armenia* (Menitskiy, 1987), autochtonic botanists from 'outside Europe' are occupied with writing their own floras, a new element in taxonomic history. In Europe the small articles with new infraspecific taxa and new combinations

continue to appear (i.a. van Ooststroom, 1951; Sylvén, 1959; Soó, 1968; Soó & Borhidi, 1968; Bjelcic et al., 1982). For the first time the new combinations outnumber the infraspecific taxa in almost all the areas of the genus *Lamium*.

A total view of all areas together (Fig. 2) shows three general developments:

1. At first new species were created with a peak in the period from 1830 to 1870;
2. Later on infraspecific taxa were described, with a peak in the period from 1870 to 1910.
3. In the period from 1910 to 1950 the number of new infraspecific taxa is surpassed by the number of new combinations, particularly on the infraspecific level; the peak of new combinations took place in the last decades. I can not escape the impression, that present authors sometimes are searching for 'free' infraspecific ranks to make new combinations ...

I.3. CONCEPT OF LAMIUM IN THIS REVISION

In the present revision the original *Lamium* concept of former authors—from Linnaeus (1759) till Briquet (1897)—has been accepted. It is rather difficult to select arguments for the delimitation of the genus, as *Lamium* is mainly *not* characterized by the presence of certain characters, but by their absence. It is striking that *Lamium* almost always can be found at the end of keys to the genera of *Labiatae*, when discriminating characters are exhausted. The absence of important and recognizable characters implied the danger that the genus *Lamium* became a repository of *insertae sedis Labiatae*. Especially in this century various authors of East-Asiatic *Labiatae*-species have thus used *Lamium* to deposit their new species, in my opinion wrongly so.

It is difficult to give a definition of *Lamium* in which it stands out from related genera by means of one or preferably two characters. As with so many genera, *Lamium* can only be defined polythetically: no single character suffices. *Lamium* has to be defined by a combination of characters that are each usually present: the cordate or reniform leaves with the shallow incisions, the campanulate calyx with its oblique mouth and subequal teeth, the lower lip of the corolla with two lateral lobes with one or two teeth, the truncate apex of the nuts. An important argument to delimit the genus *Lamium* is derived from the study of chromosomes: the base number $n = 9$, rather uncommon in other genera of the *Stachyoideae*, is characteristic for the genus (see I.5).

In the present revision of the genus *Lamium* three subgenera are recognized: *Galeobdolon*, *Lamium* and *Orvala*, and in subgenus *Lamium* three sections: *Amplexicaule*, *Lamiotypus* and *Lamium*. Recognized are 16 species, 4 of which with respectively 3, 2, 3 and 3 subspecies and one subspecies with 3 varieties; two species are divided into each 5 varieties. Only one taxon of hybrid origin is recognized.

I.4. MORPHOLOGICAL CHARACTERS OF LAMIUM

It is well-known, that the value of a character may substantially differ in related groups. For instance, in the genus *Carex* the number of two or three stigmas is an important character to divide the genus into subgenera (Kern & Reichgelt, 1954). However, the same character is used in the related genus *Scirpus* to distinguish two taxa on subspecific level, viz. *Scirpus lacustris* subsp. *lacustris* and subsp. *tabernaemontani*.

At the beginning of this monographic study of *Lamium* I investigated the material for the first time rather roughly to get an impression about the value of the various characters, available to delimit the genus, the subgenera, the sections, and the species. This impression did not change fundamentally during the second, more intensive investigation of all the specimens. Moreover this early survey gave an indication of those characters worthy of further thorough investigation.

Life-form

The species of the genus *Lamium* are herbaceous and have an annual or perennial life-form. The taxa of the subgenera *Galeobdolon* and *Ovala* are perennial, those of the three sections of subgenus *Lamium* are both perennial and annual. The perennial taxa possess more or less woody rhizomes, which are lacking in the annual taxa.

Indumentum

In general all taxa of the genus *Lamium* are hairy all over the plant, except *Lamium glaberrimum* which has only a pubescence on the corolla tube. The indumentum is rather variable both in the type of hairs and the intensity of hairiness. Shortly stalked and sessile glands are usually present, especially on the margins of the bracts and the calyx teeth. Field observations convinced me of the relation between the intensity of the indumentum and the habitat of the plants. For that reason I pay less attention to the indumentum as discriminative character than former authors often did.

Stem

The stems are decumbent or erect, simple or branched at the base, In the upper part of the plants side branches are lacking, except in *Lamium galeobdolon* subsp. *flavidum*. The internodes become shorter towards the top of the stem. The length of the stem is (≤ 5 -) 20-40 (-95) cm, but this may to some extent be influenced by the average size of herbarium-sheets. In spite of the variability the length of the stem can be a rather discriminative character, especially at the infraspecific

level. In cross-section the stem is distinctly quadrangular; the sides are, depending on the length of the stem, (1-) $1\frac{1}{2}$ - $2\frac{1}{2}$ (-5) mm. The indumentum is often lacking or hardly present at the base of the stem and increases upwards. Usually the indumentum of the stem is rather homogeneously distributed over the sides and the ribs, except in *Lamium galeobdolon* subsp. *galeobdolon*, where stems are exclusively or mainly hairy on the ribs. Field observations give the impression that in some species the young shoots are more hairy than the adult plants (e.g. *Lamium galeobdolon* s. lat. and *Lamium maculatum*).

Leaves

The leaves are always petiolate on the lower nodes, the upper ones are usually sessile or rarely amplexicaul (Section *Amplexicaule* and *Lamium galactophyllum*). In the case of rather large leaves, the petiole is always shorter, in the case of rather small leaves it is as long as or longer than the blade. There are no essential differences between the cauline leaves and those with the verticillasters, the floral leaves, neither in length, nor in shape. Usually the uppermost cauline leaves and the lowermost floral leaves are the biggest ones. Both up and downwards the length of the leaves decreases and there may be a little change in the shape of the leaves. The diagrams in Chapter II are based on the sizes, according to Fig. 3, a of the uppermost cauline leaves and the lowermost floral leaves. The leaves vary in length from ($\leq \frac{1}{2}$ -) 1-6 (-16) cm, their index from (0.6-) 0.8-1.6 (-3.5). Both the length and the index of the leaves are discriminative characters on the specific level (e.g. *Lamium album* and *Lamium tomentosum*) as well as on the infraspecific level (*Lamium amplexicaule*, *Lamium galeobdolon*, *Lamium garganicum* and *Lamium purpureum*). The smallest leaves ($\frac{1}{2}$ cm) are found in alpine and montane taxa (*Lamium amplexicaule* var. *bornmuelleri*, *Lamium garganicum* var. *armenum* and *microphyllum*, *Lamium purpureum* var. *ehrenbergii*), living on rocks and stone screes. The shape of the leaves in the genus *Lamium* normally is cordate or reniform, sometimes ovate or lanceolate with an acute apex and a cordate base. The incisions of the leaves are shallow and mostly regular and crenate, in the upper leaves sometimes dentate. The leaves of *Lamium amplexicaule* var. *incisum* and *orientale* and of *Lamium glaberrimum* are more deeply incised and may be divided into lobed segments. The incisions are of discriminative value, especially on the infraspecific level (e.g. in *Lamium amplexicaule* and *Lamium purpureum*). The indumentum on the leaves usually differs from that of the stem; normally the indumentum of the leaves is (appressed) pubescent. Glandular hairs have not been observed on the leaves.

Inflorescence

The inflorescence in the genus *Lamium* consists of verticillasters in the axils of the floral leaves. The number of verticillasters corresponds with the number of pairs

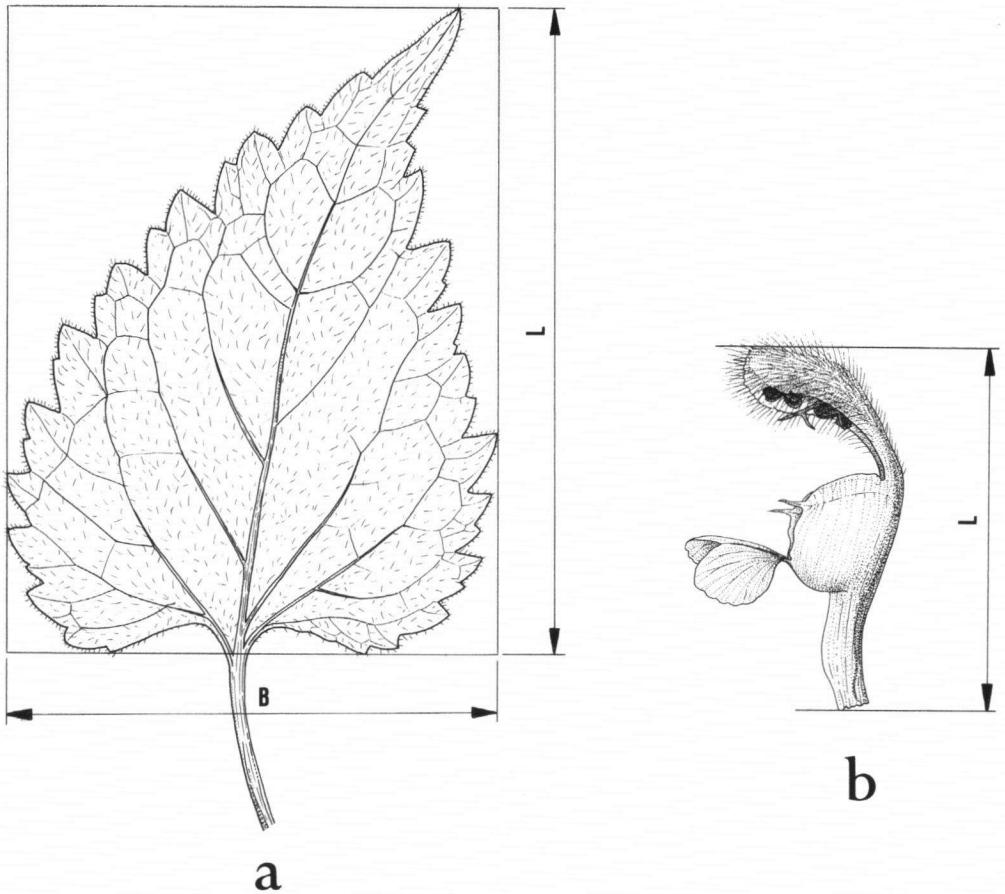


Fig. 3. The length (L) and the breadth (B) of: a. leaf; b. corolla.

of floral leaves and is (1-) 3-5 (-10). The number of verticillasters is of no discriminative value. The verticillasters may be crowded or remote, a character with discriminative value, not only on the infraspecific level (e.g. *Lamium purpureum*), but even on the specific level (*Lamium confertum*). The number of flowers per verticillaster at the lowermost floral leaves is (2-) 10-16 (≥ 20). Especially on the infraspecific level this character may have a discriminative value (*Lamium galeobdolon* and *Lamium garganicum*).

The presence (or absence) of very small bracts in the inflorescence as well as the bracts themselves give important discriminative characters on the subgeneric and sectional level. The bracts are lacking in the section *Amplexicaule* of subgenus *Lamium*. In all other sections of this subgenus and in the other subgenera the bracts are extremely small: (1-) 2-6 (-13) mm; the width varies from $\frac{1}{5}$ to 1 mm.

Normally the bracts are hidden in the verticillaster, but in the subgenus *Galeobdolon* they are spreading and reflexed. Dried specimens of this subgenus may be recognized immediately by this character. The indumentum of the bracts is usually hirsute. The apex of the bracts in the subgenus *Lamium* is hirsutely hairy too. In subgenus *Galeobdolon* the apex is clearly glabrous and distinctly corneous. This is also the case in subgenus *Orvala*, but here the apex is very short ($< \frac{1}{2}$ mm).

Calyx

Although there is a certain variation in the calyces in species of the genus *Lamium*, there is on the other hand a great similarity: the calyx is campanulate with an oblique mouth and the calyx teeth are subequal. The length of the calyx is ($\frac{1}{2}$ - $1\frac{1}{2}$ - $2\frac{1}{4}$) cm. After anthesis the calyx often enlarges. The number of nerves in the tube may vary: 5, 10 or more, but is mostly 10. The teeth are (narrowly) triangular or rarely deltoid (*Lamium galeobdolon* subsp.) The length of the teeth in relation to the length of the tube of the calyx may be of discriminative value, on the specific level (*Lamium confertum*) as well as on the infraspecific level (*Lamium album* and *Lamium purpureum*). Very often the calyx is glabrous or glabrate at the base of the tube and towards the teeth it is usually hirsute. The calyx of *Lamium eriocephalum* and *Lamium tomentosum* is densely villose, tomentose or woolly. Glandular hairs are almost always present, especially at the margin of the teeth of the calyx. The aristate apex of the calyx teeth is similar to the apex of the bracts:

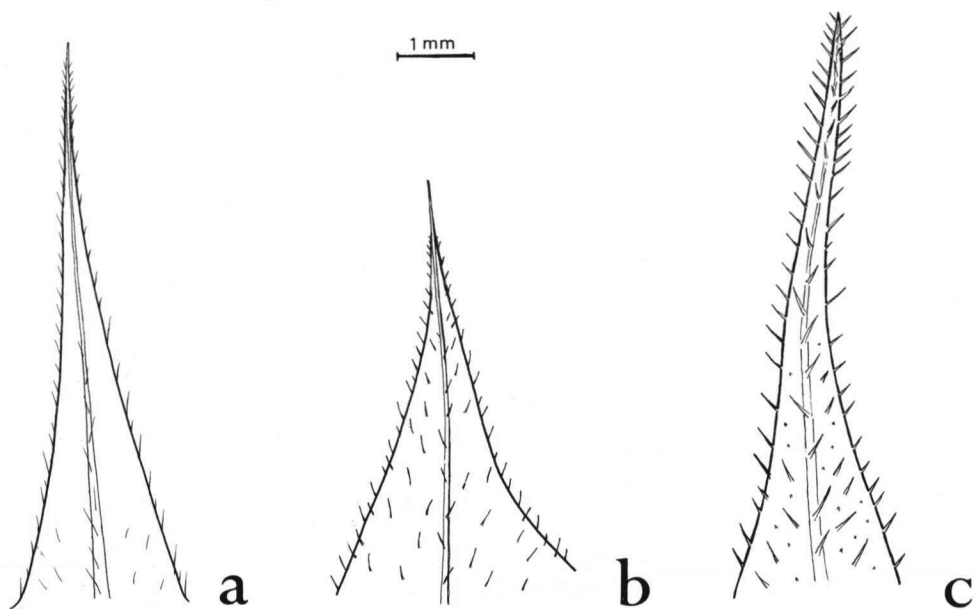


Fig. 4. The calyx teeth of: a. subgenus *Orvala*; b. subgenus *Galeobdolon*; c. subgenus *Lamium*.

hirsute in the subgenus *Lamium*, clearly glabrous and distinctly corneous in the subgenus *Galeobdolon*, and glabrous and corneous too in the subgenus *Orvala*, but with conspicuously shorter teeth ($< \frac{1}{2}$ mm). In Fig. 4 the differences in the aristate apices of the calyx teeth are given.

Corolla

The length of the corolla, as measured according to Fig. 3, b varies from $\frac{1}{2}$ – $4\frac{1}{2}$ cm. Usually the length of the corolla is rather constant and characteristic for each taxon; in *Lamium garganicum* the length may be very variable: *Briquet s.n.* collected 9 flowers of one specimen and arranged them in order of size from $2\frac{1}{2}$ – $4\frac{1}{4}$ cm! Cleistogamous flowers are known from *Lamium amplexicaule* (all varieties), *Lamium bifidum*, *Lamium confertum*, and *Lamium purpureum* var. *ehrenbergii*. Specimens only with cleistogamous flowers are observed in *Lamium amplexicaule* var. *bornmuelleri*; in all other taxa cleistogamous flowers are only found in specimens with chasmogamous flowers too. So the described varieties *clandestinum* and *cryptanthum* in *Lamium* do not make sense taxonomically. The corolla in the genus *Lamium* is bilabiate with an arched upper lip. The lower lip usually has two small lateral lobes, each with 1 or 2 teeth, and one median lobe. The lateral lobes of *Lamium galeobdolon* are oblique-ovate and toothless. The apex of the upper lip varies from rounded or truncate to bilobed or bifid (even observed in one specimen of *Lamium garganicum*!), the apex of the median lobe of the lower lip is bilobed or bipartite (or acute in *Lamium galeobdolon*). The shape of the corolla tube is a very important character on the level of the subgenus (faintly sigmoid: subgenus *Galeobdolon*; straight: subgenus *Orvala*) and on the sectional level in the subgenus *Lamium* (sigmoid: section *Lamiotypus*; straight: section *Amplexicaule* and section *Lamium*). In the section *Lamiotypus* the sigmoid corolla tube is not always exerted from the calyx. The presence of an internal ring of hairs in the tube of the corolla is of less importance as a discriminative character. The colour of the corolla is according to field observations and reliable label-data usually pink or purple, or white, rarely crimson to reddish (*Lamium orvala*) or yellow (*Lamium galeobdolon*). The honey guides are dependent of the colour of the corolla: dark purple (pink or purple flowers), yellowish green (white flowers), deep red (crimson to reddish flowers) and light brown (yellow flowers). From pink and purple flowered *Lamium* taxa also specimens with white flowers are known. In white flowered *Lamium* taxa rather rarely specimens can be observed with (light) pink flowers. In Japan mixed populations of white and pink flowered specimens of *Lamium album* subsp. *barbatum* have been recorded regularly.

Stamens and ovaries

The stamens never protrude beyond the upper lip of the corolla; their filaments reach a length from 4–6 mm in small flowered taxa (e.g. *Lamium amplexicaule*,

Lamium purpureum) up to 12–15 mm in large flowered taxa (e.g. *Lamium garganicum*, *Lamium orvala*). The anterior stamens are 1–5 mm longer than the posterior ones and 1–4 mm lower attached. The filaments are viscidly hairy and sometimes bear short glandular hairs (not observed in subgenus *Orvala* and in section *Amplexicaule* of subgenus *Lamium*). The anthers are $\frac{3}{4}$ – $3\frac{1}{2}$ by $\frac{1}{2}$ – $1\frac{1}{2}$ mm; they may be dorsally and ventrally tufted hairy (subgenus *Lamium*) or glabrous (subgenus *Galeobdolon* and subgenus *Orvala*). The colour of the pollen has only been observed in the species *Lamium album*, *Lamium amplexicaule*, *Lamium galeobdolon*, *Lamium garganicum*, *Lamium maculatum*, *Lamium orvala* and *Lamium purpureum* and varies from yellowish white to red orange. My colleague, the late Dr. J. Muller informed me, that the pollen of the species in the genus *Lamium* is uniform in size and shape. The style of the ovaries is always shorter than the upper lip of the corolla, glabrous or subglabrous, and usually equally bifurcate.

Fruits

The nutlets of the species of the genus *Lamium* are rather uniform. They are obovoid with a truncate apex and are in cross-section trigonous with one convex and two flat sides. The colour is dull-brown and the fruits very often show small greyish spots. The length of the fruits is (2–) $2\frac{1}{2}$ – $3\frac{1}{2}$ (–5) mm, the width (1–) $1\frac{1}{4}$ – $1\frac{3}{4}$ (– $2\frac{1}{2}$) mm.

The percentage of ripe fruits appears to vary strongly in herbarium specimens of *Lamium* as shown in Table 1.

Obviously there is a big gap in the percentages of ripe fruits between 17 and 56%. To give an explanation for this gap I have tried to find a correlation with one or more other characters of the various species concerned. Only one character, the life-form of the species, appeared to correlate. All species with a percentage of ripe fruits higher than 55% are annuals, and all species with a percentage of ripe fruits lower than 20% are perennials. In general herbarium specimens are collected in the flowering time. The explanation of the correlation must be that the ripening of fruits of annual *Lamium* species takes place in a shorter period than the ripening of fruits of perennial species. In the literature I could not find any data about the correlation between the life-form and the rate of fruit ripening, neither for *Lamium*, nor for other plant genera. Random studies in other genera (e.g. *Geranium*, *Polygonum*) led, however, to the same result: herbarium specimens with a percentage of specimens with ripe fruits of more than 50% were annuals, and species of the same genus with less than 20% of ripe fruits were perennials. So it looks as if the correlation observed in *Lamium* is a more general phenomenon.

Table 1. Percentages of herbarium specimens with ripe fruits of *Lamium* species. As only one specimen of *Lamium glaberrimum* could be investigated, this species is not entered.

	number of investigated specimens	specimens with ripe fruits (in %)
<i>Lamium album</i>	197	10
<i>Lamium amplexicaule</i>	258	68
<i>Lamium bifidum</i>	42	62
<i>Lamium confertum</i>	182	74
<i>Lamium eriocephalum</i>	14	7
<i>Lamium flexuosum</i>	140	8
<i>Lamium galactophyllum</i>	9	56
<i>Lamium galeobdolon</i>	235	9
<i>Lamium garganicum</i>	325	12
<i>Lamium macrodon</i>	26	73
<i>Lamium maculatum</i>	254	17
<i>Lamium moschatum</i>	73	66
<i>Lamium orvala</i>	118	8
<i>Lamium purpureum</i>	473	67
<i>Lamium tomentosum</i>	40	0

Table 2. Chromosome numbers (2n) of *Lamium* species, mainly obtained from Bolkhovskikh et al (1969) and Moore (1982).

Subgenus <i>Galeobdolon</i>	
<i>Lamium flexuosum</i>	18 (Wieffering, in litt.)
<i>Lamium galeobdolon</i> f. <i>argentatum</i>	36 (Smejkal, 1975)
<i>Lamium galeobdolon</i> subsp. <i>flavidum</i>	18
<i>Lamium galeobdolon</i> subsp. <i>galeobdolon</i>	18
<i>Lamium galeobdolon</i> subsp. <i>montanum</i>	36
Subgenus <i>Lamium</i>	
Section <i>Amplexicaule</i>	
<i>Lamium amplexicaule</i> var. <i>amplexicaule</i>	18
Section <i>Lamiotypus</i>	
<i>Lamium album</i> subsp. <i>album</i>	18
<i>Lamium album</i> subsp. <i>barbatum</i>	18
<i>Lamium maculatum</i>	18
<i>Lamium moschatum</i> s. lat.	18
<i>Lamium tomentosum</i>	18 (Tumajanov & Beridze, 1968).
Section <i>Lamium</i>	
<i>Lamium bifidum</i>	18
<i>Lamium confertum</i>	36 (<i>Lamium intermedium</i>)
<i>Lamium garganicum</i> subsp. <i>corsicum</i>	18
<i>Lamium garganicum</i> subsp. <i>garganicum</i>	18
<i>Lamium garganicum</i> subsp. <i>striatum</i>	18
<i>Lamium purpureum</i> var. <i>incisum</i>	36 (<i>Lamium dissectum</i>)
<i>Lamium purpureum</i> var. <i>purpureum</i>	18
Subgenus <i>Orvala</i>	
<i>Lamium orvala</i>	18

I.5. CHROMOSOME NUMBERS

The chromosome numbers of 19 taxa in the genus *Lamium* have been extracted from the literature. They are listed in Table 2.

From the species *Lamium eriocephalum*, *Lamium galactophyllum*, *Lamium glaberrimum*, and *Lamium macrodon* chromosome numbers are not available. According to Bolkhovskikh et al. (1969) Marchal found in 1920 the deviant chromosome numbers $2n = 16$ for *Lamium album* and $2n = 32$ for *Lamium galeobdolon*, probably miscounts.

It is evident that all taxa listed in Table 2 must be considered as diploids except *Lamium confertum*, *Lamium galeobdolon* f. *argentatum* (the originally cultivated tetraploid of subsp. *galeobdolon*) and subsp. *montanum* and *Lamium purpureum* var. *incisum*, which are tetraploids. It is evident too, that species from different subgenera and different sections have been examined, and that in all cases the base number $x = 9$. The chromosome number $2n = 18$, found in the *Lamium* taxa, is rather uncommon in other genera of the *Stachyoideae* to which *Lamium* belongs. Moore (1982) reported it only for *Leonurus cardiaca* and *Stachys ocymastrum*.

Unfortunately chromosome numbers of the related genera *Moluccella* and *Wiedemannia* are not available.

I.6. CHEMICAL CHARACTERS

It is of little use to mention in this monograph the occurrence of several chemical compounds in *Lamium* species recorded in literature (e.g. Hegnauer 1966-1973; Kritikos & Harvala, 1970; Sharma & Singh, 1981). The data are too fragmentary and too incomplete to use them as criteria for delimitation of *Lamium* taxa below the genus level. Moreover, many authors gave no or incomplete and inaccurate data about morphology and geography of the plants used. An exception forms the research of the former Laboratory for Experimental Plantsystematics in Leiden (Netherlands). Adema (1968) investigated species of *Lamium* and some related genera, using paper chromatography, for the presence of iridoid glucosides. One of the more striking results was, that in the allotetraploids *Lamium confertum* (= *Lamium moluccellifolium*) and *Lamium purpureum* var. *incisum* (= *Lamium hybridum*) no traceable amounts could be found of iridoid glucosides, present in all other *Lamium* taxa investigated, except *Lamium galactophyllum*. Another result was the difference between *Lamium galeobdolon* and the other *Lamium* species. *Lamium galeobdolon* does not have the *Lamium* compounds (e.g. lamiol and lamioside) but contains harpagid-type iridoid glucosides, the more common type of iridoid glucosides in *Labiatae*. Wieffering & Fikenscher (1974) arrived at the same conclusion: *Lamium galeobdolon* (= *Lamiastrum*) differs from *Lamium* by accumulating predominantly aucubin-like glycosides of the C-9-aglycon group. They also investigated leaves of the three subspecies of *Lamium galeobdolon* for aucubin-like

glycosides and ascertained that it seems likely, that subsp. *montanum* is of allopolyploid origin with the two diploid taxa (subsp. *flavidum* and *galeobdolon*) as parents as Dersch (1963) and Polatschek (1966) had already presumed, although not on the basis of arguments derived from phytochemistry.

I.7. GEOGRAPHY AND ECOLOGY

The distribution of the genus *Lamium* may be characterized as temperate Eurasiatic (holarctic). The area reaches from Western Europe to Eastern Asia, including Northern Africa North of the Atlas Mountains and Macaronesia (Açores, Madeira and the Canary Islands), approximately between 65 and 30° Northern latitude. It is not quite clear whether the occurrence of the genus *Lamium* in Macaronesia is natural or due to introduction by man. Outside the natural area a small number of taxa is introduced (and sometimes naturalized) in Greenland and Iceland, in the America's, Australia, and Tropical and South Africa. *Lamium amplexicaule* s. str. has by far the largest distribution area of all taxa in the genus. It is not only found in the whole Eurasiatic temperate zone, but also in the total area where introductions of *Lamium* taxa have been recorded. *Lamium eriocephalum* and *Lamium galactophyllum*, both endemic in Asia Minor, have the smallest distribution area. A certain number of taxa possesses a disjunct area; the isolated position of Portugal in the areas of *Lamium bifidum* and *Lamium confertum* is remarkable. The disjunction of the distribution area of the shade loving *Lamium flexuosum* is probably due to felling of the original forests in the Mediterranean area in ancient times.

In Table 3 the areas of distribution of the *Lamium* taxa are given. The centre of diversity is obviously found in the Irano-Turanian and the Mediterranean regions. This is in accordance with the view, that the Mediterranean and Irano-Turanian regions are also a centre of diversity for the entire family *Labiatae* (Meusel et al., 1978). It is striking that *Lamium galeobdolon* s. lat. and *Lamium orvala* of the subgenera *Galeobdolon* and *Orvala* do not occur in these regions. This induced me to the hypothesis, that both European subgenera have developed from the older, Eurasian subgenus *Lamium*. Unfortunately fossils are lacking to give further information about the origin and the evolution of the genus *Lamium*.

As for ecological data, the labels of most herbarium specimens are so poor in information, that it was impossible to derive the full ecological ranges of the individual taxa from them. In *Lamium album* for instance, the ecological data were totally lacking in 55% (subsp. *album*), 71% (subsp. *barbatum*), and 51% (subsp. *crinitum*) of the herbarium sheets investigated. If there were any data, they usually were restricted to such simple information as: 'roadside', 'forest', 'field', and the like. Herbarium specimens giving more complete ecological information about the habitat, the soil, the altitude, and the plant community, are exceptional. Field

Table 3. The distribution of the *Lamium* taxa. The columns 1-5 correspond with the phytogeographical division of Europe according to Walter & Straka (1970): 1 = Boreal; 2 = Atlantic; 3 = Central Europe; 4 = Submediterranean; 5 = Mediterranean. The columns 6-9 are mainly based on the phytogeographical division of Asia by Takhtajan (1969): 6 = Irano-Turanian; 7 = Central-Asia; 8 = East Siberian; 9 = Sino-Japanese.

	1	2	3	4	5	6	7	8	9
<i>L. flexuosum</i>	-	-	-	-	x	-	-	-	-
<i>L. galeobdolon flavidum</i>	-	-	-	x	-	-	-	-	-
<i>L. galeobdolon galeobdolon</i>	-	-	x	-	-	-	-	-	-
<i>L. galeobdolon montanum</i>	-	x	x	-	-	-	-	-	-
<i>L. amplexicaule aleppicum</i>	-	-	-	-	-	x	-	-	-
<i>L. amplexicaule amplexicaule</i>	x	x	x	x	x	x	x	-	x
<i>L. amplexicaule bornmuelleri</i>	-	-	-	-	x	x	-	-	-
<i>L. amplexicaule incisum</i>	-	-	-	-	-	x	-	-	-
<i>L. amplexicaule orientale</i>	-	-	x	-	-	-	-	-	-
<i>L. eriocephalum</i>	-	-	-	-	-	x	-	-	-
<i>L. macrodon</i>	-	-	-	-	-	x	-	-	-
<i>L. album album</i>	-	x	x	-	-	x	x	x	-
<i>L. album barbatum</i>	-	-	-	-	-	-	-	-	x
<i>L. album crinitum</i>	-	-	-	-	-	x	x	-	-
<i>L. galactophyllum</i>	-	-	-	-	-	x	-	-	-
<i>L. maculatum</i>	-	x	x	x	-	-	-	-	-
<i>L. moschatum micranthum</i>	-	-	-	-	x	-	-	-	-
<i>L. moschatum moschatum</i>	-	-	-	-	x	-	-	-	-
<i>L. tomentosum</i>	-	-	-	-	-	x	-	-	-
<i>L. bifidum</i>	-	-	-	x	x	-	-	-	-
<i>L. confertum</i>	-	x	x	-	-	-	-	-	-
<i>L. garganicum corsicum</i>	-	-	-	-	x	-	-	-	-
<i>L. garganicum garganicum</i>	-	-	-	x	x	-	-	-	-
<i>L. garganicum armenum</i>	-	-	-	-	-	x	-	-	-
<i>L. garganicum microphyllum</i>	-	-	-	-	x	-	-	-	-
<i>L. garganicum striatum</i>	-	-	-	-	x	x	-	-	-
<i>L. glaberrimum</i>	-	-	-	x	-	-	-	-	-
<i>L. purpureum ehrenbergii</i>	-	-	-	-	x	-	-	-	-
<i>L. purpureum hybridum</i>	-	x	-	-	x	-	-	-	-
<i>L. purpureum incisum</i>	-	x	x	-	x	-	-	-	-
<i>L. purpureum moluccellifolium</i>	-	-	x	x	-	-	-	-	-
<i>L. purpureum purpureum</i>	-	x	x	x	x	x	-	-	-
<i>L. orvala</i>	-	-	-	x	-	-	-	-	-

observations and reliable data from the literature were necessary to obtain the needed information, and for the very rare species (e.g. *Lamium eriocephalum* and *Lamium galactophyllum*) this did not always give a satisfactory picture.

Roughly the habitats of the taxa of the genus *Lamium* can be listed under two categories: forests on the one hand and rocky mountain slopes / cultivated fields on the other. Forest (and derivations of it like thickets, under hedges and so on) is the habitat of the taxa of the subgenera *Galeobdolon* and *Orvala*. Rocky mountain slopes (and anthropogenic derivations like waste ground, cultivated fields, gardens, and roadsides) is the dominating habitat in the subgenus *Lamium*.

The data about the soil and the plant community are too incomplete to be summarized in general terms. In only a few cases a certain preference for a calcareous soil may be recognized in the habitat of a species (e.g. *Lamium orvala*).

The range of altitude in the genus *Lamium* is very large, from sea-level up to 4800 m (*Lamium tomentosum*). Most of the taxa are known from sea-level up to c. 1000 m; typical montane species are *Lamium eriocephalum* (1800–3200 m), *Lamium galactophyllum* (1400–2550 m), *Lamium garganicum* subsp. *corsicum* (1000–2500 m), *Lamium macrodon* (900–2700 m), and the already mentioned *Lamium tomentosum* (1300–4800 m), as well as the infraspecific taxa *Lamium amplexicaule* var. *bornmuelleri* (1500–2000 m) and *Lamium purpureum* var. *ehrenbergii* (1700–2300 m).

I.8. CRITERIA FOR DELIMITATION OF SUBGENERA, SECTIONS, SPECIES AND INFRASPECIFIC TAXA

For supraspecific delimitation I choose three 'important' (i.e. constant or diagnostic) character states: the anthers glabrous and the aristate apex of the bracts and the calyx teeth corneous and glabrous too versus the anthers dorsally and ventrally tufted hairy and the aristate apex of the bracts and the calyx teeth hairy to the top. The fact that these characters always appear in combination induced me to distinguish three subgenera. Other constant characters as the position of the bracts and the shape of the corolla tube are important too for delimitation on subgeneric level.

On the other hand the presence or absence of the bracts and the shape of the corolla tube are used to divide subgenus *Lamium* into three sections.

All specimens belonging to one species always differ in the same combination of three or more, often more or less variable characters from all specimens belonging to any other species. When a certain number of intermediates have been found linking two generally recognized species, they have been united into one species. This led in some cases to merging two or more species into one, where in a part of the distribution area these 'species' are rather well recognizable.

Infraspecific taxa are distinguished in cases where the mutual similarities are greater than the discriminative characters and in cases where the variable characters as length of stem, leaves and corolla, the number of flowers per verticillaster, and so on, show a certain overlap. The rank of subspecies was chosen not only on the basis of greater importance of the discriminative characters as compared to those separating varieties, but also because of differences in distribution and habitat.

I.9. HYBRIDIZATION

Only one hybrid can be recognized with confidence in the genus *Lamium*, viz. *Lamium* × *holsaticum* (*L. album* × *maculatum*). The hybrid itself will be treated after

the species (chapter II.5). In the same chapter the *Hybrida excludendae* and the *Hybrida dubiae* are also recorded.

Attempts to produce hybrids artificially have always been unsuccessful. Bernström (1955a & b) tried to hybridize *Lamium amplexicaule* and *purpureum*, treated in many floras as the parentage of the tetraploid *Lamium purpureum* var. *incisum*. His attempt failed, in my opinion not surprisingly, as the parent species belong to two separate sections of the subgenus *Lamium*. Stace (1975) crossed parental material of *Lamium confertum* and *purpureum* to produce the hybrid *Lamium* × *boreale*, but his crosses failed.

Summarizing it can be said, that the hybridization in the genus *Lamium* gives hardly any information about the relationship of the various taxa. It is striking, that the only hybrid *Lamium* × *holsaticum* has particularly been recorded in the border region of the areas of both parent species.

I.10. AN INTUITIVE PHYLOGENETIC RECONSTRUCTION

In postulating an intuitive phylogenetic reconstruction of the genus *Lamium*, I start from the axiom, that species with a large, disjunct distribution area are older than species with a small and continuous area. In this perspective it is striking that *Lamium orvala* (= subgenus *Orvala*) possesses a rather small but continuous area. The total area of *Lamium galeobdolon* is continuous too with some outposts, but is larger. *Lamium flexuosum*, also belonging to the subgenus *Galeobdolon* has a disjunct area, but as mentioned before, this is probably due to the cutting down of forests in the Mediterranean area in ancient times. But the latter are historical times, not geological ones. By comparison with some species of the subgenus *Lamium* such as *Lamium album* s. lat. and *Lamium garganicum* s. lat. the distribution areas of the species of the subgenera *Galeobdolon* and *Orvala* are small and rather continuous. According to the above mentioned axiom subgenera *Galeobdolon* and *Orvala* are supposed to be relatively young. The geographical aspect, that the distribution areas of both subgenera mainly are situated outside the centre of diversity (see table 3), lends support to this hypothesis.

Although both subgenera *Galeobdolon* and *Orvala* are distinguished from subgenus *Lamium* by the same characters, viz. anthers glabrous, bracts and calyx teeth with a corneous, glabrous aristate apex, this does not mean, that they are closely related with each other. To the contrary, it is in my opinion highly probable that their phylogenetic pathways have been separate. *Lamium orvala* with its straight corolla tube and large flowers is most closely related to *Lamium garganicum*. The taxa of subgenus *Galeobdolon* with their sigmoid corolla tube and smaller flowers are related with *Lamium maculatum*. It is remarkable that in both lines of development the same change in habitat can be observed: from rocks and open field via forest-margins to forest.

Lamium purpureum possesses various characters that lead me to consider it to be a central species. A diagram picturing the relationships is given in Fig. 5. The translation of the diagram in terms of an intuitive phylogenetic reconstruction is as follows.

At first, starting from (the forerunner of) *Lamium purpureum*, the development of species with amplexicaul upper leaves could take place. In this line the section *Amplexicaule* (*Lamium amplexicaule*, *eriocephalum* and *macrodon*) soon branched off by losing the bracts. It is remarkable that there is a great similarity in the development within the two species *Lamium amplexicaule* and *purpureum*. In both species infraspecific taxa occur with (irregularly) incised leaves (*Lamium amplexicaule* var. *incisum* and *orientale* \leftrightarrow *Lamium purpureum* var. *hybridum* and *incisum*) and dwarf forms from the montane regions (*Lamium amplexicaule* var. *bornmuelleri* \leftrightarrow *Lamium purpureum* var. *ehrenbergii*). The diversification within *Lamium amplexicaule* mainly took place in the Irano-Turanian region and that within *Lamium purpureum* mainly in the Western European region. The occurrence of a tetraploid variety (*Lamium purpureum* var. *incisum*), however, has no known counterpart in *Lamium amplexicaule* s. lat.

In the section *Lamium* two species are closely related to *Lamium purpureum*: *Lamium bifidum* and *confertum*. Both species may have developed rather early from (the forerunner of) *Lamium purpureum*. Both possess a subarea in Portugal, where *Lamium purpureum* occurs too. Still it goes too far, as Bernström (1955b) indirectly supposed, to look for the origin of the tetraploid *Lamium confertum* in a joint ancestorship of *Lamium bifidum* and *Lamium purpureum*. The main characters of *Lamium confertum* (index leaves < 1.0 ; lowest verticillaster remote; calyx teeth longer than the calyx tube) are lacking in both putative ancestors. Except the common subarea in Portugal the distribution of *Lamium bifidum* and *purpureum* is distinctly different. *Lamium confertum* spread rather recently, i.e. after the last glacial periods, in Northern Europe, and *Lamium bifidum* in the Western Mediterranean area. Because of its bifid corolla the latter species is seen as the putative forerunner of another Mediterranean species *Lamium garganicum*, from which *Lamium glaberrimum*, restricted to the Krym (U.S.S.R.), developed, and also *Lamium orvala* (section *Orvala*).

Apart from the species of the section *Amplexicaule* there is still another species with amplexicaul upper leaves, *Lamium galactophyllum*. This species, still present in a small montane area in Asia Minor, is considered by me as the central (oldest) species of the section *Lamiotypus*, descended from the same ancestor as *Amplexicaule*. *Lamium galactophyllum* has preserved its bracts and possesses a sigmoid corolla tube. Via *Lamium moschatum*, related to *Lamium galactophyllum* by also having upper leaves with whitish (or pinkish) spots at the base, *Lamium tomentosum* and *Lamium album* arose. The latter species is closely related to *Lamium maculatum* and can be considered its parental species; the only known hybrid in *Lamium* is the hybrid of *Lamium album* and *maculatum*.

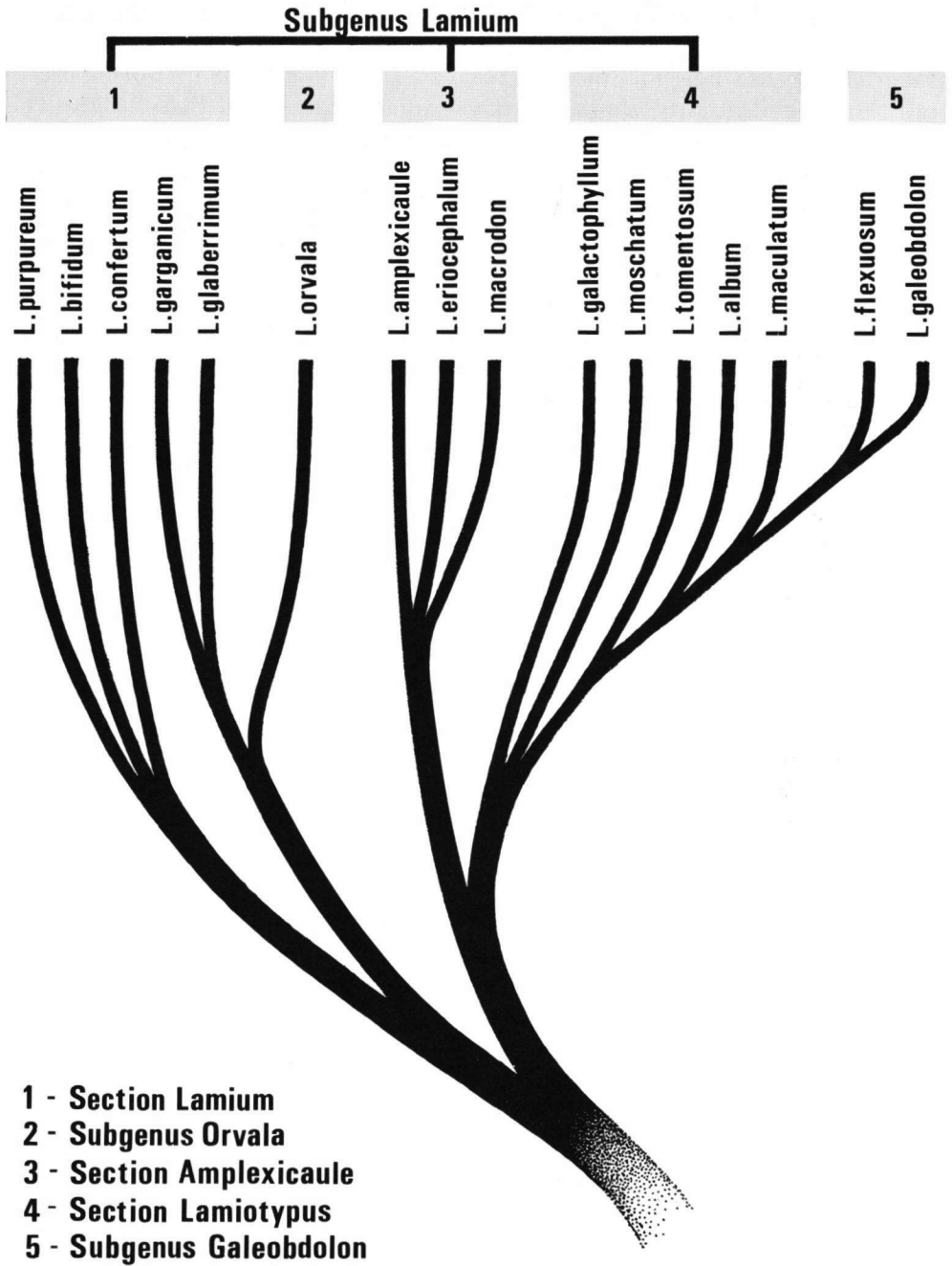


Fig. 5. The phylogenetic relationships in the genus *Lamium*.

The habitat of the latter species is in forest-margins, the same habitat where *Lamium flexuosum* is growing. This species is in my view derived from *Lamium maculatum* because of its glabrous anthers and a glabrous aristate apex of the bracts and calyx teeth, also the characters of the forest plant *Lamium galeobdolon*. The latter has been placed in a separate genus (*Lamiastrum*, *Galeobdolon*) by many recent authors (i.a. Grintescu, 1963; Dvoráková, 1966; Polatschek, 1966; Holub, 1970; Wegmüller, 1971, 1973; Ball, 1972; Mill, 1982; Hämet-Lahti et al., 1984; Clapham et al., 1987) on the basis of a number of morphological and chemical characters: the lateral lobes of the lower lip, the deviating yellow colour of the corolla, and the absence of lamiol and lamioside. Concerning the last character it is rather unfortunate that the chemical characters of *Lamium flexuosum* never have been investigated. The oblique-ovate lateral lobes of the lower lip are also observed in a form of *Lamium album*, viz. var. *splendens*; that indicates a certain relationship of *Lamium album* with the younger *Lamium galeobdolon* (via *Lamium maculatum*). Although I do not deny that the position of *Lamium galeobdolon* is a special one, I completely agree with Bentham (1848) who united *Lamium galeobdolon* and *flexuosum* in the section *Galeobdolon*. The fact, that both species have spreading or reflexed bracts, has contributed to this opinion. Muller (1978) investigated a number of *Lamium* seedlings of the North-western European lowland. The number was too low—only 5 taxa—to draw conclusions on phylogenetic relationships, but interestingly he mentioned a certain similarity between *Lamium maculatum* and *Lamium galeobdolon*. *Lamium maculatum* possesses hypocotyls with an emarginate tip and *Lamium galeobdolon* with a deeply emarginate tip; all other tips of the hypocotyls investigated are rounded-truncate (*Lamium album*, *Lamium amplexicaule*, *Lamium purpureum* var. *purpureum* and *incisum*). In this character I find some support for the supposed relationship between *Lamium maculatum* and *Lamium galeobdolon* and for the supposition that *Lamium galeobdolon* finds its origin in *Lamium maculatum*.

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II. TAXONOMIC CHAPTER

II.1. INTRODUCTION

After the description of the genus and the key the subgenera, sections, species and infraspecific taxa are treated in alphabetical order. In addition the one recognized hybrid has been treated. Criteria for what is understood by the concepts subgenera, sections, species, subspecies and varieties are given in Chapter I.8.

Synonyms are listed in chronological order, supplied with the most important literature references. Literature has been abbreviated mainly according to F. A. Stafleu & R. S. Cowan, *Taxonomic Literature* (6 volumes, 1976-1986), and G. H. M. Lawrence et al., *Botanico-Periodicum-Huntianum* (1968).

Of the synonyms not every type could be obtained for verification. To give some information about the absence of the types in the various well-known herbaria I have added in brackets: not found in ... Lectotypes have been assigned by the present author.

To show the variability of the quantitative characters diagrams are added. Diagrams give more information than minimum, average and maximum values. In the key I use averages for the quantitative characters; in the descriptions the minimum and maximum values are added. In Chapter I.4 is described how the various parts of the plant were measured. In principle the quantitative data in my descriptions are based on measurements of all the available specimens for each taxon. If a very large number of specimens of one taxon was available, measurements were made on at least 5 specimens from each country or province. In that way I tried to collect a reliable spectrum of the quantitative characters within the whole distribution area of the taxon.

The data on distribution, habitat and altitude are mainly based on data from the labels; if necessary, data from the literature were added. The sequence of the habitats mentioned reflects a decreasing preference of the plants.

The variability is described briefly and the main variable characters are mentioned. All taxa below the rank of the treated taxon, that I could find in literature, are included in alphabetical order. These lower-ranked taxa are in my opinion not of taxonomical value; completeness of the lists of names is not claimed.

The list of the cited collections (see Chapter III) is complete in the cases of rare taxa and of taxa which were known under other names. If there were too many collections, I made a selection of the cited specimens. Exsiccatae collections have been preferred; furthermore attention has been paid to a well-balanced distribu-

tion over the countries concerned and the total number of examined collections is mentioned.

Geographical names have been spelled according to the available volumes of the 'Gazetteers' (Official standard names approved by the United States Board on geographic names) and to the latest edition of 'The Times' atlas of the world (1980). In some cases the original label names are added in square brackets. Names neither in the Gazetteers, nor in the Times atlas have been spelled according to the original labels.

All names which could not be ascertained as synonyms have been summed up as *Species et varietates dubiae* respectively *Hybrida dubiae*, while *Lamium* names which do not belong to the genus as conceived here, are given under *Species excludendae*. Putative *Lamium* hybrids belonging to one of the treated taxa, have been listed up as *Hybrida excludendae*.

The major part of the material studied in this work consisted of dried specimens. Herbaria, from which material was examined, are if possible indicated in the text by the following abbreviations according to the Index Herbariorum, 7th ed. (1981). Foreign institutes I visited personally, have been marked with an asterisk (*).

AMD	Hugo de Vries-Laboratorium, Amsterdam, Netherlands.
AWH*	Natuurwetenschappelijk Museum (Dr Henri van Heurck), Antwerpen, Belgium.
—	Private herbarium J. F. Ballintijn, Purmerend, Netherlands.
B	Botanischer Garten und Botanisches Museum, Berlin, Germany.
BAS*	Botanisches Institut der Universität, Basel, Switzerland.
BM*	British Museum (Natural History), London, Great Britain.
—	Private herbarium G. Bosc, Toulouse, France.
BP	Botanical Department of the Hungarian History Museum, Budapest, Hungary.
—	Private herbarium J. Bruinsma, Breugel, Netherlands.
BR	Jardin botanique national de Belgique, Meise, Belgium.
BRNU	Institute of Plant Biology, University of J. E. Purkyne, Brno, Czechoslovakia.
C	Botanical Museum and Herbarium, Copenhagen, Denmark.
CAL	Central National Herbarium, Botanical Survey of India, Howrah, India.
COI	Botanical Institute of the University, Coimbra, Portugal.
E	Royal Botanic Garden, Edinburgh, Great Britain.
ERE	Department of Plant Taxonomy and Geography, Botanical Institute of the Academy of Sciences of the Armenian S.S.R., Yerevan, U.S.S.R.
FI	Herbarium Universitatis Florentinae, Firenze, Italy.
G*	Conservatoire et Jardin botaniques de la Ville de Genève, Chambésy, Switzerland.
GB	Botanical Museum, Göteborg, Sweden.
GOET	Systematisch-Geobotanisches Institut, Göttingen, Germany.
—	Private herbarium Prof. Dr. W. Greuter, Berlin, Germany.
GRM*	Muséum d'Histoire Naturelle, Grenoble, France.
GRO	Biological Centre, Department of Systematic Botany, Haren (Groningen), Netherlands.
H	Botanical Museum, University of Helsinki, Helsinki, Finland.
HBG*	Institut für Allgemeine Botanik und Botanischer Garten, Hamburg, Germany.
—	Private herbarium Ir. H. P. van Heel, Veere, Netherlands.
—	Private herbarium Dr. A. Huber-Morath, Basel, Switzerland.
ISTE	Istanbul Üniversitesi Eczacılık Fakültesi Herbaryum, Istanbul, Turkey.

HUJ	Department of Botany, The Hebrew University, Jerusalem, Israel.
JE	Herbarium Haussknecht, Sektion Biologie der Friedrich-Schiller-Universität, Jena, Germany.
K*	The Herbarium, Royal Botanic Gardens, Kew, Great Britain.
L	Rijksherbarium, Leiden, Netherlands.
—	Herbarium Laboratorium voor Experimentele Plantensystematiek, Leiden, Netherlands (now in L).
—	Private herbarium Prof. Ir. J.-E. de Langhe, Berchem-Antwerpen, Belgium.
LAU	Musée botanique cantonal, Lausanne, Switzerland.
LD	Botanical Museum, Lund, Sweden.
LE*	Department of Higher Plants, V. L. Komarov Botanical Institute of the Academy of Sciences of the U.S.S.R., Leningrad, U.S.S.R.
LINN*	The Linnean Society, London, Great Britain.
LY	Herbiers de l'Université de Lyon, Lyon, France.
M	Botanische Staatssammlung, München, Germany.
MA	Jardin Botánico, Madrid, Spain.
MAAS	Natuurhistorisch Museum, Maastricht, Netherlands.
MPU*	Institut de Botanique, Montpellier, France.
NBV	Koninklijke Nederlandse Botanische Vereniging, Leiden, Netherlands.
OXF	Fielding-Druce Herbarium, Oxford, Great Britain.
P*	Muséum National d'Histoire Naturelle, Paris, France.
PAL	Erbario Siculo and Erbario Generale, Palermo, Italy.
PR	Botanicke oddeleni Prirodoved muzea Narodniho muzea v Praze, Pruhonice near Praha, Czechoslovakia.
PRC	Universitatis Carolinae Facultatis Scientiae Naturalis, Institutum Botanicum, Praha, Czechoslovakia.
S	Swedish Museum of Natural History, Stockholm, Sweden.
SAV	Botanicky ustav Slovenskej akademie vied, Bratislava, Czechoslovakia.
TI	Botanic Gardens Koishikawa, Tokyo, Japan.
TO	Museum Botanicum Horti Taurinensis, Torino, Italy.
U	Institute of Systematic Botany, Utrecht, Netherlands.
UPS*	The Herbarium, University of Uppsala, Uppsala, Sweden.
—	Private herbarium Dr. H. Vollrath, Freising-Weißenstephan, Germany.
W	Naturhistorisches Museum, Botanische Abteilung, Wien, Austria.
WAG	Laboratory for Plant Taxonomy and Plant Geography, Wageningen, Netherlands.
WU	Institut für Botanik und Botanischer Garten der Universität, Wien, Austria.
—	Private herbarium R. H. Willemse, Dokkum, Netherlands.
—	Private herbarium D. W. Wolfskeel, Schagen, Netherlands.
Z*	Institut für Systematische Botanik der Universität Zürich, Zürich, Switzerland.
ZT	The Herbarium, Institut für Spezielle Botanik, Zürich, Switzerland.

II.2. LAMIUM

Lamium Linnaeus, Sp. Pl. (1753) 579. - Type species: *Lamium purpureum* L., according to Britton and Brown (1913).

Orvala Linnaeus, Sp. Pl. (1753) 578. - Type species: *Orvala garganica* L. [= *Lamium orvala* (L.) L.].

Lamiastrum Heister ex Fabr., Enum. Meth. Pl. (1759) 51, nomen gen. inval. - Type species: *Lamiastrum galeobdolon* (L.) Ehrend. & Polatschek [= *Lamium galeobdolon* (L.) L.].

Galeobdolon Adans., Fam. Pl. 2 (1763) 190. - Type species: *Galeobdolon luteum* Hudson [= *Lamium galeobdolon* (L.) L.].

Pollichia Schrank, Act. Acad. Elect. Sci. Util. Erfurti (1781) 35, nomen gen. rejic., non Aiton 1789, nomen gen. conserv. - Type species: *Pollichia galeobdolon* (L.) Willd. [= *Lamium galeobdolon* (L.) L.].

Psilopsis Necker, Elem. Bot. 1 (1790) 319. - Type species: not designated.

Lamiopsis (Dumort.) Opiz, Seznam (1852) 56. – Type species: *Lamiopsis amplexicaulis* (L.) Opiz [= *Lamium amplexicaule* L.].
Lamiella Fourr., Ann. Soc. Linn. Lyon 17 (1869) 34. – Type species: *Lamiella amplexicaulis* (L.) Fourr. (= *Lamium amplexicaule* L.).

Annual or perennial, small to middle sized *herbs*, glabrate at the base to variously hairy towards the apex; shortly stalked and sessile glands usually present, especially on the bracts and the calyx. *Stems* decumbent or erect, simple or branched, homogeneously hairy (except *L. galeobdolon* subsp. *galeobdolon*: hairs exclusively on the ribs). *Leaves* petioolate, the upper ones usually sessile or amplexicaul; cordate, reniform, rhomboid or (upper) ovate to ovate-lanceolate with cordate or attenuate to truncate base and acute to tapering acuminate apex, crenate, dentate, serrate or irregularly (deeply) incised; no significant differences between cauline and floral leaves. *Verticillasters* remote or crowded, with usually 10–20 bisexual flowers. *Bracts*, if present, linear, usually less than ½ as long as the calyx, aristate apex hairy or glabrous. *Calyx* campanulate with oblique mouth, with c. 10 nerves; longer after anthesis; teeth subequal, (narrowly) triangular, rarely deltoid, aristate apex hairy or glabrous. *Corolla* bilabiate; white, pink, purple, rarely crimson to reddish or yellow; tube straight or sigmoid, mostly abruptly dilated and exerted from the calyx, with or without internal ring of hairs; upper lip arched, rounded, truncate, emarginate, bilobed or bifid, margin entire or undulate; lower lip mostly about as long as the upper lip and at a right angle to the latter, lateral lobes rounded with 1 or 2 teeth, or oblique-ovate and toothless, median lobe bilobed to bipartite, margin mostly undulate. *Stamens* not exerted beyond the upper lip, the anterior ones longer than the posterior ones and lower attached; filaments viscidly hairy and sometimes also with short glands; anthers dorsally and ventrally tufted hairy or glabrous; pollen light yellow to red orange. *Disc* half-circular, lobed, fleshy. *Style* not longer than the corolla, (sub)glabrous, usually equally bifurcate. *Nutlets* obovoid with truncate apex, in cross-section trigonous with one convex and two flat sides, dull-brown, very often with small greyish spots.

II.3. KEY TO ALL TAXA EXCEPT HYBRIDS

1. Anthers dorsally and ventrally tufted hairy. Bracts and calyx teeth with a hairy aristate apex Subgenus **II. Lamium**
2. Bracts absent. Upper leaves amplexicaul Section **A. Amplexicaule**
 3. Perennial. Verticillasters crowded in densely, woolly globes. Corolla 3 cm or longer **4. L. eriocephalum**
 3. Annual. Verticillasters usually remote, and if crowded, not in densely, woolly globes. Corolla less than 2½ cm
 4. Calyx in anthesis 1 cm, the tube always shorter than the teeth
 **5. L. macrodon**

4. Calyx $\frac{1}{2}$ cm, the tube as long as the teeth **3. L. amplexicaule**
5. Leaves $1\frac{1}{2}$ - $2\frac{1}{4}$ × as long as broad **3.a. L. amplexicaule var. aleppicum**
5. Leaves at the utmost as long as broad, usually shorter than broad.
6. Plant very small, ≤ 5 cm, with very small leaves, c. $\frac{1}{2}$ cm long. Flowers only cleistogamous. Verticillasters crowded ... **3.c. L. amplexicaule var. bornmuelleri**
6. Plant larger, 10 cm or longer, with larger leaves, 1 cm or longer. Also chasmogamous flowers. Verticillasters remote
7. Leaves mostly coarsely and irregularly crenate to lobed **3.b. L. amplexicaule var. amplexicaule**
7. Leaves partite to divided
8. Especially the floral leaves partite to divided. Verticillasters conspicuously remote. Corolla c. $1\frac{1}{2}$ cm long, about $2\frac{1}{2}$ × as long as the calyx **3.e. L. amplexicaule var. orientale**
8. Especially the cauline leaves partite to divided. Verticillasters remote. Corolla $1\frac{3}{4}$ - $2\frac{1}{4}$ cm long, about $3\frac{1}{2}$ - 4 × as long as the calyx **3.d. L. amplexicaule var. incisum**
2. Bracts present. Upper leaves usually sessile, not amplexicaul
9. Corolla tube straight **Section C. Lamium**
10. Leaves deeply divided into 5-lobed segments **14. L. glaberrimum**
10. Leaves usually crenate, serrate, or not deeply irregularly incised
11. Perennial, rhizome present **13. L. garganicum**
12. Corolla c. $1\frac{1}{2}$ cm long. Calyx less than 1 cm. Bracts 1-2 mm long. Nutlets $2\frac{1}{2}$ by $1\frac{1}{4}$ mm **13.a. L. garganicum subsp. corsicum**
12. Corolla $2\frac{3}{4}$ - $3\frac{1}{2}$ cm long. Calyx mostly 1- $1\frac{1}{2}$ cm long. Bracts 2-10 mm long. Nutlets $2\frac{3}{4}$ - $4\frac{3}{4}$ by $1\frac{1}{2}$ - $2\frac{1}{2}$ mm
13. Stem usually longer than 30 cm. Leaves cordate, $3\frac{1}{2}$ -5 cm long, index 1.2-1.5. Verticillasters mostly with 10 or more flowers **13.b. L. garganicum subsp. garganicum**
13. Stem usually shorter than 30 cm. Leaves usually reniform, $\frac{1}{2}$ - $2\frac{1}{2}$ cm long, index 0.7.-1.1. Verticillasters mostly with 10 or fewer flowers **13.c. L. garganicum subsp. striatum**
14. Stem 15-30 cm long. Leaves 2 cm or longer. Verticillasters remote. Nutlets $2\frac{3}{4}$ - $3\frac{1}{4}$ by $1\frac{1}{2}$ mm **13.c.3. L. garganicum var. striatum**

14. Stem 5–15 cm long. Leaves less than 2 cm. Verticillasters crowded. Nutlets $4\frac{1}{4}$ – $4\frac{3}{4}$ by $2\frac{1}{4}$ – $2\frac{1}{2}$ mm
15. Stem 10–15 cm long. Leaves c. 1 cm, the upper ones rhomboid, irregularly crenate. Verticillasters mostly with 6 flowers. Upper lip corolla usually truncate.....
.....**13.c.1. L. garganicum** var. **armenum**
15. Stem about 5 cm long. Leaves $\frac{1}{2}$ –1 cm, the upper ones reniform, regularly crenate. Verticillasters with 2–4 flowers. Upper lip corolla usually bifid.....
13.c.2. L. garganicum var. **microphyllum**
11. Annual, rhizome lacking
16. Leaves with a white central band; index cauline leaves 1.2–1.4. Corolla white; upper lip bifid...**11. L. bifidum**
16. Leaves without a white central band; index cauline leaves 0.8–1.1. Corolla pink to red-purple, very rarely white; upper lip rounded
17. Corolla 2– $2\frac{1}{2}$ cm long. Calyx in anthesis c. 1 cm; tube shorter than the teeth..... **12. L. confertum**
17. Corolla less than 2 cm. Calyx less than 1 cm; tube longer than to as long as the teeth.....
..... **15. L. purpureum**
18. Leaves regularly and mostly faintly crenate
19. Stem c. 5 cm long. Leaves c. $\frac{1}{2}$ cm long. Flowers mostly always cleistogamous. Calyx teeth $\frac{1}{2}$ – $\frac{2}{3}$ as long as the tube
..... **15.a. L. purpureum** var. **ehrenbergii**
19. Stem 10 cm or longer. Leaves $1\frac{1}{2}$ –2 cm long. Flowers usually chasmogamous. Calyx teeth about as long as the tube
..... **15.e. L. purpureum** var. **purpureum**
18. Leaves irregularly and usually deeply incised, especially the upper ones
20. Verticillasters remote, especially the lower ones. The upper leaves rhomboid.....
15.d. L. purpureum var. **moluccellifolium**
20. Verticillasters crowded. The upper leaves cordate to obovate
21. Stem 10–20 cm long; very often rather hairy. Corolla $\frac{3}{4}$ – $1\frac{1}{4}$ cm long; tube

- usually not exerted from the calyx
- .. **15.b. L. purpureum** var. **hybridum**
21. Stem 20–30 cm long; mostly glabrous or glabrate. Corolla c. 1½ cm long; tube conspicuously exerted from the calyx
- **15.c. L. purpureum** var. **incisum**
9. Corolla tube sigmoid, abruptly dilated or ventrally saccate.....
- Section **B. Lamiotypus**
22. Upper leaves usually with whitish or pinkish spots at the base.
Corolla tube not exerted from the calyx
23. Floral leaves reniform, index 0.7–0.8; upper leaves amplexicaul and always with whitish spots at the base
- **7. L. galactophyllum**
23. Floral leaves cordate, index 1.1–1.4; upper leaves sessile and usually with whitish or pinkish spots at the base.....
- **9. L. moschatum**
24. Calyx usually 1 cm long, slightly longer after anthesis.
Corolla usually 1½ cm long
- **9.a. L. moschatum** subsp. **micranthum**
24. Calyx usually 1¼–1½ cm long, much longer after anthesis. Corolla usually 1¾–2 cm long
- **9.b. L. moschatum** subsp. **moschatum**
22. Upper leaves without whitish or pinkish spots at the base.
Corolla tube exerted from the calyx
25. Corolla purple; internal ring of hairs perpendicular to the tube of the corolla. Pollen orange..... **8. L. maculatum**
25. Corolla white, rarely pink; internal ring of hairs oblique.
Pollen light yellow
26. Plant usually densely patent hairy. Stem 10–25 cm long.
Leaves 1–2½ cm long. Corolla tube faintly sigmoid, ventrally saccate..... **10. L. tomentosum**
26. Plant glabrous to appressed-pubescent hairy. Stem 30–45 cm long. Leaves 3–6 cm long, or longer. Corolla tube clearly sigmoid..... **6. L. album**
27. Corolla c. 3 cm long; pink or white. Petiole of the lowermost floral leaves usually longer than the flowers of the same verticillaster.....
- **6.b. L. album** subsp. **barbatum**
27. Corolla c. 2–2½ cm long; white. Petiole of the lowermost floral leaves as long as or shorter than the flowers of the same verticillaster

- 28. Bracts small, 2-3 mm long. Calyx small, c. 1 cm long; teeth as long as or shorter than the tube **6.a. L. album subsp. album**
- 28. Bracts larger, 4-6 mm long. Calyx larger, 1¼-1½ cm long; teeth usually longer than the tube **6.c. L. album subsp. crinitum**
- 1. Anthers glabrous. Bracts and calyx teeth with a usually clearly corneous aristate apex
 - 29. Corolla 3½ cm or longer; crimson to reddish or brownish purple; tube straight. Bracts not spreading or reflexed. Aristate apex very short..... Subgenus **III. Orvala**
16. **L. orvala**
 - 29. Corolla to 2½ cm long; yellow, white or rarely pink; tube faintly sigmoid. Bracts spreading or reflexed. Aristate apex long..... Subgenus **I. Galeobdolon**
 - 30. Corolla white, rarely pink; lateral lobes rounded, to 2 mm long. Calyx tube about as long as the teeth..... **1. L. flexuosum**
 - 30. Corolla yellow; lateral lobes oblique-ovate, 5-6 mm long. Calyx tube longer than the teeth..... **2. L. galeobdolon**
 - 31. Stem 20— 30 cm long, hairs exclusively on the ribs. Verticillasters with fewer than 10 flowers. Calyx teeth usually ⅔ as long as the tube..... **2.b. L. galeobdolon subsp. galeobdolon**
 - 31. Stem 30-50 cm long, evenly hairy. Verticillasters with 10 or more flowers. Calyx teeth usually ½ × as long as the tube
 - 32. Rhizome with stolons. Stem simple. Cauline leaves 3-5 cm long. Corolla 2 cm or longer..... **2.c. L. galeobdolon subsp. montanum**
 - 32. Rhizome without stolons. Stem branched. Cauline leaves 5-10 cm long. Corolla less than 2 cm **2.a. L. galeobdolon subsp. flavidum**

II.4. DESCRIPTION OF ALL TAXA EXCEPT HYBRIDS

I. Subgenus *Galeobdolon* (Adans.) Asch.

Subgenus *Galeobdolon* (Adans.) Asch., Fl. Prov. Brandenb. 1 (1864) 525. - Type: *Lamium galeobdolon* (L.) L.

Section *Galeobdolon* Benth., Lab. Gen. spec. (1834) 515.

Bracts spreading or reflexed. Bracts and *calyx* teeth with a clearly glabrous corneous aristate apex. *Anthers* glabrous.

1. *Lamium flexuosum* Ten. - Figs. 6 and 7.

Lamium flexuosum Ten., Fl. Nap. 1 (1811) XXXIV; Benth., Lab. Gen. Spec. (1834) 515; Benth. in DC., Prodr. 12 (1848) 511; Nyman, Syll. Fl. Eur. (1855) 94; Willkomm & Lange, Prodr. Fl. Hisp. 2 (1868) 437; Battand. & Trabut, Fl. Alg. & Tun. (1905) 268; Rouy, Fl. Fr. 11 (1909) 299; P. Ball, Fl. Eur. 3 (1972) 147; Guin. & R. Vilm., Fl. Fr. 2 (1975) 716; Pign., Fl. It. 2 (1982) 457. - Type: *Tenore 367*, [Italy] 'in sylvis, ad sepes' (holo. FI, iso. BM).

Lamium archangelica Garsault, Fig. Pl. Anim. Méd. (1764) tab. 317; Descr. Pl. Anim. (1767) 197, nomen illeg. Garsault's binary names can not be accepted, because the Linnean system of binary nomenclature for species is not consistently employed.

Lamium pubescens Sibth. ex Benth., Lab. Gen. Spec. (1834) 515; Benth. in DC., Prodr. 12 (1848) 511; Nyman, Syll. Fl. Eur. (1855) 94. - *Lamium flexuosum* Ten. var. *pubescens* (Sibth. ex Benth.) Bég. in Fiori & Paol., Fl. Anal. It. 3 (1903) 35; Pign., Fl. It. 2 (1982) 457. - Type: *Sibthorp s.n.*, as *L. rugosum* Sibth. & Sm. non Aiton (holo. OXF).

Lamium heterophyllum Scheele, Flora 26,1 (1843) 567; Linnaea 22 (1849) 594. - Type: *Sieber s.n.*, Jugoslavia, Dalmatia (not seen).

Lamium flexuosum Ten. var. *typicum* Bég. in Fiori & Paol., Fl. Anal. It. 3 (1903) 34, nomen inval. *Lamium berenguieri* Pau, Mem. Real Soc. Esp. Hist. Nat. 12,5 (1924) 378. - Type: *Pau s.n.*, Morocco, Tétouan, at the right border of the river Martin (holo. FI).

Lamium album Desf., Fl. Atl. 2 (1798) 18, non L. 1753. - Type: *Desfontaines s.n.*, ?, Belide Mountains (holo. P, iso. FI).

Lamium rugosum Sibth. & Smith, Fl. Gr. 6 (1827) 45, non Aiton 1789, nomen illeg. - Type: *Sibthorp s.n.*, s.d. (holo. OXF).

Perennial. *Rhizome* cauliform, woody, very short to a few dm long, with stolons. *Stem* usually decumbent and flexuous, simple or branched, (15-) 30-40 (-80) cm long, 1½-2 (-3) mm Ø, sparsely hirsute. *Leaves*: *petiole* (½-) 1½-2½ (-5) cm, always shorter than the blade, the upper leaves sessile; *blade* ovate to (upper) ovate-lanceolate with a cordate to attenuate to truncate base and an acute to (upper) slightly tapering-acuminate apex, coarsely and partly double-crenate to (upper) dentate, sparsely appressed-pubescent on both sides: *cauline leaves* (1-) 3½-6½ (-8½) cm long, index (1.2-) 1.4-1.7 (-2.0); *floral leaves* (1-) 4½-6 (-9) cm long, index (1.2-) 1.6-1.9 (-2.1). *Verticillasters* 4 or 5, usually remote, with (6-) 10-18 (or more) flowers. *Bracts* (3-) 4-6 (-10) mm long, ½-1 mm broad, hirsute and especially on the margin with short glandular hairs. *Calyx* usually with 10 or more nerves, 1-1¼ (-1¼) cm long, longer after anthesis, hirsute; teeth about as long as the tube, triangular to narrowly triangular, on the margin with short glandular hairs. *Corolla* white, rarely pink or purple, 1½-2 (-2¼) cm long; tube faintly sigmoid, abruptly dilated, ¾-1 cm long, not exerted from the calyx, outside glabrous to subglabrous, inside with an oblique ring of hairs dorsally at 3 mm from the base ventrally pointing backwards; upper lip arched, 7-10 (-12) by 4-6 mm broad, apex rounded and margin entire to faintly undulate, outside velutinous, inside glabrous; lower lip about as long as the upper lip and at a right angle to the latter, glabrous, lateral lobes rounded, to 2 mm long, tooth minute, to ¼ mm long, or absent, median lobe 4-5 by 4-5 mm, bilobed, margin undulate. Anterior *stamens* 10-12 mm long, c. 3 mm longer than the posterior ones and attached c. 1½ mm lower; filaments with short glandular hairs; anthers 1¼-2

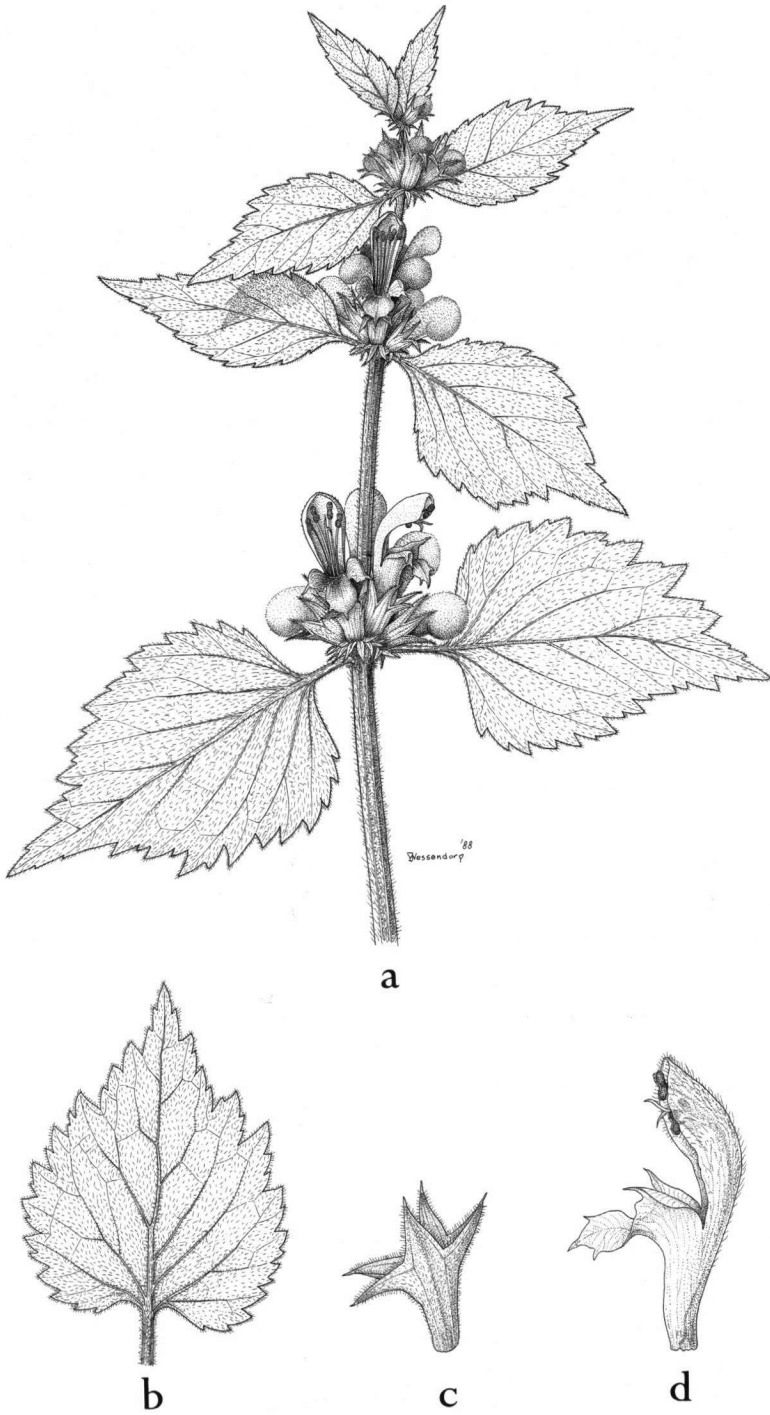


Fig. 6. *Lamium flexuosum*: a. upper part (1 ×); b. uppermost cauline leaf (1 ×); c. calyx (2 ×); d. corolla (2 ×).

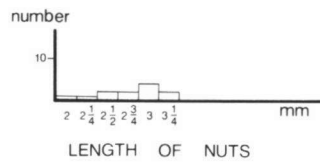
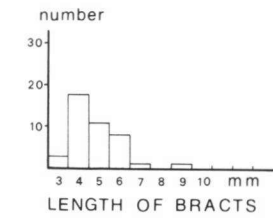
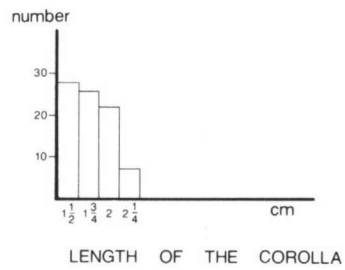
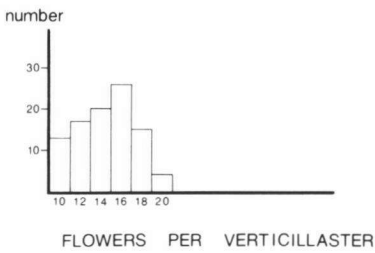
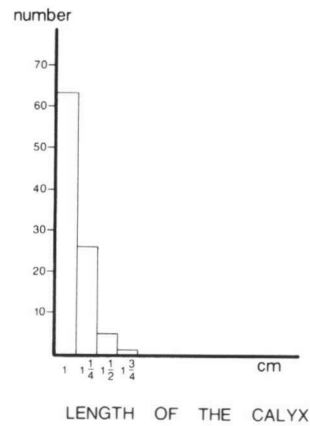
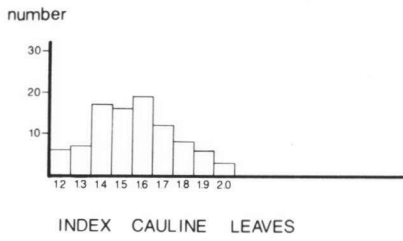
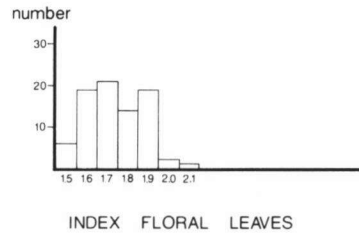
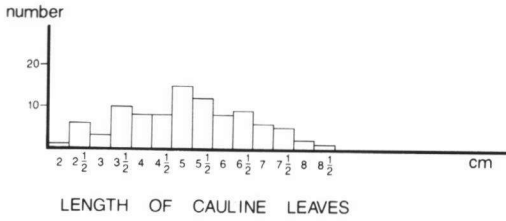
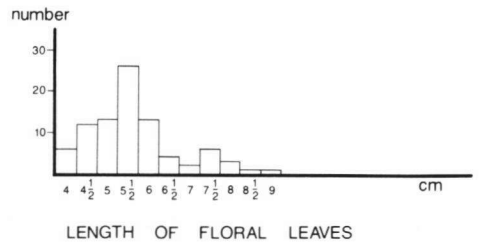
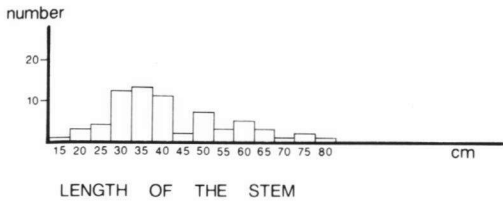


Fig. 7. *Lamium flexuosum*.

by $\frac{3}{4}$ -1 mm; pollen colour unknown. *Disc* c. $1\frac{1}{2}$ mm broad. *Style* about 3 mm shorter than the corolla, subglabrous. *Nutlets* (2-) $2\frac{1}{2}$ -3 (- $3\frac{1}{4}$) by ($1\frac{1}{4}$ -) $1\frac{1}{2}$ - $1\frac{3}{4}$ (-2) mm.

Distribution. S. France (extinct now at Montpellier), Spain, Italy S. of Rome, and Sicilia, Morocco, Algeria and Tunisia - Fig. 8.

Habitat. Roadsides under hedges, in thickets, in forests (*Quercetum*), in mountain meadows.

Altitude. From about sea-level up to 2360 m (Morocco).

Variability. *Lamium flexuosum* is a rather uniform, well recognizable species, and very closely related to *Lamium galeobdolon*.

There are no reasons to consider *Lamium pubescens* a separate taxon.

In S. Italy (Calabria) specimens are found with leaves with a white central band like the leaves of *Lamium galeobdolon* f. *argentatum*. *Fiori s.n.*, *Gavioli s.n.*, *Sarfatti & Corradi s.n.*, and *Mennema 1104* have short triangular calyx lobes, c. $\frac{1}{2}$ × as long as the tube.

Infraspecific taxa I found in the literature are recorded below in alphabetical order.

var. *incisum* Lojac., Fl. Sic. 2 (1907) 232.

var. *major* Lojac., Fl. Sic. 2 (1907) 232.

var. *microphyllum* Lojac., Fl. Sic. 2 (1907) 232.

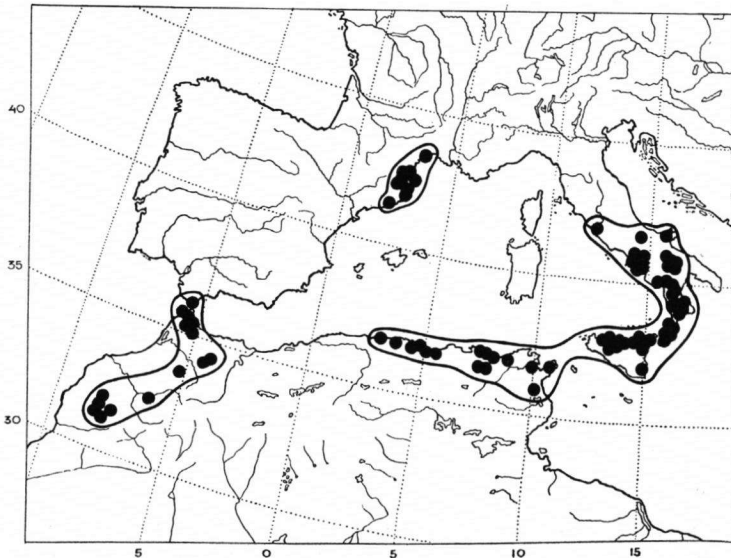


Fig. 8. Distribution of *Lamium flexuosum*.

2. *Lamium galeobdolon* (L.) L. - Fig. 9.

- Lamium galeobdolon* (L.) L., Amoen. Acad. 4 (1759) 485; Benth., Lab. Gen. Spec. (1834) 516; Benth. in DC., Prodr. 12 (1848) 512; Willkomm & Lange, Prodr. Fl. Hisp. 2 (1868) 437; Boiss., Fl. Orient. 4 (1879) 756; Briq., Lab. Alp. Mar. 2 (1893) 315; Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2441; Rothm., Feddes Rep. 50 (1941) 77; Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 960; F. Herm., Fl. N.-Mitt.eur. (1956) 864; Guterm., Ber. Bayer. Bot. Ges. 35 (1962) 43; Dersch, Ber. Deutsch. Bot. Ges. 36 (1963) 351; Lid, Norsk Sv. Fl. (1963) 578; Endtm., Feddes Rep. 72 (1966): 132; Polatschek, Oesterr. Bot. Z. 113 (1966) 102; Soó & Borh., Acta Bot. Acad. Sci. Hung. 14 (1968) 161; Rauschert, Feddes Rep. 79 (1969) 411; Mennema, Gorteria 5 (1971) 193; Wegmüller, Watsonia 8 (1971) 277; Wegmüller, Ber. Schweiz. Bot. Ges. 83 (1973) 274; Guterm. et al., Oesterr. Bot. Z. 122 (1973) 265; A. Hansen in Rostrup/C. A. Jørg., Dansk. Fl. ed. 20 (1973) 505; Schönfelder & Wegmüller, Gött. Flor. Rundbr. 8 (1974) 24; Fink, Gött. Flor. Rundbr. 9, Beibl. (1975) 1; Guin. & R. Vilm., Fl. Fr. 2 (1975) 715; H. P. Fuchs, Feddes Rep. 90 (1980) 525; Packham, J. Ecol. 71 (1983) 975; Wittmann & Strobl, Ber. Bayer. Bot. Ges. 57 (1986) 163; Menitsky in Takht., Fl. Armen. 8 (1987) 82; Stirling & Rutherford, BSBI News 45 (1987) 45. - *Galeopsis galeobdolon* L., Sp. Pl. (1753) 580; Spec. Pl. 2 ed.2 (1763) 810. - *Leonurus galeobdolon* (L.) Scopoli, Fl. Carn. 1 ed. 2 (1771) 409. - *Galeobdolon luteum* Hudson, Fl. Angl. 1 ed. 2 (1778) 258; Nyman, Syll. Fl. Eur. (1855) 94; F. Aresch., Bot. Not. 1868 (1868) 33; Rouy, Fl. Fr. 11 (1909) 299; Gorshk., Fl. USSR 21 (1954) 139; Grint., Fl. Rep. Pop. Rom. 8 (1963) 186; Dvoráková, Publ. Fac. Sci. Univ. Purkyne 477 (1966) 355. - *Pollichia galeobdolon* (L.) Willd., Fl. Berol. Prodr. (1787) 198. - *Lamiastrum galeobdolon* (L.) Ehrend. & Polatschek in Polatschek, Oesterr. Bot. Z. 113 (1966) 102; P. Ball, Fl. Eur. 3 (1972) 148; Hämet-Ahti et al., Retkeil. (1984) 298; Clapham et al., Fl. Brit. Isl. ed. 3 (1987) 413. - Type: *Linn. 734/4* (holo. LINN). *Cardiaca sylvatica* Lam., Fl. Franç. 2 (1778) 384. - Type: not found in P. *Galeobdolon umbrosum* Wibel, Prim. Fl. Werthem. (1799) 139, nomen nudum. *Lamium luteum* Krocker, Suppl. Fl. Sil. 4,2 (1823) 148. - *Lamium galeobdolon* (L.) L. var. *luteum* (Krocker) Fiori, Nuov. Fl. Anal. It. 2 (1926) 422. - Type: unknown. *Lamium cavernarium* Losa, An. Real Acad. Farm. 1 (1940) 298. - Type: *Losa Espana s.n.*, Spain, Puerto de Toro (not found in MA, MAF, Z).

Perennial. *Rhizome* cauliform, woody, very short to a few dm long. *Stem* decumbent, simple or branched, 20-50 (-65) cm long, 1-3 (-4) mm Ø, sparsely hirsute. *Leaves*: *petiole* ($\frac{1}{2}$ -) 1-2 $\frac{1}{2}$ (-6) cm long, usually shorter than the blade, the upper leaves sessile; *blade* ovate to ovate-oblong, the upper also to ovate-lanceolate, with a (lower) slightly cordate to attenuate to truncate or (upper) truncate base and an acute to (upper) tapering acuminate apex, coarsely and partly double-crenate to (upper) dentate, sparsely appressed-pubescent on both sides; *cauline leaves* 1-10 (-11) cm long, index (1.0-) 1.2-2.0 (-2.5); *floral leaves* (1 $\frac{1}{2}$ -) 2-11 (-15) cm long, index (1.0-) 1.1-2.2 (-3.5). *Verticillasters* (3-) 4-5 (-10), remote, with (2-) 6-14 (-20) flowers. *Bracts* (2-) 4-5 (-7) mm long, c. $\frac{1}{2}$ mm broad, sparsely hirsute and especially on the margin with short glandular hairs. *Calyx* 5- or 10-nerved, sometimes with more nerves, ($\frac{3}{4}$ -) 1 (-1 $\frac{1}{4}$) cm long, longer after anthesis, at the base subglabrous or sparsely appressed-puberulous, towards the apex more densely appressed-puberulous, pubescent or hirsute; teeth $\frac{1}{2}$ or $\frac{2}{3}$ × as long as the tube, deltoid or triangular, short glandular hairs on the margin not always present. *Corolla* yellow with brownish markings, (1 $\frac{1}{4}$ -) 1 $\frac{3}{4}$ -2 $\frac{1}{4}$ (-2 $\frac{1}{2}$) cm long; tube gradually dilated, $\frac{3}{4}$ -1 $\frac{1}{4}$ cm long, mostly exerted from the calyx, outside glabrous to subglabrous, inside with an oblique ring of hairs dorsally at 4-5 mm from the base ventrally pointing backwards; upper lip faintly arched, 8-12 by 6-8

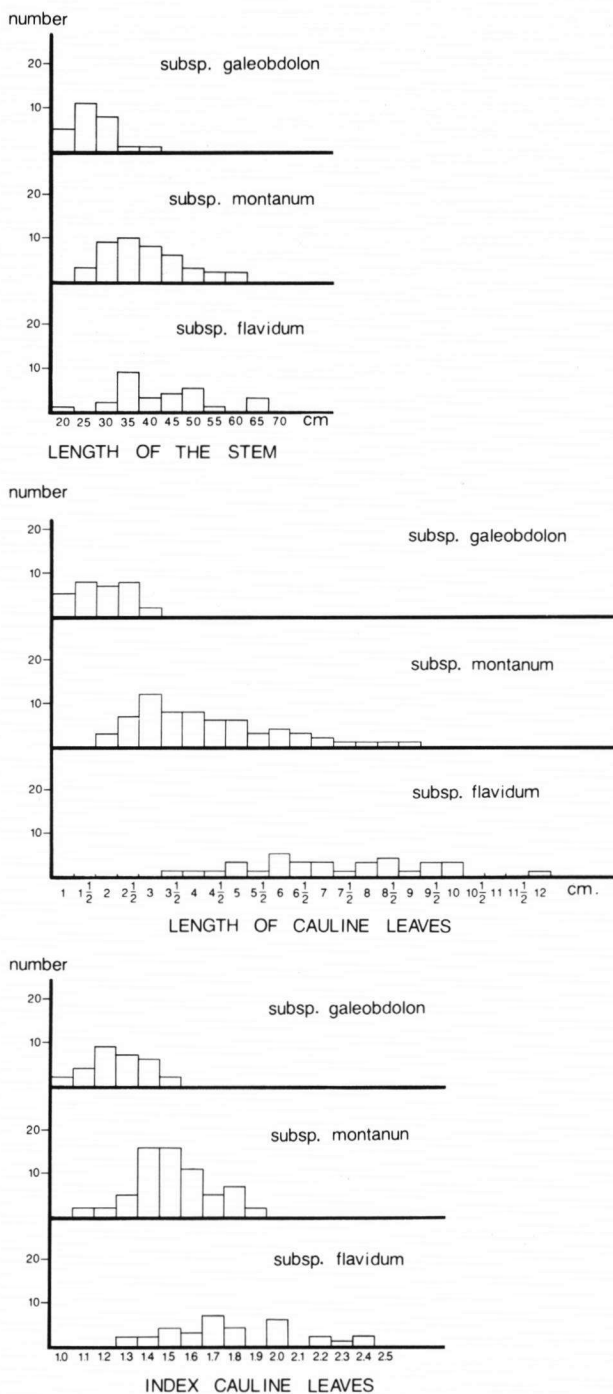


Fig. 9. *Lamium galeobdolon*.

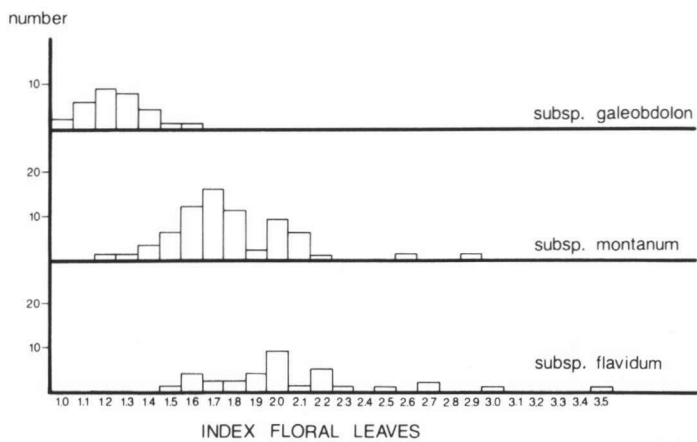
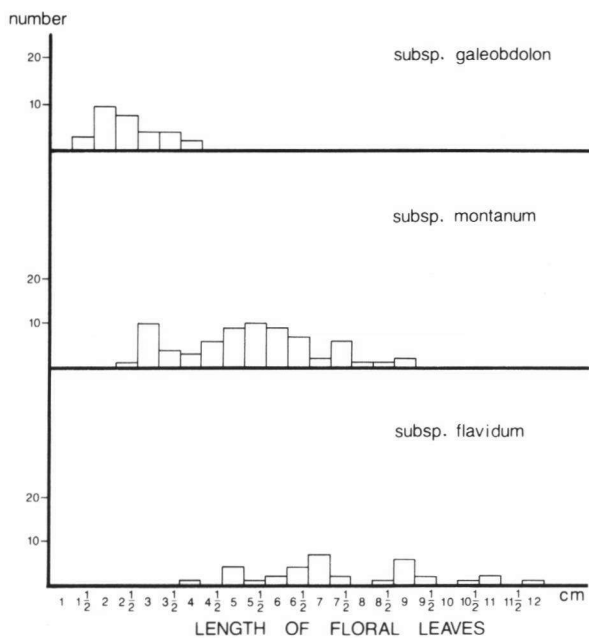


Fig. 9. *Lamium galeobdolon* (continued).

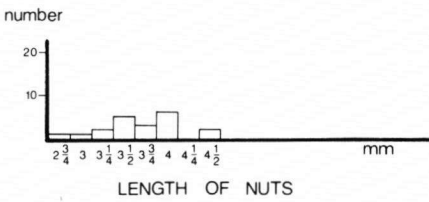
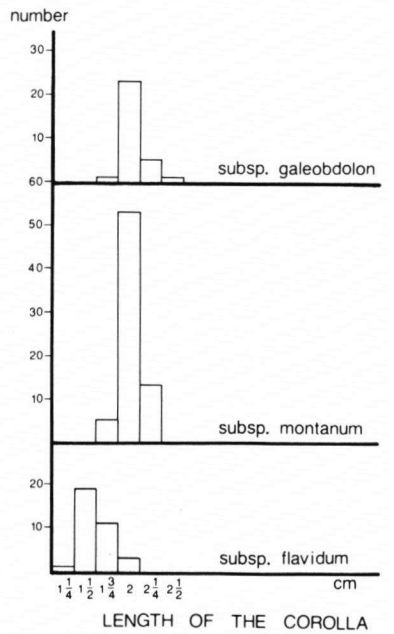
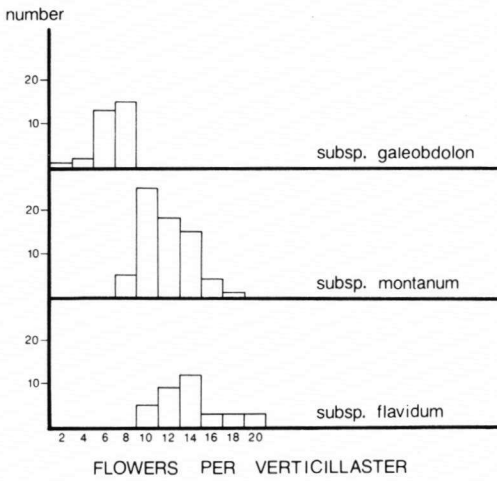
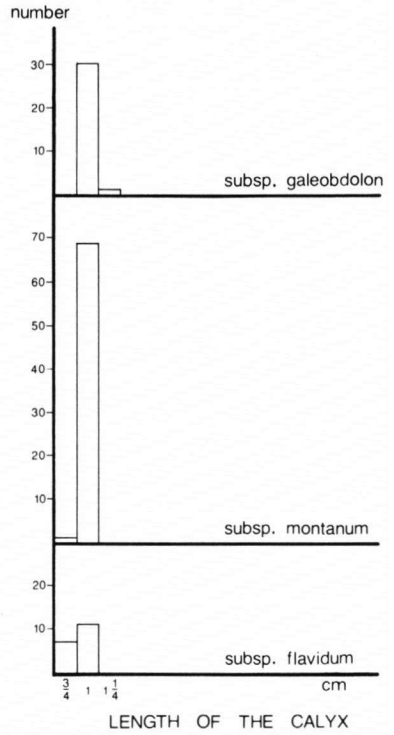
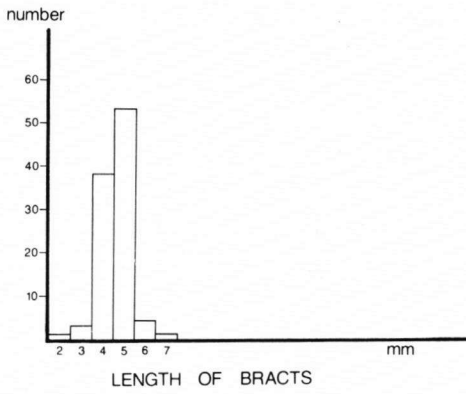


Fig.9. *Lamium galeobdolon* (continued).

mm, apex rounded, margin entire to faintly undulate, outside sparsely to densely puberulous to velutinous with longer patent stiff hairs on the margin, inside glabrous; lower lip 6–8 mm long and laid back, glabrous, lateral lobes oblique-ovate without teeth, 5–6 by 3–3½ mm, median lobe 5–8 by 3–4 mm, not bilobed, margin undulate. Anterior *stamens* 11–12 mm long, c. 3–4 mm longer than the posterior ones and attached c. 1½–2 mm lower; filaments with short glandular hairs; anthers 2–2½ by 1–1¼ mm; pollen yellowish. *Disc* c. 1½ mm broad. *Style* about as long as the corolla, glabrous. *Nutlets* (2¾–) 3½–4 (–4½) by 1¾–2 (–2¼) mm.

Variability. *Lamium galeobdolon* s.lat. is rather variable; three subspecies are clearly distinguishable. In the literature I found various infraspecific taxa below the rank of subspecies without any annotation to which subspecies these varieties and formae belong. These infraspecific names, referring mainly to the incisions of the leaves (*incisum*), the indumentum of the calyx (*glabrescens*, *hirtum*, *puberulum*), the length of the calyx teeth (*brachyodonton*, *inerme*, *spiniferum*), and the colour of the corolla (*palescens*, *pallidum*), are listed here in alphabetical order.

- var. *albifolium* Bolzon in Bég. in Fiori & Paol., Fl. Anal. It.3(1903) 34.
var. *apenninum* Bég., Bull. Soc. Bot. It. 1903 (1903) 261.
f. *brachyodontum* Borbas (1900) ex Soó & Borhidi, Acta Bot. Acad. Sci. Hung. 14 (1968) 162.
f. *glabrescens* G. Beck, Ann. K.K. Naturh. Hofmus. 2 (1887) 144.
f. *hirtum* G. Beck, Ann. K.K. Naturh. Hofmus. 2 (1887) 144.
f. *incisum* Rohlena, Sitzungsber. Königl. Böhm. Ges. Wiss. Prag 1911 (1912) 100.
var. *inerme* G. Beck, Fl. Nied.-Oesterr. 2,2 (1893) 1018. – f. *inerme* (G. Beck) G. Beck ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 87.
var. *macrobracteatum* Nyár., Enum. Pl. Vasc. Ch. Turz. (1939) 196.
f. *palescens* (Kuntze 1867) Kuntze ex Soó & Borhidi, Acta Bot. Acad. Sci. Hung. 14 (1968) 162.
– l. *palescens* (Kuntze 1867) Kuntze ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 87.
f. *pallidum* Sylvén, Bot. Not. 1931 (1931) 386.
var. *parviflorum* Saint-Lager in Rouy, Fl. Fr. 11 (1909) 300. – f. *parviflorum* (Saint-Lager) Saint-Lager in Bjelcic et al., Glasnik 15 (1982) 143.
var. *puberulum* G. Beck, Fl. Nied.-Oesterr. 2,2 (1893) 1018. – f. *puberulum* (G. Beck) Bjelcic et al., Glasnik 15 (1982) 143.
f. *spiniferum* G. Beck, Fl. Nied.-Oesterr. 2,2 (1893) 1018.
f. *subnudum* Maly in sched. in Bjelcic, Glasnik 15 (1982) 143.
Galeobdolon luteum Huds. β *calabrum* Ten., Syll. Pl. Fl. Neapol. (1831) 288.
Galeobdolon luteum Huds. var. *regulare* Gray, Nat. Arr. Brit. Pl. 2 (1821) 376.

Notes. 1. Mr. J. Schiess (Scheveningen, Netherlands) collected a number of specimens in the Pyrenees in 1970. These specimens induced me to think, that perhaps a new polyploid subspecies occurs in this area, not recognized until now by the lack of good distinguishable morphological characters. My colleague Dr. P. Baas was so kind to measure the stomatal length of leaves of the three subspecies and of a specimen, collected by Mr. Schiess in the Pyrenees. The results are

subsp. <i>galeobdolon</i>	21–24 µm, average 23 µm
subsp. <i>flavidum</i>	23–29 µm, average 25 µm

subsp. *montanum* 24–33 μm , average 30 μm
Pyrenean specimen 29–41 μm , average 34 μm .

There is a convincing similarity of these stomatal lengths of subsp. *galeobdolon* and subsp. *montanum* and those of British material of both subspecies, and also of subsp. *flavidum*, cultivated in the Botanic Garden at Cambridge (Wegmüller, 1971). The remarkable stomatal length of the Pyrenean specimen invites further biosystematical research, especially of the chromosome numbers of specimens, collected in the Pyrenees.

2. Linnaeus (1753) originally published *Galeopsis galeobdolon* in the first edition of *Species plantarum* with the added remark: 'Fructificatio parum recedit a congeneribus, vix tamen distincto genero nominari meretur'. Already in 1756 Linnaeus transferred the species in Nathhorst's dissertation to the genus *Lamium*, at first sight as a nomen nudum and without any reference to the basionym: *Lamium galeobdolon* 657. In the reprint in the *Amoenitates* (1759), however, a paragraph was added (p. 475): 'Numeri specibus adpositi indicant eandem plantam in Magnoli Botanico Monspeliensi, si numerus libro adscribatur'. But Magnol's work is unnumbered. Rothmaler (1941) elucidated: ... 'man muss dazu die Pflanzen des Werkes—ohne die Hinweise—durchnumerieren'. In Magnol's *Botanicum Monspeliense* (1686) nr. 657—I counted the species personally!—is: 'Lamium folio oblongo luteum PIN. in umbrosis saxosis monti Capouladou, & montis Lupi versus septentrionum oritur'.

As Gutermann et al. (1973) have observed, a direct reference to *Galeopsis galeobdolon* is absent, but also these authors are of the opinion that Linnaeus intention undoubtedly was to reclassify his species in the genus *Lamium*. I can agree with this point of view, the more so as Linnaeus himself has announced the possibility of this reclassification three years before by adding the remark 'Fructificatio parum etc.' as mentioned above.

Unfortunately I brought some confusion (Mennema, 1971) about the typification of *Lamium galeobdolon* (L.) L., as I discovered that Linnaeus recognized the species as a *Lamium*, based on material of another subspecies than to which *Galeopsis galeobdolon* belongs. The protologue is also mainly based on the other subspecies and in the Linnaean herbarium there are specimens of both subspecies (sheets no. 734.4 and 734.5 according to Savage, 1945).

But, as I accepted *Galeopsis galeobdolon* as the basionym, the type specimen must undoubtedly be in accordance to the description of *Galeopsis galeobdolon*: 'Verticillis sexfloris' and this refers directly to the specimen on sheet no. 734.4, which Polatschek (1966) correctly indicated as the holotype.

2.a. *Lamium galeobdolon* (L.) L. subsp. *flavidum* (F. Herm.) A. Löve & D. Löve - Figs. 9 and 10.

Lamium galeobdolon (L.) L. subsp. *flavidum* (F. Herm.) A. Löve & D. Löve, Bot. Not. 114 (1961) 55; Podl. & Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4,app. (1964) 2634; Garcke, Ill. Fl. ed. 23 (1972)

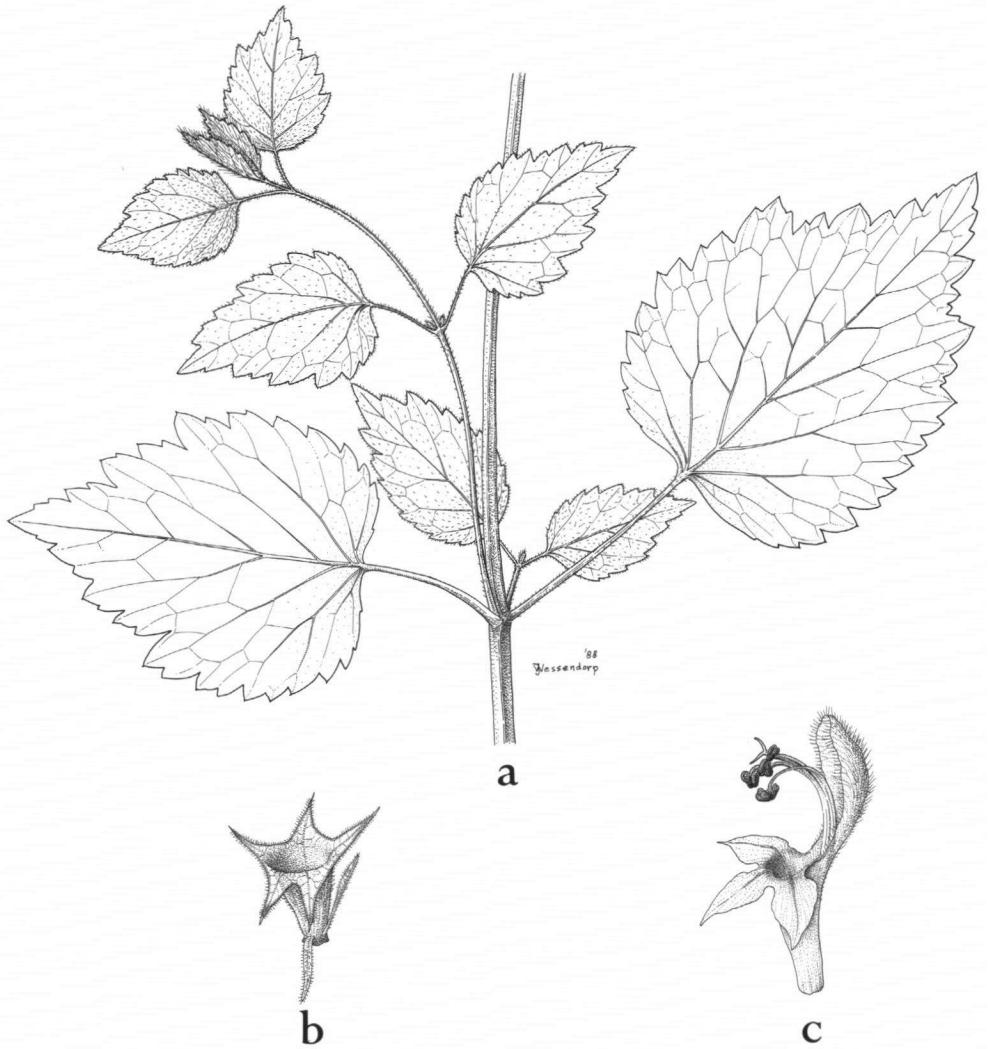


Fig. 10. *Lamium galeobdolon* subsp. *flavidum*: a. middle part (1 ×); b. calyx (2 ×); c. corolla (2 ×).

1205. - *Lamium flavidum* F. Herm., Ber. Bayer. Bot. Ges. 32 (1958) 145; H. Hess et al., Fl. Schw. 3 (1972) 124. - *Lamiastrum galeobdolon* (L.) Ehrend. & Polatschek subsp. *flavidum* (F. Herm.) Ehrend. & Polatschek in Polatschek, Oesterr. Bot. Z. 113 (1966) 105; P. Ball, Fl. Eur. 3 (1972) 149; Pign., Fl. It. 2 (1982) 459. - *Galeobdolon flavidum* (F. Herm.) Holub, Folia Geobot. & Phytotax. 5 (1970) 80. - Type: *F. Hermann s.n.*, Austria, Karnische Alpen, Plöckenpass (not seen).

Galeobdolon luteum Hudson f. *australis* F. Aresch., Bot. Not. 1868 (1868) 36. - Lectotype (mihi): *Areschoug s.n.*, [Jugoslavia], 'Litorale' p.p. (holo. LD).

Lamium pallidum F. Herm., Fl. N.-Mitt.eur. (1956) 864, nomen inval. and nomen illeg., non Salisb. 1796. - *Lamium galeobdolon* (L.) L. subsp. *pallidum* F. Herm., Fl. N.-Mitt.eur. (1956) 864, nomen inval.; Rothm., Feddes Rep. 67 (1963) 10. Published as 'species vel subspecies nova',

in this way without a clear indication of the rank of the taxon (Art. 35.1 Code). - Type: *F. Hermann s.n.*, Austria, Karnische Alpen, Plöckenpass (not seen).

Rhizome without stolons. *Stem* branched, (20-) 35-50 (-65) cm long, homogeneously hairy. *Cauline leaves* (3-) 5-10 (-12) cm long, index (1.3-) 1.5-2.0 (-2.4); *floral leaves* (-4) 5-11 (-15) cm long, index (1.5-) 1.6-2.2 (-3.5). *Verticillasters* with (10-) 12-14 (-20) flowers. *Calyx* towards the apex hirsute or appressed-puberulous and pubescent; teeth usually $\frac{1}{2}$ × as long as the tube and deltoid. *Corolla* less than 2 cm.

Distribution. SE. France, SE. Germany, S. Switzerland, Austria, N. Italy and Apennines N. of Rome, W. Jugoslavia, and scattered in Czechoslovakia - Fig. 11.

Habitat. Particularly in light forest (*Fagus* and *Picea*), forest margins, in thickets and hedges, (shady) roadsides, in meadows, among pebbles, on walls; prefers calcareous soil.

Altitude. From 200 m up to 1800 m (Osttirol, Austria).

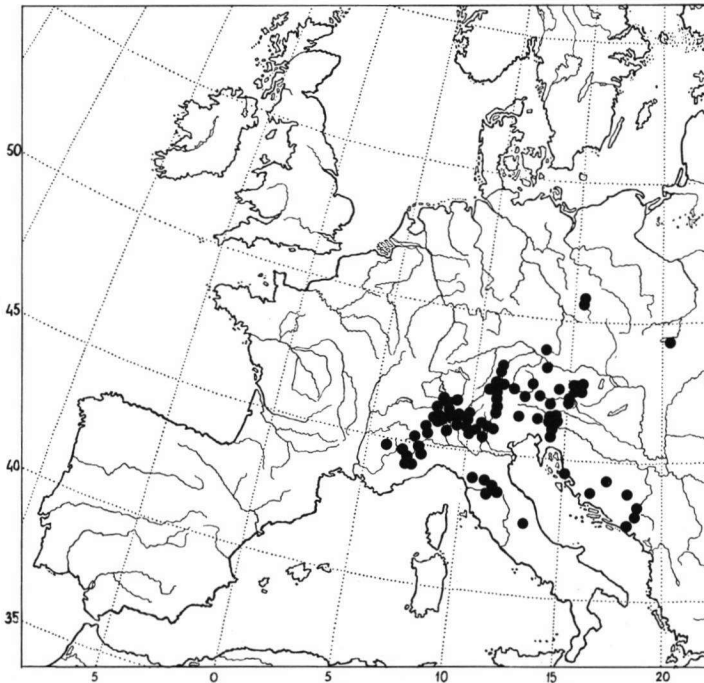


Fig. 11. Distribution of *Lamium galeobdolon* subsp. *flavidum*.

Variability. See under the species. Intraspecific taxa exclusively referring to subsp. *flavidum* are unknown.

2.b. *Lamium galeobdolon* (L.) L. subsp. *galeobdolon* - Fig. 9

Lamium galeobdolon (L.) L. subsp. *galeobdolon*, Podl. & Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4,app. (1964) 2634; Garcke, Ill. Fl. ed. 23 (1972) 1204; Heukels/Meijden, Fl. Nederl. ed. 20 (1983) 318; De Langhe et al., Fl. Belg. ed. 3 (1983) 489; Mennema et al., Atl. Nederl. Fl. 1 (1980) 139; Mennema, Norrlinna 2 (1984) 99; Mennema et al., Atl. Nederl. Fl. 2 (1985) 186. - *Lamiastrum galeobdolon* (L.) Ehrend. & Polatschek subsp. *galeobdolon*, Polatschek, Oesterr. Bot. Z. 113 (1966) 108; P. Ball, Fl. Eur. 3 (1972) 149. - *Lamium galeobdolon* (L.) L., H. Hess et al., Fl. Schw. 3 (1972) 122.

Pollichia vulgaris Pers., Neu. Ann. Bot. 14 (1795) 37, 39. - *Galeobdolon vulgare* (Pers.) Pers., Syn. Pl. 2 (1806) 122. - *Lamium vulgare* (Pers.) Fritsch, Exc. Fl. Oesterr. (1897) 472; Hayek, Denkschr. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl. 94 (1918) 184. - *Lamium galeobdolon* (L.) L. var. *vulgare* (Pers.) Briq., Lab. Alp. Mar 2 (1893) 319; Grint., Fl. Rep. Pop. Rom. 8 (1963) 186. - *Lamium galeobdolon* (L.) L. subsp. *vulgare* (Pers.) Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 272; N. Hylander, Uppsala Univ. Årsskr. 1945,7 (1945) 272, pro comb. nov. - Type: *Persoon s.n.*, Germany, near Göttingen [in sylvis] (holo. L).

Galeobdolon luteum Hudson var. *minus* Schur, Enum. Pl. Transs. (1866) 534. - Type: *Schur s.n.*, Rumania, near Brasov [Kronstadt] (not seen).

Galeobdolon luteum Hudson f. *borealis* F. Aresch., Bot. Not. 1868 (1868) 35. - Type: unknown.

Galeobdolon luteum Hudson subsp. *luteum*, Dvoráková, Publ. Fac. Sci. Univ. Purkyne 477 (1966) 358; Sychowa in Pawlowskiego, Fl. Polsk. 11 (1967) 117; R. Mill in P. Davis, Fl. Turk. 7 (1982) 151.

Galeobdolon argentatum Smejkal, Preslia 47 (1975) 241. - Type: *Smejkal s.n.*, Czechoslovakia, Moravia, Brno, at the border of Svratka river near Cerveny kopec (holo. BRNU).

Rhizome with stolons. *Stem* simple, 20-30 (-40) cm long, hairs exclusively on the ribs. *Cauline leaves* 1-2½ (-3) cm long, index (1.0-) 1.2-1.4 (-1.5); *floral leaves* (1½-) 2-3½ (-4) cm long, index (1.0-) 1.1-1.4 (-1.6). *Verticillasters* with (2-) 6-8 flowers. *Calyx* towards the apex hirsute; teeth usually ⅓ × as long as the tube and triangular. *Corolla* large, usually 2 cm or longer.

Distribution. S. Scandinavia, E. England, Netherlands, Germany, Poland, Czechoslovakia, and Balkan, S. to Albania and Turkey (Istanbul), Baltic, Central and South-western division of the U.S.S.R., E. to Ural - Fig. 12.

Habitat. Particularly in light, deciduous forests (especially in *Fagus*-forest), forest margins, in thickets and hedges, at shady places along streams; with an indistinct preference for calcareous soil.

Altitude. From sea-level up to c. 2000 m (Romania).

Variability. See under the species. The typical subspecies appears to me much more homogeneous than the rather variable subsp. *montanum*. A numerical investigation of material of both subspecies in the Netherlands (Mennema, 1971) showed, that there were no 'transitional forms' as found by Endtmann (1966) in

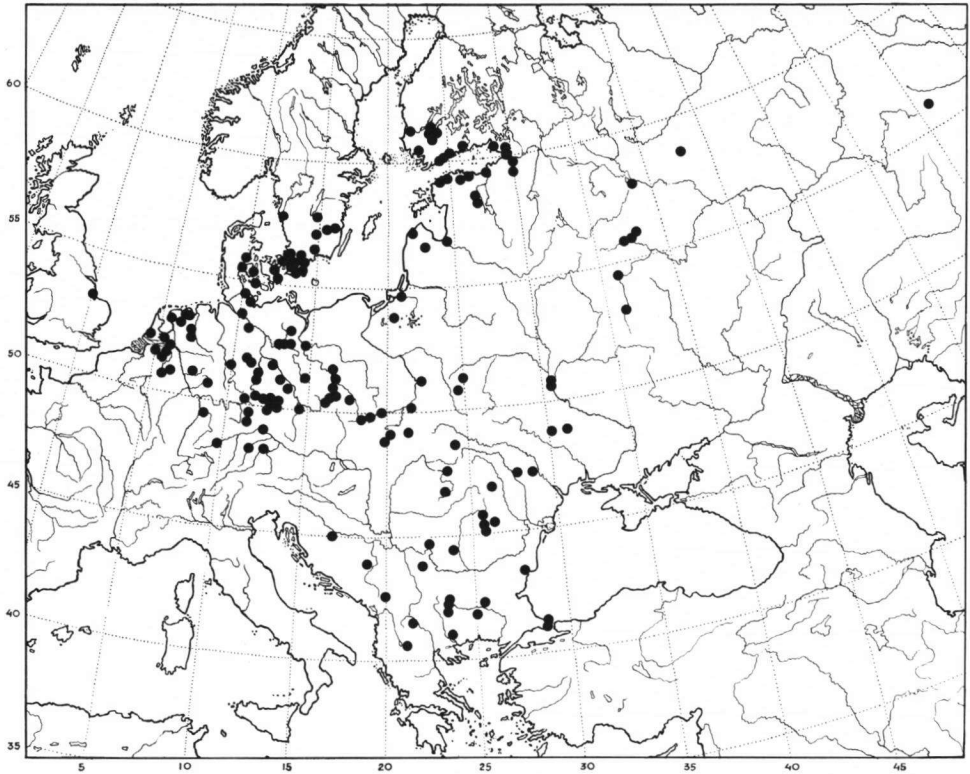


Fig. 12. Distribution of *Lamium galeobdolon* subsp. *galeobdolon*.

Germany. However, according to Soó & Borhidi (1968) and Bjelcic (1982) a large number of formae, viz. *hirtum*, *inermis*, *palescens*, *parviflorum*, *puberulum*, *spiniferum*, and *subnudum* refer to subsp. *galeobdolon*. There is a difference in opinion about f. *glabrescens*: according to Bjelcic (1982) this forma refers also to subsp. *galeobdolon*; furthermore he distinguished two new formae, one with stolons in the leaf axils (*axillaris*) and one without stolons (*fruticulosus*).

f. *axillaris* Bjelcic in Bjelcic et al., Glasnik 15 (1982) 143.

f. *fruticulosus* Bjelcic in Bjelcic et al, Glasnik 15 (1982) 143.

Note. During the last decade a cultivated forma with permanently silvery white variegated leaves [var. *florentinum* Hort., cv. *Variegatum*, recently even described as species: *Galeobdolon argentatum* Smejkal] has frequently escaped from gardens in various parts of Europe. In the Netherlands this garden escape has been naturalized and has been recorded already in more localities than the native subspecies (Mennema, 1980, 1984 & 1985).

An official name for this forma is lacking. Expecting more publications about this garden escape, a new combination is presented below:

Lamium galeobdolon (L.) L. f. **argentatum** (Smejkal) Mennema, *comb. nov.*

Basionym: *Galeobdolon argentatum* Smejkal, *Preslia* 47 (1975) 243.

2.c. *Lamium galeobdolon* (L.) L. subsp. *montanum* (Pers.) Hayek - Figs. 9 and 13.

Lamium galeobdolon (L.) L. subsp. *montanum* (Pers.) Hayek, *Prodr. Fl. Penins. Balc.* 2 (1929) 272; Hylander, *Uppsala Univ. Årsskr.* 1945,7 (1945) 272, pro *comb. nov.*; Podl. & Gams in *Hegi, Ill. Fl. Mitt.-Eur.* 5,4,app. (1964) 2634; Garcke, *Ill. Fl. ed.* 23 (1972) 1204; Mennema in *Rech. f., Fl. Iran.* 150 (1982) 332; Heukels/Meijden, *Fl. Nederl. ed.* 20 (1983) 318; De Langhe et al., *Fl. Belg. ed.* 3 (1983) 489. - *Pollichia montana* Pers., *Neu. Ann. Bot.* 14 (1795) 37, 39. - *Galeobdolon vulgare* (Pers.) Pers. var. *montanum* (Pers.) Pers., *Syn. Pl.* 2 (1806) 122. - *Galeobdolon luteum* Hudson var. *montanum* (Pers.) Gray, *Nat. Arr. Brit. Pl.* 2 (1821); Gaudin, *Fl. Helv.* 4 (1829) 58; Reichb., *Fl. Germ. Ind.* (1833) XXXII. - *Galeobdolon montanum* (Pers.) Pers. ex Reichb., *Fl. Germ. Exc.* (1832) 860. - *Lamium montanum* (Pers.) Hoffm. ex Kabath, *Fl. Gleiw.* (1846) 130 (by error published as *S. montanum*); A. Löve & D. Löve, *Bot. Not.* 114 (1961) 42, pro *comb. nov.*; H. Hess et al., *Fl. Schw.* 3 (1972) 124. - *Lamium galeobdolon* Crantz var. *montanum* (Pers.) Briq., *Lab. Alp. Mar.* 2 (1893) 318. - *Galeobdolon luteum* Hudson var. *luteum*, *Nyár., Kv. Fl.*



Fig. 13. Upper part of *Lamium galeobdolon* subsp. *montanum* (1 ×).

(1941-43) 440; Grint., Fl. Rep. Pop. Rom. 8 (1963) 186. – *Galeobdolon luteum* Hudson subsp. *montanum* (Pers.) Dvoráková, Publ. Fac. Sci. Univ. Purkyne 477 (1966) 361; Sychowa in Pawlowskiego, Fl. Polsk. 11 (1967) 117; R. Mill in P. Davis, Fl. Turk. 7 (1982) 150, pro comb. nov. – *Lamiastrum galeobdolon* (L.) Ehrend. & Polatschek subsp. *montanum* Ehrend. & Polatschek in Polatschek, Oesterr. Bot. Z. 113 (1966) 109; P. Ball, Fl. Eur. 3 (1972) 149; Pign. Fl. It. 2 (1982) 459. – Type: *Persoon s.n.*, Germany, [Meissner Mountains] near Göttingen (holo L). *Galeobdolon luteum* Hudson var. *majus* Schur, Enum. Pl. Transs. (1866) 534. – Type: *Schur s.n.*, Romania, mountain woods at the Pojana near Braşov [Kronstadt] (not seen). *Galeobdolon luteum* Hudson f. *typica* Aresch., Bot. Not. 1868 (1868): 36, nomen inval.

Rhizome with stolons. *Stem* simple, (25-) 30-45 (-60) cm long, homogeneously hairy. *Cauline leaves* (2-) 3-5 (-9) cm long, index (1.1-) 1.4-1.8 (-2.6); *floral leaves* (2½-) 3-7½ (-9) cm long, index (1.2-) 1.6- 2.1 (-2.9). *Verticillasters* with (8-) 10-14 (-20) flowers. *Calyx* towards the apex hirsute; teeth usually ½ × as long as the tube and deltoid. *Corolla* large, usually 2 cm or longer.

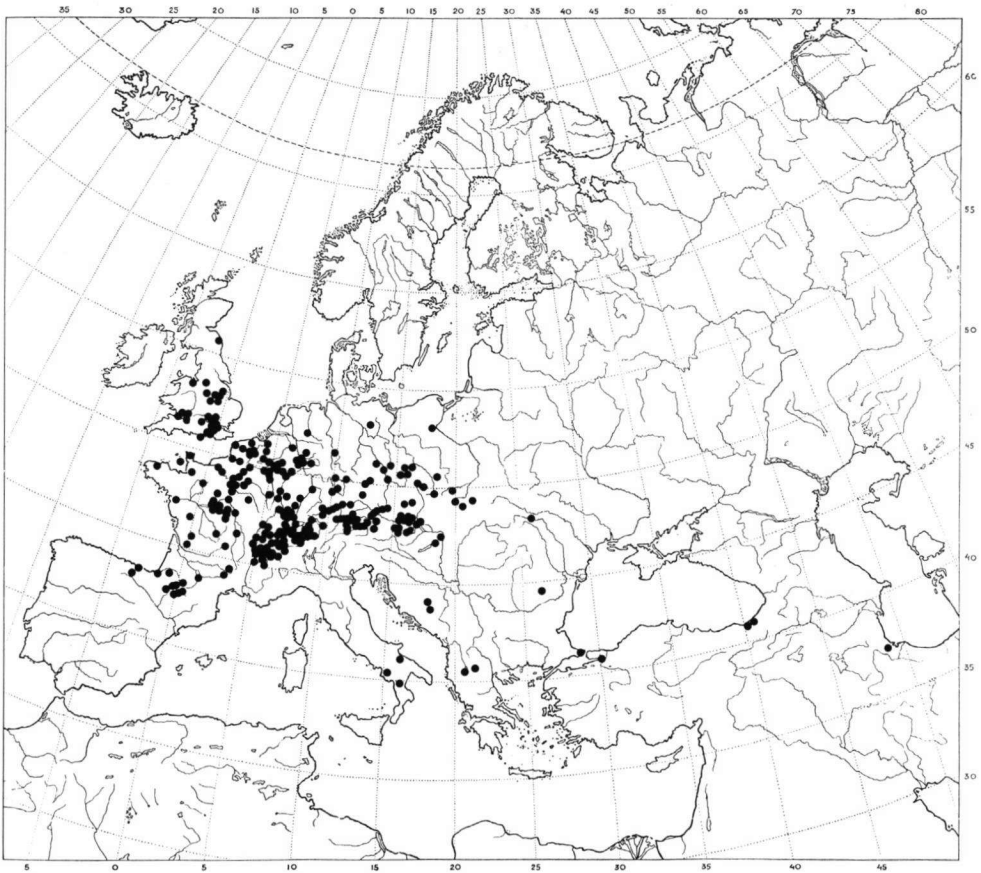


Fig. 14. Distribution of *Lamium galeobdolon* subsp. *montanum*.

Distribution. Great-Britain, Netherlands, Belgium, Luxembourg, France, Germany, NW. Switzerland, N. Austria, Poland, Czechoslovakia, E. Hungary, and N. Spain (Pyrenees), scattered in S. Italy, South-western division of the U.S.S.R., Balkan, N. Turkey and Iran - Fig. 14.

Habitat. Particularly in deciduous forests (especially in *Fagus*-forest), forest margins and along forest trails, in thickets and hedges, also along streams and in damp and shady places; with a certain preference for calcareous soil.

Altitude. From sea-level up to 1900 m (Hautes-Pyrénées, France).

Variability. See under the species. According to Soó & Borhidi (1968) and Bjelcic (1982) a small number of formae, viz. *brachyodontum* and *incisum* refers to subsp. *montanum*. There is a difference in opinion about f. *glabrescens*: according to Soó & Borhidi (1968) these forma refers also to subsp. *montanum*. Bjelcic (1982) added a new forma with branched floescence, obviously teratological:

f. *ramosa* Bjelcic in Bjelcic et al., Glasnik 15 (1982) 144.

II. Subgenus *Lamium* L.

Subgenus *Eulamium* Asch., Fl. Prov. Brandenb. 1 (1864) 523. - Type: *Lamium purpureum* L.

Bracts, if present, not spreading or reflexed. *Bracts* and *calyx* teeth with a hairy aristate apex. *Anthers* dorsally and ventrally tufted hairy.

A. Section *Amplexicaule* Mennema, *sect. nov.*

Bracteae nullae. *Corolla* tubus rectus. *Folia* superiora amplexicaulia. - Typus: *Lamium amplexicaule* L.

Bracts absent. *Corolla* tube straight. Upper leaves amplexicaul.

Note. The section *Amplexicaule* does not coincide with subsection *Amplexicaulia* Briquet of section *Pollichia* (Willd.) Briquet, as the description above limits the number of species belonging to the section: *Lamium amplexicaule*, *Lamium eriocephalum* and *Lamium macrodon*. *Lamium bifidum*, *Lamium confertum* and *Lamium purpureum* var. *ehrenbergii* of Briquet's subsection *Amplexicaulia* belong in my opinion to section *Lamium*.

3. *Lamium amplexicaule* L. - Fig. 15.

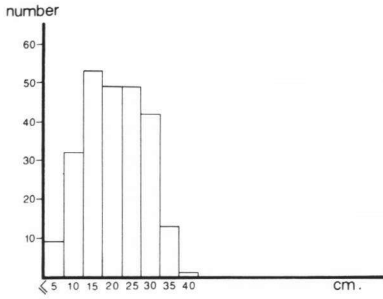
Lamium amplexicaule L., Sp. Pl. (1753) 579; Benth., Lab. Gen. Spec. (1834) 511; Benth. in DC., Prodr. 12 (1848) 508; Nyman, Syll. Fl. Eur. (1855) 94; Willkomm & Lange, Prodr. Fl. Hisp. 2 (1868) 435; Boiss., Fl. Orient. 4 (1879) 760; Briq., Lab. Alp. Mar. 2 (1893) 299; Battand.

& Trabut, Fl. Alg. & Tun. (1905) 269; Rouy, Fl. Fr. 11 (1909) 294; Britton & Brown, Ill. Fl. N. U.S. 3 ed. 2 (1913) 121; Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2452; Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 276; Ostenf. & Grøntved, Fl. Icel. Faer. (1934) 117; Rech. f., Fl. Aegaea (1943) 512; Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 959; Ohwi, Fl. Jap. (1953) 776; Gorshk., Fl. USSR 21 (1954) 128; F. Herm., Fl. N.-Mitt.eur. (1956) 864; Rech. f., Fl. Syr. Liban. (1959) 367; Lid, Norsk Sv. Fl. (1963) 579; Grint., Fl. Rep. Pop. Rom. 8 (1963) 175; Sychowa in Pawlowskiego, Fl. Polsk. 11 (1967) 121; A. Löve, Isl. Ferdafl. (1970) 348; H. Hara, Fl. East. Himalaya (1971) 115; P. Ball, Fl. Eur. 3 (1972) 148; H. Hess et al., Fl. Schw. 3 (1972) 126; R. Stewart, Fl. W. Pakist. (1972) 614; Garcke, Ill. Fl. ed. 23 (1972) 1203; A. Hansen in Rostrup/C.A. Jørg., Dansk. Fl. ed. 20 (1973) 507; Täckh., Stud. Fl. Egypt ed. 2 (1974) 465; Guin. & R. Vilm., Fl. Fr. 2 (1975) 716; Haslam et al., Fl. Maltes. Isl. (1977) 267 (as subsp. *amplexicaule*); Anon., Fl. Reip. Pop. Sin. 65,2 (1977) 485; Feinbrun, Fl. Pal. 3 (1978) 123; Sykes, New Zealand J. Bot. 16 (1978) 392; Pign., Fl. It. 2 (1982) 458; R. Mill in P. Davis, Fl. Turk. 7 (1982) 138; De Langhe et al., Fl. Belg. ed. 3 (1983) 490; Heukels/Meijden, Fl. Nederl. ed. 20 (1983) 320; Hämet-Ahti et al., Retkeil. (1984) 298; A. Hansen & Sunding, Sommerfeltia 1 (1985) 61; Meikle, Fl. Cypr. 2 (1985) 1311; Menitskiy in Takht., Fl. Armen. 8 (1987) 79; Clapham et al., Fl. Brit. Isl. ed. 3 (1987) 414. - *Pollichia amplexicaulis* (L.) Willd., Fl. Berol. Prodr. (1787) 198. - *Galeobdolon amplexicaule* (L.) Moench, Meth. Pl. (1794) 394. - *Lamiopsis amplexicaulis* (L.) Opiz, Seznam (1852) 56. - *Lamiella amplexicaulis* (L.) Fourreau, Ann. Soc. Linn. Lyon 17 (1869) 134. - Type: *Linn. 733/12* (holo. LINN).

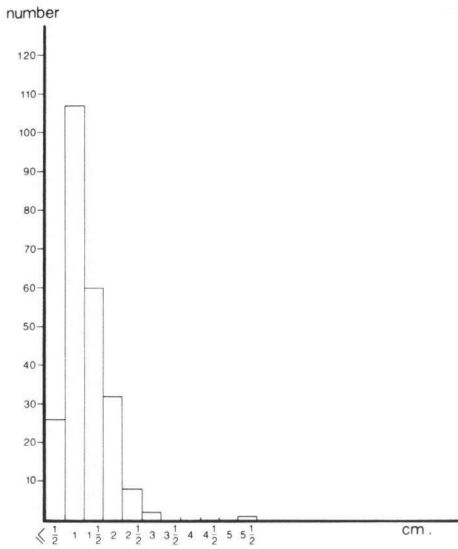
Lamium mesogaeon Heldr. ex Boiss., Fl. Orient. 4 (1879) 760, nomen nudum.

Annual. *Stem* erect or decumbent, branched, especially at the base, < 5–30 (–70) cm long, (½–) 1–1½ (–2) mm Ø, glabrous to glabrate at the base, appressed-pubescent towards the apex. *Leaves: petiole* (½–) 1–1½ (–2) cm long, about as long as the blade or longer, the floral leaves amplexicaul; *blade* reniform and rhomboid to cordate, the upper ones cordate to rhomboid, mostly coarsely and irregularly crenate to (upper) lobed, sometimes very deeply incised, sparsely to moderately appressed-pubescent on both sides; *cauline leaves* ½–2 (–3) cm long, index (0.7–) 0.8–1.0 (–1.2) [var. *aleppicum*: 1.5–2.2 (–2.7)]; *floral leaves* ½–2 (–3) cm long, index (0.6–) 0.7–0.9 (–1.1) [var. *aleppicum*: 1.5–2.2 (–2.6)]. *Verticillasters* (2–) 3–5 (–7), mostly remote, with (6–) 8–16 (–20) flowers. *Bracts* not present. *Calyx* many-nerved, ½ (–¾) cm long, longer after anthesis, moderately to densely pubescent to hirsute, also with short glandular hairs; teeth subequal, as long as the tube, sometimes shorter, narrowly triangular. *Corolla* purple, (1¼–) 1½–2 (–2½) cm, in cleistogamous flowers c. ½ cm long, tube abruptly dilated, (1–) 1¼–1½ (–2) cm long, exerted from the calyx, outside glabrous at the base, towards the lips puberulous, no internal ring of hairs; upper lip arched, (3–) 4–5 by 3–4 mm, apex rounded, margin entire to faintly undulate, outside pubescent to velutinous, inside glabrous; lower lip about as long as the upper lip or longer and at a right angle to the latter, glabrous, lateral lobes rounded, ¾–1 mm long, tooth absent or to ¼ mm long, median lobe 2–3 (–4) by 2–3 (–4) mm, bipartite, margin undulate. Anterior *stamens* 4–5 mm long, c. 1–2 mm longer than the posterior ones and attached c. 1 mm lower; filaments usually without short glandular hairs; anthers ¾–1 by c. ½ mm. *Disc* c. ¼ mm broad. *Style* c. 2–3 mm shorter than the corolla, glabrous. *Nutlets* 2–3 (–¾) by 1–1½ mm.

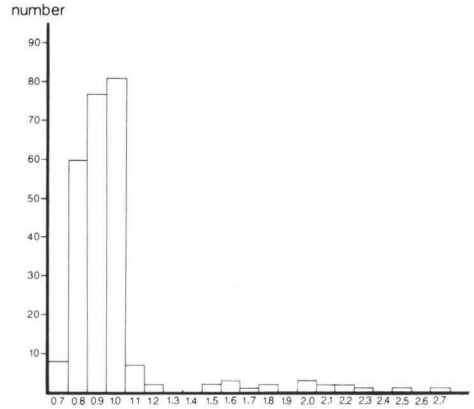
Distribution. See under the varieties.



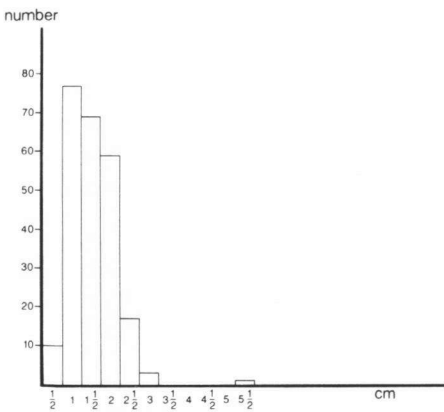
LENGTH OF THE STEM



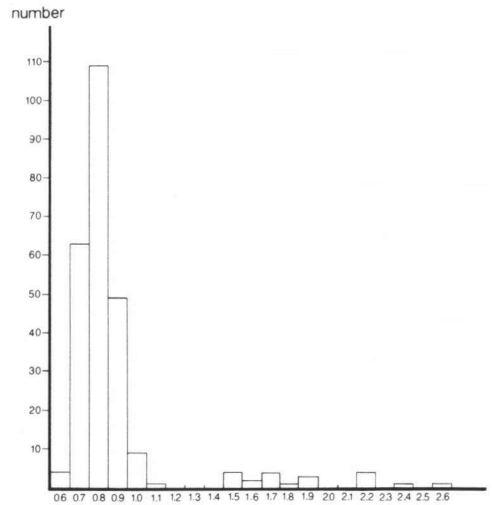
LENGTH OF CAULINE LEAVES



INDEX CAULINE LEAVES



LENGTH OF FLORAL LEAVES



INDEX FLORAL LEAVES

Fig. 15. *Lamium amplexicaule*.

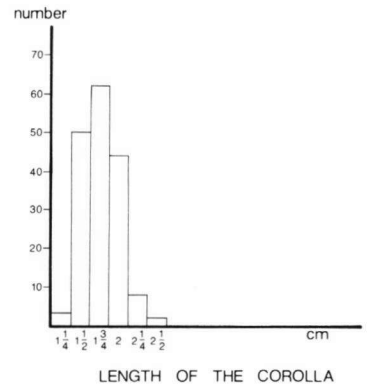
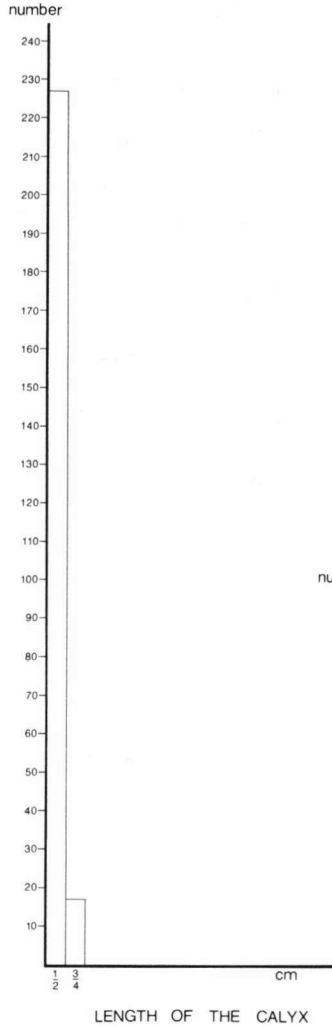
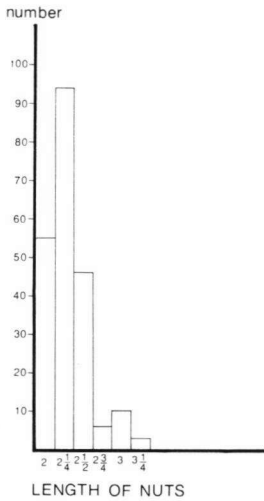
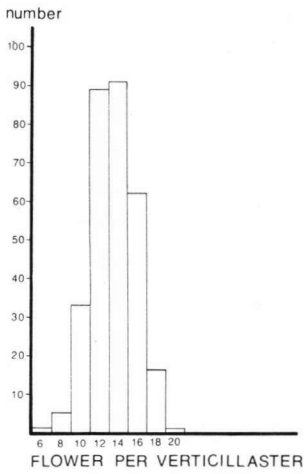


Fig. 15. *Lamium amplexicaule* (continued).

Habitat. Cultivated land, in gardens, also in open, waste places, roadsides, in lawns, under hedges, on walls, in desert, on rocky mountain slopes, sometimes in oak-forest; on sandy and stony, calcareous as well as non-calcareous soils.

Altitude. From sea-level up to 3900 m (Tibet, China).

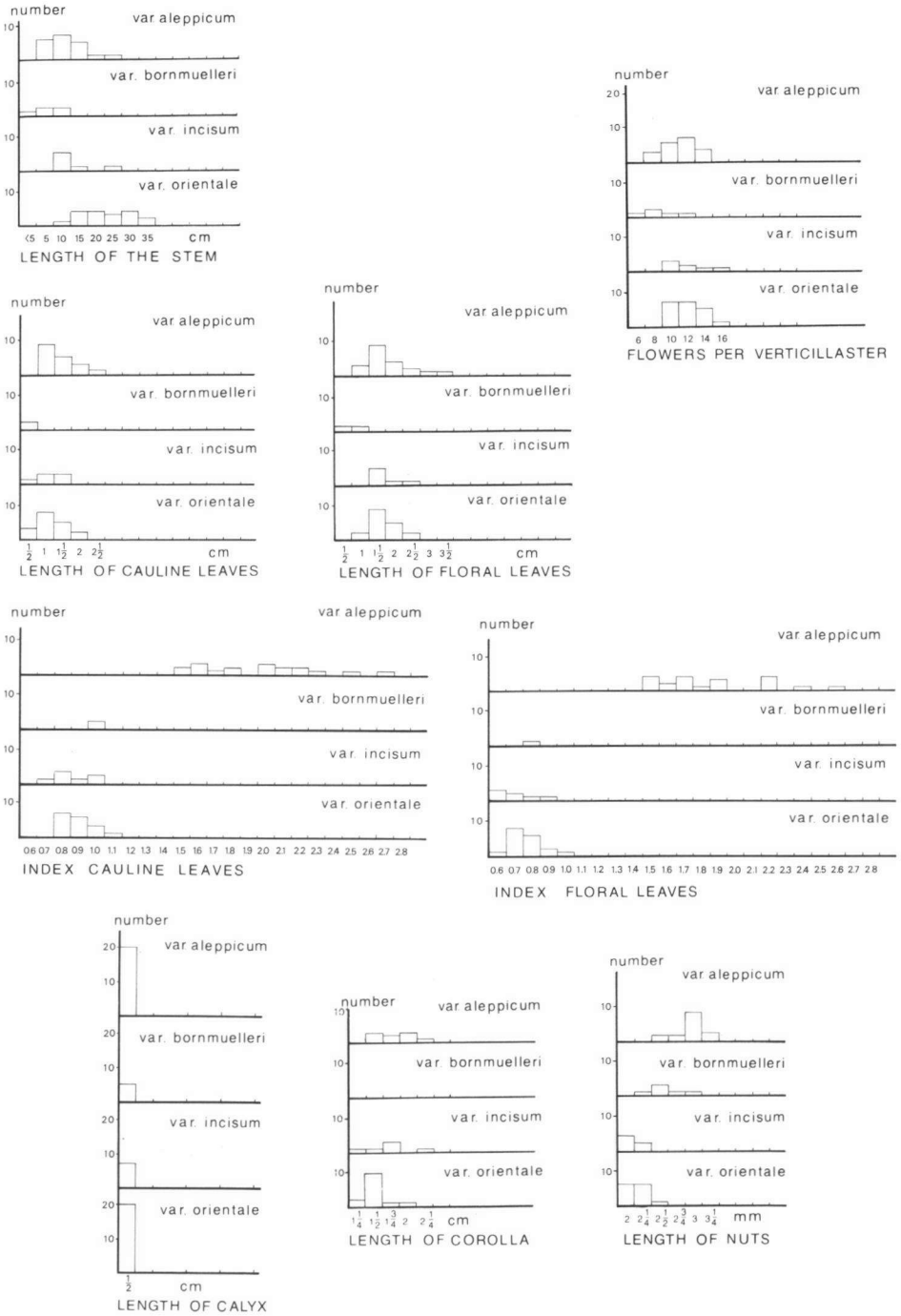


Fig. 16. *Lamium amplexicaule* var. *aleppicum*, var. *bornmuelleri*, var. *incisum*, and var. *orientale*.

**3.a. *Lamium amplexicaule* L. var. *aleppicum* (Boiss. & Hausskn. ex Boiss.)
Bornm. - Fig. 16.**

Lamium amplexicaule L. var. *aleppicum* (Boiss. & Hausskn. ex Boiss.) Bornm., Beih. Bot. Centralbl. 22,2 (1907) 133; Mennema in Rech. f., Fl. Iran. 150 (1982) 331. - *Lamium aleppicum* Boiss. & Hausskn. ex Boiss., Fl. Orient. 4 (1879) 761; Rech. f., Fl. Syr. Liban. (1959) 367; R. Mill in P. Davis, Fl. Turk. 7 (1982) 140. - Type: *Haussknecht 244*, Syria, in fields near Halab [Aleppo] (holo. G, iso. JE).

Lamium amplexicaule L. var. *kurdicum* Bornm., Beih. Bot. Centralbl. 22,2 (1907) 133. - Type: *Bornmueller 1711*, Iraq, Kurdistania, Arbil, Kuh Safin, near Shaqlawa (holo. JE).

Stem 5-15 (-25) cm long. *Leaves* 1-2 (-3½) cm long, index 1.5-2.2 (-2.7), rather regularly, coarsely crenate to lobed. *Verticillasters* rather crowded, mostly with 10-12 flowers. *Corolla* 1½-2 (-2½) cm long, cleistogamous flowers shorter, about 3-4 × as long as the calyx. *Nutlets* large, (2½-) 3 (-3¼) by (1¼-) 1½ mm.

Distribution. Scattered in SE. Turkey, N. Syria, Iraq and Iran - Fig. 17.

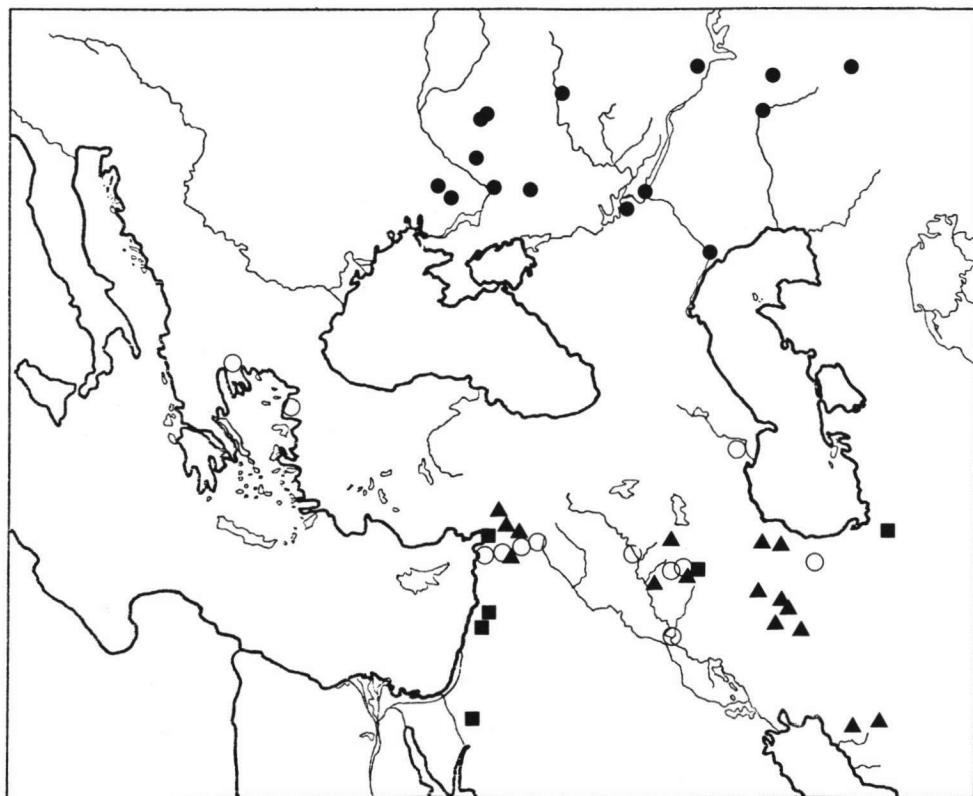


Fig. 17. Distribution of four varieties of *Lamium amplexicaule*: var. *aleppicum* (▲), var. *bornmuelleri* (■), var. *incisum* (○), and var. *orientale* (●).

Habitat. See under the species.

Altitude. From sea-level up to 1800 m (Iran).

Variability. This variety is a rather homogeneous taxon. Plants with cleistogamous flowers are known. Intraspecific taxa lower than the rank of variety are unknown.

3.b. *Lamium amplexicaule* L. var. *amplexicaule*

Lamium amplexicaule L. var. *amplexicaule*, Mennema in Rech. f., Fl. Iran. 150 (1982) 329.

Lamium amplexicaule clandestinum Reichb., Ic. Bot. Pl. Crit. 8 (1830) 3, nomen illeg. - *Lamium amplexicaule* L. var. *clandestinum* Reichb., Fl. Germ. Ind. (1833) XXXI. - *Lamiopsis amplexicaulis* (L.) Opiz var. *clandestina* (Reichb.) Opiz, Seznam (1852) 56. - *Lamium amplexicaule* L. f. *clandestinum* Porcius, Fl. Naseud (1885) 87; Grint., Fl. Rep. Pop. Rom. 8 (1963) 176. - Type: *Reichenbach*, Ic. Bot. Pl. Crit. 8 (1830): tab. DCCVIII.

Lamium amplexicaule L. var. *calyciflorum* Ten., Syll. Pl. Fl. Neapol. (1831) 288. - Type: *Tenore s.n.*, Italy, Gargano Tre Santi (not seen).

Lamium var. *clandestinum* Boiss., Voy. Bot. Esp. 2 (1841) 503, non Reichb. 1833, nomen illeg.

Lamium amplexicaule L. var. *parviflorum* Schur, Enum. Pl. Transs. (1866) 534. - Type: *Schur s.n.*, Romania, Sibiu [Hermannstadt] (not seen).

Lamium amplexicaule L. var. *fallax* Junger ex Fiek, Fl. Schles. (1881) 351. - *Lamium amplexicaule* L. f. *fallax* (Junger ex Fiek) Grint., Fl. Rep. Pop. Rom. 8 (1963) 176. - Lectotype (mihi): *Uechtritz s.n.*, Poland, Wroclaw [Breslau], Rotkretscham (holo. L, iso. W).

Lamium amplexicaule L. var. *cryptantha* Cariot, Étud. Fl. 2 ed.7 (1884) 619. - Type: unknown.

Lamium rumelicum Velen., Fl. Bulg. (1891) 649; Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 277 - *Lamium amplexicaule* L. var. *rumelicum* (Velen.) Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948): 959. - Type: *Velenovsky s.n.*, Bulgaria, at Sadovo and Sliven (holo. PRC).

Lamium amplexicaule var. *thracicum* Velen., Sitzungsber. Königl. Böhm. Ges. Wiss. Prag, Math.-Naturwiss. Cl. 1893, 37 (1894) 54. - Type: *Velenovsky s.n.*, Bulgaria, Nova Makhala (not seen).

Lamium amplexicaule L. var. *nemetzii* Azn., Bull. Soc. Bot. France 46 (1899) 147. - Type: *Nemetz s.n.*, Turkey, Kutchuk Tchekmédje (not seen).

Lamium amplexicaule L. var. *typicum* Bég. in Fiori & Paol., Fl. Anal. It. 3 (1903) 36, nomen inval.

Lamium mauritanicum Gand. ex Battand. & Trabut, Fl. Alg. & Tun. 1902 (1905) 269; Battand., Bull. Soc. Bot. France 56 (1909) LXX. - Type: *Gandoger 820*, Algeria, Kouba (holo. LY, iso. BM, P).

Lamium amplexicaule L. var. *nanum* Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2454. - *Lamium amplexicaule* L. f. *nanum* (Gams) Gams ex Grint., Fl. Rep. Pop. Rom. 8 (1963) 176. - Type: *Gams s.n.*, Switzerland, Unterwallis, warm S. slopes (not found in IB).

Lamium amplexicaule L. var. *tel-avivensis* Eig, Sec. Contr. Fl. Palest. (1927) 47. - Syntypes: *Eig s.n.* Israel, Tel-Aviv, II.21; Ibid., III.22; Ibid., 6.II.24; Ibid., III.25; Ibid., III.26; Petah-Tikwa, 18.II.25; Nahalal, 3.II.24; Kinnereth, slopes of the mountain, 26.II.25 (not seen).

Lamium amplexicaule L. var. *lassithicum* (Coustur. & Gand. ex Gand.) Hayek, Prodr. Fl. Penins. Balc. 2 (1929): 276; Rech. f., Fl. Aegaea (1943) 512. - Basionym unknown.

Lamium amplexicaule L. var. *genuinum* Stoy. in Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 959, nomen inval.

Lamium stepposum Kossko in Klovov, Fl. URSS 9 (1960) 644. - Type: *Levina s.n.*, U.S.S.R., Ukraine, Zaporozhiensis, Syvashensis, near Novo-Mychajlivka (not seen).

Stem (5-) 10-30 (-40) cm long. *Leaves* (½-) 1-2 (-3) cm long, index (0.6-) 0.7-1.0 (-1.2). mostly coarsely and irregularly crenate to lobed. *Verticillasters* remote, with (10-) 12-16 (-20) flowers. *Corolla* (1¼-) 1½-2 (-2½) cm long, cleistogamous

flowers shorter, ($2\frac{1}{2}$ –) 3 – $3\frac{1}{2}$ (– 4) \times as long as the calyx. *Nutlets* 2 – $2\frac{1}{2}$ (– $2\frac{3}{4}$) by 1 – $1\frac{1}{4}$ (– $1\frac{1}{2}$) mm.

Distribution. Throughout Europe, except in the Faeröer and Spitzbergen, probably N. of the Alps as archaeophyte or even as neophyte (Gams, 1927), in Asia from Turkey and the Middle East to Japan, N. of the Tropic of Cancer, and in N. Africa, including the Açores, Madeira and the Canary Islands. Introduced in Iceland and Greenland (and naturalized in both countries), in many states of Canada and the U.S.A., and on the Bermuda Islands, in S. America (Peru, Chile, Argentina, Falkland Islands), in Abyssinia and S. Africa (Zimbabwe, Transvaal, Cape of Good Hope), and in Australia (Queensland, New South Wales, S. Australia) – Fig. 18.

Habitat. See under the species.

Altitude. See under the species.

Variability. *Var. amplexicaule* is a very variable taxon, as also testified by the long list of synonyms. Especially the size of the plants (*majus*, *nanum*, *rumelicum*), the indumentum (*hirtum*, *nemetzii*, *stepposum*, *tel-avivensis*), the length of the calyx teeth (*longidens*), and the flower colour (*albiflorum*, *roseiflorum*) can diverge highly. Plants with cleistogamous flowers are known too (*calyciflorum*, *clandestinum*, *cryphanthum*, *mauritanicum*).

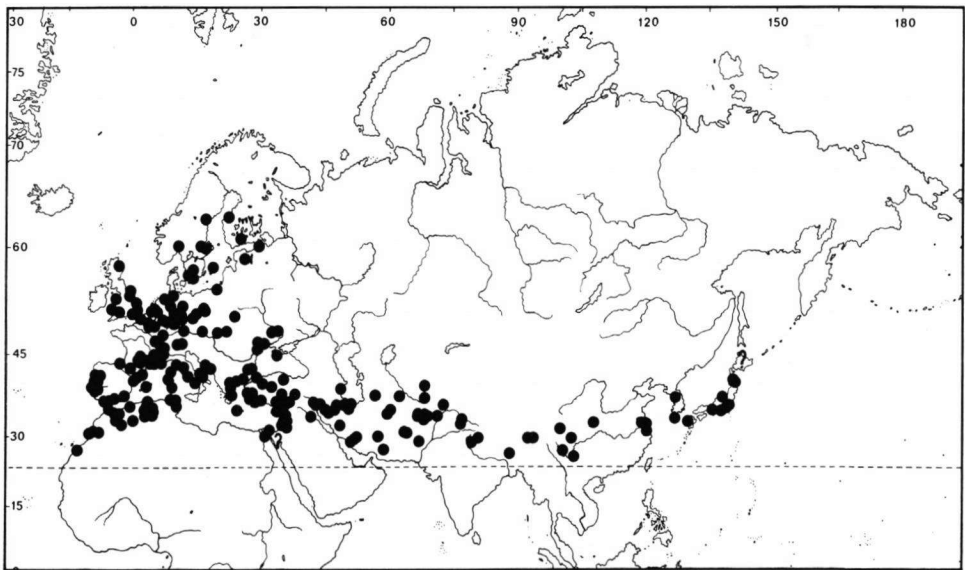


Fig. 18. Distribution of *Lamium amplexicaule* var. *amplexicaule*, without the introduced specimens.

The infraspecific taxa lower than the rank of variety, not mentioned in the list of synonyms, are listed below in alphabetical order.

- f. *albiflorum* (Candargy) Litard. in Briq., Prodr. Fl. Corse 3,2(1955) 178. – f. *albiflorum* Grint., Fl. Rep. Pop. Rom. 8 (1963) 176, 678, pro comb. nov. – l. *albiflorum* (Grint.) Grint. ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 89.
- f. *hirtum* Prod. 1915 [nom. nud.] in Soó, Syn. Fl. Veg. Hung. 3 (1968) 89.
- f. *longidens* Podp. in Soó, Syn. Fl. Veg. Hung. 3 (1968) 89.
- f. *majus* Bolzon 1918 in Soó, Syn. Fl. Veg. Hung. 3 (1968) 89.
- f. *pinnatifidum* Christiansen 1953 in Soó, Syn. Fl. Veg. Hung. 3 (1968) 89
- l. *roseiflorum* Priszter, Bot. Közlem. 53 (1966) 28.

3.c. *Lamium amplexicaule* L. var. *bornmuelleri* Mennema – Fig. 16.

Lamium amplexicaule L. var. *bornmuelleri* Mennema in Rech. f., Fl. Iran. 150 (1982) 330. – Type: *Bornmueller 12290*, Lebanon, alpine region of Jebel ash Sharqi [Antilibanon], near the top, above Ba'labakk (holo. JE, iso. BM, G).

Stem < 5 (–10) cm long. *Leaves* c. ½ cm long, index 0.8–1.0, irregularly crenate to lobed. *Verticillasters* crowded, with 8 (–12) only cleistogamous flowers. *Nutlets* large, (2¼–) 2¾ (–3) by 1¼–1½ mm.

Distribution. Very rare and scattered in mountains in SE. Turkey, Lebanon, Syria, Jordan, Iraq and Iran – Fig. 17.

Habitat. See under the species.

Altitude. From 1500 m up to 2000 m.

Variability. Var. *bornmuelleri* is a very uniform taxon. Infraspecific taxa lower than the rank of variety are unknown.

Notes. 1. This variety is named after J. F. N. Bornmueller, who collected it in 1910 (*Bornmueller 12290*) and identified it as *L. amplexicaule* L. var. *kurdicum* Bornm., described in 1907. However, the type-specimen of var. *kurdicum* (*Bornmueller 1711*) is without any doubt *L. amplexicaule* L. var. *aleppicum* (Boiss. et Hausskn.) Bornm.

2. Var. *bornmuelleri* bears great similarity in appearance and habitat to *L. purpureum* L. var. *ehrenbergii*.

3.d. *Lamium amplexicaule* L. var. *incisum* Boiss. – Fig. 16.

Lamium amplexicaule L. var. *incisum* Boiss., Fl. Orient. 4 (1879) 761; Mennema in Rech. f., Fl. Iran. 150 (1982) 330. – Lectotype (mihi): *Hausknecht s.n.*, Syria, near H̄alab [Aleppo], in field (holo. G).

Lamium adoxifolium Hand.-Mazz., Ann. K. K. Naturhist. Hofmus. 27 (1913) 413. – Type: *Handel-Mazzetti 302*, Syria, E. of H̄alab [Aleppo], near Han am Nahr ed Deheb (not seen).

Stem 10–15 (–25) cm long. *Leaves* ($\frac{1}{2}$ –) 1–1 $\frac{1}{2}$ (–2) cm long, index 0.6–0.8 (–1.0), partite to divided, especially the cauline leaves. *Verticillasters* remote, mostly with 10–12 flowers. *Corolla* usually 1 $\frac{3}{4}$ –2 $\frac{1}{4}$ cm long, cleistogamous flowers shorter, about 3 $\frac{1}{2}$ –4 \times as long as the calyx. *Nutlets* small, 2–2 $\frac{1}{4}$ by 1 (–1 $\frac{1}{4}$) mm.

Distribution. Very rare and scattered in Greece, Turkey, Caucasian division of the U.S.S.R., Syria, Iraq and Iran – Fig. 17.

Habitat. See under the species.

Altitude. From sea-level up to 300 m.

Variability. Var. *incisum* is a rather uniform taxon. Plants with cleistogamous flowers are known. Intraspecific taxa lower than the rank of variety are unknown.

3.e. *Lamium amplexicaule* L. var. *orientale* (Pacz.) Mennema, *comb. nov.* – Fig. 16.

Lamium amplexicaule L. f. *orientalis* Pacz., Florogr. Iisp. Kapm. Step. (1892) 103. – *Lamium orientale* (Pacz.) Desjat.-Shost., Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 8,9 (1940) 151, non Krause 1903, nomen illeg. – *Lamium paczoskianum* Voroshilov, Bjull. Moskovsk. Obsc. Isp. Prir. Otd. Biol. N. S. 52,3 (1947) 50, nom. nov. with a reference to *Lamium orientale* Desjat.-Shost., Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 8,9 (1940) 151, non Krause 1903; Gorshk., Fl. USSR 21 (1954) 129. – *Lamium amplexicaule* L. subsp. *orientale* (Pacz.) Pacz. ex P. Ball, Fl. Eur. 3 (1972) 148. – Type: *Paczosky s.n.*, U.S.S.R., Astrakan area, at Bascunczak lake (holo. LE).

Lamium palmatum Smith in Rees, Cycl. 20 (1812) *Lamium* no. 18. – Type: *Pallas s.n.*, U. S. S. R., the banks of the river Wolga (holo. LINN).

Stem (10–) 15–30 (–35) cm long. *Leaves* ($\frac{1}{2}$ –) 1–2 (–2 $\frac{1}{2}$) cm long, index (0.6–) 0.7–0.9 (–1.1), partite to divided, especially the floral leaves. *Verticillasters* conspicuous remote, mostly with 10–14 flowers. *Corolla* usually 1 $\frac{7}{2}$ cm long, cleistogamous flowers shorter, about 2 $\frac{1}{2}$ \times as long as the calyx. *Nutlets* small, 2–2 $\frac{1}{4}$ (–2 $\frac{1}{2}$) by 1–1 $\frac{1}{4}$ mm.

Distribution. South-western and South-eastern division of the U.S.S.R. – Fig. 17.

Habitat. See under the species.

Altitude. No data available.

Variability. Var. *orientale* is a rather uniform taxon. Plants with cleistogamous flowers are known. Intraspecific taxa lower than the rank of variety are unknown.

Note. *Landmark s.n.* (UPS) belongs to this variety, but is said to be from Thorshang, Oslo, Norway. In view of the natural distribution area of the variety it seems that this must be due to a mix-up of labels.

4. *Lamium eriocephalum* Benth. - Figs. 19 and 20.

Lamium eriocephalum Benth. in DC., Prodr. 12 (1848) 506; Boiss., Fl. Orient. 4 (1879) 762; R. Mill in P. Davis, Fl. Turk. 7 (1982) 137. - Type: *Kotschy 467*—not 167, R. Mill in P. Davis, Fl. Turk. 7 (1982) 137—Turkey, Toros Dagları [Taurus Mountains] (holo. G, iso. K, M, S, UPS, W).

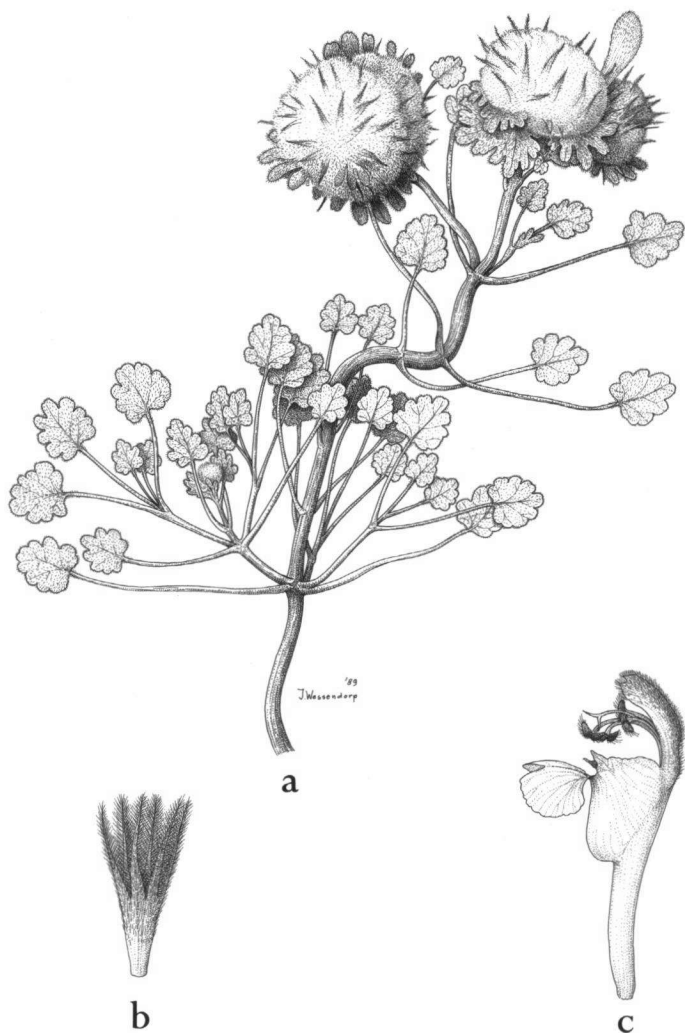


Fig. 19. *Lamium eriocephalum*: a. habitus (1 ×); b. calyx (2 ×); c. corolla (2 ×).

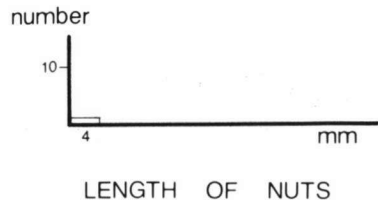
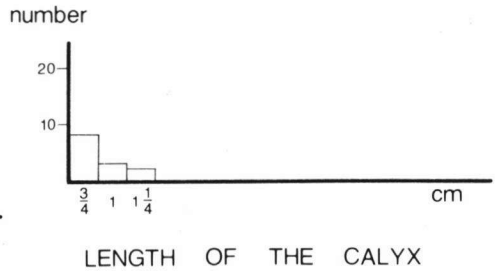
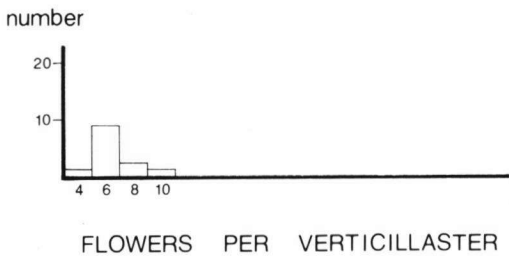
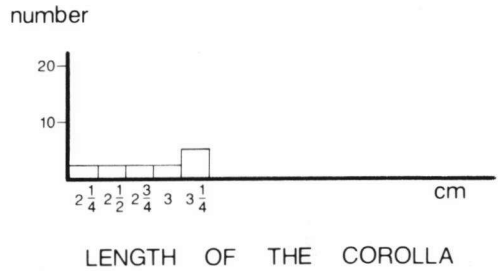
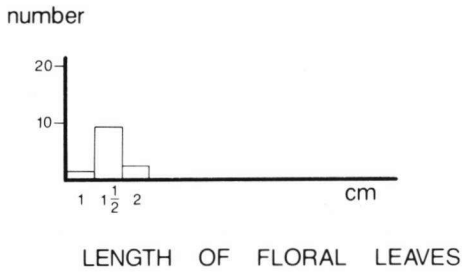
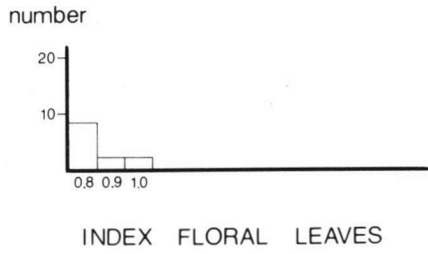
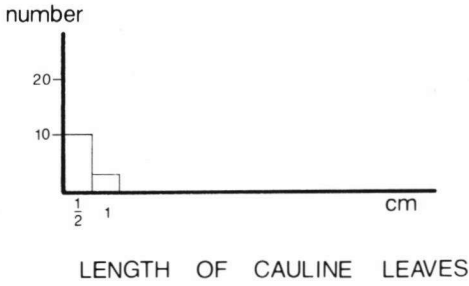
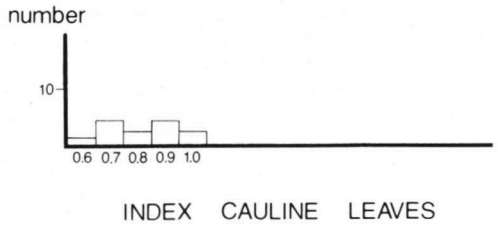
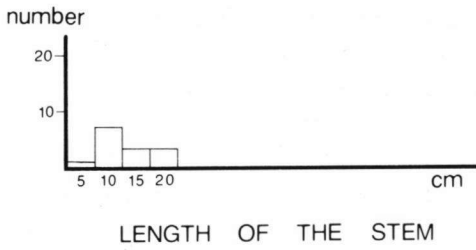


Fig. 20. *Lamium eriocephalum*.

Lamium glandulosidens Hub.-Mor., *Bauhinia* 6 (1978) 286. - *Lamium eriocephalum* Benth. subsp. *glandulosidens* (Hub.-Mor.) R. Mill, *Notes Roy. Bot. Gard. Edinburgh* 38 (1980) 36; R. Mill in P. Davis, *Fl. Turk.* 7 (1982) 138. - Type: *Huber-Morath 8183*, Turkey, Konya, Ermenek, Yelibel Dag, between Ermenek and Karaman (holo. Herb. Huber-Morath, iso. Herb. Basler Bot. Ges.).

Perennial. *Rhizome* cauliform, woody, very short to about 1 dm long. *Stem* decumbent or erect, usually branched, (5-) 10 (-20) cm long, 1-2 mm Ø, glabrous or glabrate. *Leaves: petiole* 1-2 (-3) cm long, always longer than the blade, the upper ones more or less amplexicaul; *blade* reniform to cordate, the upper ones rhomboid, coarsely crenate to (upper) lobed, moderately pubescent to (upper) densely woolly on both sides; *cauline leaves* ½ (-1) cm long, index (0.6-) 0.7-0.9 (-1.0); *floral leaves* (1-) 1½ (-2) cm long, index 0.8 (-1.0). *Verticillasters* 2-3 (-5), crowded in densely, woolly globes, each with 10 flowers or less. *Calyx* many-nerved, 1 (-1¼) cm long, longer after anthesis, at the base moderately villous, towards the apex densely villous or woolly, especially on the margin, also hairy at the inside of the lobes; teeth c. ¾ × as long as the tube, narrowly triangular, on the margin also with short glandular hairs. *Corolla* purple (?), (2¼-) 3-3¼ cm long, tube abruptly dilated, (1½-) 1¾-2½ cm long, exerted from the calyx, glabrous at the base, towards the lips moderately pubescent, no internal ring of hairs; upper lip arched, 6-7 by 4-5 mm, apex truncate, sometimes emarginate, margin entire

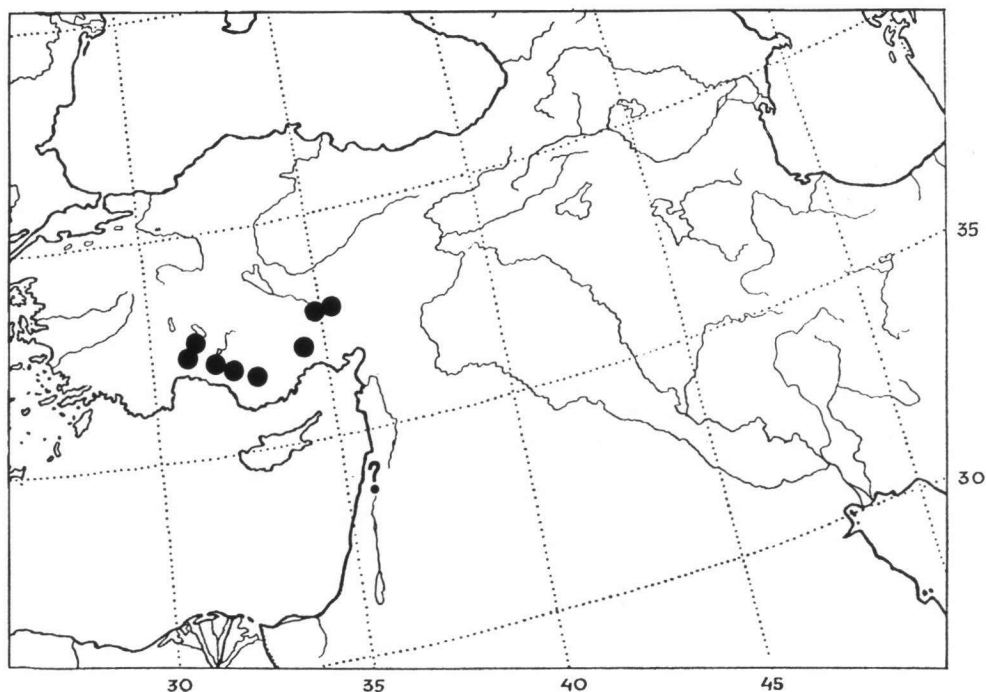


Fig. 21. Distribution of *Lamium eriocephalum*.

to faintly undulate, outside moderately to densely pubescent or sericeous, inside glabrous; lower lip longer than the upper lip and at a right angle to the latter, glabrous, lateral lobes rounded, $1\frac{1}{4}$ ($-1\frac{1}{2}$) mm long, tooth to $\frac{1}{2}$ mm long, median lobe $3\frac{1}{2}$ -4 by 6-7 mm, bipartite, margin undulate. Anterior *stamens* 9-11 mm long, 3-4 mm longer than the posterior ones and attached $1\frac{1}{2}$ -2 mm lower; filaments also with glandular hairs; anthers $1\frac{1}{2}$ -2 by $\frac{3}{4}$ -1 mm, pollen colour unknown. *Disc* c. $1\frac{1}{2}$ mm broad. *Style* about 3 mm shorter than the corolla, glabrous. *Nutlets* c. 4 by c. $2\frac{1}{4}$ mm.

Distribution. S. Turkey and Syria/Lebanon - Fig. 21.

Habitat. Among rocks, on screes and instable slopes.

Altitude. From 1800 m up to 3200 m.

Variability. *Lamium eriocephalum* is a very rare, well recognizable, perennial species and not an annual one as Boissier (1879) asserted. Intraspecific taxa are unknown.

5. *Lamium macrodon* Boiss. & Huet ex Boiss. - Figs. 22 and 23.

Lamium macrodon Boiss. & Huet ex Boiss., Diagn. Ser. 2,4 (1859) 45; Boiss., Fl. Orient. 4 (1879) 761; R. Mill in P. Davis, Fl. Turk. 7 (1982) 139; Mennema in Rech. f., Fl. Iran. 150 (1982) 331. - Lectotype (mihi): *Huet du Pavillon s.n.*, Turkey, Armenia, near Tortum (holo. G, iso. K, as *Lamium orthodon*).

Lamium orthodon Boiss. & Huet ex Boiss., Diagn. Ser. 2,4 (1859) 45, nomen nudum.

Lamium ordubadicum Grossh., Beih. Bot. Centralbl. 44,2 (1928) 236; Gorshk., Fl. USSR 21 (1954) 129. - *Lamium* × *ordubadicum* Grossh. ex Menitskiy in Takht., Fl. Armen. 8 (1987) 80 (as hybrid). - Type: *Grossheim s.n.*, U.S.S.R., Mount Soyuck, Nakhichevan, above Ordubad (holo. LE).

Annual. *Stem* decumbent or erect, branched, especially at the base, (5-) 10-20 cm long, $1\frac{1}{2}$ (-2) mm Ø, glabrate at the base, pubescent towards the apex, especially on the ribs. *Leaves*: *petiole* (1-) $1\frac{1}{2}$ -2 (-3) cm long, usually longer than the blade, the floral leaves amplexicaul; *blade* cordate to rhomboid, the upper ones to ovate-oblong, coarsely crenate to (sometimes the upper ones) lobed, moderately appressed-pubescent on both sides; *cauline leaves* $1\frac{1}{2}$ (-2) cm long, index 1.0-1.1 (-1.4); *floral leaves* $1\frac{1}{2}$ - $2\frac{1}{2}$ (-4) cm long, index (1.0-) 1.1-1.2 (-1.3). *Verticillasters* 2-3 (-4), mostly remote, with (10-) 12-20 flowers. *Calyx* many-nerved, ($\frac{3}{4}$ -) 1 (- $1\frac{1}{4}$) cm long, longer after anthesis, hirsute and towards the mouth densely sericeous, also with short glandular hairs; teeth $1\frac{1}{2}$ -2 × as long as the tube, narrowly triangular. *Corolla* purple, ($1\frac{1}{4}$ -) $1\frac{1}{2}$ -2 (- $2\frac{1}{4}$) cm long, tube abruptly dilated, (1-) $1\frac{1}{4}$ - $1\frac{1}{2}$ (- $1\frac{3}{4}$) cm long, exerted from the calyx, outside glabrous at the base, towards the lips puberulous, inside with an oblique ring of hairs dorsally at 2-3 mm from the base ventrally pointing back-

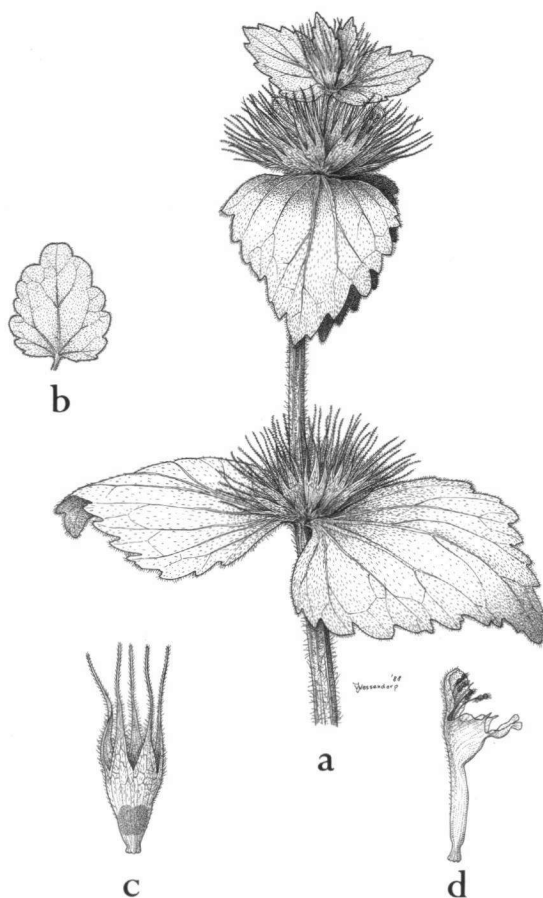


Fig. 22. *Lamium macrodon*: a. upper part (1 ×); b. uppermost cauline leaf (1 ×); c. calyx (2 ×); d. corolla (2 ×).

wards; upper lip arched, (4-) 5-6 by (3-) 4-5 mm, apex emarginate, margin entire to faintly undulate, outside pubescent to velutinous, inside glabrous; lower lip about as long as the upper lip and at a right angle to the latter, glabrous, lateral lobes rounded, $\frac{3}{4}$ -1 mm long, tooth absent or to $\frac{1}{4}$ mm long, median lobe 2-3 by 2-3 mm, bipartite, margin undulate. Anterior *stamens* 4-5 mm long, c. 1 - 2 mm longer than the posterior ones and attached c. 1 mm lower; filaments also with glandular hairs; anthers $\frac{3}{4}$ -1 by c. $\frac{1}{2}$ mm, pollen colour unknown. *Disc* c. $\frac{3}{4}$ mm broad. *Style* c. 2-3 mm shorter than the corolla, glabrous. *Nutlets* (2 $\frac{1}{2}$ -) 2 $\frac{3}{4}$ -3 by (1 $\frac{1}{4}$ -) 1 $\frac{1}{2}$ mm.

Distribution. E. Turkey, Caucasion division of the U.S.S.R., N. Lebanon, NE. Iraq, W. Iran - Fig. 24.

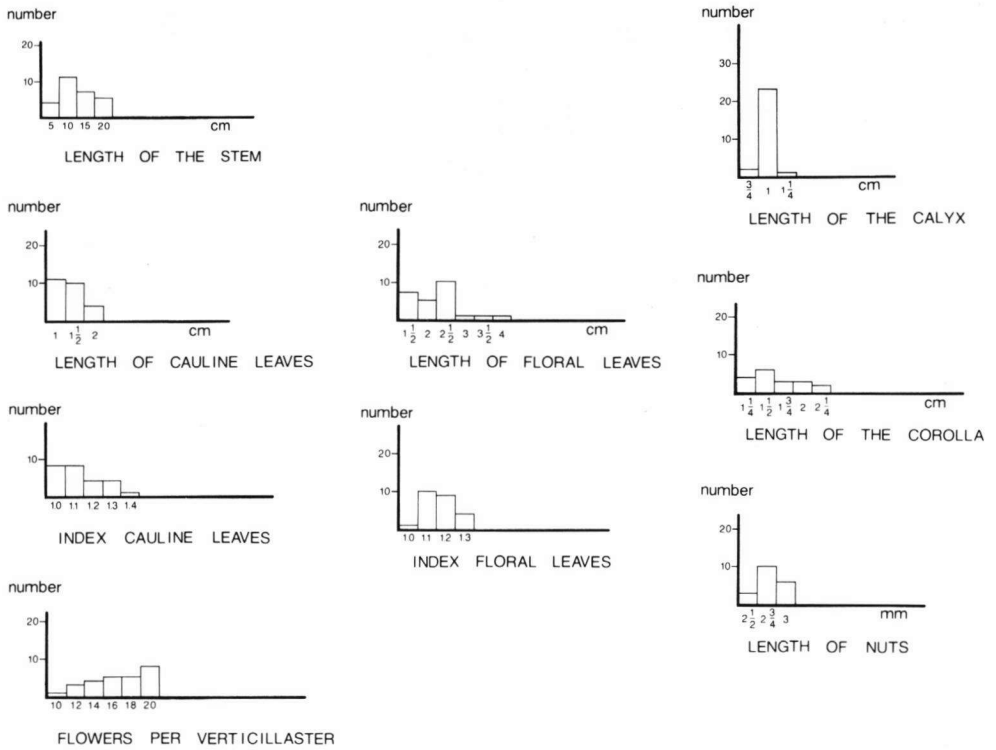


Fig. 23. *Lamium macrodon*.

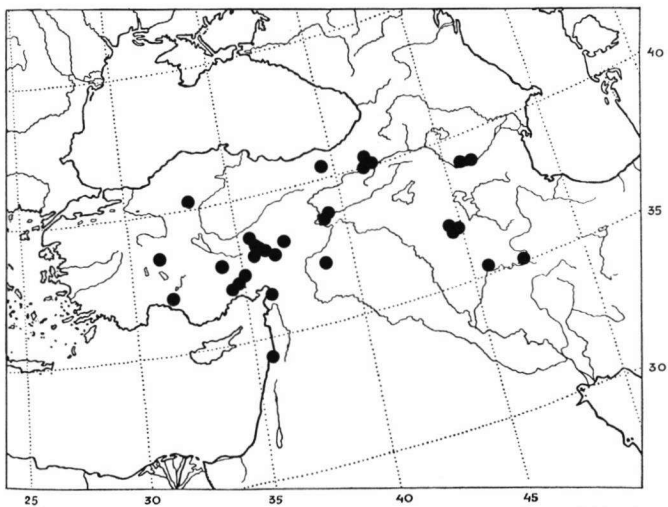


Fig. 24. Distribution of *Lamium macrodon*.

Habitat. On stony, rocky places, also on screes, in cultivated land, sometimes on walls and in light forests; on calcareous and igneous soils.

Altitude. From 900 m up to 2700 m.

Variability. A very distinct plant, also different from the related *Lamium amplexicaule* s.str. by a later time of flowering. Intraspecific taxa are unknown.

B. Section *Lamiotypus* Dumort.

Section *Lamiotypus* Dumort., Fl. Belg. (1827) 45. - Type: *Lamium album* L.

Bracts present. *Corolla* tube sigmoid, abruptly dilated or ventrally saccate. Upper *leaves* sessile or not, or amplexicaul.

6. *Lamium album* L. - Fig. 25.

Lamium album L., Sp. Pl. (1753) 759; Nyman, Syll. Fl. Eur. (1855) 94; Willkomm & Lange, Prodr. Fl. Hisp. 2 (1868) 436; Boiss., Fl. Orient. 4 (1879) 762; Briq., Lab. Alp. Mar. 2 (1893) 312; Britton & Brown, Ill. Fl. N. U.S. 3 ed.2 (1913) 122; Rouy, Fl. Fr. 11 (1909) 298; Sirks, Ned. Kruidk. Arch. 1925 (1926) 72; Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2445; Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 273; Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 960; Gorshk., Fl. USSR 21 (1954) 134; F. Herm., Fl. N.-Mitt.eur. (1956) 865; Grint., Fl. Rep. Pop. Rom. 8 (1963) 178; Lid, Norsk Sv. Fl. (1963) 578; Sychowa in Pawlowskiego, Fl. Polsk. 11 (1967) 118; A. Löve, Isl. Ferdafl. (1970) 350; H. Hess et al., Fl. Schw. 3 (1972) 124; P. Ball, Fl. Eur. 3 (1972) 148; Garcke, Ill. Fl. ed. 23 (1972) 1203; A. Hansen in Rostrup/C. A. Jørg., Dansk. Fl. ed. 20 (1973) 506; Guin. & R. Vilm., Fl. Fr. 2 (1975) 716; Anon., Fl. Reip. Pop. Sin. 65,2 (1977) 488; Sykes, New Zealand J. Bot. 16 (1978) 392; Pign., Fl. It. 2 (1982) 457; R. Mill in P. Davis, Fl. Turk. 7 (1982) 143; Heukels/Meijden, Fl. Nederl. ed. 20 (1983) 318; De Langhe et al., Fl. Belg. ed. 3 (1983) 489; Hämet-Ahti et al., Retkeil. (1984) 297; Clapham et al., Fl. Brit. Isl. ed. 3 (1987) 414; Menitskiy in Takht., Fl. Armen. 8 (1987) 80. - *Lamium vulgatum* Benth. var. *album* (L.) Benth., Lab. Gen. Spec. (1834) 514. - Type: *Linn. 733/10* (holo. LINN).

Lamium capitatum Smith in Rees, Cycl. 20 (1812) *Lamium* no. 7. - Type: *Smith s.n.*, England, Chelsea garden (holo. LINN).

Lamium parietariifolium Benth., Lab. Gen. Spec. (1835) 739; Benth. in DC., Prodr. 12 (1848) 510. - *Lamium album* L. f. *parietariifolium* (Benth.) Benth. ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 90. - Type: *de Candolle s.n.*, 'ex hortus Paris' (holo. G).

Lamium brachyodon (Bordz.) Kuprian., Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 14 (1951) 345. - Basionym unknown.

Lamium turkestanicum Kuprian., Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 14 (1951) 346. - Type: *Zapryagaev 355*, USSR, Gissarskiy Khrebet, top of gully of the Khorangon (holo. LE).

Lamium dumeticola Klokov, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 16 (1954) 319; Gorshk., Fl. USSR 21 (1954) 135. - Type: *Vysotszkij s.n.*, USSR, Staliniensis, near Zhdanov (holo. LE).

Perennial. *Rhizome* cauliform, very short and woody to a few dm long and herbaceous, with stolons. *Stem* usually decumbent and simple, (10-) 25-40 (-95) cm long, (1½-) 2-3 (-4) mm Ø, glabrous to glabrate at the base, appressed-pubescent towards the apex. *Leaves: petiole* (½-) 1½-5 (-8½) cm long, mostly

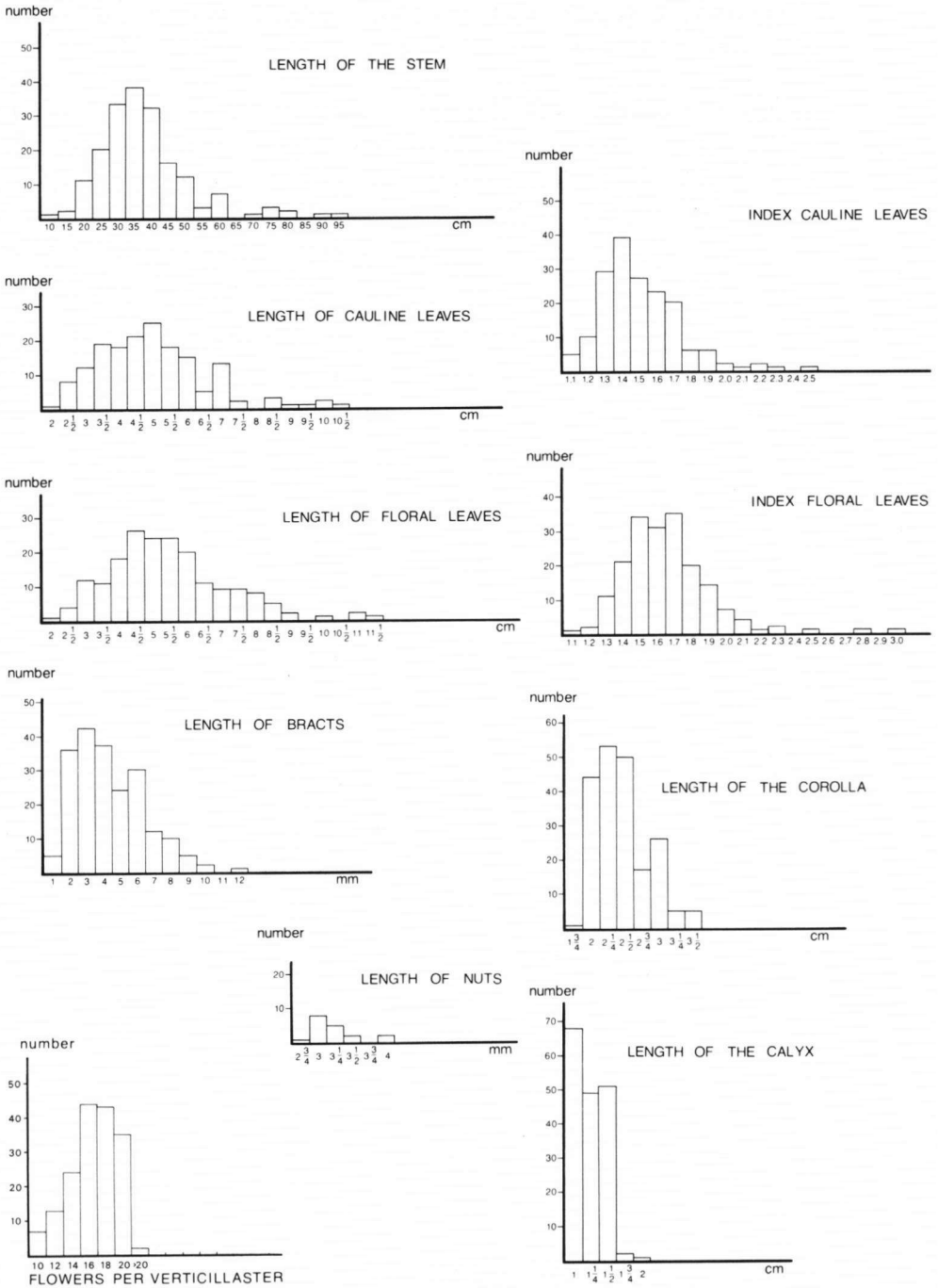


Fig. 25. *Lamium album*.

shorter than the blade, the upper leaves usually not sessile; *blade* ovate to (upper) ovate-oblong or ovate-lanceolate with a cordate to (upper) attenuate to truncate base and an acute to (upper) slightly tapering-acuminate apex, usually coarsely crenate to (upper) dentate or serrate, sparsely appressed-pubescent on both sides; *cauline leaves* (2-) 3-7 (-11) cm long, index (1.1-) 1.3-1.7 (-2.5); *floral leaves* (2-) 3-8 (-12) cm long, index (1.1-) 1.4-1.9 (-3.0). *Verticillasters* (3-) 4-5 (-7), sometimes conspicuously remote, with (10-) 16-20 (-22) flowers. *Bracts* (-1) 2-6 (-12) mm long, $\frac{1}{2}$ -1 mm broad, hirsute, also with short glandular hairs. *Calyx* 5 (-10)-nerved, 1-1 $\frac{1}{2}$ (-2) cm long, longer after anthesis, at the base glabrous, towards the apex sparsely hirsute; teeth longer to shorter than the tube, narrowly triangular, on the margin with short glandular hairs. *Corolla* white or pink (1 $\frac{3}{4}$ -) 2-3 (-3 $\frac{1}{2}$) cm long; tube abruptly dilated, (1-) 1 $\frac{1}{2}$ -2 (-2 $\frac{1}{4}$) cm long, usually exerted from the calyx, outside glabrous at the base, dorsally towards the lips puberulous, inside with an oblique ring of hairs dorsally at 4-5 mm from the base ventrally pointing backwards; upper lip (6-) 8-10 (-12) by 5-6 mm, apex rounded to truncate or emarginate, margin usually undulate, outside velutinous, inside glabrous; lower lip about as long as the upper lip and slightly recurved, glabrous, lateral lobes rounded, to 2 mm long, tooth 1 - 1 $\frac{1}{2}$ mm long, median lobe 3-5 by 4-8 mm, bilobed, margin undulate. Anterior *stamens* 9-11 mm long, c. 3 mm longer than the posterior ones and attached c. 1 mm lower; filaments also with short glandular hairs; anthers 1 $\frac{1}{2}$ -2 by $\frac{3}{4}$ -1 mm; pollen light yellow. *Disc* c. $\frac{1}{2}$ mm broad. *Style* c. 3-4 mm shorter than the corolla, subglabrous. *Nutlets* (2 $\frac{3}{4}$ -) 3-3 $\frac{1}{4}$ (-4) by (1 $\frac{1}{4}$ -) 1 $\frac{1}{2}$ -1 $\frac{3}{4}$ (-2) mm.

6.a. *Lamium album* L. subsp. *album* - Figs. 26 and 27.

Mennema in Rech. f., Fl. Iran. 150 (1982) 323.

Petiole of the lowermost floral leaves as long as or shorter than the flowers of the same verticillasters; *floral leaves* (2-) 4-6 (-10) cm long. *Bracts* (1-) 2-3 (-7) mm long. *Calyx* 1 (-1 $\frac{1}{4}$) cm long, the teeth as long as or shorter than the tube. *Corolla* white, very seldom pink, (1 $\frac{3}{4}$ -) 2-2 $\frac{1}{2}$ cm long.

Distribution. Most of Europe, but rare in the area North of 65° N. lat. and in the South, absent from many islands; in E. Turkey, Iraq and Iran, Eastwards in the Asiatic part of the U.S.S.R. to Kamchatka and in China to Mongolia and Manchuria; introduced (and naturalized ?) in Iceland (Löve, 1970), N. America (Britton & Brown, 1913), and New Zealand (Sykes, 1978) - Fig. 23.

Habitat. Roadsides, along ditches and dikes, in grassland, in ruderal places, under hedges, also in thickets and forest, on rocky mountain slopes; on various soils.

Altitude. From sea-level up to 3500 m (NW. Iran).

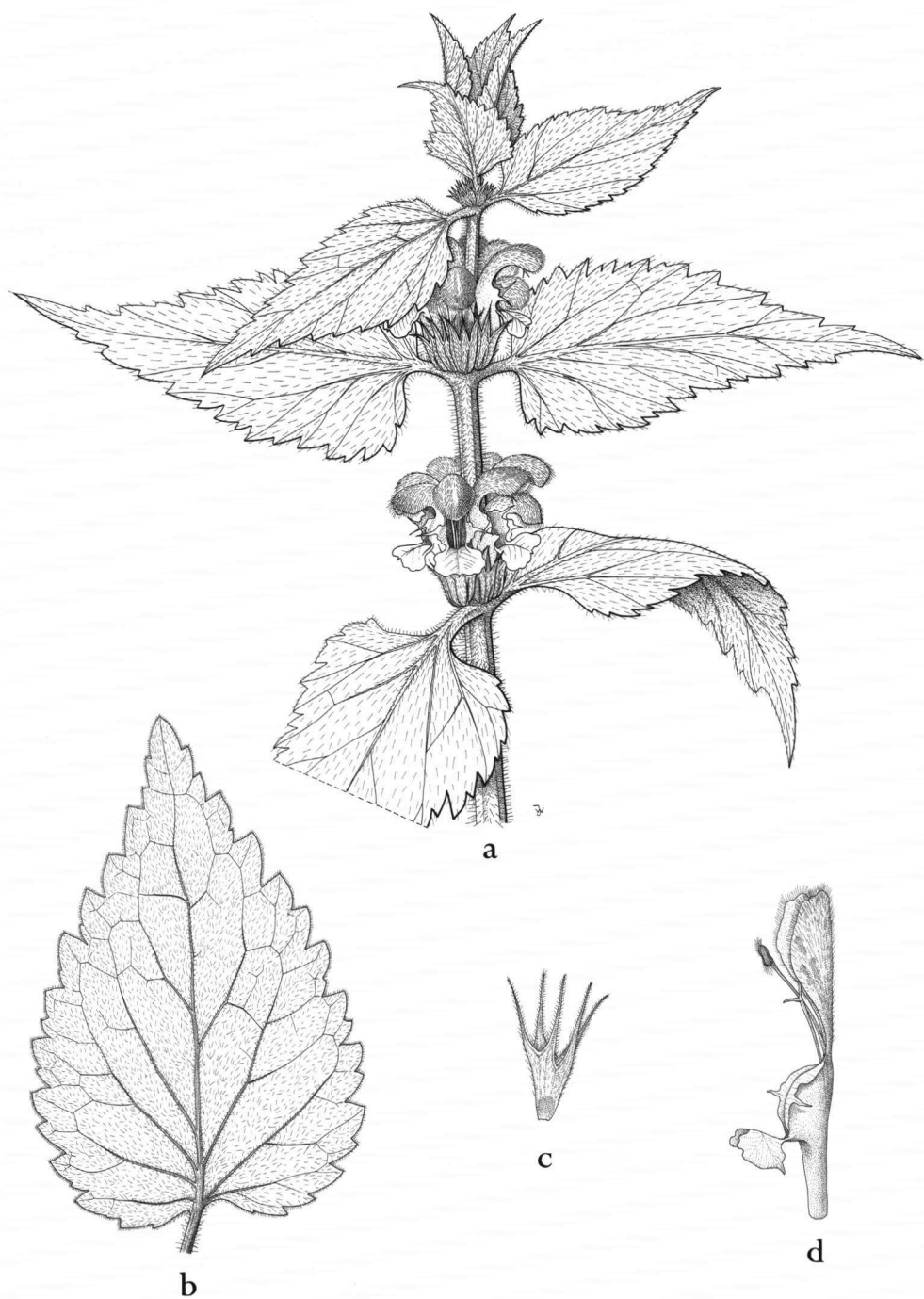


Fig. 26. *Lamium album* subsp. *album*: a. upper part (1 ×); b. uppermost cauline leaf (1 ×); c. calyx (2 ×); d. corolla (2 ×).

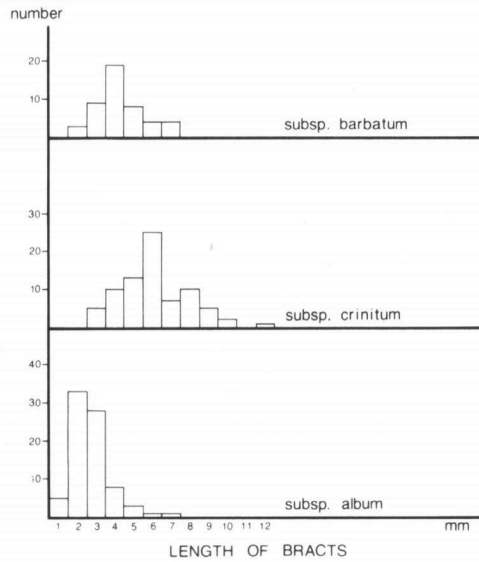
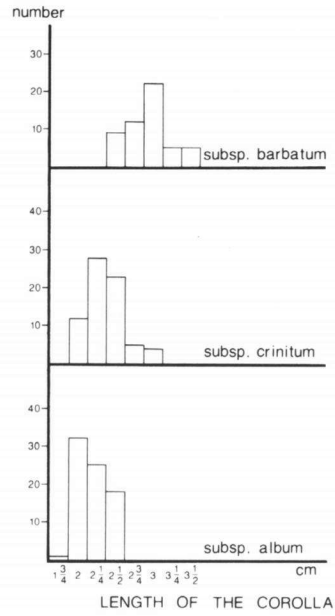
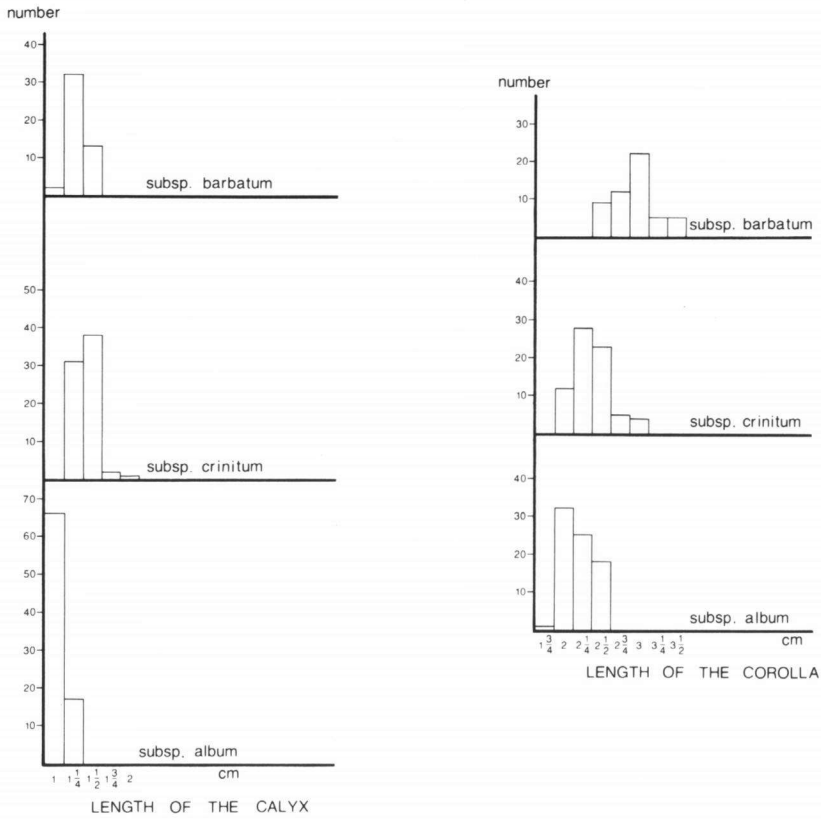


Fig. 27. *Lamium album* subsp. *album*, subsp. *barbatum*, and subsp. *crinitum*.

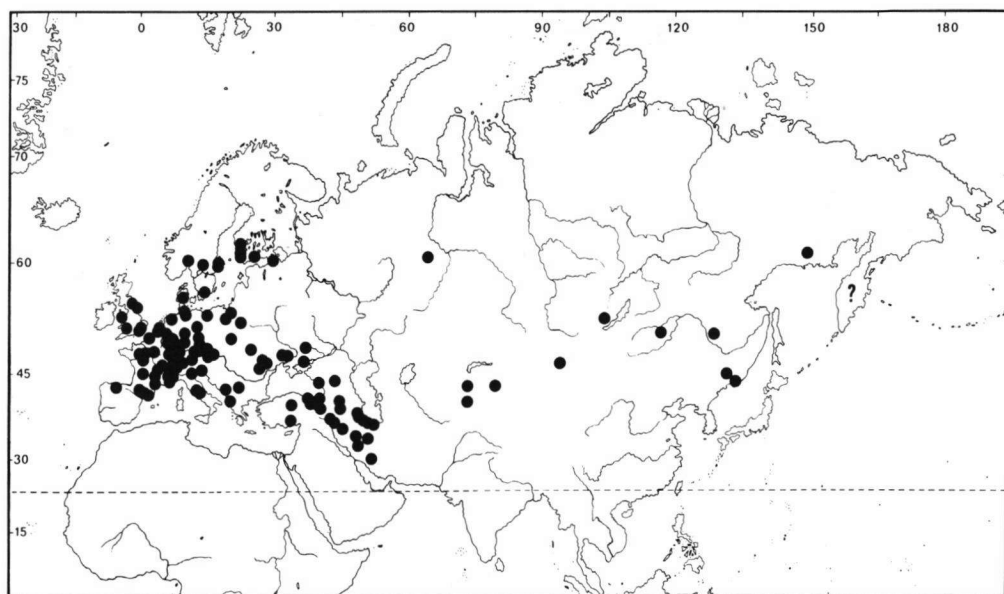


Fig. 28. Distribution of *Lamium album* subsp. *album*, without the introduced specimens.

Variability. Subsp. *album* is a rather uniform taxon. There is some variability in the shape (*lycopifolium*) and incisions of the leaves (*parietariifolium* and *integrifolium* versus *caudatum* and *laciniatum*) and the colour of the flowers (*roseum*, *rubellum*). The lower lip of the corolla incidentally has lateral lobes with a rounded entire margin (*splendens*) such as *Lamium galeobdolon*. The varieties and ranks of lower level I found in the literature, are listed below in alphabetical order.

- var. *acuminatum* Opiz, Seznam (1852) 57, nomen nudum.
- var. *acutifolium* Bolzon, Bull. Soc. Bot. Ital. 1905 (1905) 63.
- var. *caudatum* Ooststr., Ned. Kruidk. Arch. 54 (1947) 111.
- f. *glabrata* E.B. Almq., Acta Phytogeogr. Suec. 1 (1929) 585, nomen nudum.
- var. *incarnatum* Opiz, Seznam (1852) 57, nomen nudum.
- f. *incisa* [Anon., Bot. Not. 1904 (1904) 75, pro. descr.] E.B. Almq., Acta Phytogeogr. Suec. 1 (1929) 585, not a nomen nudum, as N. Hylander [Uppsala Univ. Årsskr. 1945,7 (1945) 272] suggests.
- var. *integrifolium* Nolte ex Sonder, Fl. Hamb. (1851) 328. – f. *integrifolium* (Nolte) Nolte ex G. Nilsson, Svensk Bot. Tidskr. 19 (1925) 521.
- f. *laciniatum* Neuman ex N. Hylander, Uppsala Univ. Årsskr. 1945,7 (1945) 272, nomen illeg., superfluous name.
- f. *lycopifolium* J. Scholz in Asch. & Graebner, Fl. Nordostdeutsch. Flachl. (1899) 600.
- f. *memorale* (Grecescu 1900) Grecescu in Soó, Syn. Fl. Veg. Hung. 3 (1968) 90.
- l. *nigrocinctum* (G. Beck 1921) G. Beck in Soó, Syn. Fl. Veg. Hung. 3 (1968) 90.
- var. *obtusifolium* Bolzon, Bull. Soc. Bot. Ital. 1905 (1905) 63.
- var. *roseum* Dum., Fl. Belg. (1827) 45, nomen nudum. – var. *roseum* Lange, Haandb. Dansk. Fl. ed. 3 (1864) 441. – f. *roseum* (Lange) Lange in E. Krause in Prahl, Krit. Fl. Schl.-Holst. 2 (1890) 169.

f. *rubellum* Desv. in Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2446. – l. *rubellum* (Desv. 1827) Desv. ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 90.
 var. *splendens* Ooststr., Ned. Kruidk. Arch. 50 (1940) 159.
 f. *subintegerrimum* Segerström, Svensk Bot. Tidskr. 22 (1928) 480.

6.b. *Lamium album* L. subsp. *barbatum* (Siebold & Zucc.) Mennema, *comb. nov.* – Figs. 27 and 29.

Lamium barbatum Siebold & Zucc., Fl. Jap. Fam. Nat. (1846) 158; Benth. in DC., Prodr. 12 (1848) 511; Gorshk., Fl. USSR 21 (1954) 136; Anon., Ic. Corm. Sin. 3 (1974) 652; Anon., Fl. Reip. Pop. Sin. 65,2 (1977) 490. – *Lamium album* L. var. *barbatum* (Siebold & Zucc.) Franchet & Savat., Enum. Plant. Jap. 1 (1875) 380; Ohwi, Fl. Jap. (1953) 777. – Type: *Siebold 540*, Japan (holo. L).

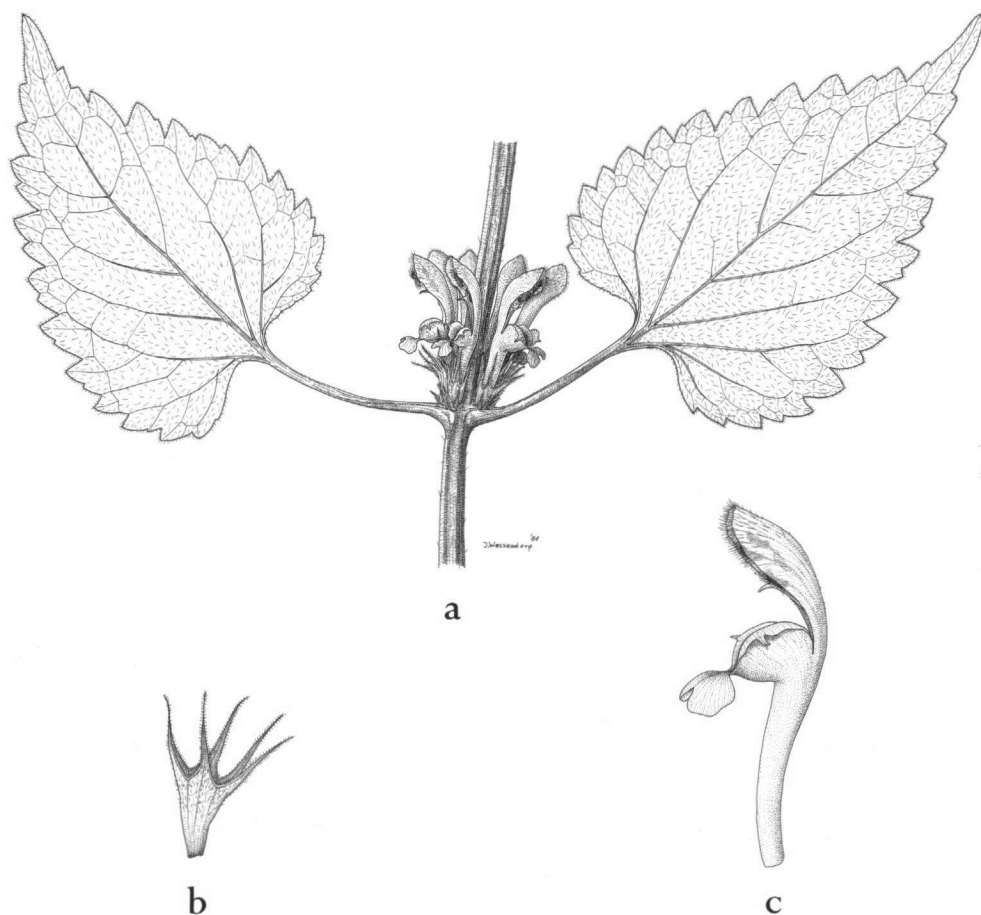


Fig. 29. *Lamium album* subsp. *barbatum*: a. lowermost verticillaster and floral leaves (1 ×); b. calyx (2 ×); c. corolla (2 ×).

Lamium takesimense Nakai, Rep. Veg. Dagelet. Isl. (1919) 40. - *Lamium album* L. var. *takesimense* (Nakai) Kudo, Mem. Fac. Sci. Taihoku Imp. Univ. 2,2 (1929) 201. - Syntype: Nakai 4533, Korea, Dagelet Island (holo. TI).

Lamium garganicum Thunb., Fl. Jap. (1784) 246, non Linn. 1763 - Type: Thunberg s.n., Japan (holo. L).

Lamium album L. var. *petiolatum* Nakai, J. Coll. Sc. Imp. Univ. Tokyo 31 (1911) 154, non Royle ex Benth. 1833.

Petiole of the lowermost floral leaves usually longer than the flowers of the same verticillasters; *floral leaves* (4-) 4½-8 (-12) cm long. *Bracts* (2-) 3-5 (-7) mm long. *Calyx* (1-) 1¼ (-1½) cm long, the teeth usually longer than the tube. *Corolla* pink or white, also mixed-coloured populations, (2½-) 3 (-3½) cm long.

Distribution. NE. Asiatic U.S.S.R. (Sikhote Alin and Sakhalin), NE. China, Korea and Japan - Fig. 30.

Habitat. In forests and thickets, in grassland, in ruderal places, on walls, along water.

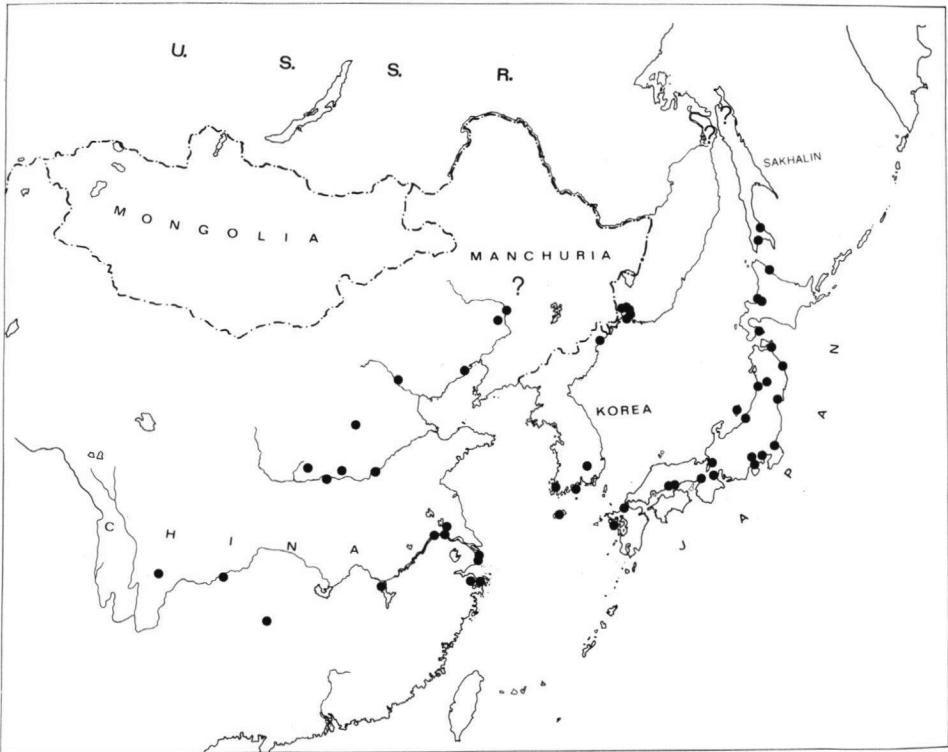


Fig. 30. Distribution of *Lamium album* subsp. *barbatum*.

Altitude. From sea-level up to 2700 m (Szechwan, China).

Variability. Subsp. *barbatum* is very homogeneous. C.Y. Wu & Hsuan distinguish three varieties, based on differences in hairiness. One specimen has been found with yellow (!) flowers (*kitadakense*).

- var. *glabrescens* C.Y. Wu & Hsuan in C.Y. Wu et al., Acta Phytotax. Sin. 10 (1965) 157.
var. *hirsutum* C.Y. Wu & Hsuan in C.Y. Wu et al., Acta Phytotax. Sin. 10 (1965) 156.
var. *kitadakense* Yonezawa, J. Phytogeogr. Tax. 29 (1981) 111.
var. *rigidum* C.Y. Wu & Hsuan in C.Y. Wu et al., Acta Phytotax. Sin. 10 (1965) 156.

**6.c. *Lamium album* L. subsp. *crinitum* (Montbr. & Auch. ex Benth.)
Mennema - Figs. 27 and 31.**

- Lamium album* L. subsp. *crinitum* (Montbr. & Auch. ex Benth.) Mennema in Rech. f., Fl. Iran. 150 (1982) 323. - *Lamium crinitum* Montbr. & Auch. ex Benth., Ann. Sci. Nat. 2,6 (1836) 48; Benth. in DC., Prodr. 12 (1848) 511; Boiss., Fl. Orient. 4 (1879) 765; R. Mill in P. Davis, Fl. Turk. 7 (1982) 144. - Type: *Montbret s.n.*, Turkey, East Cappadocia (holo. G, iso. K, W).
Lamium petiolatum Royle ex Benth. in Hook., Bot. Misc. 3 (1833) 381; Benth., Lab. Gen. Spec. (1834) 513; Benth. in DC., Prodr. 12 (1848) 509. - Type: *Royle s.n.*, Himalaya (holo. K).
Lamium robertsonii Boiss., Diagn. 7 (1846) 54; Benth. in DC., Prodr. 12 (1848) 505; Boiss., Fl. Orient. 4 (1879) 764. - *Lamium crinitum* Montbr. & Auch. ex Benth. var. *robertsonii* (Boiss.) Bornm., Beih. Bot. Centralbl. 22,2 (1907) 134. - Type: *Kotschy 604*, Iran, Kuh-e Dinar (holo. G, iso. AWH, C, GOET, JE, K, L, M, MPU, P, S, UPS, W, WAG, WU, ZT).
Lamium persicum Boiss. & Buhse, Nouv. Mém. Soc. Imp. Naturalistes Moscou 12 (1860) 180. - Type: *Buhse s.n.*, Iran, Warahosul (holo. G).
Lamium setidens Freyn, Oesterr. Bot. Z. 41 (1891) 58. - Type: *Bornmueller 635*, Turkey, Amasya, Ak Dag, subalpine region (holo. B).
Lamium oreades Azn., Magyar Bot. Lapok 17 (1919) 22. - Type: *Van Dijk Post s.n.*, Turkey, Mount Ararat (holo. G).
Lamium leucolophum [Hauskn. ex] R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 37; R. Mill in P. Davis, Fl. Turk. 7 (1982) 145. - Type: *Sintenis 3753*, Turkey, Kastamonu, in field near Hambarlu (holo. JE, iso. LD)
Lamium album auct. non L.: L., Sp. Pl. (1753) 759 p.p.; Hedge & Lamond, Notes Roy. Bot. Gard. Edinburgh 28 (1968) 90; H. Hara, Fl. East. Himalaya (1971) 115; R. Stewart, Fl. W. Pakistan (1972) 614; O. Polunin & Stainton, Flow. Himalaya (1984) 325.

Petiole of the lowermost floral leaves usually as long as or shorter than the flowers of the same verticillasters; *floral leaves* (2½ -) 3-5½ (-8½) cm long. *Bracts* (3-) 4-6 (-12) mm long. *Calyx* (1-) 1¼-1½ (-2) cm long, the teeth usually longer than the tube. *Corolla* white, seldom pink, (2-) 2¼-2½ (-3) cm long.

Distribution. Alpine and subalpine region of E. Turkey, N. Iraq, N. Iran (Kurdistan and Elburs), Asiatic U.S.S.R. (Turkmeniya), Afghanistan, Pakistan (Punjab), N. India and Nepal - Fig. 32.

Habitat. In deciduous forests, in thickets, on rocky slopes, along rivulets, mostly shady, on various soils.

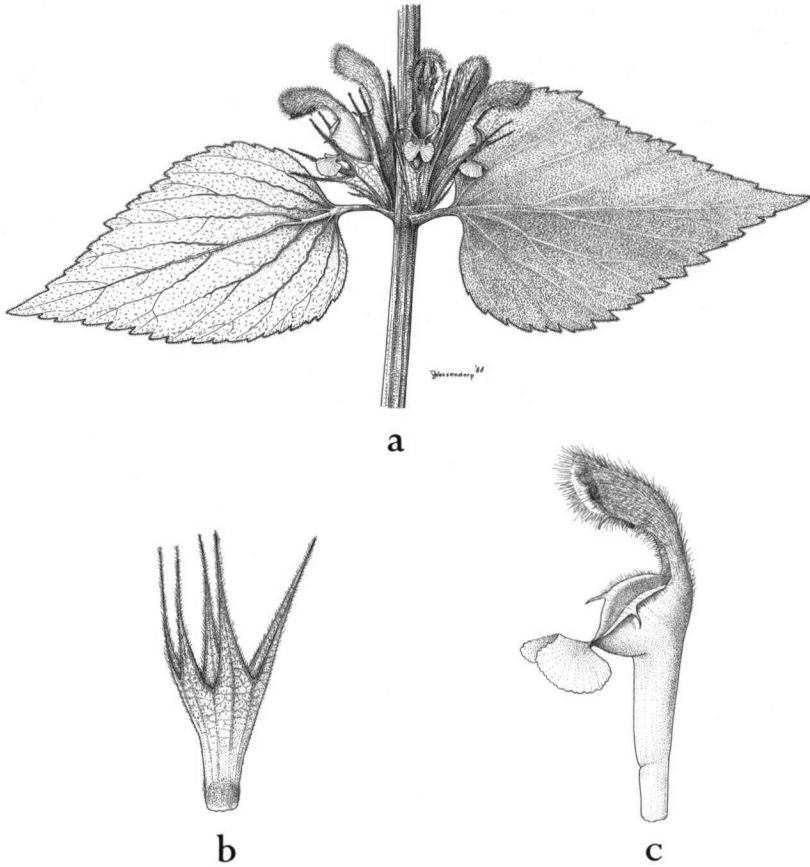


Fig. 31. *Lamium album* subsp. *crinitum*: a. lowermost verticillaster and floral leaves (1 ×); b. calyx (2 ×); c. corolla (2 ×).

Altitude. From 400 m (N. Iran) up to 3750 m (Nepal).

Variability. Subsp. *crinitum* is rather homogeneous. Intraspecific taxa on a lower rank than subspecies are unknown, except the one mentioned in the synonymy.

Note. In the choice of an infraspecific epithet on the subspecies level I ignored the oldest epithet '*petiolatum*' (*Lamium petiolatum* Royle ex Benth., 1833), because of the fact that the floral leaves of subsp. *barbatum* are usually much more 'petiolate' than those of subsp. *crinitum* (Mennema, 1982). The choice of the epithet '*petiolatum*' for the subspecies could have continued the misunderstanding,

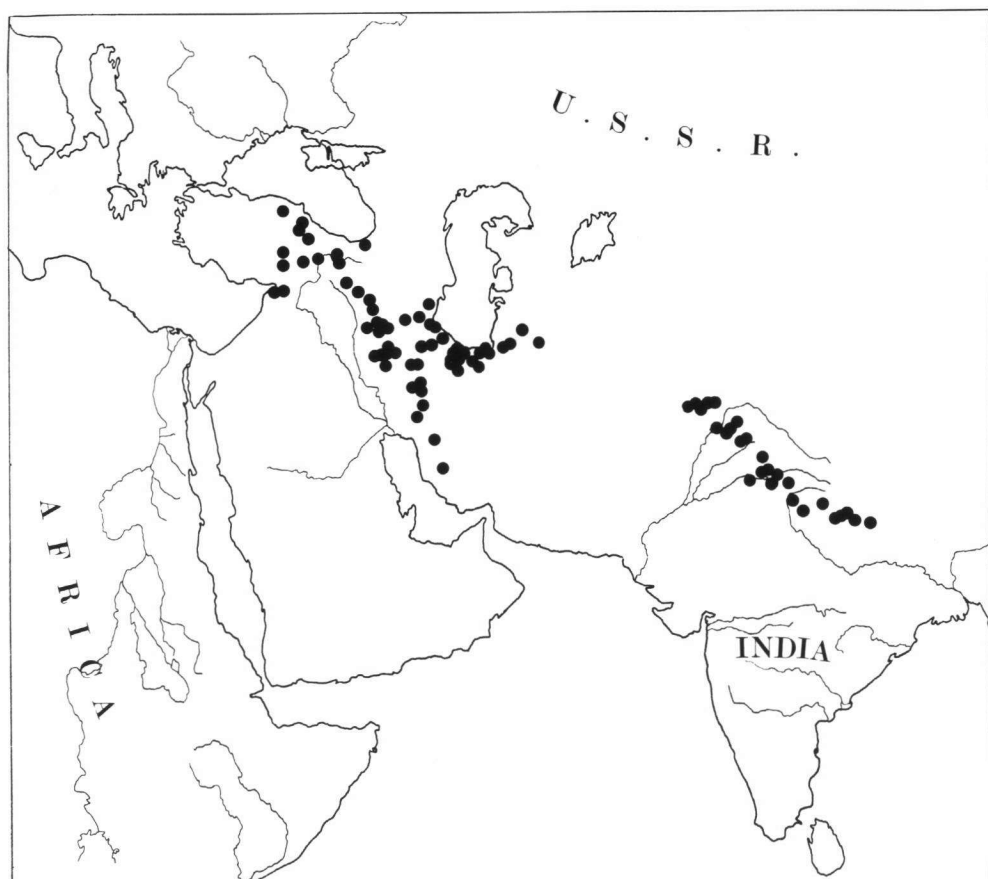


Fig. 32. Distribution of *Lamium album* subsp. *crinitum*.

already originated by introduction of *Lamium petiolatum* sensu auct. Japon., non Royle, and *Lamium album* var. *petiolatum* Nakai, excl. syn. [Ohwi (1953) 777].

7. *Lamium galactophyllum* Boiss. & Reuter ex Boiss. - Figs. 33 and 34.

Lamium galactophyllum Boiss. & Reuter ex Boiss., Fl. Orient. 4 (1879) 766; R. Mill in P. Davis, Fl. Turk. 7 (1982) 148. - Lectotype (mihi): *Bourgeau* 223, Turkey, above Gümüşane (holo G, iso. C, COI, GOET, JE, K, LD, MPU, P, UPS, W, WU, Z).

Annual. *Stem* erect or decumbent, simple or branched at the base, (10-) 20-25 (-30) cm long, 2-3 (-5) mm Ø, glabrate. *Leaves*: *petiole* (½-) 2-3 (-5) cm, usually longer than the blade, the floral leaves amplexicaul; *blade* reniforme or cordate, the upper usually slightly acuminate, moderately to (upper) coarsely and double crenate or serrate, sparsely appressed-pubescent on both sides; *cauline leaves* (1 ½-) 2-3 (-5) cm long, 2-3 (-5) mm Ø, glabrate.

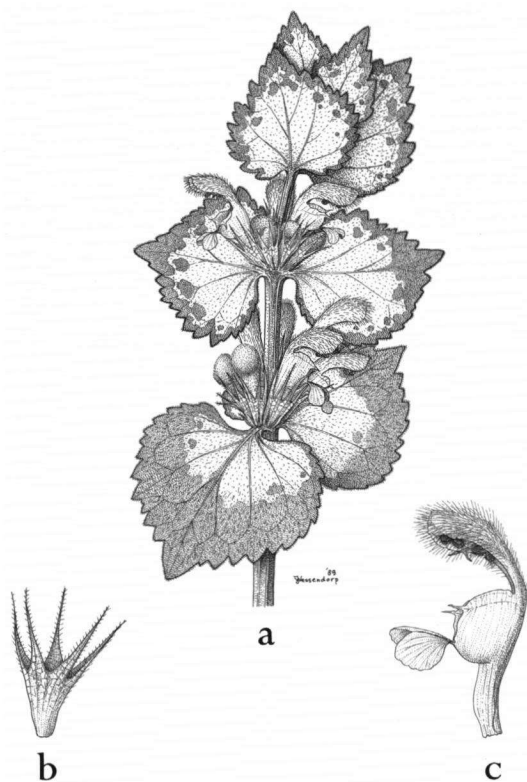


Fig. 33. *Lamium galactophyllum*: a. upper part (1 ×); b. calyx (2 ×); c. corolla (2 ×).

2-3 (-3½) cm long, index 0.9-1.0 (-1.1); *floral leaves* (1½-) 2 - 3½ (-4) cm long, index 0.7-0.8 (-0.9) the upper ones always with whitish spots at the base. *Verticillasters* (2-) 3-4 (-6), remote, with 16-18 (-20) flowers. *Bracts* 1-2 (-3) mm long, ¼-½ mm broad, hirsute, with short glandular hairs. *Calyx* many-nerved, 1 (-1¼) cm long, longer after anthesis, at the base usually glabrous, towards the apex shortly appressed hairy and sparsely hirsute, also with short glandular hairs; teeth 1½-1½ × as long as the tube, narrowly triangular, on the inside puberulous and on the outside on the margin with short glandular hairs. *Corolla* white, sometimes with minute dark-purple spots on the lips, 1½ (-1¾) cm long; tube abruptly dilated, towards the upper lip dorsally crested, 1-1¼ cm long, not exerted from the calyx, outside glabrous at the base, towards the lips pubescent, inside with an oblique ring of hairs dorsally at 2½-3½ mm from the base ventrally pointing backwards; upper lip arched, 6-8 mm long and 5-6 mm broad, apex rounded, margin undulate, outside densely sericeous, inside glabrous; lower

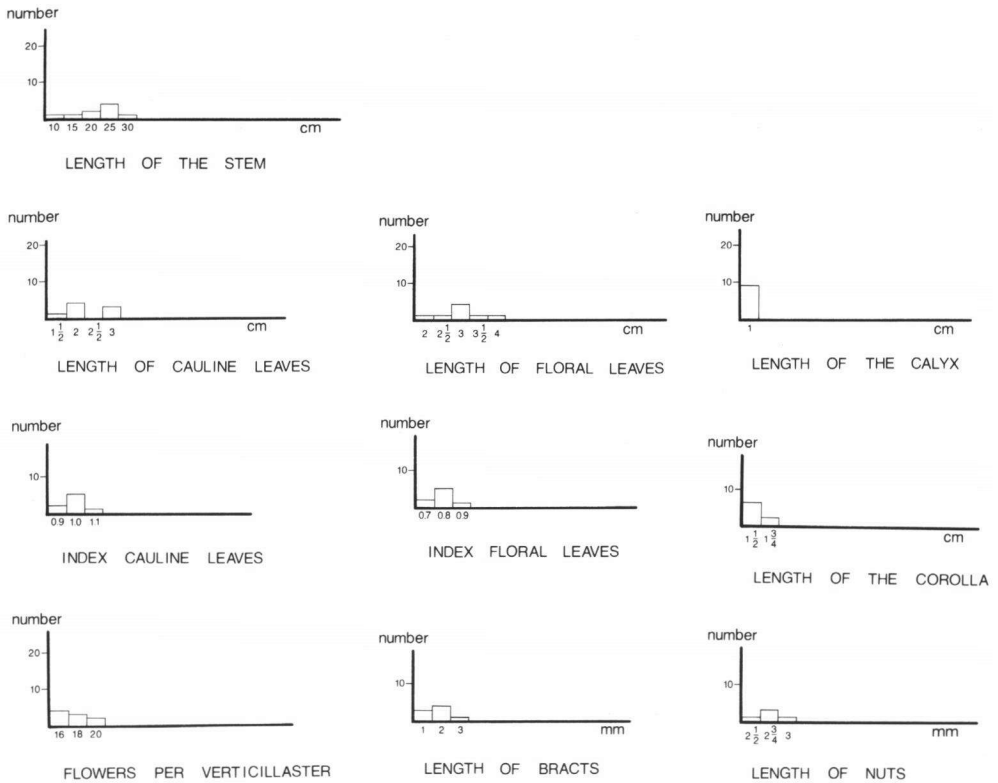


Fig. 34. *Lamium galactophyllum*.

lip longer than the upper lip and at an acute angle to the latter, glabrous, lateral lobes rounded, 1 1/2 mm long, tooth c. 1 mm long, median lobe 4-5 mm long and 6-7 mm broad, bipartite, margin undulate. Anterior *stamens* 7-8 mm long, c. 3 mm longer than the posterior ones and attached c. 1-1 1/2 mm lower; filaments also with short glandular hairs; anthers 1 1/2-1 3/4 by 3/4-1 mm; pollen colour unknown. *Disc* c. 1 mm broad. *Style* c. 1 1/2 mm shorter than the corolla, glabrous. *Nutlets* (2 1/2-) 2 3/4 (-3) by 1 1/4-1 1/2 mm.

Distribution. Endemic in the mountains of NE. Turkey - Fig. 35.

Habitat. Among rocks, on screes and unstable slopes.

Altitude. From 1400 m up to 2550 m.

Variability. In the *Hooker* herbarium there is a fragment from Erzurum, Turkey, only with variegated floral leaves such as of *Lamium galactophyllum* and

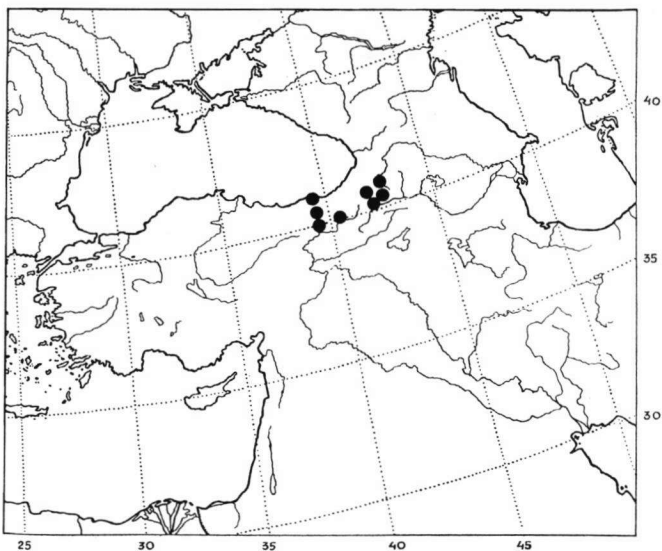


Fig. 35. Distribution of *Lamium galactophyllum*.

flowers; the corollas of the latter are 2 ¾–3 cm long, exerted from the calyx, which has the normal length of that of *Lamium galactophyllum*, viz. 1–1 ¼ cm. For the rest the material is very homogeneous; infraspecific taxa are unknown.

8. *Lamium maculatum* (L.) L. – Fig. 36.

Lamium maculatum (L.) L., Sp. Pl. 2 ed. 2 (1763) 809; Benth. in DC., Prodr. 12 (1848) 510; Nyman, Syll. Fl. Eur. (1855) 94; Willkomm & Lange, Prodr. Fl. Hisp. 2 (1868) 436; Boiss., Fl. Orient. 4 (1879) 763; Briq., Lab. Alp. Mar. 2 (1893) 305; Battand. & Trabut, Fl. Alg. & Tun. (1905) 268; Rouy, Fl. Fr. 11 (1909) 297; Britton & Brown, Ill. Fl. N. U. S. 3 ed. 2 (1913) 122; Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2447; Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 273; Rech. f., Fl. Aegaea (1943) 512; Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 959; Hultén, Atl. Växt. Utbr. Nord. (1950) 385; Gorshk., Fl. USSR 21 (1954) 137; F. Herm., Fl. N.-Mitt.eur. (1956) 865; Rech. f., Fl. Syr. Liban. (1959) 367; Lid, Norsk Sv. Fl. (1963) 578; Mennema, Gorteria 4 (1968) 100; Sychowa in Pawlowskiego, Fl. Polsk. 11 (1969) 119; P. Ball, Fl. Eur. 3 (1972) 148; Garcke, Ill. Fl. ed. 23 (1972) 1202; H. Hess et al., Fl. Schw. 3 (1972) 125; Guin. & R. Vilm., Fl. Fr. 2 (1975) 716; Anon., Fl. Reip. Pop. Sin. 65,2 (1977) 492; Sykes, New Zealand J. Bot. 16 (1978) 392. R. Mill in P. Davis, Fl. Turk. 7 (1982) 141; Pign., Fl. It. 2 (1982) 457; Heukels/Meijden, Fl. Nederl. ed. 20 (1983) 320; De Langhe et al., Fl. Belg. ed. 3 (1983) 489; Menitskiy in Takht., Fl. Armen. 8 (1987) 80; Clapham et al., Fl. Brit. Isl. ed. 3 (1987) 414. – *Lamium album* L. var. *maculatum* L., Sp. Pl. (1753) 579. – Type: Linn. 733/6 (holo. LINN).

Lamium laevigatum L., Sp. Pl. 2, ed.2 (1763) 808. – *Lamium maculatum* (L.) L. var. *laevigatum* (L.) Mutel, Fl. Fr. Herb. 3 (1836) 24. – Type: Linn. 733/7 (holo. LINN).

Lamium melissifolium Miller, Gard. Dict. ed. 8 (1768) *Lamium* nr. 5. – Type: Miller, Fig. Pl. Gard. Dict. (1760) tab. 158.

Lamium foliosum Crantz, Stirp. Austr. 2,4, ed.2 (1769) 258. – *Lamium maculatum* (L.) L. var. *foliosum* (Crantz) G. Beck, Fl. Nied.-Oesterr. 2,2 (1893) 1019. – *Lamium maculatum* (L.) L. f. *foliosum* (Crantz) G. Beck ex Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 274. – *Lamium maculatum* (L.) L. subsp. *foliosum* (Crantz) A. Löve & D. Löve, Bot. Not. 114 (1961) 55. – Type: unknown.

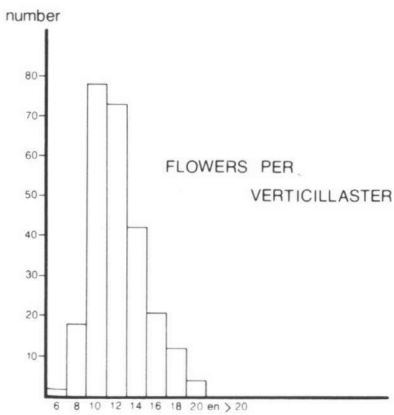
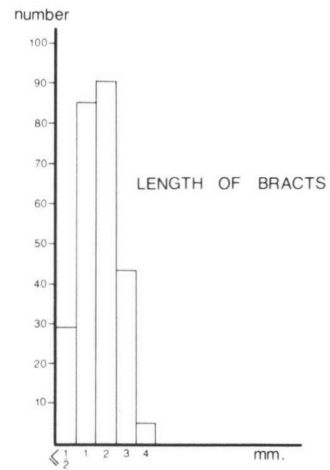
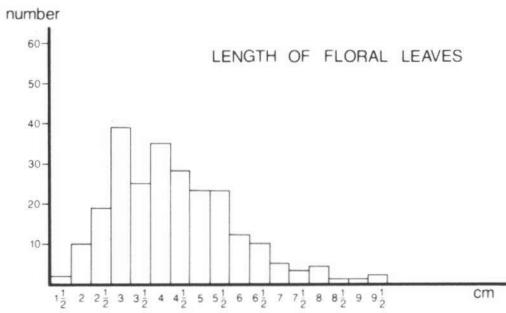
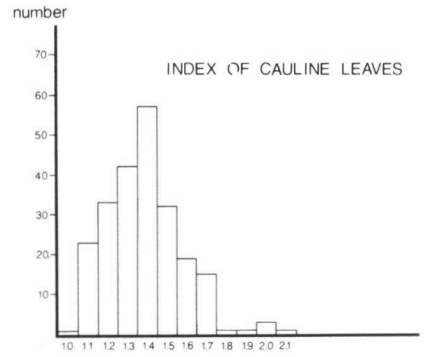
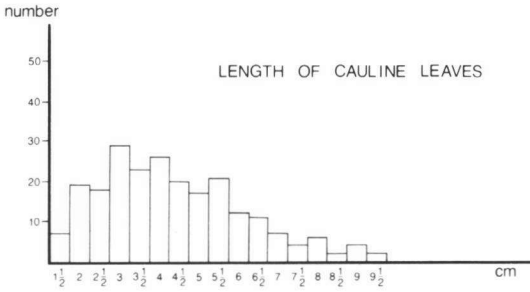
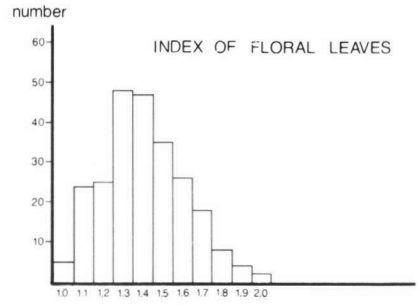
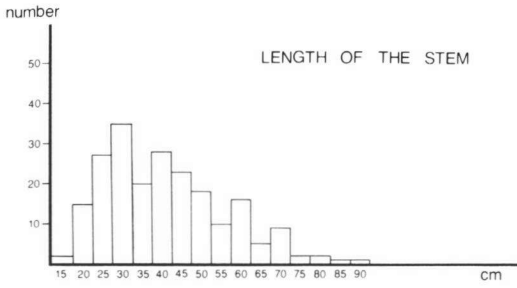


Fig. 36. *Lamium maculatum*.

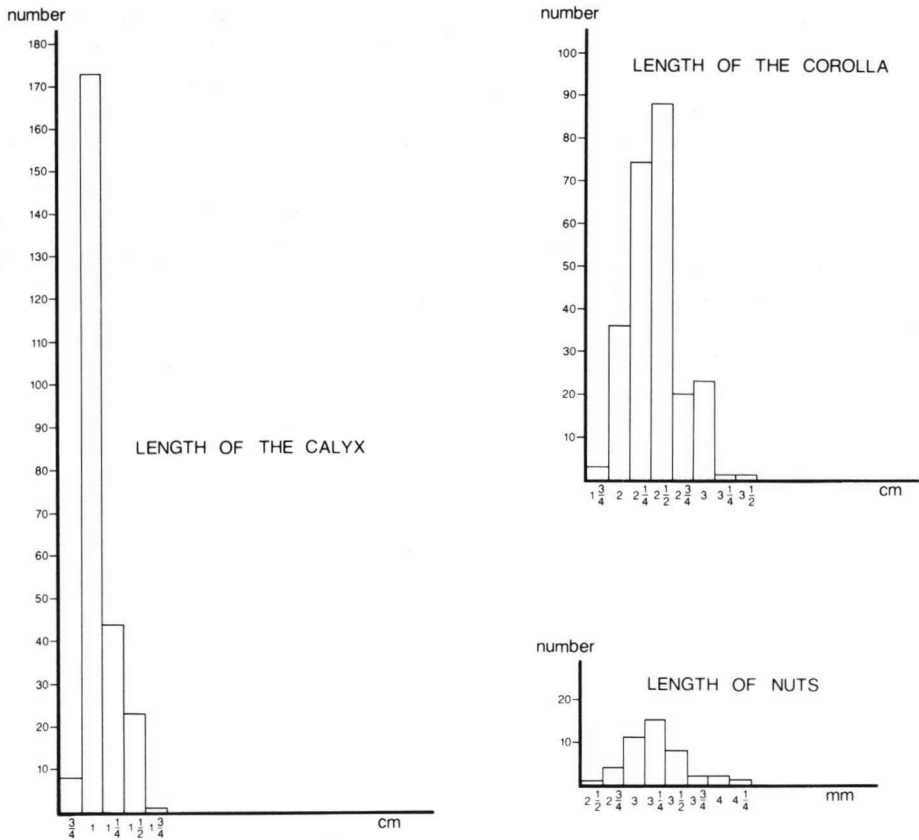


Fig. 36. *Lamium maculatum* (continued).

Lamium rubrum Jenkinson, Brit. Pl. (1775) 128. - Type: unknown.

Lamium rugosum Aiton, Hort. Kew. 2 (1789) 296. - *Lamium maculatum* (L.) L. var. *rugosum* (Aiton) Opiz, Seznam (1852) 56; Briq., Lab. Alp. Mar. 2 (1893): 310. - *Lamium maculatum* (L.) L. subvar. *rugosum* (Aiton) Reichb. in Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2449. - Type: *Aiton s.n.*, England, Oxford Garden (not seen).

Lamium hirsutum Lam., Enc. Méth. 3,2 (1792) 410. - *Lamium maculatum* (L.) L. var. *hirsutum* (Lam.) Mutel, Fl. Fr. Herb. 3 (1836) 24; Opiz, Seznam (1852) 56; G. Beck, Ann. K.K. Naturh. Hofmus. 2 (1887) 144. - Type: *Lamarck s.n.*, France, Auvergne, Mont-d'or (holo. P).

Lamium stoloniferum Lapeyr., Hist. Abrég. Pl. Pyrén. (1813) 333, nomen illeg., superfluous name.

Lamium rubrum Wallr., Sched. Crit. 1 (1822) 300, non Jenkinson 1775, nomen illeg. - *Lamium vulgatum* Benth. var. *rubrum* (Wallr.) Benth., Lab. Gen. Spec. (1834) 514. - *Lamium maculatum* (L.) L. var. *rubrum* (Wallr.) Briq., Lab. Alp. Mar. 2 (1893) 308. - Type: unknown.

Lamium mutabile Dumort., Fl. Belg. (1827) 45. - Type: *Dumortier s.n.*, Belgium, Freyr, Anseremme, Waulsort, Falmagne, very common (holo. BR).

Lamium columnae Ten., Syll. Pl. Fl. Neapol. (1831) 285. - Lectotype (mih): *Tenore s.n.*, Italy, Abruzzi Mountains [In Samnii et Apritii montibus] (holo. BM).

Lamium maculatum (L.) L. var. *genuinum* Reichb., Fl. Germ. Exc. (1831) 321, nomen inval.; K. Koch, Linnaea 21 (1848) 682.

- Lamium affine* Guss. & Ten. ex Ten., Syll. Pl. Fl. Neapol. App. 4 (1835) 25; Fl. Nap. 5 (1835) 10. - Type: *Tenore s.n.*, Italy, Abruzzi Mountains [Montosis Aprutii; ad ovilia: Majella presso lo Jazzo di Tittone] (not seen).
- Lamium tillii* Ten., Syll. Pl. Fl. Neapol. App. 4 (1835) 27; Fl. Nap. 5 (1835) 11. - Type: *Tenore s.n.*, Italy, Abruzzi Mountains [In Aprutii montibus: Reganello] (not seen).
- Lamium grenieri* Mutel, Fl. Fr. Herb. 3 (1836) 25, 401. - *Lamium maculatum* L. f. *grenieri* (Mutel) Gams in Hegi, Ill. Fl. Mitt.-Eur. 5, 4 (1927) 2119. - Type: *Grenier s.n.*, France, Besançon, fortification walls of Chamars (holo. P).
- Lamium niveum* Schrader in Bartling, Litteraturber. Linnaea 1841 (1841) 94. - *Lamium maculatum* (L.) L. f. *niveum* (Schrader) Griseb., Fl. Rep. Pop. Rom. 8 (1863) 185. - Type: unknown.
- Lamium gundelshimeri* K. Koch, Linnaea 17 (1843) 297; Benth. in DC., Prodr. 12 (1848) 510; K. Koch, Linnaea 21 (1848) 679; Boiss., Fl. Orient. 4 (1879) 763; R. Mill in P. Davis, Fl. Turk. 7 (1982) 142. - Type: *Gundelshimer s.n.*, Armenia and Cappadocia (holo. B, destroyed). - Neotype according to R. Mill in P. Davis, Fl. Turk. 7 (1982) 143: *Tournefort s.n.*, Oriens, Lamium orientale, nunc moschatum, magno flore (holo. BM), but that must be an error, as this is the type specimen of *Lamium moschatum* Mill.
- Lamium truncatum* Boiss., Diagn. 12 (1853) 86; Boiss., Fl. Orient. 4 (1879) 762; Rech. f., Fl. Syr. Liban. (1959) 368; R. Mill in P. Davis, Fl. Turk. 7 (1982) 143. - Type: *Boissier s.n.*, Palestina, Banyas (holo. G).
- Lamium cupreum* Schott, Nyman & Kotschy, Anal. Bot. (1854) 14; Neilr., Sitzungsber. Kaiserl. Akad. Wiss., Math.-Naturw. Cl. Abt. 1, 58 (1868) 559. - *Lamium maculatum* (L.) L. var. *cupreum* (Schott, Nyman & Kotschy) Briq., Lab. Alp. Mar. 2 (1893) 309. - *Lamium maculatum* (L.) L. subsp. *cupreum* (Schott, Nyman & Kotschy) Hadac. ex Sychowa in Pawlowskiego, Fl. Polak. 11 (1969) 120. - Type: *Kotschy 231*, Romania, Transsylvania, Piatra Craiului, limestone (holo. W, iso GOET, K, P).
- Lamium elegantissimum* Schur, Enum. Pl. Transs. (1866) 535, nomen illeg., superfluous name and nomen nudum.
- Lamium* × *cardiaca* Cogniaux, Bull. Soc. Bot. France 20 (1873) XXIV. - Type: *Nyst s.n.*, Belgium, near Cannes (holo. BR); see: Mennema, Gorteria 4 (1968): 100.
- Lamium tomentosum* Benth., Lab. Gen. Spec. (1834) 514, non Willd. 1800; Nyman, Syll. Fl. Eur. (1855) 94.
- Lamium urticifolium* Schur, Enum. Pl. Transs. (1866) 535, non Weihe 1825, nomen illeg.

Perennial. *Rhizome* cauliform, very short and woody to a few dm long and herbaceous, with stolons. *Stem* usually decumbent and branched, (15-) 25-60 (-90) cm long, (1-) 2-3 (-4) mm Ø, mostly hirsute. *Leaves: petiole* (½-) 2-4½ (-6) cm long, shorter than the blade, the upper usually not sessile; *blade* cordate to (upper) ovate or ovate-oblong with an attenuate to truncate base and a slightly acuminate apex, usually coarsely, sometimes irregularly crenate to crenate-serrate to (upper) serrate, sparsely appressed-pubescent hairy on both sides, sometimes, especially in winter, with a whitish central band. *Cauline leaves* (1½-) 2-5½ (-9½) cm long, index (1.0-) 1.1-1.5 (-2.1); *floral leaves* (1½-) 3-7 (-9½) cm long, index (1.0-) 1.1-1.7 (-2.0). *Verticillasters* (3-) 4-5 (-7), conspicuously remote, with (6-) 10-12 (-> 20) flowers. *Bracts* (≤ ½-) 1-2 (-4) mm long, c. ¼ mm broad, hirsute, also with short glandular hairs. *Calyx* usually indistinctly 10-nerved, (¾-) 1 (-1¾) cm long, longer after anthesis, sparsely hirsute, especially on the nerves; teeth usually shorter, sometimes as long as or longer than the tube, very narrowly triangular, on the margin with short glandular hairs. *Corolla* purple, rarely white, with dark purple markings, (1¾-) 2-2½ (-3½) cm long; tube gradually dilated, (1¼-) 1½-1¾ (-2) cm long, exerted from the calyx, outside glabrous at the base,

towards the lips puberulous, inside with a perpendicular ring of hairs dorsally at 2–3 mm from the base, upper lip arched, (8–) 9–10 (–12) by 6–8 mm, apex rounded to truncate, margin usually undulate, outside velutinous, inside glabrous; lower lip about as long as upper lip and at a right angle to the latter, glabrous, lateral lobes rounded, to 2 mm long, tooth 1–2 mm long, also a minute rounded, second protuberance, median lobe 4–6 by 7–8 mm, bilobed, margin undulate. Anterior *stamens* 10–12 mm long, c. 3–4 mm longer than the posterior ones and attached c. 1–2 mm lower; filaments also with short glandular hairs; anthers 2–2¼ by 1–1¼ mm; pollen orange. *Disc* c. ½ mm broad. *Style* 2–3 mm shorter than the corolla, subglabrous. *Nutlets* (2½–) 3–3¼ (–4¼) by (1½–) 1¾ (–2) mm.

Distribution. Europe northwards to c. 55° N. lat. in Germany and c. 60° N. lat. in U.S.S.R., but absent from most of the islands, scattered in SW. Balkan, Turkey, Syria and Lebanon; escaped from gardens in Scandinavia (Hultén, 1950; Lid, 1963), introduced in Great-Britain (Clapham et al. 1987), and in New Zealand (Sykes, 1978), escaped from gardens in Canada and U.S.A. (Britton & Brown, 1913) – Fig. 37.

Habitat. In mixed and deciduous forests, in thickets and hedges, roadsides and banks of streams, rocky places and walls, in (mountain) pastures and fields, prefers shade and calcareous soil.

Altitude. From sea-level up to 2000 m (Switzerland and Italy).

Variability. *Lamium maculatum* is a very variable species, as is manifest from the long list of synonyms. In some parts of the area forms as *cupreum* and *truncatum* are well recognizable, but I arrived at the same opinion as P. W. Ball (1972): 'It does not at the moment seem possible to recognize subspecies, as although there seems to be a good correlation of characters in some areas this is not maintained elsewhere'.

Especially the shape (*macrophyllum*, *truncatum*, *rhombifolium*) and tothing of the leaves (*nemorale*), the length of the calyx teeth (*brevidents*, *longearistatum*), the length (*cupreum*) and colour of the corolla (*albiflora*, *carneum*, *pallidiflorum*), and the indumentum (*foliosum*, *hirsutum*) can vary highly, even in one population.

The infraspecific taxa I found in the literature, not mentioned in the list of synonyms, are listed below in alphabetic order.

var. *albiflorum* Opiz, Seznam (1852) 57, nomen nudum.

f. *albiflora* F. Gérard, Rev. Bot. Bull. Mens. 8 (1890) 185.

var. *alpinum* Heuffel, Verh. Zool.-Bot. Ges. Wien 8, Abh. (1858) 179. – f. *alpinum* (Heuffel) Heuffel ex Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 273.

var. *bourgaei* Briq., Lab. Alp. Mar. 2 (1893) 311.

f. *brachysiphon* Peterm. 1846 in Soó, Syn. Fl. Veg. Hung. 3 (1968) 91.

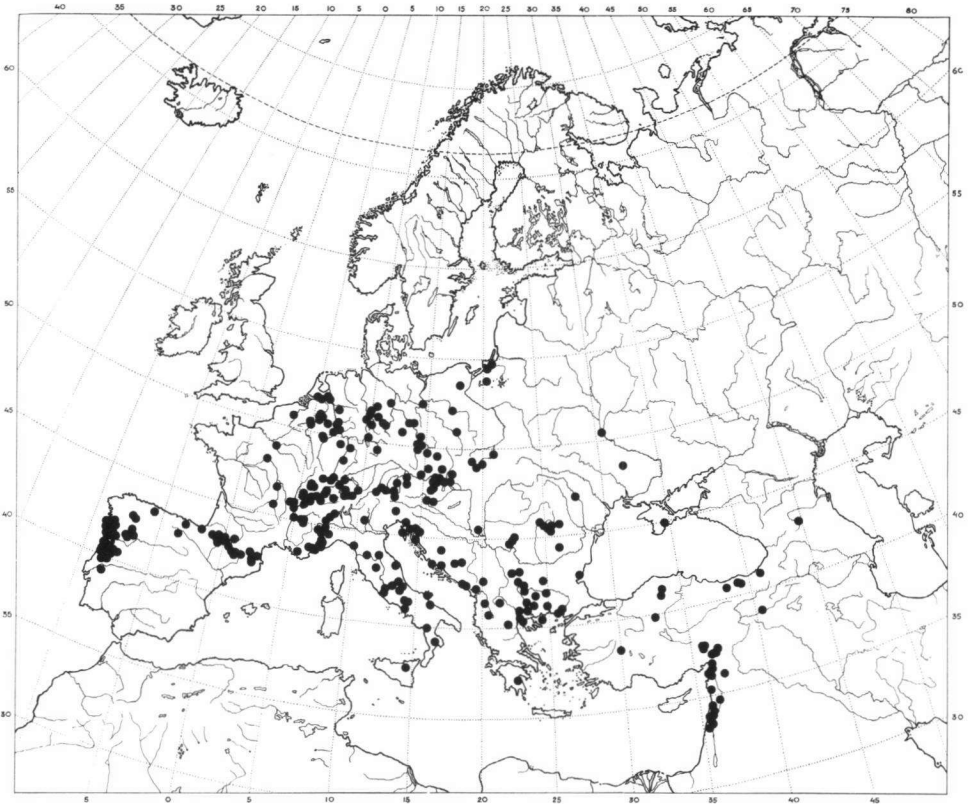


Fig. 37. Distribution of *Lamium maculatum*, without the introductions and the specimens, escaped from gardens.

- f. brevidens* G. Beck, Fl. Nied.-Oesterr. 2,2 (1893) 1019.
l. carneum Beckhaus 1883 in Soó, Syn. Fl. Veg. Hung. 3 (1968) 91.
var. crenatum Peterm., Fl. Lips. (1838) 440. - *f. crenatum* (Peterm.) Peterm. ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 91.
var. echinatum Griseb., Spic. Fl. Rum. Bith. 2 (1844) 134. - *f. echinatum* (Griseb.) Griseb. ex Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 273.
var. elatius Wimmer & Grab., Fl. Siles. 2,1 (1829) 194.
var. fasciatum Gaudin, Fl. Helv. 4 (1829) 47.
var. humilius Wimmer & Grab., Fl. Siles. 2,1 (1829) 8 194.
var. inflatum Heuffel ex Griseb., Spic. Fl. Rum. Bit. 2 (1844) 134.
l. intactum Murr 1923 in Soó, Syn. Fl. Veg. Hung. 3 (1968) 91.
var. lacteum Wallr., Sched. Crit. 1 (1822) 301. - *f. lacteum* (Wallr.) Krause in Prah, Krit. Fl. Schl. Holst. 2 (1890) 169. - *l. lacteum* (Wallr.) Wallr. ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 91.
f. laevigatum (All.) Grint., Fl. Rep. Pop. Rom. 8 (1963) 182.
var. longearistatum Nejc. in Rohlena, Mém. Soc. Roy. Sci. Bohême 1933,8 (1933) 8. - *f. longearistatum* (Nejc.) Nejc. ex Hayek, Prodr. Fl. Penins. Balc. 2 (1929): 273.
var. macrodonton Peterm., Fl. Lips. (1838) 439.
var. macrophyllum Gaudin, Fl. Helv. 4 (1829) 47. - *f. macrophyllum* (Gaudin) Gaudin ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 91.

- f. *melliferum* Peterm. 1846 in Soó, Syn. Fl. Veg. Hung. 3 (1968) 91.
 var. *nemorale* Reichb., Fl. Germ. Exc. (1831) 321. – subsp. *nemorale* (Reichb.) Reichb. ex Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 959.
 var. *pallidiflorum* G. Beck, Ann. K.K. Naturh. Hofmus. 2 (1887) 143. – f. *pallidiflorum* (G. Beck) G. Beck ex Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 273. – l. *pallidiflorum* (G. Beck) G. Beck ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 91.
 var. *parvifolium* Gaudin, Fl. Helv. 4 (1829) 47.
 var. *rhombifolium* G. Beck, Fl. Nied.-Oesterr. 2,2 (1893) 1019. – f. *rhombifolium* (G. Beck) G. Beck ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 91.
 var. *roseum* Opiz, Seznam (1852) 56, nomen nudum. – f. *roseum* Goiran 1904 in Fiori & Paol., Fl. Anal. It. 4 (1907) 173.
 var. *subalpinum* G. Beck, Fl. Nied.-Oesterr. 2,2 (1893) 1019. – f. *subalpinum* (G. Beck) G. Beck ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 91.
 var. *tenoreanum* Bég. in Fiori & Paol., Fl. Anal. It. 3 (1903) 37. – f. *tenoreanum* (Bég. in Fiori & Paol.) Fiori, Nuov. Fl. Anal. It. 2 (1926) 424.
 f. *trilobum* J. Jansen, Ned. Kruidk. Arch. 1930 (1930) 223.
 var. *truncatum* G. Beck, Fl. Nied.-Oesterr. 2,2 (1893) 1019, non Boiss. 1853.
 var. *villosifolium* R. Mill, Not. Roy. Bot. Gard. Edinburgh 38 (1980) 36; R. Mill in P. Davis, Fl. Turk. 7 (1982) 142 includes the type specimen of var. *bourgaei* Briq.: *Bourgeau s.n.*, Gümüşane. subvar. *vulgare* Duftschmid in Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2449, nomen inval. – f. *vulgare* (Duftschmid ap. Gams in Hegi) Duftschmid ap. Gams in Hegi ex Grint., Fl. Rep. Pop. Rom. 8 (1963) 182, nomen inval.
Lamium columnae Ten. var. *glabratum* Ten., Syll. Pl. Fl. Neapol. (1831) 286.
Lamium columnae Ten. var. *pubescens* Ten., Syll. Pl. Fl. Neapol. (1831) 286.
Lamium cupreum Schott, Nyman & Kotschy var. *dilatatum* Schur, Enum. Pl. Transs. (1866) 535. – *Lamium cupreum* Schott, Nyman & Kotschy subsp. *dilatatum* (Schur) Nyman, Consp. Fl. Eur. (1881) 575.
Lamium laevigatum L. var. *glabratum* Ten., Syll. Pl. Fl. Neapol. (1831) 286.
Lamium laevigatum L. var. *minor* Ten., Syll. Pl. Fl. Neapol. (1831) 286.
Lamium laevigatum L. var. *pubescens* Ten., Syll. Pl. Fl. Neapol. (1831) 286.

9. *Lamium moschatum* Miller – Fig. 28.

Lamium moschatum Miller, Gard. Dict. ed. 8 (1768) *Lamium* nr. 4; Benth., Lab. Gen. Spec. (1834) 513; Benth. in DC., Prodr. 12 (1848) 509; Nyman, Syll. Fl. Eur. (1855) 94; Boiss., Fl. Orient. 4 (1879) 765; Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 272; Rech. f., Fl. Aegaea (1943) 511; Rech. f., Fl. Syr. Liban. (1959) 368; P. Ball, Fl. Eur. 3 (1972) 148; Feinbrun, Fl. Palest. 3 (1978) 123; R. Mill in P. Davis, Fl. Turk. 7 (1982) 146; Meikle, Fl. Cypr. 2 (1985) 1312. – Type: *Tournefort s.n.*, *Lamium Orientale*, nunc *moschatum*, nunc *foetidum*, magno flore (holo. BM).

? Annual. *Stem* decumbent or erect, branched (5–) 20–40 (–60) cm long, 3–5 (–7) mm Ø, glabrous, towards the apex sparsely puberulous. *Leaves*: *petiole* (½–) 3–4 (–9) cm, usually about as long as the blade or longer, the upper leaves sessile; *blade* cordate, slightly to (upper) more acuminate, the upper leaves also ovate with an attenuate to truncate base, moderately crenate or double-crenate, the upper leaves also serrate, moderately pubescent on both sides; *cauline leaves* (1–) 3–5 (–7½) cm long, index (1.0–) 1.1–1.4 (–1.6); *floral leaves* (2–) 3½–6 (–8½) cm, index (1.0–) 1.1–1.4 (–1.7), the upper leaves usually with whitish or pinkish spots at the base. *Verticillasters* (3–) 5–6 (–8), remote, with (6–) 12–20 (–28) flowers. *Bracts* (2–) 3–4 (–6) mm long, ½–¾ mm broad, hirsute, with short glandular hairs. *Calyx* 10-nerved, 1–1½ (–1¾) cm long, (much) longer after anthesis, glabrous at the base, towards the apex shortly appressed hairy and especially on the nerves and

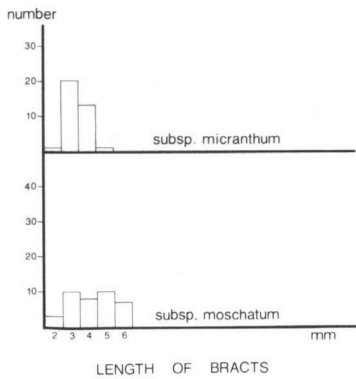
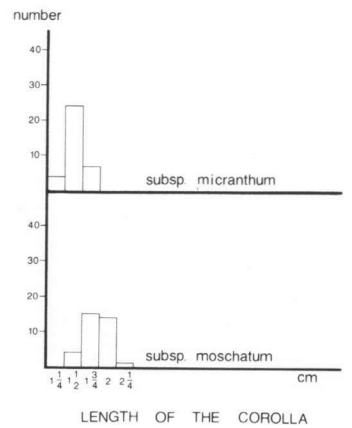
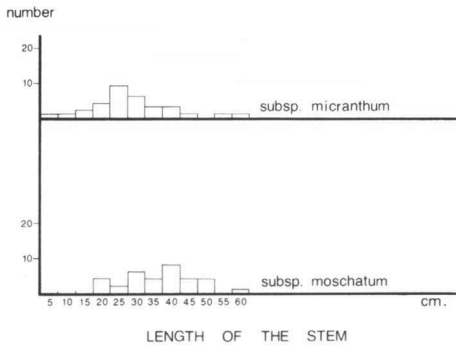
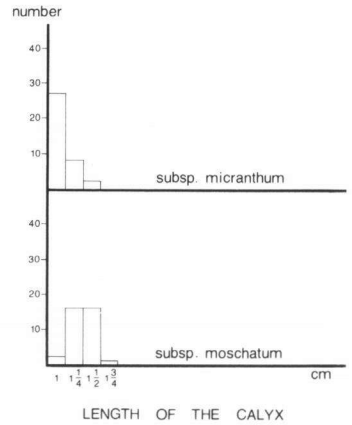
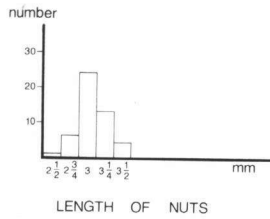
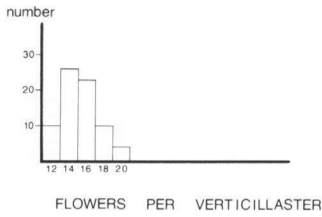
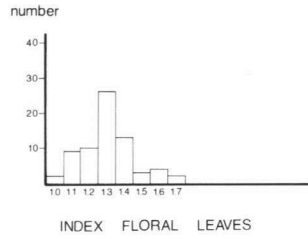
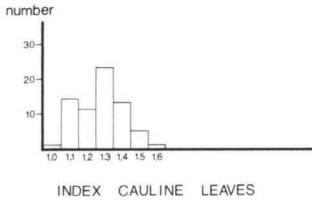
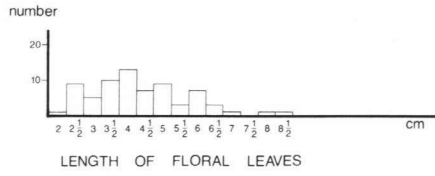
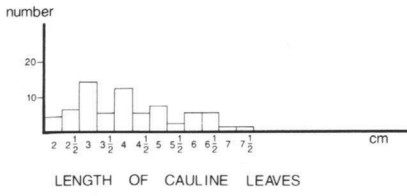


Fig. 38. *Lamium moschatum*.

margin sparsely hirsute, also with short glandular hairs; teeth $1\frac{1}{3}$ - $1\frac{1}{2}$ (-2) × as long as the tube, narrowly triangular, on the inside puberulous, on the outside especially on the margin with short glandular hairs. *Corolla* white, ($1\frac{1}{4}$ -) $1\frac{1}{2}$ -2 (- $2\frac{1}{4}$) cm long; tube abruptly dilated, $\frac{3}{4}$ -1 cm long, not exerted from the calyx, outside glabrous at the base, towards the lips especially dorsally pubescent, inside with an oblique ring of hairs dorsally at 3-4 mm from the base ventrally pointing backwards; upper lip arched, carinate, (6-) 10-12 by 7-9 mm, apex truncate and margin entire, outside densely sericeous, inside glabrous; lower lip longer than the upper lip and at a right angle to the latter, glabrous, lateral lobes oblique-ovate, 6-7 by 3- $3\frac{1}{2}$ mm, without teeth, sinuous margin, median lobe 6-7 by 9-10 mm, bipartite, sinuous margin. Anterior *stamens* 9-11 mm long, c. 3-4 mm longer than the posterior ones and attached c. $1\frac{1}{2}$ -2 mm lower; filaments also with glandular hairs; anthers 2- $2\frac{1}{2}$ by 1- $1\frac{1}{4}$ mm; pollen colour unknown. *Disc* c. $1\frac{1}{2}$ mm broad. *Style* c. $2\frac{1}{2}$ mm shorter than the corolla, glabrous. *Nutlets* ($2\frac{1}{2}$ -) 3- $3\frac{1}{4}$ (- $3\frac{1}{2}$) by $1\frac{3}{4}$ -2 (- $2\frac{1}{4}$) mm.

Notes. 1. In spite of Miller's (1768) statement that 'this is an annual plant', I am not quite sure about that. Various specimens were collected without the subterranean parts of the plant in a way suggesting the difficulty to gather the rhizome too. *Aucher-Eloy 1686* and *Reese s.n.* collected specimens with subterranean parts, which could be called rhizomes. On the other hand 66% of the studied specimens had ripe fruits which points to the fact that *Lamium moschatum* is perhaps still an annual plant (see pag. 12).

2. It is remarkable that only once the label mentioned the scent: "Plante à odeur de sauge et de *Ballota foetida*" (*Berton 68*). Recent collectors I asked about the scent of the plants, could not remember a specific smell, as Miller (1768) had observed.

3. The differences, formerly mentioned by Boissier (1879), between the specimens of the Western and the Eastern part of the area (Fig. 39), seem not to be of great importance. However, their existence in combination with the geographical disjunction and discrepancy in habitat induce to distinguish two subspecies.

4. As Miller (1768) mentioned, that *Lamium moschatum* 'grows naturally in the Archipelago', there is no doubt about the fact, that subsp. *moschatum* is the typical subspecies, despite the fact that Miller's collections have been lost.

9.a. *Lamium moschatum* Miller subsp. *micranthum* (Boiss.) Mennema, *comb. nov.* - Fig. 38.

Lamium moschatum Miller var. *micranthum* Boiss., Fl. Orient. 4 (1879): 765; Rech. f., Fl. Aegaea (1943) 511; R. Mill in P. Davis, Fl. Turk. 7 (1982) 147. - Lectotype (mihi): *Gaillardot 1385*, Lebanon [Syria], near Sayda, fields (holo. G, iso. AWH, GB, JE, K, L, MPU, P, ZT).

Lamium ponticum Boiss. & Bal. ex Boiss., Fl. Orient. 4 (1879) 766; R. Mill in P. Davis, Fl. Turk. 7 (1982) 148. - Type: *Balansa 892*, Turkey, Lazistan, near Rize (holo. G).

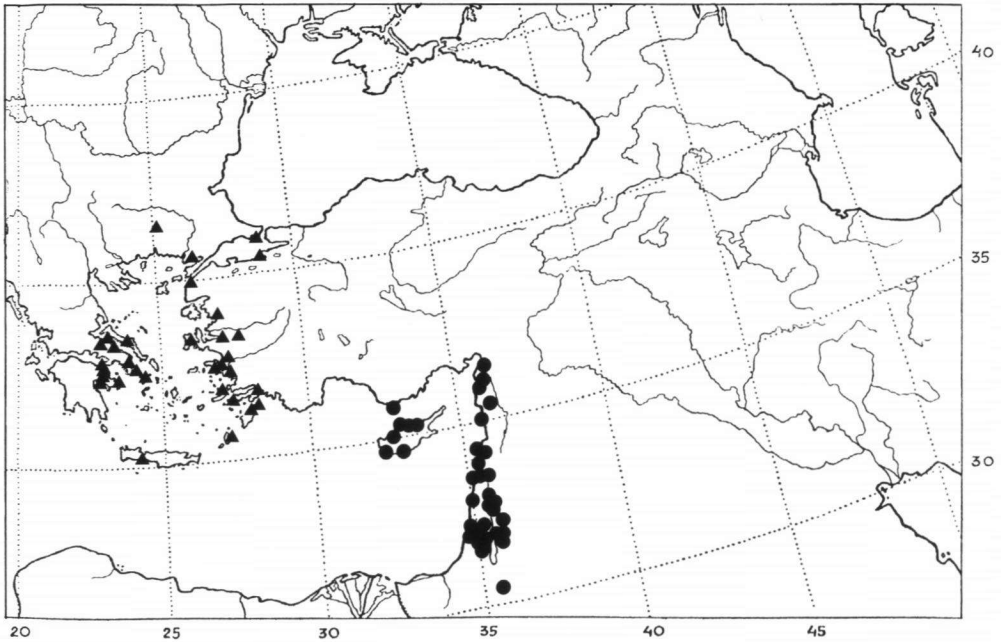


Fig. 39. Distribution of the subspecies of *Lamium moschatum*: subsp. *micranthum* (●), and subsp. *moschatum* (▲).

Stem (5-) 20-30 (-60) cm long. *Bracts* (2-) 3-4 (-5) mm long. *Calyx* 1 (-1½) cm long, longer after anthesis. *Corolla* (1¼-) 1½ (-1¾) cm long.

Distribution. E. Turkey, Cyprus, W. Syria, Lebanon, Israel and W. Jordan - Fig. 39.

Habitat. Damp, shady places, cultivated land and rarely on stony places, roadsides, waste ground and slopes.

Altitude. From sea-level up to 1000 m.

Variability. Subsp. *micranthum* is very homogeneous, but can vary in indumentum, probably in relation to the habitat; infraspecific taxa on a lower level are unknown.

9.b. *Lamium moschatum* Miller subsp. *moschatum* - Figs. 38 and 40.

Lamium calycinum Urv., Mém. Soc. Linn. Paris 1 (1822) 323. - Type: *Urville s.n.*, Greece, Samos (holo. P).

Lamium rhodium Gand., Bull. Soc. Bot. France 60 (1913) 26. - *Lamium moschatum* Miller var. *rhodium* (Gand.) R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 37; R. Mill in P. Davis, Fl. Turk.

No 392289

cm

Lamium moschatum Mill.
subsp. *moschatum*

det. J. MENNEMA
(Rijksherbarium, Leiden)

VIII. 1978

Fig. 40. Herbarium specimen of *Lamium moschatum* subsp. *moschatum*.

7 (1982) 147. - Type: *Bourgeau s.n.*, Greece, Rhodos, Filierino, stony hills (holo. LY, iso. AWH, G, K, MPU, P).

Stem (20-) 30-40 (-60) cm long. *Bracts* (2-) 3-6 mm long. *Calyx* (1-) 1¼-1½ (-1¾) cm long, much longer after anthesis. *Corolla* (1½-) 1¾-2 (-2¼) cm long.

Distribution. S. Bulgaria, E. Greece, W. and SW. coast of Turkey - Fig. 39.

Habitat. Open stony places, roadsides, rarely on waste ground, less in hedges and at shady places.

Altitude. From sea-level up to 600 m.

Variability. Subsp. *moschatum* is very homogeneous. Besides the variety mentioned in the synonymy, only one form with variegated leaves (*pictum*) is recorded in the literature.

var. pictum Griseb., Spic. Fl. Rum. Bith. 2 (1844) 133. - subf. *pictum* (Griseb.) Griseb. ex Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 273.

10. *Lamium tomentosum* Willd. - Fig. 41.

Lamium tomentosum Willd., Sp. Pl. 3 ed. 4 (1800) 90; Benth. in DC., Prodr. 12 (1848) 511; Boiss., Fl. Orient. 4 (1879) 764; Gorshk., Fl. USSR 21 (1954) 133; Mennema in Rech. f., Fl. Iran. 150 (1982) 325; R. Mill in P. Davis, Fl. Turk. 7 (1982) 145; Menitskiy in Takht., Fl. Armen. 8 (1987) 80. - Type: *Willdenow 10858*, Turkey, Armenia (holo. B).

Lamium filicaule Boiss. ex Benth. in DC., Prodr. 12 (1848) 507. - *Lamium tomentosum* Willd. var. *filicaule* (Boiss. ex Benth.) Boiss., Fl. Orient. 4 (1879) 765; R. Mill in P. Davis, Fl. Turk. (1982) 146. - Type: *Kotschy 565*, Iran, Tchal Mountain, above Tehran, Darya-i Jakh (holo. G, iso. AWH, GOET, K, M, P, W, WAG, ZT).

Lamium vestitum Benth. in DC., Prodr. 12 (1848) 507. - Type: *Aucher 5120*, Iran, Damavand Mountain (holo. G, iso. K, P, W).

Lamium alpestre Trautv., Act. Hort. Petrop. 2 (1873) 481. - *Lamium tomentosum* Willd. var. *alpestre* (Trautv.) N. Popov ex Gorshk., Fl. USSR 21 (1954) 133; R. Mill in P. Davis, Fl. Turk. 7 (1982) 146. - Type: *Radde s.n.*, Turkey, Aşagi Dagh (holo. LE).

Lamium hakkiarense Náb., Publ. Fac. Sc. Univ. Masaryk 70 (1926) 67. - *Lamium tomentosum* Willd. var. *hakkiarense* (Náb.) R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 37; R. Mill in P. Davis, Fl. Turk. 7 (1982) 146. - Type: *Nábelek 1557*, Turkey, Hakkiari, Gelamemi Dagi, above Hoz between Aşutka and Çatak (holo. SAV).

Lamium sulfureum [Hauskn. & Sint. ex] R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 36; R. Mill in P. Davis, Fl. Turk. 7 (1982) 146. - Type: *Sintenis 7007*, Turkey, Gümüşane, Karagoelldagh, in scree at Büyükgöl, near the snow (holo. LD, iso. BM, JE, Z).

Perennial. *Rhizome* cauliform, woody, very short to about 1 dm long. *Stem* decumbent, usually branched, (5-) 10-25 (-40) cm long, 1-3 mm Ø, glabrate to very densely patently hairy, especially at the top. *Leaves*: *petiole* (½-) 1-2½ (-4½) cm long, the lower ones mostly longer than the blade, the upper ones often sessile; *blade* cordate or reniform, the upper ones also ovate with a truncate or cuneate base and an acute apex, crenate, crenate-serrate or double-crenate, sparsely

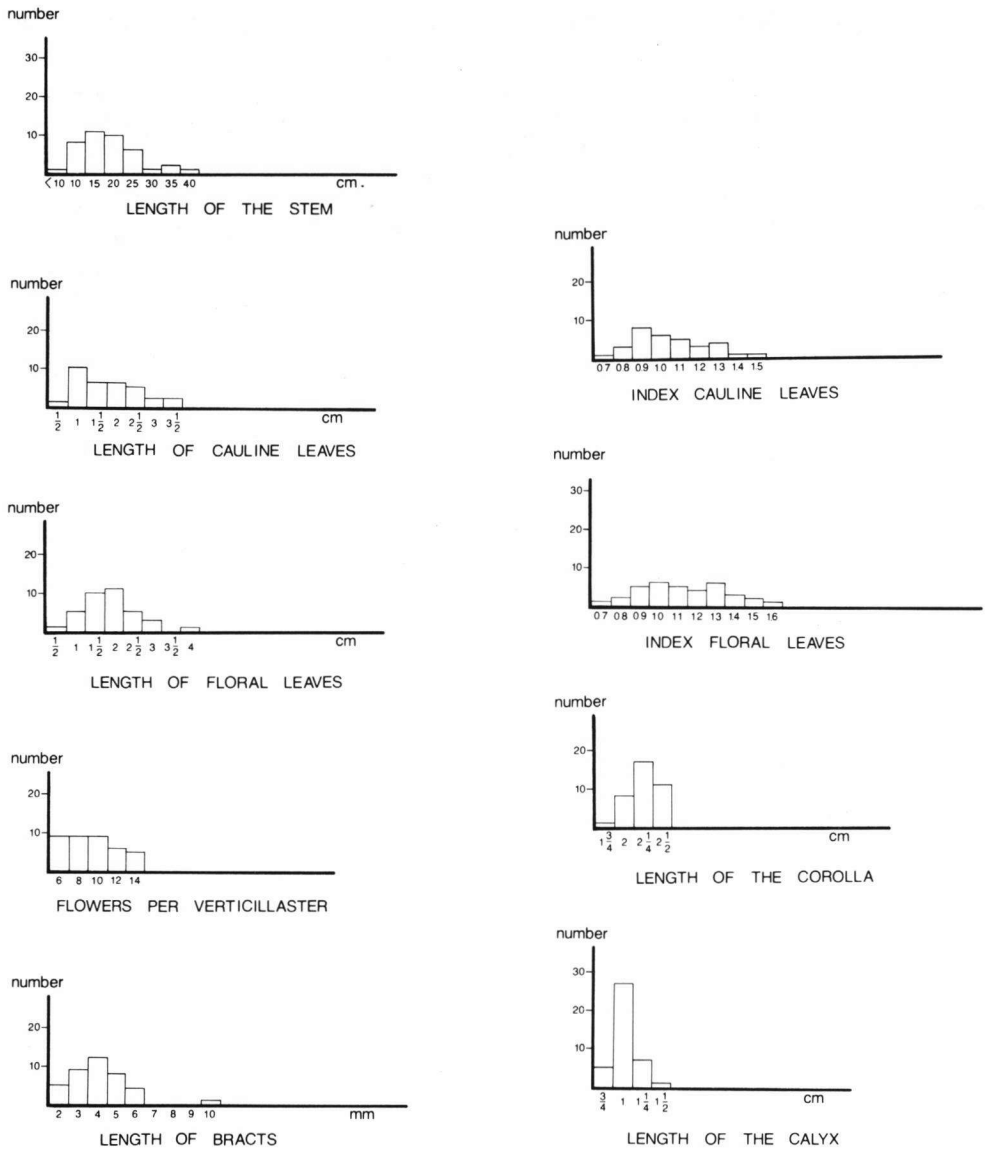


Fig. 41. *Lamium tomentosum*.

appressed-pubescent to very densely tomentose or woolly on both sides; *cauline leaves* ($\frac{1}{2}$ -) 1-2 $\frac{1}{2}$ (-3 $\frac{1}{2}$) cm long, index (0.7-) 0.9-1.3 (-1.5); *floral leaves* ($\frac{1}{2}$ -) 1 $\frac{1}{2}$ -2 $\frac{1}{2}$ (-4) cm long, index (0.7-) 0.9-1.3 (-1.0). *Verticillasters* 2-3 (-6), crowded or remote, with 6-14 flowers. *Bracts* (2-) 3-5 (-10) mm long, ($\frac{1}{4}$ -) $\frac{1}{2}$ - 1 mm broad, moderately to very densely hirsute, glandular hairs not seen. *Calyx* with

10 distinct nerves, ($\frac{3}{4}$ -) 1 (-1 $\frac{1}{2}$) cm long, longer after anthesis, usually very densely tomentose or woolly, especially the lobes, seldom sparsely appressed hairy; teeth usually 2 × as long as the tube, narrowly triangular, glandular hairs not seen. *Corolla* white, (1 $\frac{3}{4}$ -) 2-2 $\frac{1}{2}$ cm long, tube ventrally saccate, 1 $\frac{1}{4}$ -1 $\frac{1}{2}$ cm long, exerted from the calyx, outside glabrous at the base, towards the lips puberulous, inside with an oblique ring of hairs dorsally 4-5 mm from the base ventrally pointing backwards; upper lip arched, 8-10 by 6-7 mm, apex emarginate, margin undulate, outside usually densely velutinous or woolly, inside glabrous; lower lip about as long as the upper lip and laid back, glabrous, lateral lobes rounded, to 1 mm long, tooth 1-1 $\frac{1}{4}$ mm long, median lobe 4-5 by 7-8 mm, bipartite, margin undulate. Anterior *stamens* 9-10 mm long, c. 3 mm longer than the posterior ones and attached c. 1-1 $\frac{1}{2}$ mm lower; filaments with short glandular hairs; anthers 1 $\frac{3}{4}$ -2 by $\frac{3}{4}$ -1 mm; pollen light yellow. *Disc* c. 1 $\frac{1}{2}$ mm broad. *Style* about 3 mm shorter than the corolla, glabrous. *Nutlets* not seen.

Distribution. E. Turkey, Caucasian division of the U.S.S.R., N. Iraq and N. Iran - Fig. 42.

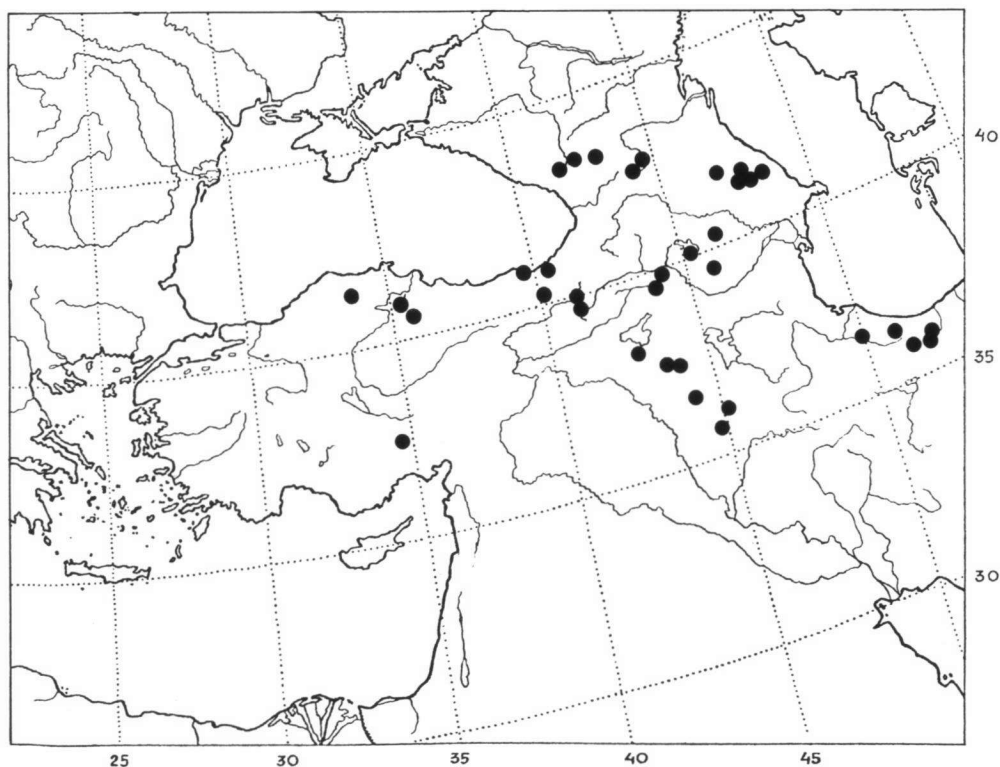


Fig. 42. Distribution of *Lamium tomentosum*.

Habitat. Among rocks, on volcanic, calcareous and non-calcareous screes, unstable slopes and in mountain meadows up to the snow-line.

Altitude. From 1300 m (Turkey) up to 4800 m (N. Iran).

Variability. *Lamium tomentosum* is a rather rare and nevertheless a heterogeneous species, very variable in hairiness and length and index of the leaves, probably due to the variable ecological factors of the habitat. Constant characters are the ventrally saccate tube of the corolla with the oblique internal ring of hairs, the rather long and broad bracts, very often the tomentose or woolly calyx teeth and the densely velutinous or woolly upper lip of the corolla, also in bud. Apart from the varieties mentioned in the synonymy, infraspecific taxa are unknown.

C. Section *Lamium*

Section *Lamiopsis* Dumort., Fl. Belg. (1827) 45. – Section *Pollichia* (Willd.) Briq. in Engler & Prantl, Nat. Pflanzenfam. 4,3a (1897) 254, nomen illeg. – Type: *Lamium purpureum* L.

Bracts present. *Corolla* tube straight. *Upper leaves* sessile, not amplexicaul.

Notes. 1. Briquet (1897) incorrectly ascribed the authorship of the taxon *Pollichia* to Willdenow (1787). Willdenow rightly referred in the synonymy to Schrank (1782) as the author of the name *Pollichia*.

2. Schrank (1782) described the new genus *Pollichia* exclusively based on and referring to *Galeopsis galeobdolon* L. Since the latter one—as *Lamium galeobdolon*—was inserted by Briquet in the subgenus *Galeobdolon*, the name of Briquet's section *Pollichia* in subgenus *Eulamium* is incorrect; besides, the section name *Pollichia* is illegitimate since Briquet referred in the synonymy to the older section name *Lamiopsis* Dumort.

11. *Lamium bifidum* Cirillo – Figs. 43 and 44.

Lamium bifidum Cirillo, Pl. Rar. Neapol. 1 (1788) XXII; Benth., Lab. Gen. Spec. (1834) 511; Benth. in DC., Prodr. 12 (1848) 507; Nyman, Syll. Fl. Eur. (1855) 94; Boiss., Fl. Orient. 4 (1879) 760; Battand. & Trabut, Fl. Alg. & Tun. (1905) 268; Rouy, Fl. Fr. 11 (1909) 296; Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 275; Rech. f., Fl. Aegaea (1943) 512; Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 958; Grint., Fl. Rep. Pop. Rom. 8 (1963) 176, as subsp. *balcanicum* Velen.; P. Ball, Fl. Eur. 3 (1972) 148; Guin. & R. Vilm., Fl. Fr. 2 (1975) 716; Pign., Fl. It. 2 (1982) 458. – Type: destroyed, neotype (mihi): *Savi s.n.*, Pisa, in shady forest (holo. TO, iso. MPU).

Lamium cryptanthum Guss., Ind. Sem. 1826 (1826) 6; Guss., Fl. Sicul. Prodr. 2 (1828) 97. – *Lamium bifidum* Cirillo var. *cryptanthum* (Guss.) Arcang., Comp. Fl. It. (1882): 555. – Type: unknown.

Lamium panormitanum Lojac., Fl. Sic. 2 (1907) 234. – Type: *Parlatore s.n.*, Italy, Sicilia, Bosco di Renda (not found in PAL).

Lamium serbicum Pancic ex Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 958, nomen nudum.

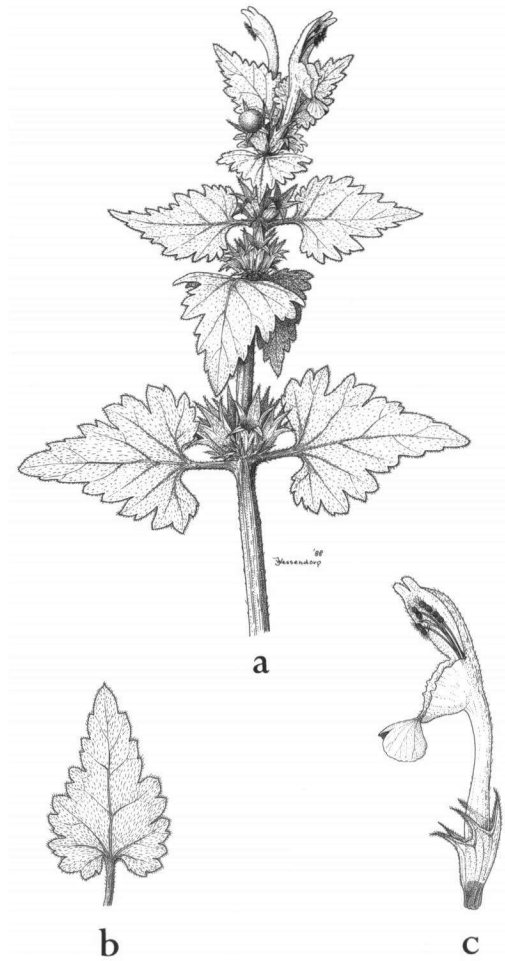


Fig. 43. *Lamium bifidum*; a. upper part (1 ×); b. uppermost cauline leaf (1 ×); c. calyx and corolla (2 ×).

Annual. *Stem* decumbent, branched at the base, (10-) 15-30 (-50) cm long, 1-2 (-3) mm Ø, glabrate. *Leaves: petiole* (½-) 1 ½-3 (-5 ½) cm, about as long as the blade or longer, the upper leaves sessile; *blade* cordate or (lower) reniform, slightly to (upper) more acuminate, crenate, crenate-serrate or double-crenate to (upper) irregularly incised, appressed-pubescent to strigose on both sides, very often with a white central band; *cauline leaves* (½-) 1 ½-3 (-6) cm long, index (1.0-) 1.2-1.4 (-1.6); *floral leaves* (1-) 1 ½-3 (-6) cm long, index (1.0-) 1.1-1.4 (-1.6). *Verticillasters* (2-) 3-4 (-6), usually crowded, with mostly 20 or more flowers. *Bracts* (1-) 2-3 (-4) mm long, ¼-½ mm broad, hirsute and with short glandular hairs. *Calyx*

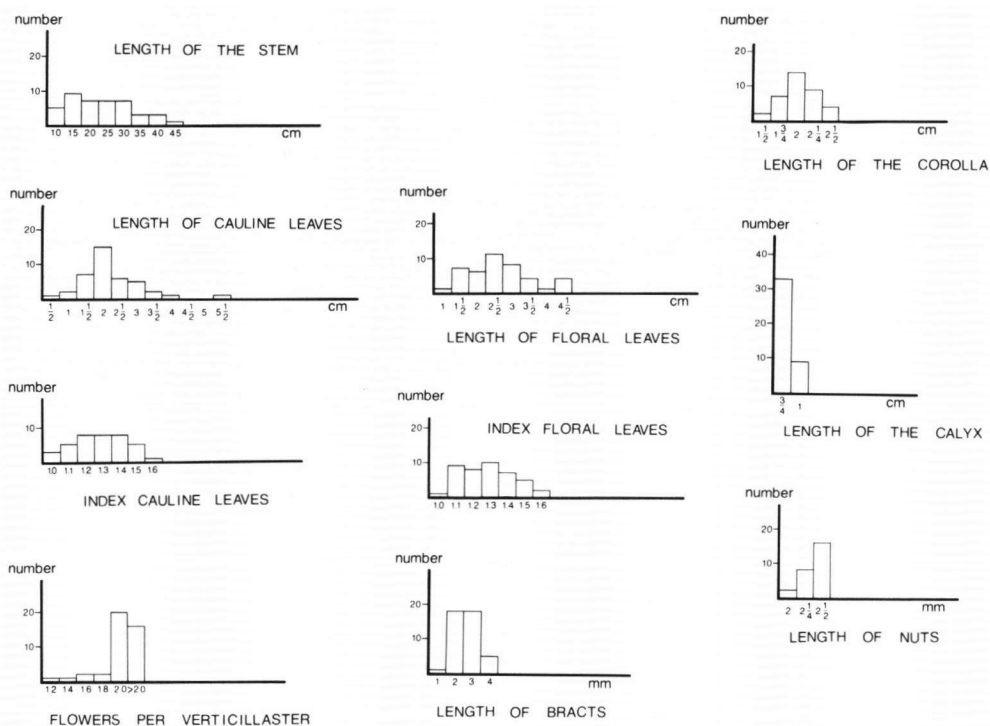


Fig. 44. *Lamium bifidum*.

usually with 5 distinct nerves, $\frac{3}{4}$ (-1) cm long, longer after anthesis, hirsute; teeth $\frac{1}{2}$ - $\frac{2}{3}$ \times as long as the tube, triangular, on the margin with short glandular hairs. *Corolla* white, rarely pink or purple, (1 $\frac{1}{2}$ -) 2-2 $\frac{1}{4}$ (-2 $\frac{1}{2}$) cm long, cleistogamous flowers c. $\frac{1}{2}$ cm long; tube abruptly dilated, (1 $\frac{1}{4}$ -) 1 $\frac{1}{2}$ -1 $\frac{3}{4}$ cm long, exerted from the calyx, glabrous at the base, towards the lips puberulous to pubescent, no internal ring of hairs; upper lip arched, 5-6 (-8) by 4-5 (-6) mm, apex bifid, margin entire, outside pubescent to hirsute, inside glabrous; lower lip about as long as upper lip and at a right angle to the latter, glabrous, lateral lobes rounded, to 1 mm long, tooth to $\frac{1}{2}$ mm long, median lobe 2 $\frac{1}{2}$ - $\frac{1}{2}$ by 5-6 mm, bilobed, margin undulate. Anterior *stamens* 11-12 mm long, c. 4 $\frac{1}{2}$ mm longer than the posterior ones and attached c. 3 mm lower; filaments with short glandular hairs; anthers 1-1 $\frac{1}{4}$ by $\frac{1}{2}$ - $\frac{3}{4}$ mm; pollen colour unknown. *Disc* c. $\frac{1}{2}$ mm broad. *Style* 3-4 mm shorter than the corolla, subglabrous. *Nutlets* (2-) 2 $\frac{1}{4}$ -2 $\frac{1}{2}$ by (1-) 1 $\frac{1}{4}$ (-1 $\frac{1}{2}$) mm.

Distribution. C. Portugal, C. Spain, Corse (France), C. and S. Italy, Sardegna and Sicilia, Jugoslavia, Albania, Greece, S. Romania (Grintescu, 1963), Bulgaria and Algeria - Fig. 45.

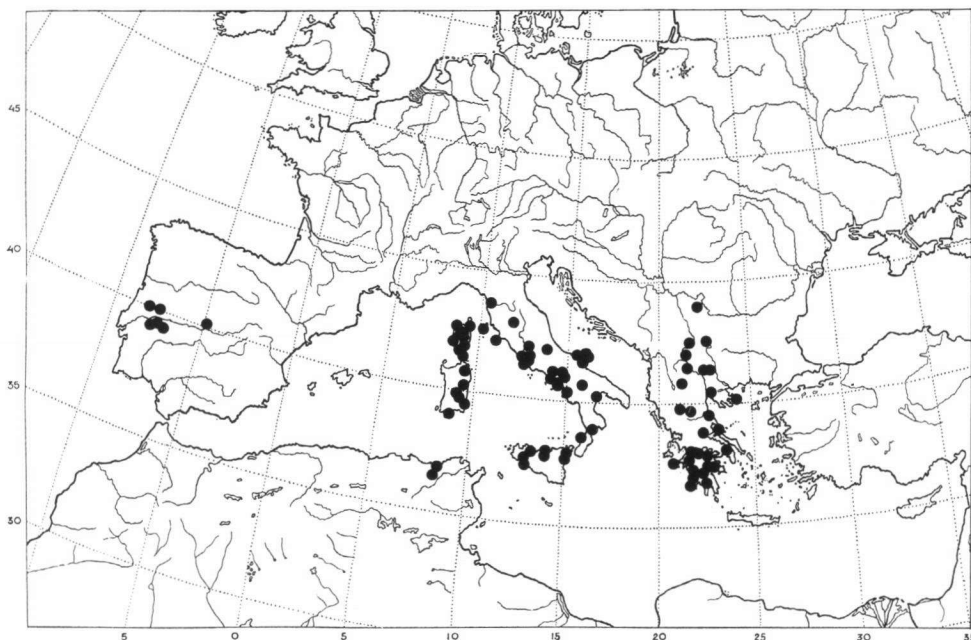


Fig. 45. Distribution of *Lamium bifidum*.

Habitat. Roadsides, waste places, on arable land, on walls and rocks, in mountain forests, on stony and grassy mountain slopes.

Altitude. Up to 1700 m (Greece).

Variability. *Lamium bifidum* is a uniform, well recognizable species, and closely related to *Lamium purpureum*. Plants with cleistogamous flowers are known (*clandestinum*, *cryptanthum*). Subsp. *balcanicum* seems to be 'distinguished' mainly by purple flowers.

subsp. *balcanicum* Velen., Sitzungsber. Königl. Böhm. Ges. Wiss. Prag, Math.-Naturwiss. Cl. 1893, 37 (1894) 54; Grint., Fl. Rep. Pop. Rom. 8 (1963) 176; P. Ball, Fl. Eur. 3 (1972) 148. var. *clandestinum* Benth., Lab. Gen. Spec. (1834) 511. - monstr. *clandestinum* Mutel, Fl. Fr. Herb. 3 (1836) 26.

Notes. 1. The annotations on the colour of the corolla in specimens collected by *Hawker s.n.* 'flower yellow' and *van Royen 2738* 'corolla white to light yellow' very probably have been made some time after drying the plants, not at the moment of collecting. *Biondi s.n.*, *Gavioli s.n.* and *Podlech 9/33* have collected plants with yellow flowers, when dry, without any annotation.

2. The hairs on the filament of the stamen, illustrated by Grintescu (1963, tab. 28, fig. 1 c) are viscid hairs.

3. *Lamium bifidum* subsp. *albimontanum* appeared to be *Lamium purpureum* var. *incisum*. The locality Kriti, Greece (Ball, 1972) very probably has to be left out.

12. *Lamium confertum* Fries - Figs. 46 and 47.

Lamium confertum Fries, Summ. Veg. Scand. 1 (1846) 198; Heukels/Meijden, Fl. Nederl. ed. 20 (1983) 320; Hämet-Ahti et al., Retkeil. (1984) 297. - Lectotype (mih): *Fries s.n.*, Sweden, Scania, Lund, 'ubi primus distincti' (holo. UPS).

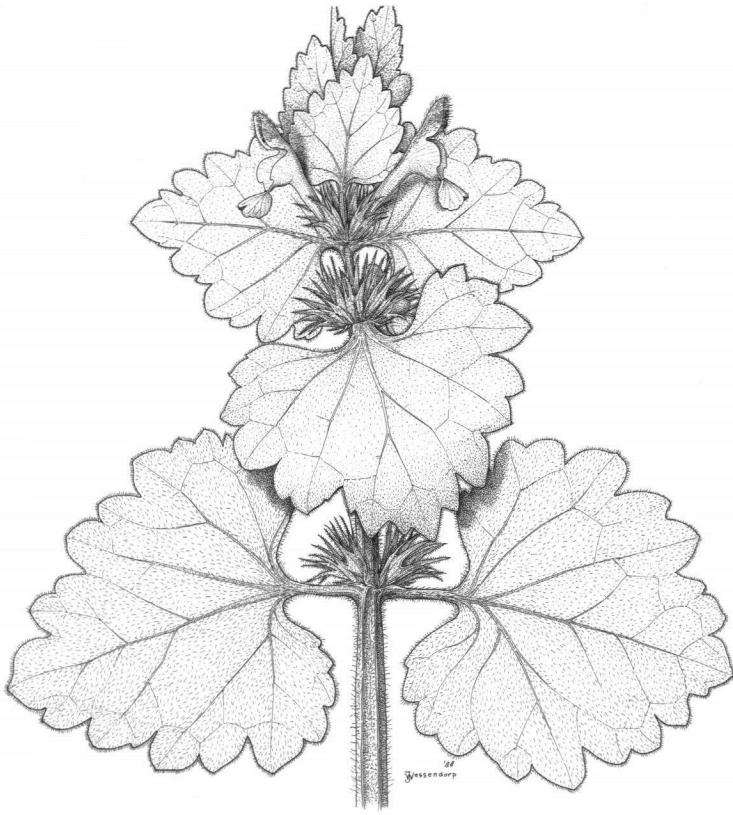
Lamium intermedium Fries, Nov. Fl. Svec. 7,2 (1823) 105, nom. illeg.; Benth., Lab. Gen. Spec. (1834) 512; Benth. in DC., Prodr. 12 (1848) 508; Nyman, Syll. Fl. Eur. (1855) 94; Neuman, Sver. Fl. (1901) 173; Müntzing, Bot. Not. 1932 (1932) 153; Ostenf. & Grøntved, Fl. Icel. Faer. (1934) 117. - *Lamium purpureum* L. var. *intermedium* (Fries) Wahlenb., Fl. Svec. 1, (1824) 369. - *Lamium amplexicaule* L. var. *intermedium* (Fries) Mutel, Fl. Fr. Herb. 3 (1836) 26. - *Lamium purpureum* L. 'Spielart' *intermedium* (Fries) Meyer, Chlor. Hanov. (1836) 298. - *Lamium hybridum* Vill. emend. Gams subsp. *intermedium* (Fries) Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2455; Sychowa in Pawlowskiego, Fl. Polsk. 11 (1967) 124. - *Lamium incisum* Willd. subsp. *intermedium* (Fries) Gams ex Garcke, Ill. Fl.ed. 23 (1972) 1204.

Lamium purpureo-amplexicaule Meyer, Fl. Hanov. Exc. (1849) 432, nomen illeg., homotypic synonym of *Lamium intermedium* Fries.

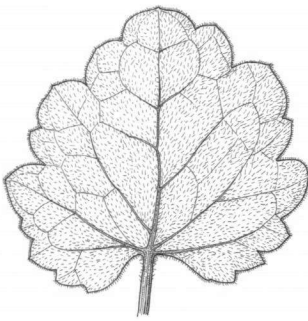
Lamium × *coutinhoi* Garcia, Bol. Soc. Brot. Sér. 2,21 (1947) 29. - Type: *Lucas s.n.*, Portugal, Celorico da Beira (holo. COI).

Lamium moluccellifolium Fries, Nov. Fl. Svec. 5 (1819) 72, non Schum. 1801; F. Herm., Fl. N.-Mitt.eur. (1956) 864; Lid, Norsk Sv. Fl. (1963) 579; Podl. & Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4, app. (1964) 2634; Böcher et al., Fl. Greenl. (1968) 159; A. Löve, Isl. Ferdafl. (1970) 350; P. Ball, Fl. Eur. 3 (1972) 148; A. Hansen in Rostrup/C. A. Jørg., Dansk. Fl. ed. 20 (1973) 507; Clapham et al., Fl. Brit. Isl. ed. 3 (1987) 414. - *Lamium amplexicaule* L. var. *moluccellifolium* (Fries) Fiori, Nuov. Fl. Anal. It. 2 (1926) 423. - Lectotype (mih): *Fries s.n.*, Sweden [Succia copiose, longius quam L. amplexic. septentrio, nem versus progrediens], s.d. (holo L).

Annual. *Stem* decumbent or erect, simple or branched, (15-) 20-40 (-70) cm long, 2-3 mm Ø, glabrous to glabrate. *Leaves: petiole* (½-) 1-2½ (-4) cm long, usually about as long as the blade, the upper sessile; *blade* reniform to cordate, the upper seldom rhomboid, deeply coarsely crenate or double-crenate, seldom irregularly incised, pubescent on both sides; *cauline leaves* (1-) 2-3½ (-6½) cm long, index (0.6-) 0.8-0.9 (-1.0); *floral leaves* (1-) 2-4 (-6½) cm long, index (0.6-) 0.8-0.9 (-1.0). *Verticillasters* 3-4 (-5), crowded, but the lower one(s) remote, with (8-) 10-14 (-20) flowers. *Bracts* (2-) 3-4 (-6) mm long, c. ½ mm broad, hirsute, also with short glandular hairs. *Calyx* many-nerved, the main nerves often purple, (¾-) 1 (-1¼) cm long, much longer after anthesis, subglabrous or sparsely appressed-puberulous or strigose, towards the apex sometimes less scarcely pubescent or strigose; teeth always longer than the tube, narrowly triangular, also with short glandular hairs. *Corolla* red-purple, (1½-) 2 (-2½) cm long, in cleistogamous flowers c. ½ cm long; tube abruptly dilated, (1-) 1¼-1½ (-1¾) cm long, exerted from the calyx, outside glabrous at the base, towards the lips puberulous, no internal ring of hairs; upper lip arched, (3-) 4-5 (-6) mm long and broad, apex rounded, margin entire to faintly undulate, outside pubescent, inside glabrous; lower lip about as long as the upper lip or longer and at a right angle to the latter, glabrous, lateral lobes rounded, ¾-1¼ mm long, tooth c. ½



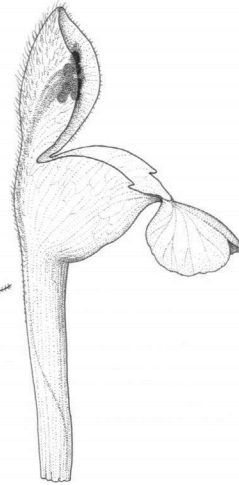
a



b



c



d

Fig. 46. *Lamium confertum*: a. upper part (1 ×); b. uppermost cauline leaf (1 ×); c. calyx (3 ×); d. corolla (3 ×).

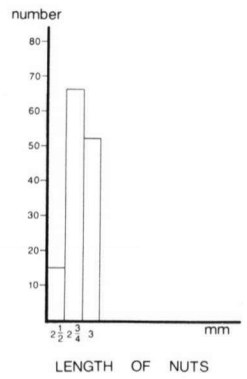
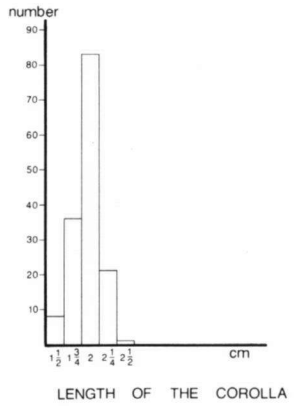
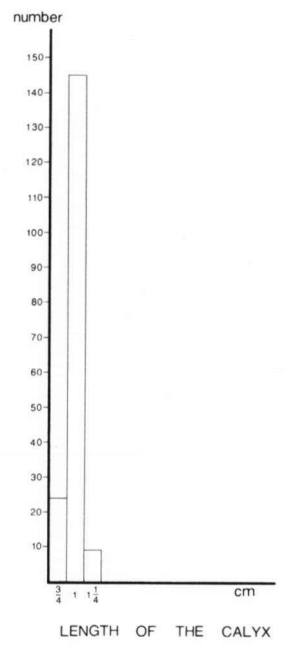
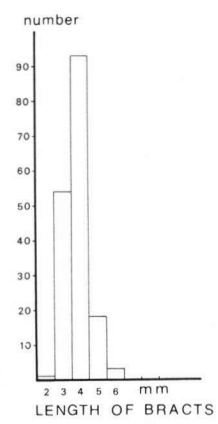
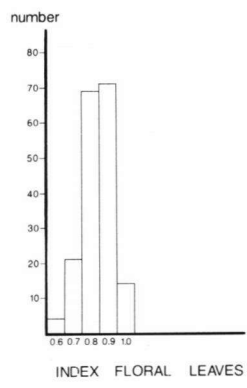
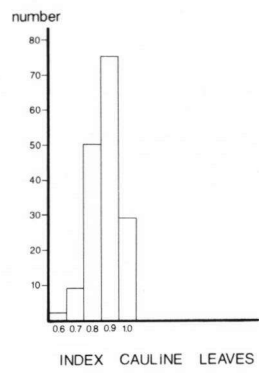
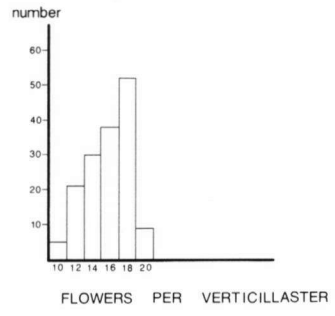
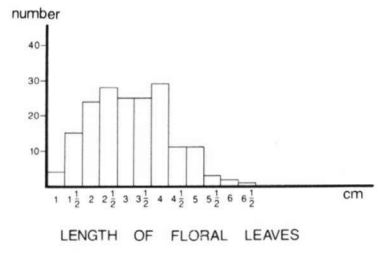
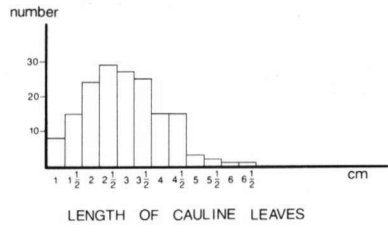
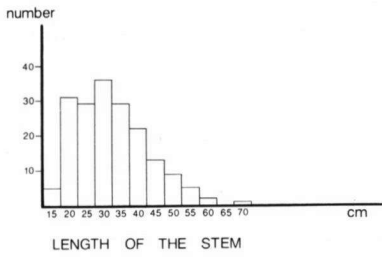


Fig. 47. *Lamium confertum*.

mm long, median lobe 3–4 by 4–5 mm, bipartite, margin undulate. Anterior *stamens* 6–7 mm long, c. 1–2 mm longer than the posterior ones and attached c. 1 mm lower; filaments without short glandular hairs; anthers 1–1¼ by c. ½ mm; pollen colour unknown. *Disc* c. ¼ mm broad. *Style* c. 3 mm shorter than the corolla, glabrous. *Nutlets* (2½–) 2¾–3 by 1½ (–1¾) mm.

Distribution. C. and S. Scandinavia, Orkney and Scotland (Great-Britain), Netherlands, N. Germany, Northern and Baltic division of the U.S.S.R., Portugal and Sicilia (Italy); introduced on Greenland (Böcher et al, 1968) and on Iceland and the Faeröer (Ostenfeld & Grøntved, 1934) – Fig. 48.

Habitat. Cultivated land, in gardens, roadsides.

Altitude. No data available; a low-land taxon.

Variability. The influence of the season on the total shape and the various details of *Lamium confertum* is, just as with *Lamium amplexicaule* s. str. and *Lamium purpureum* s. str., very well perceptible. To show the seasonal influence I investigated the length of the lowermost floral leaves of 159 specimens of *Lamium confertum*, collected in the whole area, except Portugal. Although ‘May 1873’ in Finland is hardly to compare with ‘May 1930’ in the Netherlands, there is a convincing difference in length of the small floral leaves in spring and the larger ones in late summer and early autumn.

Sowing experiments by Müntzing (1932) proved that the seasonal dimorphism of *Lamium confertum*, and also of *Lamium amplexicaule* s. str., is purely based on a modification. So it is incorrect to attach taxonomical value to these seasonal differences as Neuman (1901) did: *Lamium intermedium* f. *vernale* and f. *aestivale*.

Lamium intermedium Fries f. *aestivale* Neuman, Sv. Fl. (1901) 173.

Lamium intermedium Fries f. *subdissectum* Neuman, Sv. Fl. (1901) 173.

Lamium intermedium Fries f. *vernale* Neuman, Sv. Fl. (1901) 173.

Notes. 1. In 1819 Fries described and named *Lamium moluccellifolium*. For a long time no attention was paid to the protologue comprising the basionym ‘*L. purpureum* β Schum. Saell. I’. The correct author citation must be: *Lamium moluccellifolium* (Schum.) Fr.

The change of the name *Lamium moluccellifolium* by the same author (Fries, 1823) into *Lamium intermedium* without any argumentation—‘*Lamium mollucellae-folium* dicendum est: *L. intermedium*’—means irrevocably, that according to the rules of nomenclature the name *Lamium intermedium* is superfluous and consequently illegitimate.

Probably the reason for Fries’ new name is quite simple, viz. that he had come to the conviction that *Lamium purpureum* L. β *moluccellifolium* Schum. (1801) is a

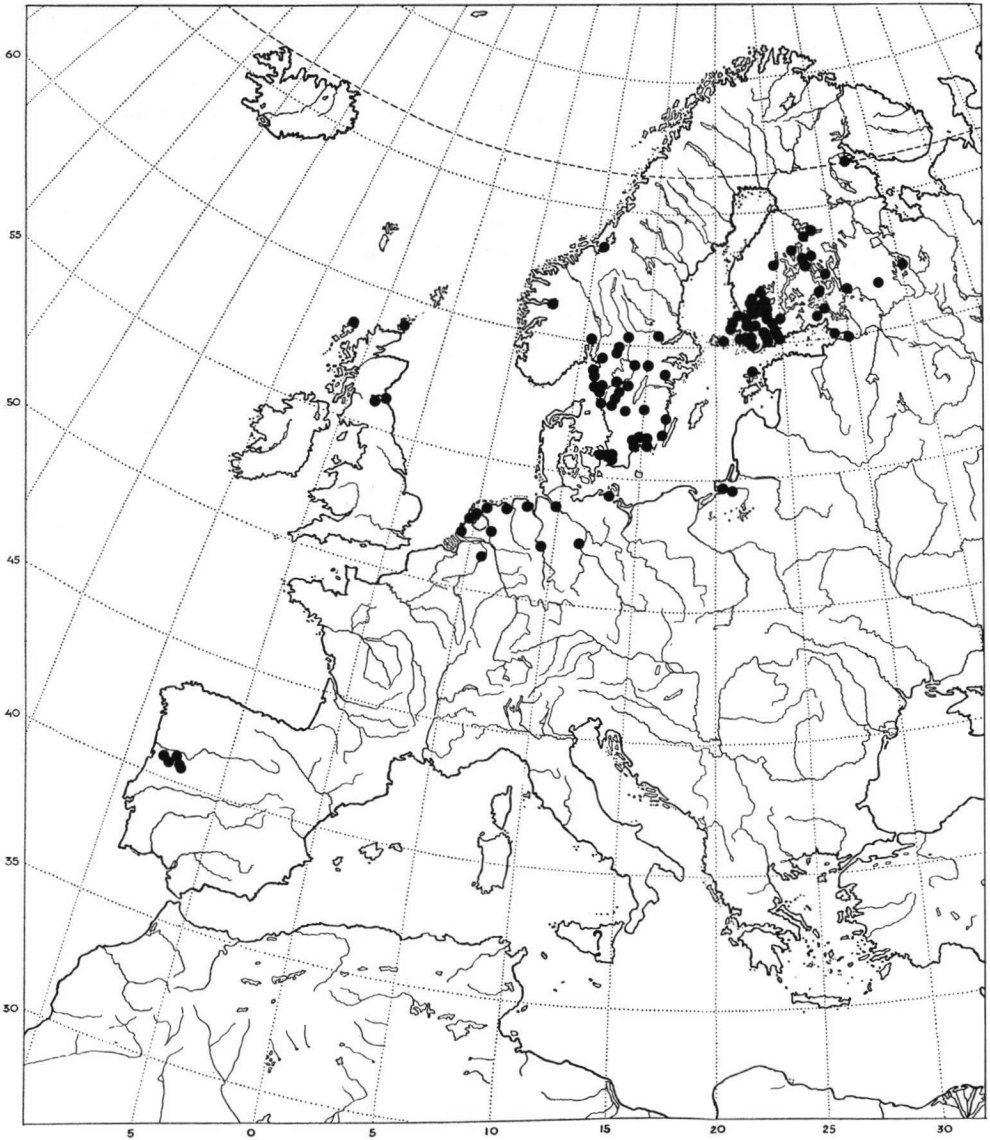


Fig. 48. Distribution of *Lamium confertum*, without the introduced specimens.

different taxon, which it is in my opinion too. The consequence of the illegitimate name is, that *Lamium moluccellifolium* in recent flora's has to change name again.

Fries described *Lamium confertum* in 1846, supposing—erroneously—this new taxon to be closely related to *Lamium incisum* Willd. The specimen in the herbarium of Fries, named *Lamium confertum*, with in his own handwriting the addi-

tion 'Ubi primus distinxi', is without any doubt *Lamium moluccellifolium* sensu Fr. (= *Lamium intermedium* Fr.). This specimen, lectotypified by me, is not very typical because of the irregular incisions of the leaves, but all other characters show that the correct name for *Lamium moluccellifolium* Fr. (= *Lamium intermedium* Fr.) is *Lamium confertum* Fr.

13. *Lamium garganicum* L. - Fig. 49.

Lamium garganicum L., Sp. Pl. 2 ed. 2 (1763) 808; Benth., Lab. Gen. Spec. (1834) 509; Benth. in DC., Prodr. 12 (1848) 504; Nyman, Syll. Fl. Eur. (1855) 94; Briq., Lab. Alp. Mar. 2 (1893) 291; Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 274; Rech.f., Fl. Aegaea (1943) 512; Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 958; F. Herm., Fl. N.-Mitt.eur. (1956) 864; P. Ball, Fl. Eur. 3 (1972) 147; P. Ball, J. Linn. Soc., Bot. 65 (1972) 347; Guin. & R. Vilm., Fl. Fr. 2 (1975) 715; Feinbrun, Fl. Pal. 3 (1978) 122. - Type: *Linn. 733/4* (holo. LINN).
Lamium pallidum Salisb., Prodr. (1796) nomen illeg., superfluous name.

Perennial. *Rhizome* cauliform, woody, very short to about 1 dm, with stolons. *Stem* usually decumbent and simple, 5-40 (-70) cm long, (1-) 1½-2½ (-4) mm Ø, totally glabrous to glabrate or at the base moderately, to the apex more densely, patently hirsute or bristly hairy. *Leaves*: *petiole* (½-) 1½-3 (-7) cm, usually shorter than the blade; *blade* reniform or cordate to (upper) ovate-oblong with a cordate to truncate base and an acute apex, coarsely and partly double-crenate to (upper) sometimes dentate, glabrate to rather densely pubescent to sericeous on both sides; *cauline leaves* ≤ ½-5 (-9½) cm long, index 0.7-1.5 (-1.8); *floral leaves* 1½-4 (-8½) cm long, index 0.7-1.5 (-2.0). *Verticillasters* 2-4 (-6), usually remote, with 2-16 (-20) flowers. *Bracts* 1-10 (-13) mm long, ¼-1 (-1½) mm broad, usually hirsute to bristly hairy and especially on the margin with short glandular hairs. *Calyx* 5 - 10-nerved, ¾-1½ (-2) cm long, longer after anthesis, at the base glabrate to densely hirsute to velutinous or sericeous, towards the apex moderately to densely hirsute to velutinous or sericeous; teeth usually much shorter than the tube, triangular to narrowly triangular, on the margin with short glandular hairs. *Corolla* pink to purple, rarely white, 1½-4 (-4½) cm long, tube abruptly dilated, 1-2½ (-3½) cm long, exerted from the calyx, outside glabrous at the base, towards the lips pubescent, usually no internal ring of hairs; upper lip arched, 4-12 (-15) by 3-8 (-10) mm, apex usually bifid, margin faintly undulate, outside usually moderately sericeous, inside glabrous; lower lip about as long and at a right angle to the latter, glabrous, lateral lobes rounded, 1-2 mm long, tooth, if present, usually minute, to ¼ mm long, median lobe 2-6 by 3-9 mm, bilobed to bipartite, margin undulate. Anterior *stamens* 6-14 mm long, 3-5 mm longer than the posterior ones and attached 1½-3½ mm lower; filaments especially towards the apex with short glandular hairs; anthers 1 - 2 by ½-1¼ mm; pollen yellowish white. *Disc* c. ¾ mm broad. *Style* c. 1½-5 mm shorter than the corolla, glabrous. *Nutlets* 2½-4¾ by 1¼-2½ mm.

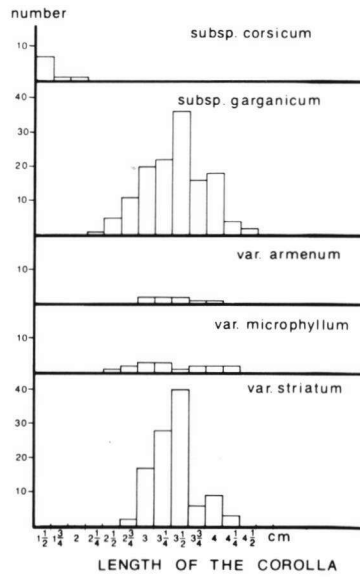
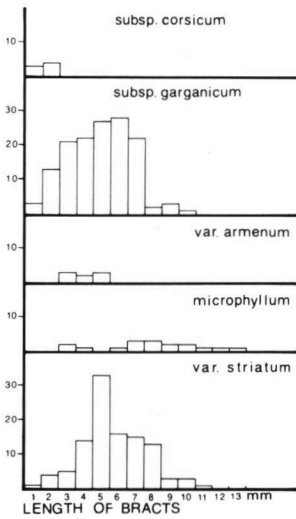
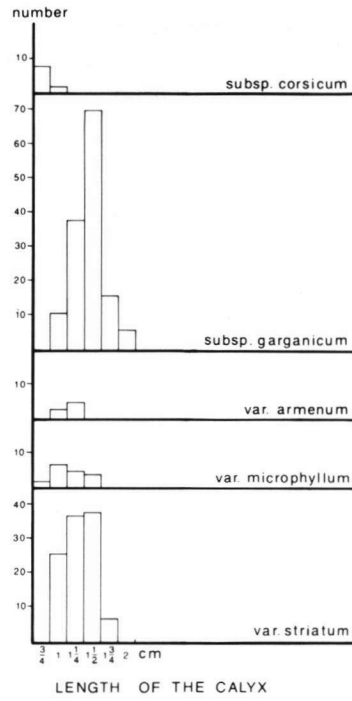
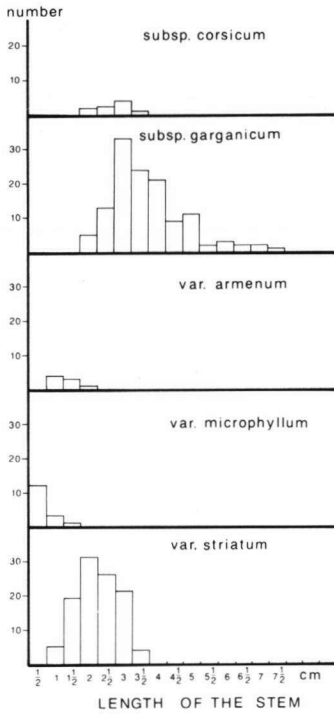


Fig. 49. *Lamium garganicum*.

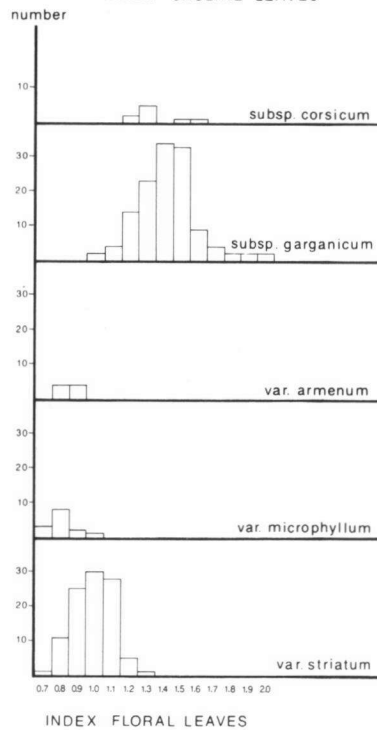
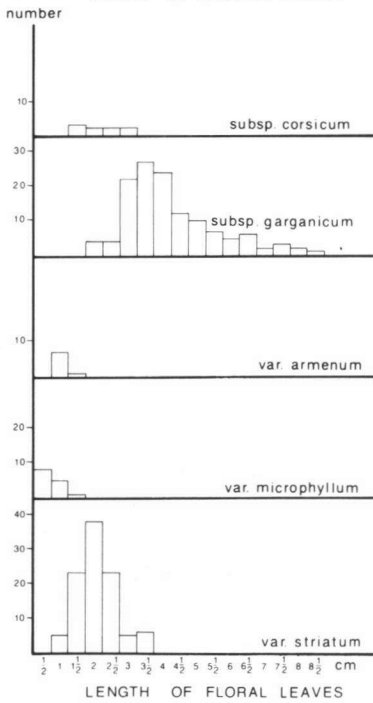
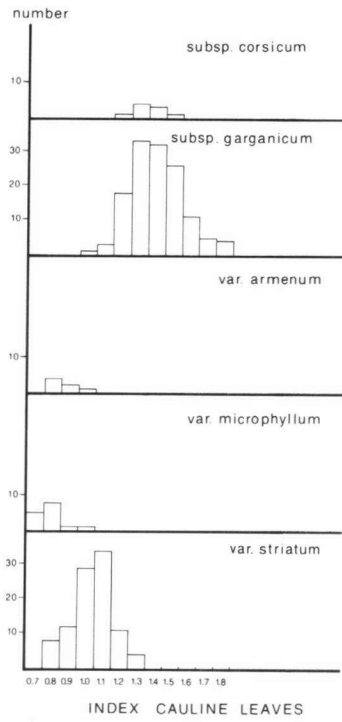
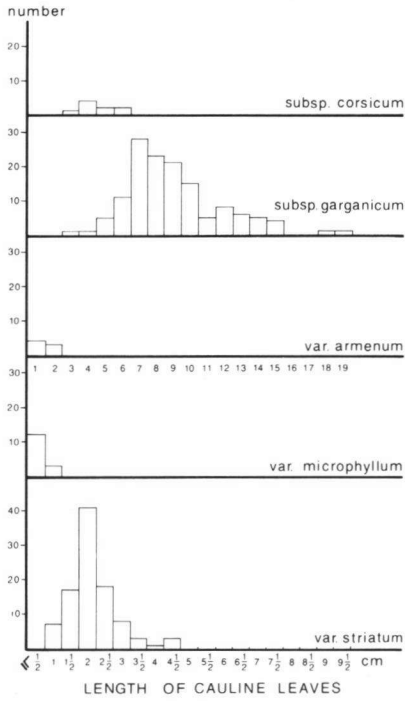


Fig. 49. *Lamium garganicum* (continued).

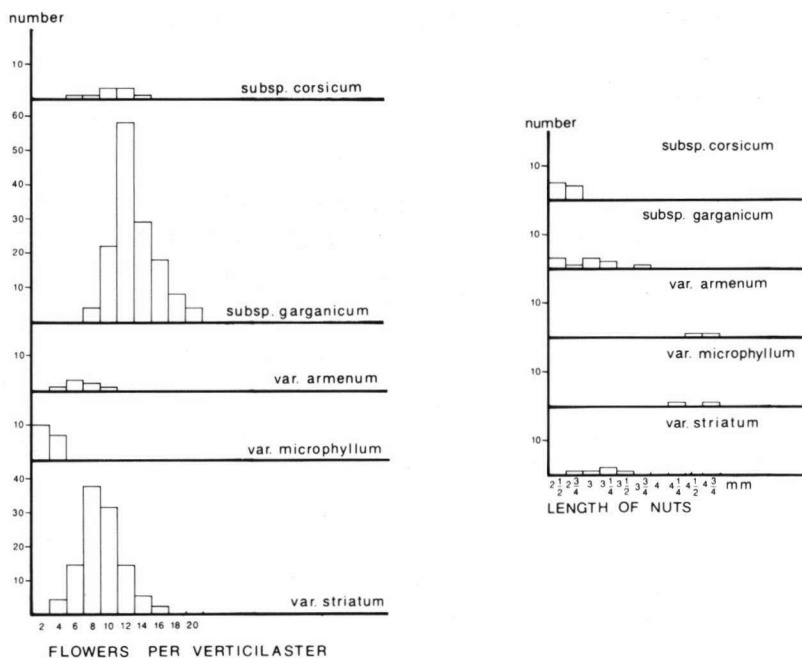


Fig. 49. *Lamium garganicum* (continued).

Variability. *Lamium garganicum* is a very variable species, which can be observed not only in the same collection-number, but also sometimes within one specimen. Briquet *s.n.* collected 9 flowers of one specimen and arranged them in order of size from 24–43 mm! Greuter 4117 noted on his label: “Oberlippe variiert von ausgerandet bis tief 2-, 3- oder 4-spaltig”; this phenomenon can also be observed in specimens in my garden.

This variability makes an infraspecific classification very difficult. I propose to distinguish besides the typical subspecies only the well recognizable subsp. *corsicum* and subsp. *striatum*, mainly based on the characters of the shape and the size of the leaves and the number of flowers in each verticillaster. Subsp. *striatum* can be divided in a number of varieties.

It seems to me that in general there is also a difference in distribution area, altitude and habitat between subsp. *garganicum* and subsp. *striatum*. Subsp. *garganicum* occupies the Western part of the area, usually at subalpine altitude and in shady places; subsp. *striatum* has been found mainly in the Eastern part of the area, usually at alpine altitude and in more open places.

As there are obvious overlaps, field research in areas of overlap and cultural experiments of both subspecies under similar circumstances are needed to test the taxonomic status of both subspecies. It seems to me that in *Lamium garganicum* the

habitat has more influence on the characters of the plant than in other taxa of the genus. Therefore I do not consider the hairiness of the plants as taxonomically important, as Ball (1972) did in separating subsp. *laevigatum* and subsp. *garganicum*.

13.a. *Lamium garganicum* L. subsp. *corsicum* (Gren. & Godron) Mennema, *comb. nov.* – Figs. 49 and 50.

Lamium corsicum Gren. & Godron, Fl. Fr. 2 (1852) 679; Nyman, Syll. Fl. Eur. (1855) 94; Rouy, Fl. Fr. 11 (1909) 294; Briq., Prodr. Fl. Corse 3,2 (1955) 176; P. Ball, Fl. Eur. 3 (1972) 147; Guin. & R. Vilm., Fl. Fr. 2 (1975) 715; Pign., Fl. It. 2 (1982) 457. – *Lamium longiflorum* Ten. subsp. *corsicum* (Gren. & Godron) Nyman, Consp. Fl. Eur. (1881) 575. – *Lamium garganicum* L. var. *corsicum* (Gren. & Godron) Bég. in Fiori & Paol., Fl. Anal. It. 3 (1903) 35. – Type: *Bernard s.n.*, France, Corse, top of Mount Cinto (holo. P).

Lamium longiflorum minus Moris, Fl. Sard. 3 (1858-1859) 310, nomen illeg. – *Lamium garganicum* L. var. *minus* (Moris) Cesati, Passer. & Gibelli, Comp. Fl. It. 2 (1874) 320. – Type: not seen.

Stem (20–) 25–30 (–35) cm long, glabrous to glabrate. *Blade* cordate, glabrate; *cauline leaves* (1½–) 2 (–3) cm long, index (1.2–) 1.3–1.4 (–1.5); *floral leaves* 1½–2 (–3) cm long, index 1.2–1.3 (–1.6). *Verticillasters* (2–) 3–4 with (6–) 10–12 (–14) flowers. *Bracts* 1–2 mm long, sometimes lacking (!). *Calyx* ¼ (–1) cm long. *Corolla*



Fig. 50. *Lamium garganicum* subsp. *corsicum*: a. upper part (1 ×); b. uppermost cauline leaf (1 ×); c. calyx (2 ×); d. corolla (2 ×).

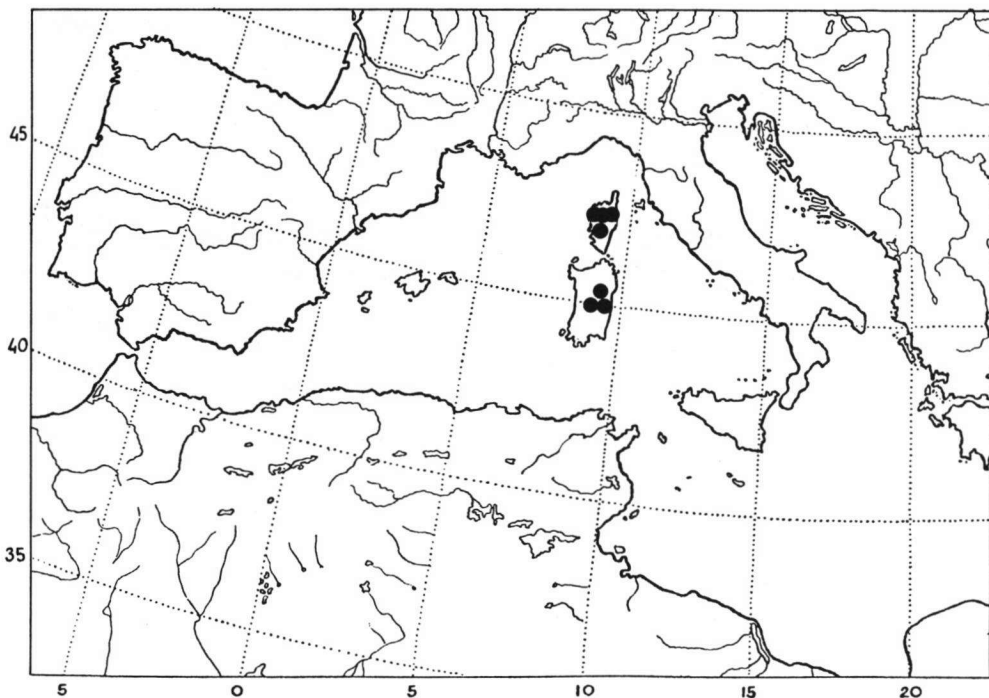


Fig. 51. Distribution of *Lamium garganicum* subsp. *corsicum*.

1½ (-2) cm long; tube c. 1 cm long; upper lip 4-5 by 3-4 mm, bifid; lateral lobes of the lower lip to 1 mm long, median lobe c. 2 by 2-3 mm. Anterior *stamens* c. 6 mm long, c. 3 mm longer than the posterior ones and attached lower 1½-2 mm; anthers 1-1½ by ½-¾ mm. *Style* 1-1½ mm shorter than the corolla. *Nutlets* 2½ (-2¾) by 1¼ (-1½) mm.

Distribution. Corse (France) and Sardegna (Italy) - Fig. 51.

Habitat. On rocks and screes; prefers calcareous soils.

Altitude. From 1000 m up to above 2000 m (Corse; Briquet, 1955: to 2500 m).

Variability. See under the species. Intraspecific taxa lower than the rank of subspecies have not been described, except those mentioned in the synonymy.

13.b. *Lamium garganicum* L. subsp. *garganicum* - Figs. 49 and 52.

Lamium garganicum L. subsp. *garganicum*, Briq., Lab. Alp. Mar. 2 (1893) 293; Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 274; P. Ball, Fl. Eur. 3 (1972) 147; Pign., Fl. It. 2 (1982) 457; Mennema in Rech. f., Fl. Iran. 150 (1982) 327.



Fig. 52. Herbarium specimen of *Lamium garganicum* subsp. *garganicum*.

- Lamium grandiflorum* Pourret, Hist. & Mém. Acad. Roy. Sci. Toulouse 3 (1788) 322; Rouy, Fl. Fr. 11 (1909) 293. - *Lamium garganicum* L. subsp. *grandiflorum* (Pourret) Briq., Lab. Alp. Mar. 2 (1893) 296. - Type: unknown.
- Lamium longiflorum* Ten., Fl. Nap. 1 (1811) XXXIV; Benth., Lab. Gen. Spec. (1834) 510; Nyman, Syll. Fl. Eur. (1855) 94; Battand. & Trabut, Fl. Alg. & Tun. (1905) 268. - *Lamium garganicum* L. var. *longiflorum* (Ten.) Ten. ex Hal., Consp. Fl. Gr. 2 (1902) 512. - Type: *Tenore s.n.*, Italy, Basilicata (holo. K).
- Lamium pedemontanum* Reichb., Fl. Germ. Exc. (1831) 322. - Type: *Reichenbach s.n.*, Italy, Col de Tenda (holo. BM).
- Lamium garganicum* L. var. *glabratum* Griseb., Spic. Fl. Rum. Bith. 2 (1844) 133. - *Lamium garganicum* L. subsp. *glabratum* (Griseb.) Briq., Lab. Alp. Mar. 2 (1893) 295; Rech. f., Fl. Aegaea (1942) 512. - Type: *Grisebach s.n.*, Turkey, Bithynia, Bursa (holo. GOET, iso. W).
- Lamium numidicum* Noé, Bull. Soc. Bot. France 2 (1855) 584. - *Lamium longiflorum* Ten. subsp. *numidicum* (Noé) Nyman, Consp. Fl. Eur. (1881) 575. - Lectotype (mihi): *Cosson s.n.*, Algeria, Constantine, Aurès Mountains (holo. P).
- Lamium inflatum* Heuffel, Verh. Zool.-Bot. Ges. Wien 8, Abh. (1858) 179; Maly, Enum. Pl. (1848) 179, nomen nudum; Nyman, Syll. Fl. Eur. (1855) 94, nomen nudum. - *Lamium garganicum* L. var. *inflatum* (Heuffel) Briq., Lab. Alp. Mar. 2 (1893) 290. - Lectotype (mihi): *Zeujer s.n.*, Romania, Caraşova [Krassova] (holo. BP, iso. W).
- Lamium garganicum* L. var. *genuinum* Caruel in Parl.-Caruel, Fl. It. 4 (1884) 208, nomen inval.
- Lamium scardicum* Wettstein, Biblioth. Bot. 26 (1892) 82. - Type: *Dörfler s.n.*, Albania, Scardus, Kobilica Mountains, in rock crevice (holo. W, iso. WU).
- Lamium garganicum* L. var. *typicum* Hall., Consp. Fl. Gr. 2 (1902) 511, nomen inval.
- Lamium reiseri* Degen, Magyar Bot. Lapok 4 (1905) 130. - Type: *Reiser s.n.*, Jugoslavia, Lisac, S. of Zagubica (not found in BP).
- Lamium macedonicum* Degen, Magyar Bot. Lapok 4 (1905) 131. - *Lamium garganicum* L. var. *macedonicum* (Degen) Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 275. - Type: *Kindl s.n.*, [Macedinia australi prope Vodenam] (not found in BP).
- Lamium lovcanicum* Rohlena, Mém. Soc. Roy. Sci. Bohême 1933, 8 (1934) 9. - Lectotype (mihi): *Rohlena s.n.*, Jugoslavia, Montenegro, Lovćen Mountains, Zalazi (holo. PR, iso. G).
- Lamium garganicum* L. subsp. *genuinum* Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 958, nomen inval.
- Lamium × conradiae* G. Bosc, Candollea 41 (1986) 59; Candollea 42 (1987) 72. - Type: *G. Bosc s.n.*, France, Corse, at the border of the mountain stream Casso (holo. herb. Bosc).
- Lamium laevigatum* DC., Fl. Fr. 3 (1805) 541, non L. 1762. - *Lamium garganicum* L. var. *laevigatum* (DC.) Cesati et al., Comp. Fl. It. 2 (1874) 320; Arcang., Comp. Fl. It. (1882) 555; Pign., Fl. It. 2 (1982) 457. - *Lamium garganicum* L. subsp. *laevigatum* (DC.) R. Mill in P. Davis, Fl. Turk. 7 (1982) 133 as subsp. *laevigatum* Arcangeli. - Type: unknown.
- Lamium molle* Boiss. & Orph. ex Boiss., Fl. Orient. 4 (1879) 756, non Aiton 1789, nomen illeg. - *Lamium garganicum* L. var. *molle* (Boiss. & Orph. ex Boiss.) Briq., Lab. Alp. Mar. 2 (1893) 293. - Type: *Orphanides 202*, Greece, Macedonia, Peristeri Mountains (holo. G).

Stem (20-) 30-40 (-70) cm long, glabrous to glabrate. *Blade* cordate, glabrate; *cauline leaves* (1½-) 3½-5 (-9½) cm long, index (1.0-) 1.2-1.5 (-1.8); *floral leaves* (2-) 3-4 (-8½) cm long, index (1.0-) 1.2-1.5 (-2.0). *Verticillasters* 3-4 (-6) with (8-) 10-16 (-20) flowers. *Bracts* (1-) 2-7 (-10) mm long; *Calyx* (1-) 1¼-1½ (-2) cm long. *Corolla* (2¼-) 2¾-4 (-4½) cm long; tube (1½-) 2 - 2½ (-3½) cm long; upper lip (-8) 10-12 (-15) by 7-8 (-10) mm, usually bifid; lateral lobes of the lower lip 1½-2 mm long; median lobe c. 2 by 2-3 mm. Anterior *stamens* 12-13 mm long, 4-5 mm longer than the posterior ones and attached lower 3-3½ mm; anthers 1½-2 by ¾-1¼ mm. *Style* c. 3-5 mm shorter than the corolla. *Nutlets* (2½-) 3-3¼ (-3¾) by (1¼-) 1½ (-2) mm.

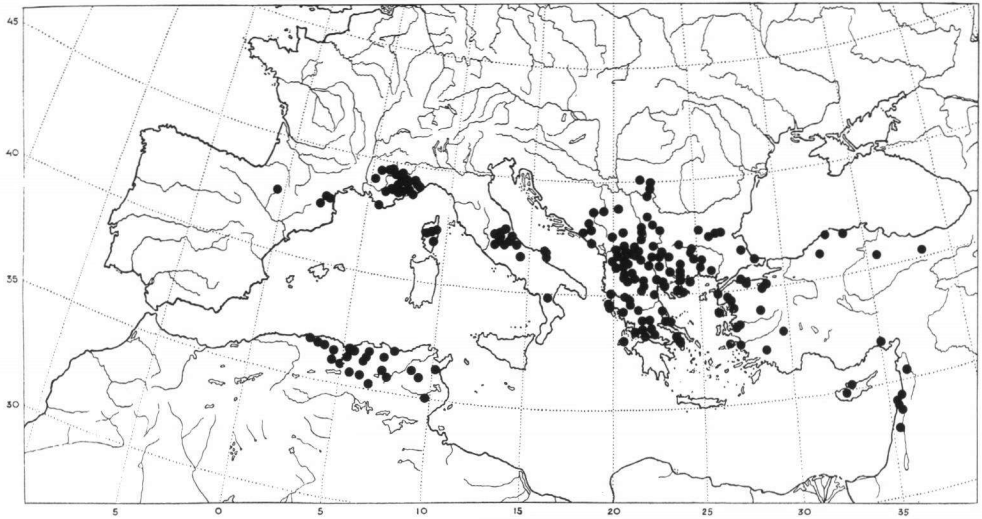


Fig. 53. Distribution of *Lamium garganicum* subsp. *garganicum*, without the specimens, escaped from gardens in Denmark and Switzerland and the adventitious records in Germany.

Distribution. S. France and Corse, N. Spain, W., C. and S. Italy, the Balkan from C. Jugoslavia and S. Romania as far as Athens in Greece, W. Turkey and scattered in E. Turkey, Cyprus, Syria, Lebanon and Israel; also in N. Algeria and N. Tunisia – Fig. 53.

Habitat. Between stones, on rocks, on mountain-slopes of mainly Northern and Western exposure, and on screes, especially in shaded places, also in light (deciduous) forests and in thickets and hedges; prefers calcareous soils.

Altitude. From 50 m up to 2250 m (C. Italy, Algeria).

Variability. See under the species. Intraspecific taxa lower than the rank of subspecies, not mentioned in the synonymy, are listed here in alphabetical order.

f. *glabrescens* Heldr. ex Hal., Consp. Fl. Gr. 2 (1902) 512.

f. *hymettium* Heldr. ex Hal., Consp. Fl. Gr. 2 (1902) 512.

var. *laevigatum* Car. in Parl.-Caruel, Fl. Ital. 4 (1884) 208.

13.c. *Lamium garganicum* L. subsp. *striatum* (Sibth. & Smith) Hayek

Lamium garganicum L. subsp. *striatum* (Sibth. & Smith) Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 275; Rech. f., Fl. Aegaea (1943) 512; R. Mill in P. Davis, Fl. Turk. 7 (1982) 132; Meikle, Fl. Cypr. 2 (1985) 1311. – *Lamium striatum* Sibth. & Smith, Fl. Graec. Prodr. 1 (1809) 405; Sibth. & Smith in Rees, Cyclop. 20 (1812) *Lamium* no. 8; Sibth. & Smith, Fl. Graec. 6 (1827) 46; Benth., Lab. Gen. Spec. (1834) 510; Benth. in DC., Prodr. 12 (1848) 507; Nyman, Syll. Fl. Eur. (1855) 94; Boiss., Fl. Orient. 4 (1879) 757; Rech. f., Fl. Syr. Liban. (1959) 368. – Type: *Sibthorp s.n.*, Greece, the waste ground of Greece and the Archipelago (holo. OXF).

Stem 5–30 (–35) cm long, glabrate to hirsute or bristly hairy. *Blade* mostly reniform, sometimes cordate or rhomboid, glabrate to pubescent or sericeous; *cauline leaves* $\leq \frac{1}{2}$ – $2\frac{1}{2}$ (– $4\frac{1}{2}$) cm long, index 0.7–1.1 (–1.3); *floral leaves* $\frac{1}{2}$ – $2\frac{1}{2}$ (– $4\frac{1}{2}$) cm long, index 0.7–1.1 (–1.3). *Verticillasters* 2–4 (–5) with 2–10 (–16) flowers. *Bracts* (1–) 3–10 (–13) mm long. *Calyx* ($\frac{3}{4}$ –) $1-1\frac{1}{2}$ (– $1\frac{3}{4}$) cm long; *Corolla* ($2\frac{1}{2}$ –) $3-3\frac{1}{2}$ (– $4\frac{1}{4}$) cm long; tube ($1\frac{1}{2}$ –) $2-2\frac{1}{2}$ (– $3\frac{1}{2}$) cm long; upper lip (8–) 10–12 (–15) by 7–8 (–10) mm; lateral lobes of the lower lip $1\frac{1}{2}$ –2 mm long; median lobe c. 2 by 2–3 mm. *Anterior stamens* 12–13 mm long, 4–5 mm longer than the posterior ones and attached lower $3-3\frac{1}{2}$ mm; anthers $1\frac{1}{2}$ –2 by $\frac{3}{4}$ – $1\frac{1}{4}$ mm. *Style* c. 3–5 mm shorter than the corolla. *Nutlets* $2\frac{3}{4}$ – $4\frac{3}{4}$ by $1\frac{1}{2}$ – $2\frac{1}{2}$ mm.

13.c.1. *Lamium garganicum* L. subsp. *striatum* (Sibth. & Smith) Hayek var. *armenum* (Boiss.) Mennema, comb. nov. – Fig. 49.

Lamium armenum Boiss., Diagn. 7 (1846) 55; Benth. in DC., Prodr. 12 (1848) 506; Boiss., Fl. Orient. 4 (1879) 758; R. Mill in P. Davis, Fl. Turk. 7 (1982) 136. – Type: *Aucher 1682*, Turkey, Erzincan, Keşiş, Dağları (holo. G, iso. K, MPU, P).

Lamium veronicifolium Benth., Ann. Sci. Nat. Ser. 2, 6 (1836) 47, non Benth., Lab. Gen. Spec. (1834) 510.

Lamium armenum Boiss. subsp. *sintensisii* R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 35; R. Mill in P. Davis, Fl. Turk. 7 (1982) 137. – Type: *Sintenis 4764*, Turkey, Kastamonu, Tossia, Büyük Ilgaz Dağları, summit (holo. JE, iso. B, G, GOET, JE, K, L, LD, P, PR, S, W, WU, Z).

Rhizome to about 1 dm. *Stem* 10–15 (–20) cm long. *Blade* reniform, the upper rhomboid and decurrent on the petiole, irregularly crenate; *cauline leaves* $\frac{1}{2}$ –1 cm long, index 0.8–0.9 (–1.0); *floral leaves* $1 (-1\frac{1}{2})$ cm long, index 0.8–0.9. *Verticillasters* 3–4 (–5), crowded, with (–4) 6 (–10) flowers. *Bracts* 3–5 mm long. Upper lip *corolla* usually truncate. *Nutlets* $4\frac{1}{2}$ – $4\frac{3}{4}$ by $2\frac{1}{4}$ – $2\frac{1}{2}$ mm, without greyish spots.

Distribution. Very rare and scattered in mountains in N. Turkey and the Caucasian division of the U.S.S.R. – Fig. 54.

Habitat. On rocks and sliding stone screes; on calcareous soil.

Altitude. From 2000 m up to 2800 m.

Variability. See under the species. Intraspecific taxa lower than the rank of variety are unknown. *Furse 3820* collected plants with floral leaves with white spots at the base such as occur in *Lamium galactophyllum* and *Lamium moschatum*.

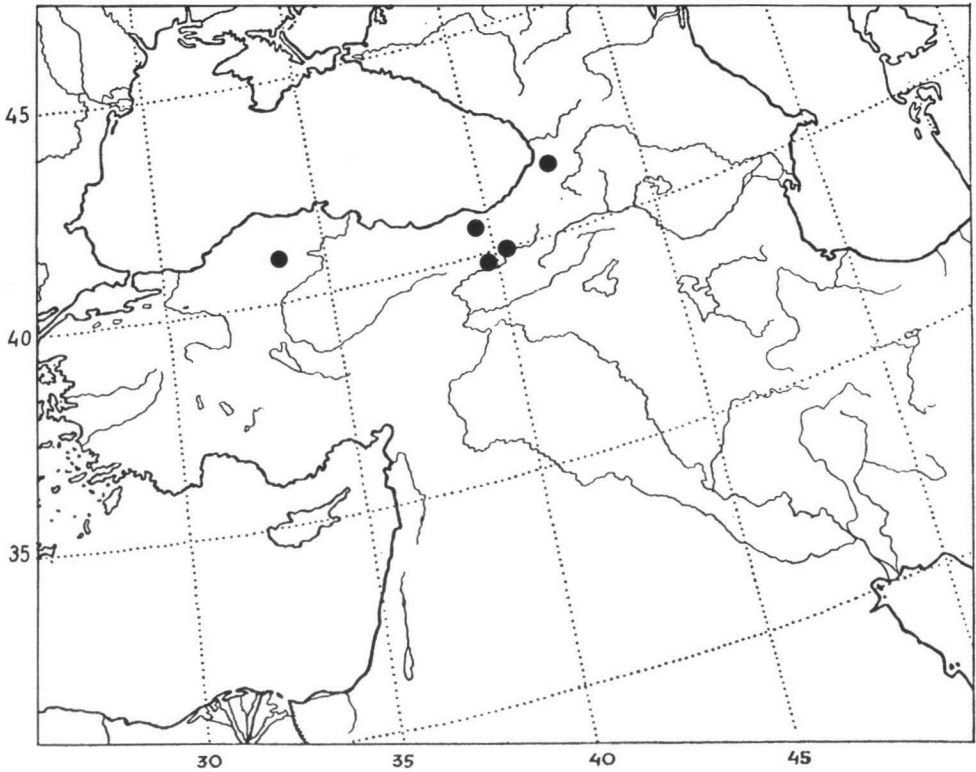


Fig. 54. Distribution of *Lamium garganicum* subsp. *striatum* var. *armenum*.

13.c.2. *Lamium garganicum* L. subsp. *striatum* (Sibth. & Smith) Hayek var. *microphyllum* (Boiss.) Mennema, *comb. nov.* - Figs. 49 and 55.

Lamium microphyllum Boiss., Diagn. 5 (1844) 25; Benth. in DC., Prodr. 12 (1848) 506; Boiss., Fl. Orient. 4 (1879) 759; R. Mill in P. Davis, Fl. Turk. 7 (1982) 135. - Type: *Boissier s.n.*, Turkey, above Cadmi (holo. G, iso. GOET, K, P, TO, UPS, W).

Lamium cymbalariaifolium Boiss., Fl. Orient. 4 (1879) 759; R. Mill in P. Davis, Fl. Turk. 7 (1982) 136. - Type: *Bourgeau 215*, Turkey, Ak Dag (holo. G, iso. C, COI, GOET, K, MPU, P, W).

Lamium sandrasicum P. Davis, Kew Bull. 1949 (1949) 398; R. Mill in P. Davis, Fl. Turk. 7 (1982) 136. - Type: *P. Davis 13548*, Turkey, Mugla, above Köycegiz, Sandras Dag, 2200 m. (holo. K, iso. E).

Rhizome to about 1 dm. *Stem* 5 (-10) cm long. *Blade* reniform, regularly crenate; *cauline leaves* $\leq \frac{1}{2}$ (-1) cm long, index 0.7-0.8 (-1.0); *floral leaves* $\frac{1}{2}$ -1 (-1 $\frac{1}{2}$) cm long, index 0.7-0.8 (-1.0). *Verticillasters* 3-4 (-5), crowded, with 2-4 flowers. *Bracts* (3-) 7-10 (-13) mm long. Upper lip *corolla* usually bifid. *Nutlets* 4 $\frac{1}{4}$ -4 $\frac{3}{4}$ by 2 $\frac{1}{4}$ -2 $\frac{1}{2}$ mm, without greyish spots.

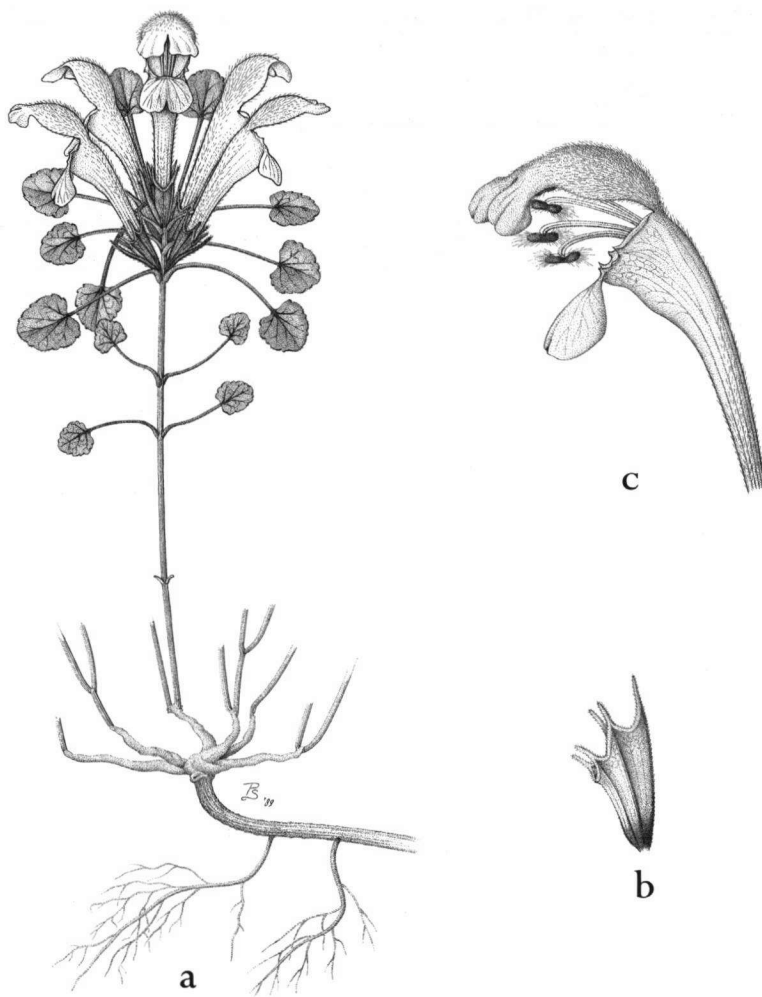


Fig. 55. *Lamium garganicum* subsp. *striatum* var. *microphyllum*: a. habitus (1 ×); b. calyx (2 ×); c. corolla (2 ×).

Distribution. Very rare and scattered in mountains in Greece, SW. Turkey and Lebanon - Fig. 56.

Habitat. On rocks and stone screes; on calcareous and serpentineous soils.

Altitude. From 1500 m up to 2800 m (Lebanon).

Variability. See under the species. Intraspecific taxa lower than the rank of variety are unknown.

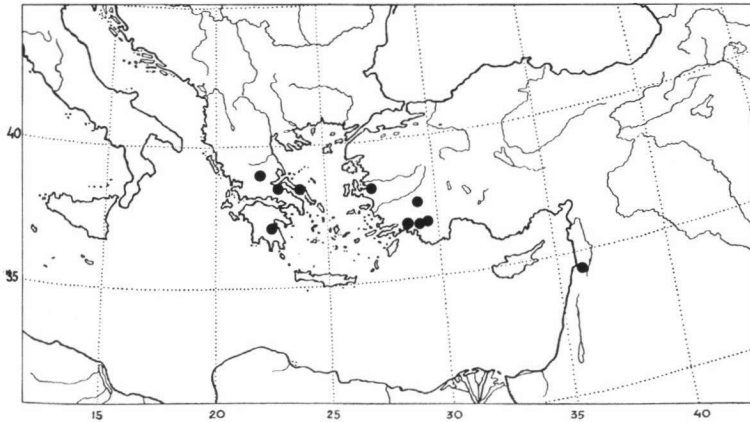


Fig. 56. Distribution of *Lamium garganicum* subsp. *striatum* var. *microphyllum*.

13.c.3. *Lamium garganicum* L. subsp. *striatum* (Sibth. & Smith) Hayek var. *striatum* – Figs. 49 and 57.

Lamium garganicum L. var. *striatum* (Sibth. & Smith) Baldacci, Nuovo Giorn. Bot. Ital. 5 (1898) 34; Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 958.

Lamium glechomoides Smith in Rees, Cyclop. 20 (1812) *Lamium* no. 11; Benth., Lab. Gen. Spec. (1835) 738; Benth. in DC., Prodr. 12 (1848) 506. – Type: *Tournefort s.n.*, the Levant (holo. LINN).

Lamium veronicifolium Benth., Lab. Gen. Spec. (1834) 510, non Benth., Ann. Sci. Nat. (Paris) 2,6 (1836) 47; Benth. in DC., Prodr. 12 (1848) 505; Nyman, Syll. Fl. Eur. (1855) 94; Boiss., Fl. Orient. 4 (1879) 758; R. Mill in P. Davis, Fl. Turk. 7 (1982) 135. – *Lamium garganicum* L. var. *veronicifolium* (Benth. 1834, non 1836) Fiori, Nuov. Fl. Anal. It. 2 (1926) 423. – Type: *Sibthorp s.n.*, Greece, Lacaita (holo. OXF).

Lamium reniforme Montbr. & Auch. ex Benth., Ann. Sci. Nat. (Paris) 2,6 (1836) 47; Benth. in DC., Prodr. 12 (1848) 506; Rech. f., Fl. Syr. Liban. (1959) 368. – *Lamium striatum* Sibth. & Sm. var. *reniforme* (Montbr. & Auch. ex Benth.) Boiss., Fl. Orient. 4 (1879) 757. – *Lamium garganicum* L. subsp. *reniforme* (Montbr. & Auch. ex Benth.) R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 34; R. Mill in P. Davis, Fl. Turk. 7 (1982) 132. – Type: *Aucher s.n.*, Turkey, Trabzon (holo. G).

Lamium rectum A. Schenk, Pl. Spec. Aegypt. Arab. Syr. (1840) 19; Benth. in DC., Prodr. 12 (1848) 506; Rech. f., Fl. Syr. Liban. (1959) 368. – *Lamium garganicum* L. subsp. *rectum* (A. Schenk) R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 35; R. Mill in P. Davis, Fl. Turk. 7 (1982) 134. – Type: *Roth & Erdl s.n.*, Lebanon, ‘in montis Libanon cedreto’ (holo. W).

Lamium striatum Sibth. & Smith var. *glabratum* Griseb., Spic. Fl. Rum. Bith. 2 (1844) 133, non *Lamium garganicum* L. var. *glabratum* Griseb. – *Lamium garganicum* L. f. *glabratum* (Griseb.) Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 275, Rech. f. Fl. Aegaea (1943) 512. – Type: *Grisebach s.n.*, ‘in peninsula Hajon-Oros’ (not seen).

Lamium nivale Boiss. & Heldr. ex Boiss., Diagn. 7 (1846) 54; Benth. in DC., Prodr. 12 (1848) 507; Nyman, Syll. Fl. Eur. (1855) 94. – *Lamium striatum* Sibth. & Sm. subsp. *nivale* (Boiss. & Heldr. ex Boiss.) Nyman, Consp. Fl. Eur. (1881) 575. – *Lamium garganicum* L. var. *nivale* (Boiss. & Heldr. ex Boiss.) Baldacci, Nuovo Giorn. Bot. Ital. 5 (1898) 34. – Type: *de Heldreich 91*, Greece, Taïyetos Oros, Kakkochori (holo. G).

Lamium bithynicum Benth. in DC., Prodr. 12 (1848) 505; Boiss., Fl. Orient. 4 (1879) 756; Grint., Fl. Rep. Pop. Rom. 8 (1963) 177. – Lectotype (mihi): *Aucher 1683 p.p.*, Turkey, Ulu Dag [Olympus bithynicus] (holo. G).

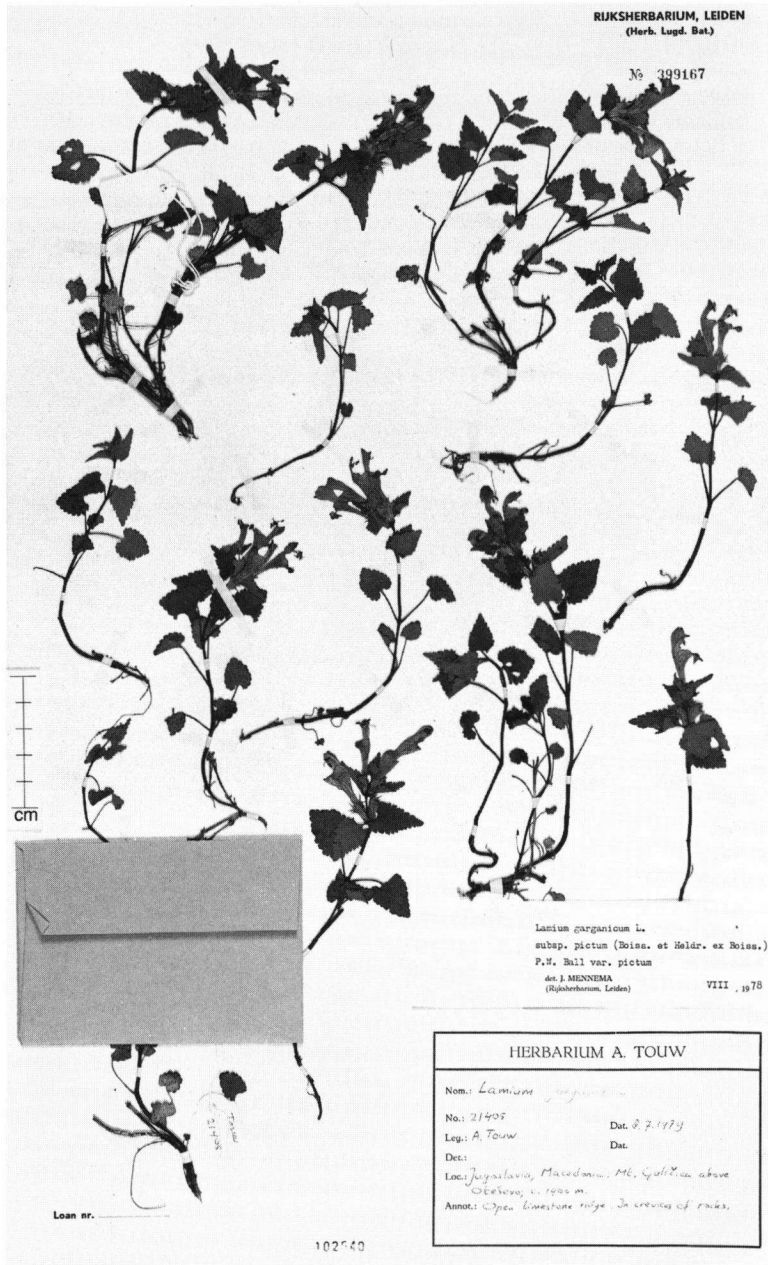


Fig. 57. Herbarium specimen of *Lamium garganicum* subsp. *pictum* var. *pictum*.

- Lamium tenuiflorum* Fischer & C. Meyer, Ann. Sci. Nat. (Paris) 4 (1854) 35; Boiss., Fl. Orient. 4 (1879) 759; R. Mill in P. Davis, Fl. Turk. 7 (1982) 130. - Type: *Tchichatcheff s.n.*, Turkey, Gözlü, c. 1050 m (holo. P).
- Lamium manganottianum* Clementi, Mem. Reale Accad. Sci. Torino Ser. 2,16 (1857) 311, nomen illeg., superfluous name.
- Lamium pictum* Boiss. & Heldr. ex Boiss., Diagn. Ser. 2,4 (1859) 44; Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 275. - *Lamium garganicum* L. subsp. *pictum* (Boiss. & Heldr. ex Boiss.) Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 958; P. Ball, Bot. J. Linn. Soc. 65 (1972) 350, pro comb. nov.; P. Ball, Fl. Eur. 3 (1972) 147; Mennema in Rech. f., Fl. Iran. 150 (1982) 326. - *Lamium striatum* Sibth. & Smith subsp. *pictum* (Boiss. & Heldr. ex Boiss.) Nyman, Consp. Fl. Eur. (1881) 575. - Type: *de Heldreich 2752*, Greece, Parnassos, alpine region (holo. G, iso. COI, FI, GOET, M).
- Lamium striatum* Sibth. & Smith var. *cylleneum* Boiss. & Orph. ex Boiss., Diagn. Ser. 2,4 (1859) 45. - Type: *Orphanides 2663*, Greece, Killini Oros, 'Flambouritza' (holo. G, iso. BM, FI, GB, PRC).
- Lamium plebeium* Boiss., Diagn. Ser. 2,4 (1859) 45. - Type: *Huet de Pavillon s.n.*, Turkey, Armenia, Zazalar Hané (holo. G, iso. K).
- Lamium striatum* Sibth. & Smith var. *nepetifolium* Boiss., Fl. Orient. 4 (1879) 757. - *Lamium garganicum* L. var. *nepetifolium* (Boiss.) P. Davis, Kew Bull. 1949 (1949) 398. - *Lamium garganicum* L. subsp. *nepetifolium* (Boiss.) R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 34; R. Mill in P. Davis, Fl., Turk. 7 (1982) 133. - Lectotype (mihi): *Kotschy 17*, Turkey, Bolkar Daglari, Kizil Tepe, Gusguta valley (holo. G, iso. K, P, UPS).
- Lamium striatum* Sibth. & Smith var. *minus* Boiss., Fl. Orient. 4 (1879): 757, nomen illeg., homotypic synonym of *Lamium striatum* Sibth. & Smith var. *cylleneum* Boiss. & Orph. ex Boiss. 1859; Rech. f., Fl. Syr. Liban. (1959) 368. - *Lamium garganicum* L. var. *minus* (Boiss.) Hayek, Prod. Fl. Penins. Balc. 2 (1929) 275.
- Lamium stenosisiphon* Boiss. & Hausskn. ex Boiss., Fl. Orient. 4 (1879) 760. - Type: *Hausknecht 798*, Iran, Avroman and Shahu Mountain (holo. G, iso. P).
- Lamium lycium* Boiss., Fl. Orient. 4 (1879) 762; R. Mill in P. Davis, Fl. Turk. 7 (1982) 129. - Type: *Bourgeau 217*, Turkey, alpine region of Elmali Dag (holo. G, iso. C, E, GOET, K, W).
- Lamium lasiocladus* Stapf, Denkschr. Kaiserl. Akad. Wiss., Math.-Naturwiss. Kl. 50,2 (1885) 101. - *Lamium garganicum* L. subsp. *lasiocladus* (Stapf) R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 35; R. Mill in P. Davis, Fl. Turk. 7 (1982) 134. - Type: *Luschan s.n.*, Turkey, Nemrut Dag (holo. WU).
- Lamium garganicum* L. subsp. *grandiflorum* (Pourret) Briq. var. *gracile* Briq., Lab. Alp. Mar. 2 (1893) 298. - *Lamium garganicum* L. subsp. *gracile* (Briq.) Greuter & Burdet, Willdenowia 14 (1984) 300. - Type: *Porta s.n.*, Italy, Monte Morrone (not seen, not found in G).
- Lamium spachianum* Clementi ex Baldacci, Malpighia 8 (1894) 289, nomen illeg. - Type: *Clementi s.n.*, Turkey, Ulu Dag [Olympus bithynicus] (holo. G, iso. P, TO, W).
- Lamium cariense* R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 33; R. Mill in P. Davis, Fl. Turk. 7 (1982) 129. - Type: *P. Davis 41628*, Turkey, Aydin, Karacasu, Baba Dag, above Seki (holo. E, iso. K).
- Lamium pisidicum* R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 33; R. Mill in P. Davis, Fl. Turk. 7 (1982) 130. - Type: *de Heldreich s.n.*, Turkey, Davras Dagi [monte Davros Pisidia] (holo. E, iso. G).
- Lamium garganicum* L. subsp. *pulchrum* R. Mill, Notes Roy. Bot. Gard. Edinburgh 38 (1980) 35; R. Mill in P. Davis, Fl. Turk. 7 (1982) 134. - Type: *Wood & Gibson 117*, Turkey, Nigde, Ala Dag, base camp (holo. E).

Rhizome usually short. *Stem* (10-) 15-30 (-35) cm long. *Blade* usually reniform, rarely cordate, regularly crenate; *Cauline leaves* (1-) 2-2½ (-4½) cm long, index (0.8-) 1.0-1.1 (-1.3); *floral leaves* (1-) 1½-2½ (-4½) cm long, index (0.7-) 0.9-1.1 (-1.3). *Verticillasters* 2-3 (-4), remote, with (4-) 8-10 (-16) flowers. *Bracts* (1-) 5-8 (-11) mm long. Upper lip *corolla* usually bifid. *Nutlets* 2¼-3¼ (-3½) by 1½ (-1¾) mm, with little greyish spots.

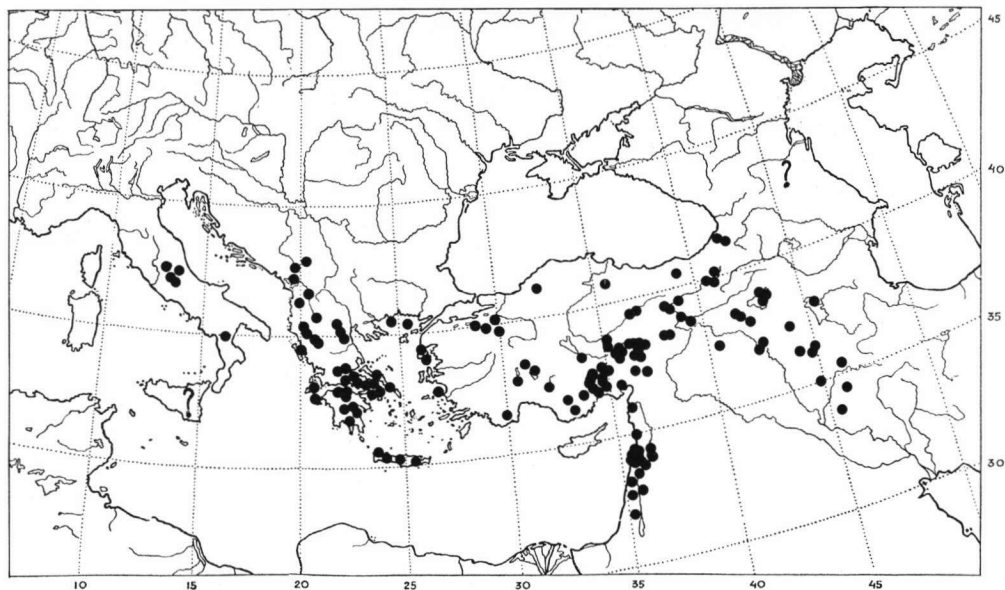


Fig. 58. Distribution of *Lamium garganicum* subsp. *striatum* var. *striatum*.

Distribution. C. and S. Italy, S. Jugoslavia, Albania, Greece, Turkey, the Caucasian division of the U.S.S.R. (?), Syria, Lebanon, Israel, Iraq and Iran – Fig. 58.

Habitat. On rocks, amongst stones, on mountain slopes of mainly Southern and Eastern exposure, and on screes, especially in dry, open places; also, but less frequent in light (coniferous) forests; prefers calcareous soils.

Altitude. From 400 m up to 3000 m (Turkey).

Variability. See under the species. Furthermore Mill (1980) distinguished at the species level a form with an internal ring of hairs in the tube of the corolla: *Lamium caricense*, occurring in S. Greece and E. Turkey. Intraspecific taxa lower than the rank of variety, except those mentioned in the synonymy, are unknown.

Note. *Hausknecht 800* has been collected ‘in fissur. rup. Terek, 2000 ped.’ on 6. IV.1867. He used the printed label ‘Iter syriaco-armeniacum 1865’, but changed by hand the 5 to 7. As far as I know the name Terek can only refer to a former province of U.S.S.R., N. of the Caucasian Alps. According to Hergt (1904), however, Hausknecht travelled in Mesopotamia in 1867 and did not reach the Caucasus until 1869 after a period of illness. The labels of the

Mesopotamian Mountain-exploration make it clear that this excursion took place in June and July 1867. So it is possible that earlier in that year Haussknecht collected some plants in more temperate areas N. of the Caucasus. Although *Lamium garganicum* has not been mentioned in the Russian flora (Gorshkova, 1954), I marked the Terek-area on the map of *Lamium garganicum* var. *striatum* with an interrogation-mark.

Ref.: Gorshkova, S. G., 1954. *Lamium*, in B. K. Shishkin (ed.), Flora U.S.S.R. 21: 124-138.
Hergt, B., 1904. Karl Haussknecht. Ber. Deutsch. Bot. Ges. 22: 31-39.

14. *Lamium glaberrimum* (K. Koch) Taliev

Lamium glaberrimum (K. Koch) Taliev, Bull. Jard. Imp. Bot. St. Pétersb. 2,4 (1902) 132; Gorshk., Fl. USSR 21 (1954) 126; P. Ball, Fl. Eur. 3 (1972) 147. - *Lagochilus glaberrimus* K. Koch, Linnaea 21 (1848) 679. - Type: *Rögner s.n.*, U.S.S.R., Krym (holo. B; destroyed), Neotype (mih): *Bogosharov s.n.*, U.S.S.R., Krym, Kozmo-Demian Monastery on rubble slope, 6. VI. 1900 (holo B).

Perennial. *Rhizome* ?. *Stem* decumbent and simple, 20-30 cm long, c. 1½ mm Ø, glabrous. *Leaves*: *petiole* ½-2 cm, the upper leaves sessile; blade reniform, deeply (the upper ones less deep) divided into (3-) 5-lobed segments, glabrous; *cauline leaves* c. 1-1½ cm long, index c. 0.7; *floral leaves* c. 1½ cm long, index ? *Verticillasters* 1-2, remote, with 4-6 flowers. *Bracts* 7 - 8 mm long, ½-1 mm broad, glabrous, sometimes with some short glandular hairs. *Calyx* 5-nerved, 1½ cm long, longer after anthesis, glabrous; teeth about as half as long as the tube, narrowly triangular, on the margin with short glandular hairs. *Corolla* pink, 3-3½ cm long; tube abruptly dilated, 2-2½ cm long, exerted from the calyx, outside glabrous at the base, dorsally towards the lips pubescent, no internal ring of hairs; upper lip arched, c. 10 by 6-7 mm, apex bilobed, margin faintly undulate, outside pubescent, inside glabrous; lower lip about as long as the upper lip and in a right angle to the latter, glabrous, lateral lobes rounded, to 1½ mm long, tooth less than 1 mm?, median lobe 4-5 by 5-6 mm, bilobed, margin undulate. *Anterior stamens* 10-11 mm long, c. 3-4 mm longer than the posterior ones and attached c. 1-2 mm lower; filaments also with short glandular hairs; anthers c. 2 by ¾-1 mm. Pollen colour unknown. *Disc* c. ¾ mm broad. *Style* c. 3 mm shorter than the corolla, subglabrous. *Nutlets* not ripe.

Distribution. Very rare in the Krym (U.S.S.R.).

Habitat. 'Stony screes in the lower cultivated mountain belt and wood margins' (Gorshkova, 1954).

Altitude. No data available.

Variability. No data available; see note 1.

Notes. 1. During my visit to the Komarov Botanical Institute in Leningrad in 1975 I separated specimens of this species and asked the curator of the Herbarium to send them on loan. Unfortunately I did not receive them in spite of later letters. The rareness of the species is demonstrated by the absence of specimens in BM, G, P, S, UPS and Z. So I had to base my opinion on a brief inspection of material during my stay in Leningrad and to describe the species (admittedly somewhat incomplete) on the basis of a fragment of one specimen from Berlin, which also has to be the neotype.

2. As *Lamium glaberrimum* is completely glabrous, except the corolla, the apex of the bracts and calyx lobes are also glabrous. However, there is a conspicuous difference with the glabrous, corneous, yellowish brown aristate apex of the bracts and calyx teeth of the species from the subgenera *Galeobdolon* and *Orvala*.

3. Although the nutlets of the specimen examined were unripe, the length of the nutlets was about 4½ mm and not 3-3½ mm as mentioned in the Russian Flora (Gorshkova, 1954).

15. *Lamium purpureum* L. - Fig. 59.

Lamium purpureum L., Sp. Pl. (1753) 579; Benth., Lab. Gen. Spec. (1834) 512; Benth. in DC., Prodr. 12 (1848) 508; Nyman, Syll. Fl. Eur. (1855) 94; Willkomm & Lange, Prodr. Fl. Hisp. 2 (1868) 436; Boiss., Fl. Orient. 4 (1879) 766; Briq., Lab. Alp. Mar. 2 (1893) 301; Britton & Brown, Ill. Fl. N. U.S. 3 ed. 2 (1913) 121; Battand. & Trabut, Fl. Alg. & Tun. (1905) 269; Rouy, Fl. Fr. 11 (1909) 296; Gams in Hegi, Ill. Fl. Mitt.-Eur. 5, 4 (1927) 2450; Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 276; Müntzing, Bot. Not. 1932 (1932) 153; Ostenf. & Grøntved, Fl. Icel. Faer. (1934) 118; Rech. f., Fl. Aegaea (1943) 512; Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 959; Ohwi, Fl. Jap. (1953) 776; Gorshk., Fl. USSR 21 (1954) 130; F. Herm., Fl. N.-Mitt.eur. (1956) 865; Rech. f., Fl. Syr. Liban. (1959) 368 as f. *albiflorum* Goir.; Lid, Norsk Sv. Fl. (1963) 578; Grint., Fl. Rep. Pop. Rom. 8 (1963) 178; Sychowa in Pawlowskiego, Fl. Polsk. 11 (1967) 122; Böcher et al., Fl. Greenl. (1968) 159; David Moore, Brit. Antarct. Surv. Scient. Rep. 60 (1968) 106; A. Löve, Isl. Ferdafn. (1970) 350; Garcke, Ill. Fl. ed. 23 (1972) 1203; H. Hess et al., Fl. Schw. 3 (1972) 125; P. Ball, Fl. Eur. 3 (1972) 148; A. Hansen in Rostrup/C. A. Jørg., Dansk. Fl. ed. 20 (1973) 506; Guin. & R. Vilm., Fl. Fr. 2 (1975) 716; Sykes, New Zealand J. Bot. 16 (1978) 392; Pign., Fl. It. 2 (1982) 458. Mennema in Rech. f., Fl. Iran. 150 (1982) 327, 579; R. Mill in P. Davis, Fl. Turk. 7 (1982) 140; De Langhe et al., Fl. Belg. ed. 3 (1983) 134; David Moore, Fl. Tierr. Fuego (1983) 194; Hämet-Ahti et al., Retkeil. (1984) 297; A. Hansen & Sunding, Sommerfeltia 1 (1985) 61; Clapham et al., Fl. Brit. Isl. ed. 3 (1987) 414. - *Lamiopsis purpurea* (L.) Opiz, Seznam (1852) 56. - Type: *Linn. 733/11* (holo. LINN).

Lamium foetidum Garsault, Descr. Pl. Anim. (1767) 198; Fig. Pl. Anim. Med. (1764) tab. 317, nomen illeg.

Lamium nudum Crantz, Stirp. Austr. 2, 4, ed. 2 (1769) 259. - Type: unknown.

Lamium molle Aiton, Hort. Kew. 2 (1789) 297; Britten, J. Bot. 37 (1899) 130; Boulger, J. Bot. 41 (1903) 150. - *Lamium purpureum* L. var. *molle* (Aiton) Benth., Lab. Gen. Spec. (1834) 512. - Type: *Sutherland s.n.*, cult. 1683 (not seen).

Lamium ocimifolium Smith in Rees, Cyclop. 20 (1812) *Lamium* no. 14. - Type: *Smith s.n.*, England, Chelsea garden (holo. LINN).

Lamium durandoi Pomel, Nouv. Mat. Fl. Atl. (1874) 117. - Type: *Durando s.n.*, Algeria, Djebel Mouzaia (holo. MPU).

Lamium caucasicum Grossh., Izv. Azerb. FAN SSSR 10 (1944) 39; Gorshk., Fl. USSR 21 (1954) 131. - *Lamium purpureum* L. subsp. *caucasicum* (Grossh.) Menitskiy in Takht., Fl. Armen. 8 (1987) 80. - Type: *Grossheim s.n.*, U.S.S.R., Krtsanisi, near Tbilisi (holo. BAK; not seen).

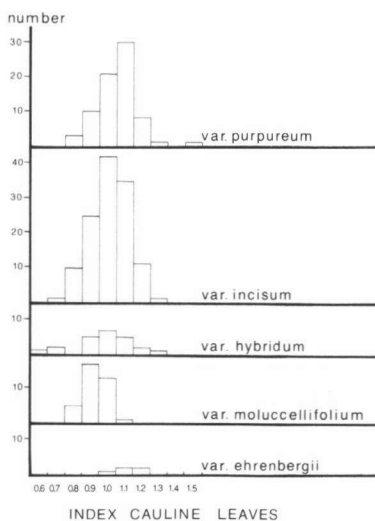
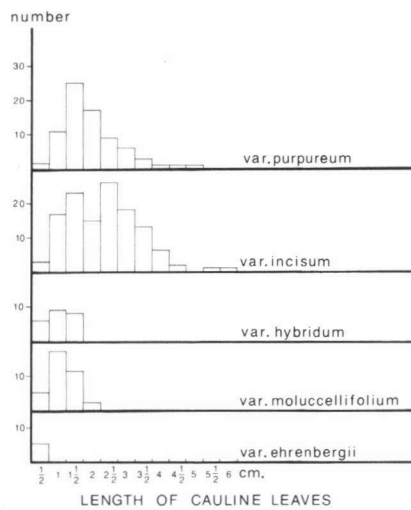
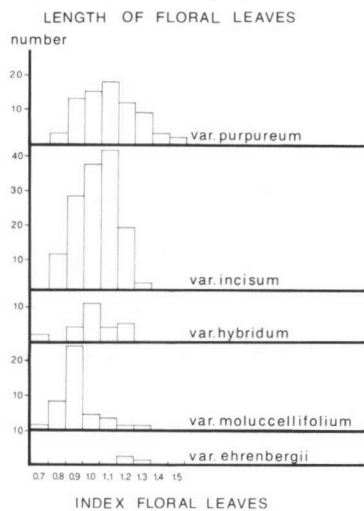
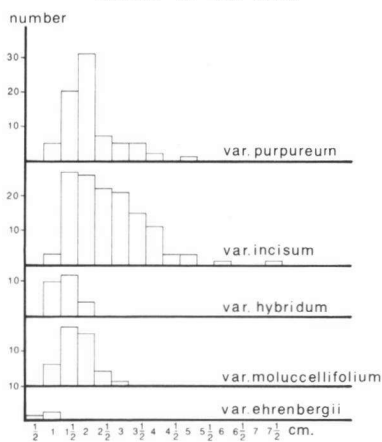
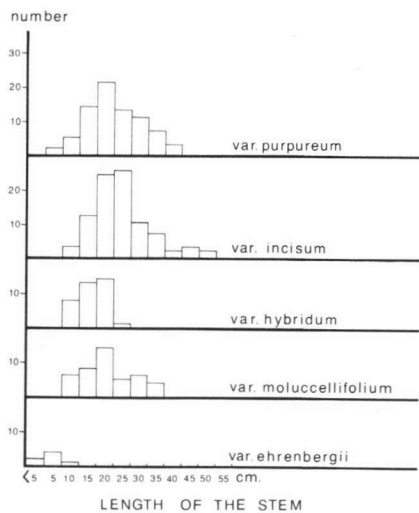


Fig. 59. *Lamium purpureum*.

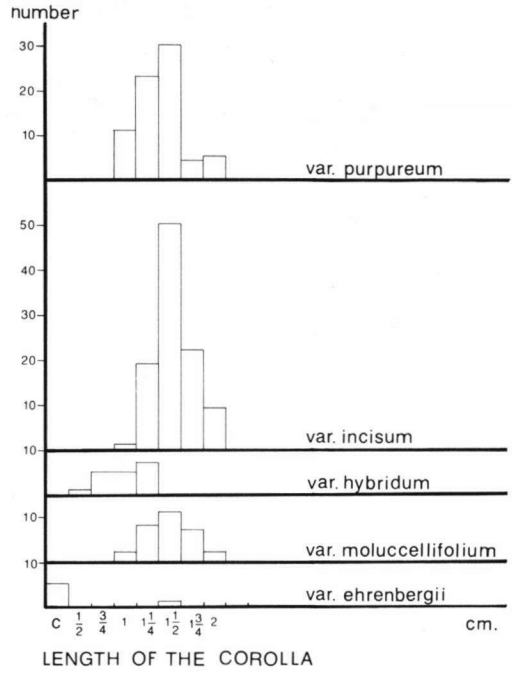
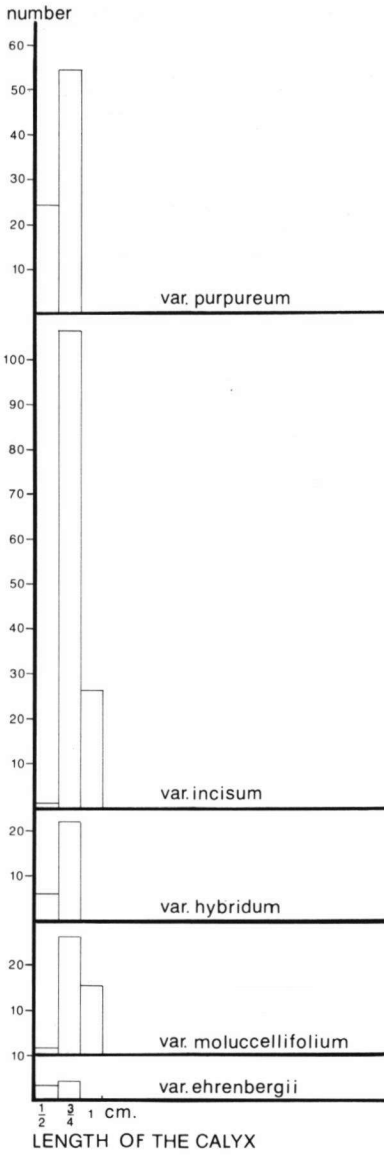


Fig. 59. *Lamium purpureum* (continued).

Lamium foetidum Gilib., Excerc. Phyt. 1 (1792) 97, non Garsault 1767, nomen illeg., superfluous name. - Type: *Gilibert s.n.*, 'prope Grodwam' (not seen).

Lamium nudum Moench, Meth. Pl. (1794) 393, non Crantz 1769, nomen illeg., homotypic synonym of *Lamium purpureum* L.

Annual. *Stem* erect or decumbent, simple or branched, (5-) 10 - 30 (-55) cm long, 1-2 mm Ø, glabrous to glabrate, rarely densely hairy. *Leaves: petiole* ($\frac{1}{2}$ -) 1-4 (-6 $\frac{1}{2}$) cm long, usually longer than the blade, the upper ones sessile; *blade* cordate or rhomboid to reniform, the upper ones also ovate or obovate with a cordate or truncate base and an acute apex, faintly crenate to deeply irregularly incised, pubescent to strigose on both sides; *cauline leaves* $\frac{1}{2}$ -3 $\frac{1}{2}$ (-6) cm long, index (0.6-) 0.9-1.1 (-1.5); *floral leaves* $\frac{1}{2}$ -4 (-7 $\frac{1}{2}$) cm long, index (0.7-) 0.8-1.1 (-1.5). *Verticillasters* 4-8, crowded or remote, with (4-) 12-18 (-20) flowers. *Bracts* sometimes hardly to distinguish, (1-) 2-3 (-5) mm long, c. $\frac{1}{3}$ mm broad, hirsute, short glandular hairs not always present. *Calyx* usually with 10 distinct, sometimes more nerves, the main nerves often purple, $\frac{1}{2}$ - $\frac{3}{4}$ (-1) cm long, longer after anthesis, at the base subglabrous, towards the apex more densely pubescent to hirsute; teeth subequal, as long as or shorter than the tube, narrowly triangular, short glandular hairs on the margin not always present. *Corolla* red-purple, rarely white, ($\frac{1}{2}$ -) $\frac{3}{4}$ -1 $\frac{1}{4}$ (-2) cm long, tube abruptly dilated, ($\frac{1}{2}$ -) $\frac{3}{4}$ -1 (-1 $\frac{1}{4}$) cm long, not always exerted from the calyx, outside glabrous at the base, towards the lips puberulous, inside usually with a perpendicular ring of hairs dorsally at 1-2 mm from the base; upper lip arched, (1-) 2-3 (-4) by (1-) 2-3 mm, apex rounded, margin entire to faintly undulate, outside pubescent, inside glabrous; lower lip about as long as the upper lip and at a right angle to this, glabrous, lateral lobes rounded, $\frac{3}{4}$ -1 $\frac{1}{4}$ mm long, tooth c. $\frac{1}{2}$ mm long, median lobe 1 $\frac{1}{2}$ -2 $\frac{1}{2}$ by 2 $\frac{1}{2}$ -4 $\frac{1}{2}$ mm, bipartite, margin undulate. Anterior *stamens* (4-) 5-6 mm long, c. 1-2 mm longer than the posterior ones and attached c. 1 mm lower; filaments usually without glandular hairs; anthers ($\frac{3}{4}$ -) 1 - 1 $\frac{1}{4}$ by c. $\frac{1}{2}$ mm; pollen orange red. *Disc* c. $\frac{1}{4}$ mm broad. *Style* about as long as the corolla, glabrous. *Nutlets* 2-3 (-3 $\frac{1}{4}$) by (1-) 1 $\frac{1}{4}$ -1 $\frac{1}{2}$ (-2) mm.

Distribution, Habitat, Altitude, and Variability: See under the varieties.

15.a. *Lamium purpureum* L. var. *ehrenbergii* (Boiss. & Reuter ex Boiss.) Mennema, comb. nov. - Figs. 59 and 60.

Lamium ehrenbergii Boiss. & Reuter ex Boiss., Fl. Orient. 4 (1879) 761; R. Mill in P. Davis, Fl. Turk. 7 (1982) 140. - Lectotype (mih): *Ehrenberg* 326, Syria, in Makmal Mountains, near the snow (holo. G).

Stem (<) 5 (-10) cm long. *Blade* cordate to (upper) rhomboid, faintly crenate, pubescent on both sides; *cauline leaves* c. $\frac{1}{2}$ cm long, index 1.0-1.2; *floral leaves* c. 1 cm long, index 1.2-1.3. *Verticillasters* crowded, with mostly cleistogamous

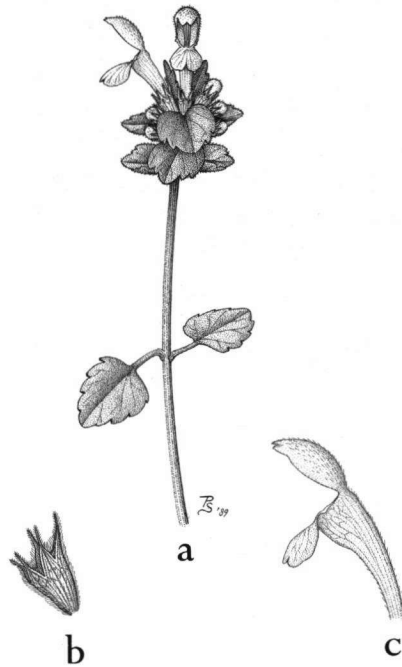


Fig. 60. *Lamium purpureum* var. *ehrenbergii*: a. habitus (1 ×); b. calyx (2 ×); c. corolla (2 ×).

flowers. *Calyx* $\frac{1}{2}$ – $\frac{3}{4}$ cm long, teeth $1\frac{1}{2}$ –2 × shorter than the tube. *Corolla* of normal flowers c. $1\frac{1}{2}$ cm long, of cleistogamous flowers conspicuously shorter, internal ring of hairs observed. *Nutlets* $1\frac{1}{2}$ (– $2\frac{3}{4}$) by $1\frac{1}{4}$ – $1\frac{1}{2}$ mm.

Distribution. Very rare in alpine region of SW. Turkey and Syria, less rare in mountains of Lebanon – Fig. 61.

Habitat. Rocky slopes, sometimes in grassland.

Altitude. From 1700 m up to 2300 m.

Variability. Var. *ehrenbergii* is very homogeneous. Intraspecific taxa lower than the rank of variety are unknown.

Note. This variety has a great similarity in appearance and habitat to *Lamium amplexicaule* var. *bornmuelleri*. The presence of bracts in the verticillasters of *Lamium purpureum* var. *ehrenbergii* and the length of the calyx tube in proportion to the teeth are the characters to separate both taxa.

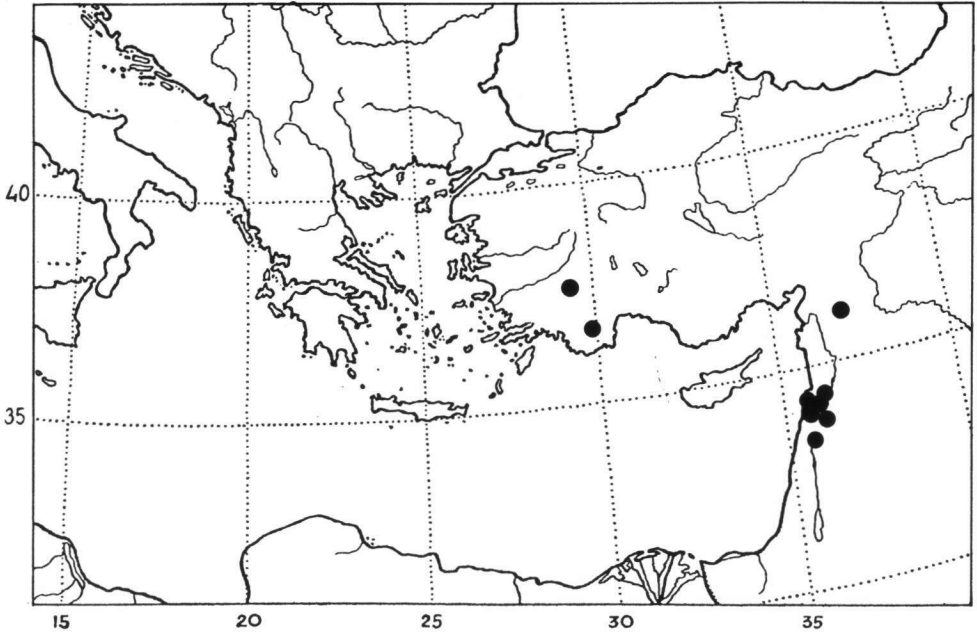


Fig. 61. Distribution of *Lamium purpureum* var. *ehrenbergii*.

15.b. *Lamium purpureum* L. var. *hybridum* (Villars) Villars - Figs. 59 and 62.

Lamium purpureum L. var. *hybridum* (Villars) Villars, Hist. Pl. Dauph. 2 (1787) 385. - *Lamium hybridum* Villars, Hist. Pl. Dauph. 1 (1786) 251; Willkomm & Lange, Prodr. Fl. Hisp. 2 (1868) 436 as *Lamium incisum* Willd.; Battand. & Trabut, Fl. Alg. & Tun. (1905) 269; A. Hansen & Sunding, Sommerfeltia 1 (1985) 61. - Type: not found in GRM and P, Neotype (mihi): *Pailoux 915 bis*, France, Creuse, Aun [Aubun] (holo. L, iso COI, MPU, WAG).

Stem 10-20 (-25) cm long. *Blade* cordate or (lower) reniform, deeply irregularly incised, pubescent to strigose on both sides; *cauline leaves* ½-1½ cm long, index (0.6-) 0.9-1.1 (-1.3); *floral leaves* 1-1½ (-2) cm long; index (0.7-) 1.0 (-1.2). *Verticillasters* crowded. *Calyx* (½-) ¾ cm long, teeth mostly shorter than the tube. *Corolla* (½-) ¾-1¼ cm long, the tube usually not exerted from the calyx, internal ring of hairs usually present. *Nutlets* (2¼-) 2½ by 1¼-1½ mm.

Distribution. France S. of the Seine, Switzerland, Portugal, Spain, Italy, Madeira, Morocco and Algeria; also Canary Islands (A. Hansen & Sunding, 1985) - Fig. 63.

Habitat. Cultivated land, roadsides, sea dunes, forest, also in the mountains.

Altitude. No data available.

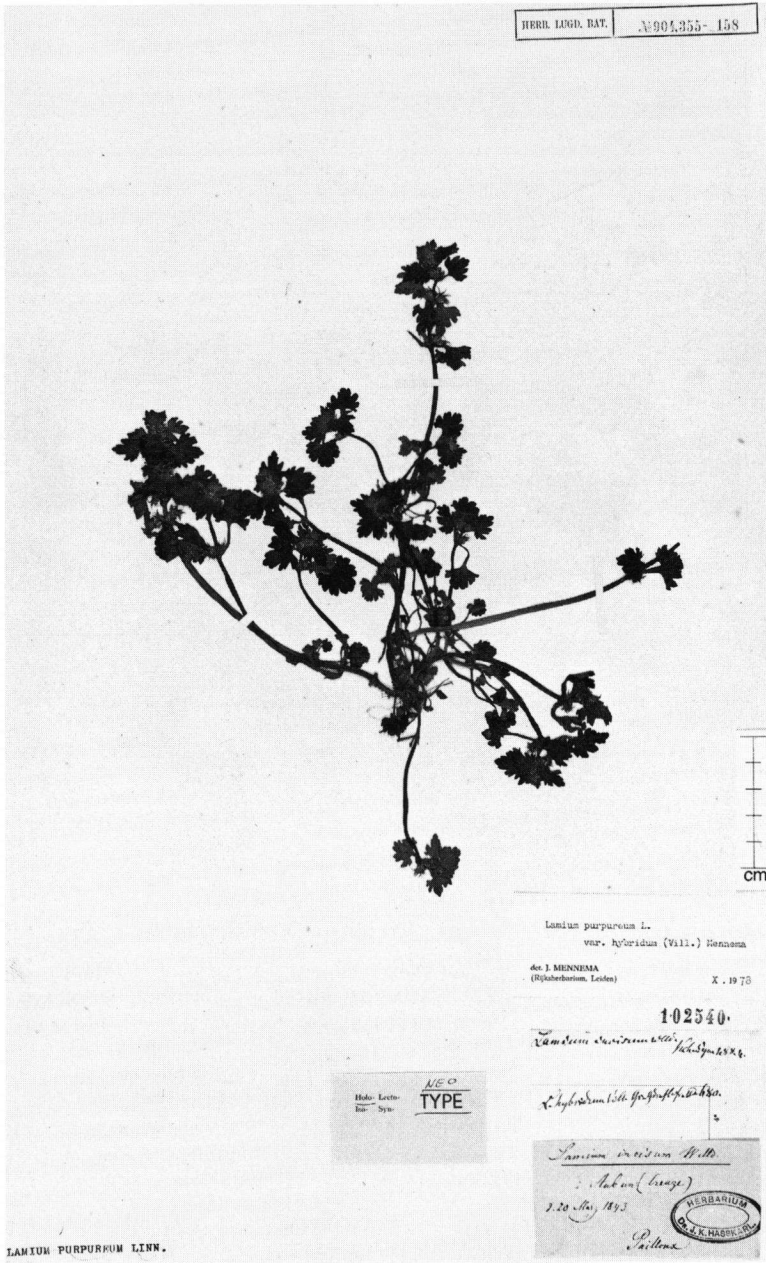


Fig. 62. Type specimen of *Lamium purpureum* var. *hybridum*.

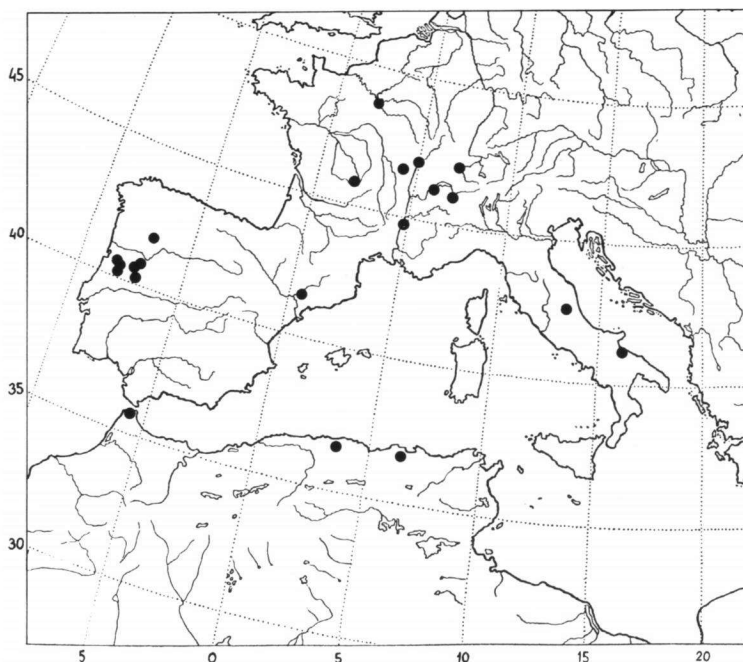


Fig. 63. Distribution of *Lamium purpureum* var. *hybridum*, also Madeira and Canary Islands.

Variability. Var. *hybridum* is very homogeneous. Intraspecific taxa lower than the rank of variety are unknown.

15.c. *Lamium purpureum* L. var. *incisum* (Willd.) Pers. – Fig. 59.

Lamium purpureum L. var. *incisum* (Willd.) Pers., Syn. Pl. 2 (1806) 122; Heukels/Meijden, Fl. Nederl. ed. 20 (1983) 320. – *Lamium incisum* Willd., Sp. Pl. 3 ed. 4 (1800) 89; Benth., Lab. Gen. Spec. (1834) 512; Benth. in DC., Prodr. 12 (1848) 509; Nyman, Syll. Fl. Eur. (1855) 94; Podl. & Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4,app. (1964) 2634; Garcke, Ill. Fl. ed. 23 (1972) 1204; – *Lamium purpureum* L. ‘Spielart’ *incisum* (Willd.) G. Meyer, Chlor. Hanov. (1836) 298. – *Lamium purpureum* L. var. *incisum* (Willd.) Hartman, Handb. Skand. Fl. ed. 4 (1843) 193, non subsp. *incisum* —confr. Janchen, Cat. Fl. Austr. 1,3 (1958) 527. – *Lamium dubium incisum* (Willd.) Krause in Sturms, Fl. Deutschl. 11,2 ed. 2 (1903) 137, nomen illeg. – *Lamium hybridum* Villars subsp. *incisum* (Willd.) Janchen, Phytion 5 (1953) 92. – Type: *Villars s.n.* (Herb. Willd. 10856), France, [in Gallia australi] (holo. B).

Lamium dissectum With., Arr. Brit. Pl. 3 ed. 3 (1796) 527; Ostenf. & Grøntved, Fl. Icel. Faer. (1934) 118. – *Lamium hybridum* Villars var. *dissectum* (With.) Mutel, Fl. Fr. Herb. 3 (1836) 26. – *Lamium hybridum* Vill. emend. Gams subsp. *dissectum* (With.) Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2455, nomen inval. – Type: *Withering s.n.*, England, between Pimlico and Chelsea, on a bank (not found in LINN).

Lamium westphalicum Weihe in Maly, 3. Beil. Flora 1822, 1 (1822) 105. – Type: *Weihe s.n.*, Germany, Bünde, Minden, Steinlake, in a field with *Trifolium* (not found in LZ; probably destroyed in 1943).

- Lamium urticifolium* Weihe in Reichb., Ic. Bot. Pl. Crit. 3 (1825) 21, nomen illeg., superfluous name. - *Lamium incisum* Willd. var. *urticifolium* (Weihe) Reichb., Ic. Bot. Pl. Crit. 3 (1825) 21. *Lamium incisum* Willd. var. *obscurum* Dumort., Fl. Belg. (1827) 45, nomen nudum.
- Lamium purpureum* L. var. *decipiens* Sonder ex Koch, Syn. Fl. Germ. Helv. 2, ed. 2 (1844) 649. - *Lamium decipiens* (Sonder ex Koch) Martrin-Donos, Fl. Tarn. (1864) 560. - *Lamium hybridum* Villars var. *decipiens* (Sonder ex Koch) Rouy, Fl. Fr. 11 (1909) 296. - Type: unknown.
- Lamium amplexicaule-purpureum* G. Meyer, Fl. Hanov. Exc. (1849) 432, nomen illeg., homotypic synonym of *Lamium incisum* Willd.
- Lamium confusum* Martrin-Donos, Fl. Tarn. (1864) 561, nomen illeg., homotypic synonym of *Lamium decipiens* (Sonder ex Koch) Martrin-Donos.
- Lamium purpureum* L. var. *exanulatum* Loret, Rev. Sci. Nat. 4 (1875) 49; Loret & Barrandon, Fl. Montp. (1876) 518, 842; Battand. & Trabaud, Fl. Alg. & Tun. (1905) 269. - *Lamium purpureum* L. f. *exanulatum* (Loret & Barrandon) Loret & Barrandon ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 90. - Type: *Loret s.n.*, France, La Salvetat (holo. MPU).
- Lamium* × *felixii* L. Lambert, Monde Pl. Sér. 2 8,38 (1906) 16. - Type: *Lambert s.n.*, France, Cher, Baugy (holo. P).
- Lamium aeolicum* Lojac., Fl. Sic. 2 (1907) 234. - Lectotype (mihi): *Lojacono s.n.*, Italy, Lipari, San Elmo, pumice soil (holo. PAL).
- Lamium hybridum* auct. non Villars var. *commune* Rouy, Fl. Fr. 11 (1909) 295, nomen inval.
- Lamium bifidum* Cirillo subsp. *albimontanum* Rech. f., Denkschr. Kaiserl. Akad. Wiss., Math.-Naturw. Kl. 105,2 (1943) 120. - Type: *Rechinger 12372*, Greece, Kriti, Selinos, Levka Ori, Monte Psilaphi (holo. W, iso. BM, G).
- Lamium hybridum* auct. non Villars; Briq., Lab. Alp. Mar. 2 (1893) 301; Rouy, Fl. Fr. 11 (1909) 295; Britton & Brown, Ill. Fl. N. U.S. 3 ed. 2 (1913) 122; Gorshk., Fl. USSR 21 (1954) 132; F. Herm., Fl. N.-Mitt.eur. (1956) 865; Lid, Norsk Sv. Fl. (1963) 579; Grint., Fl. Rep. Pop. Rom. 8 (1963) 185 as *Lamium* × *hybridum* Villars emend. Gams in Hegi; Sychowa in Pawlowskiego, Fl. Polsk. 11 (1967) 123; David Moore, Brit. Antarct. Surv. Scient. Rep. 60 (1968) 106; P. Ball, Fl. Eur. 3 (1972) 148; H. Hess et al., Fl. Schw. 3 (1972) 125; A. Hansen in Rostrup/C. A. Jørg., Dansk. Fl. ed. 20 (1973) 506; Guin. & R. Vilm., Fl. Fr. 2 (1975) 716; Sykes, New Zealand J. Bot. 16 (1978) 392; Pign., Fl. It. 2 (1982) 458; De Langhe et al., Fl. Belg. ed. 3 (1983) 490; David Moore, Fl. Tierr. Fuego (1983) 194; Hämet-Ahti et al., Retkeil. (1984) 297; Clapham et al., Fl. Brit. Isl. ed. 3 (1987) 414. - *Lamium purpureum* L. subsp. *hybridum* (Villars) Nyman, Consp. Fl. Eur. (1881) 575. - *Lamium purpureum* L. var. *hybridum* (Villars) auct. non Bég.; Bég. in Fiori & Paol., Fl. Anal. It. 3 (1903) 36. - *Lamium hybridum* Villars emend. Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2455.

Stem (10-) 20-30 (-55) cm long. *Blade* cordate to (upper) ovate or obovate, deeply irregularly incised, pubescent on both sides; *cauline leaves* (½-) 1-3 ½ (-6) cm long, index (0.7-) 0.9-1.1 (-1.3); *floral leaves* (1-) 1 ½-4 (-7 ½) cm long, index (0.8-) 0.9-1.1 (-1.3). *Verticillasters* crowded. *Calyx* (½-) ¼ (-1) cm long, teeth as long as or shorter than the tube. *Corolla* (1-) 1 ½ (-2) cm long, the tube exerted from the calyx, internal ring of hairs present or absent. *Nutlets* (2 ½-) 2 ¾-3 (-3 ¼) by (1 ¼-) 1 ½ (-2) mm.

Distribution. C. and S. Scandinavia, Great-Britain, Netherlands, Belgium, France (incl. Corse), N., W. and S. Germany, Switzerland, Austria, Poland, Portugal, Spain, N. Italy and Sardegna, Baltic and Central division U.S.S.R., scattered in Jugoslavia, Romania, Kriti (Greece), Turkey, Syria and Algeria; introduced (and naturalized?) in Iceland and Faeröer (Ostenf. & Grøntved, 1934), New Zealand (Sykes, 1978), Canada and U.S.A. (Britton & Brown, 1913), Tierra del Fuego (Chile and Argentina; David Moore, 1983) and Falkland Islands (David Moore, 1968) - Fig. 64.

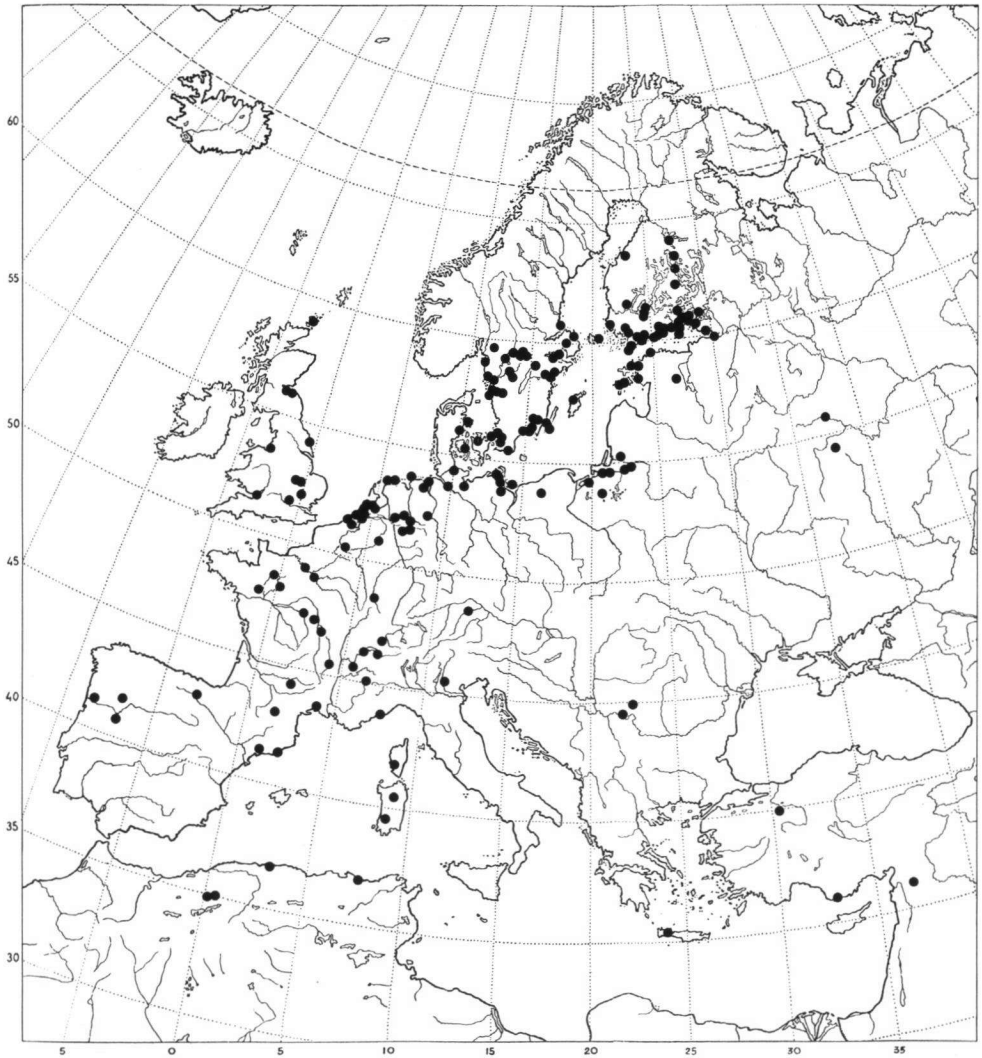


Fig. 64. Distribution of *Lamium purpureum* var. *incisum*, without the introduced specimens.

Habitat. Cultivated land, in gardens, roadsides, waste ground, on walls, mountain rocks, in forest.

Altitude. From sea-level up to 2000 m (Algeria).

Variability. Var. *incisum* is rather variable in shape (*urticifolium*, *westphalicum*) and length of the leaves, and their incisions (*decipiens*, *dissectum*). The presence or

absence of the internal ring of hairs (*exanulatum*) in the tube of the corolla is of no taxonomic value, as this character can vary from the absolute absence of hairs via the presence of a couple of hairs to a complete ring of hairs. Very probably the forms, mentioned below by Neuman (1901) are purely based on a modification.

Lamium dissectum With. f. *aestivale* Neuman, Sver. Fl. (1901) 173.

Lamium dissectum With. f. *vernale* Neuman, Sver. Fl. (1901) 173.

15.d. *Lamium purpureum* L. var. *moluccellifolium* Schum. – Figs. 59 and 65.

Lamium purpureum L. var. *moluccellifolium* Schum., Enum. Pl. 1 (1801) 178; Hämet-Ahti et al., Retkeil. (1984) 297; – *Lamium moluccellifolium* (Schum.) Fries, Nov. Fl. Svec. 5 (1819) 72. – Neotype: *Vahl s.n.*, France, near Paris (holo. C).

Stem 10–20 (–35) cm long. *Blade* reniform to cordate, the upper ones rhomboid, coarsely crenate to (upper) deeply, irregularly incised, pubescent on both sides; *cauline leaves* ($\frac{1}{2}$ –) 1–1 $\frac{1}{2}$ (–2) cm long, index (0.8–) 0.9–1.0 (–1.1); *floral leaves* (1–) 1 $\frac{1}{2}$ –2 (–3) cm long, index (0.7–) 0.8–0.9 (–1.3). *Verticillasters* remote, especially the lower ones. *Calyx* ($\frac{1}{2}$ –) $\frac{3}{4}$ (–1) cm long, teeth mostly shorter than the tube. *Corolla* (1–) 1 $\frac{1}{4}$ –1 $\frac{3}{4}$ (–2) cm long, the tube exerted from the calyx, internal ring of hairs usually present. *Nutlets* 2 $\frac{1}{2}$ –2 $\frac{3}{4}$ (–3) by 1 $\frac{1}{4}$ –1 $\frac{1}{2}$ mm.

Distribution. C. and S. Scandinavia, Great-Britain, Netherlands, Belgium, France, N. and W. Germany, Switzerland and the Baltic division of the U.S.S.R. – Fig. 66.

Habitat. Cultivated land in the lowlands, in gardens, roadsides, waste ground.

Altitude. No data available.

Variability. Var. *moluccellifolium* is a rather homogeneous taxon. Intraspecific taxa lower than the rank of variety are unknown.

Note. See also *Lamium confertum* (pag. 95) for the incorrect use of the name *Lamium moluccellifolium*

15.e. *Lamium purpureum* L. var. *purpureum* – Fig. 59.

Lamium purpureum L. var. *purpureum*, Heukels/Meijden, Fl. Nederl. ed. 20 (1983) 320.

Lamium purpureum L. var. *integrum* Gray, Nat. Arr. Brit. Pl. 2 (1821) 375. – Type: not seen.

Lamium purpureum L. var. *albiflorum* Dumort., Fl. Belg. (1827) 45, nomen nudum. – *Lamium purpureum* L. f. *albiflorum* (Dumort.) Dumort. ex Lindman, Svensk Fan. Fl. ed. 2 (1926) 467.



Fig. 65. Type specimen of *Lamium purpureum* var. *moluccellifolium*.

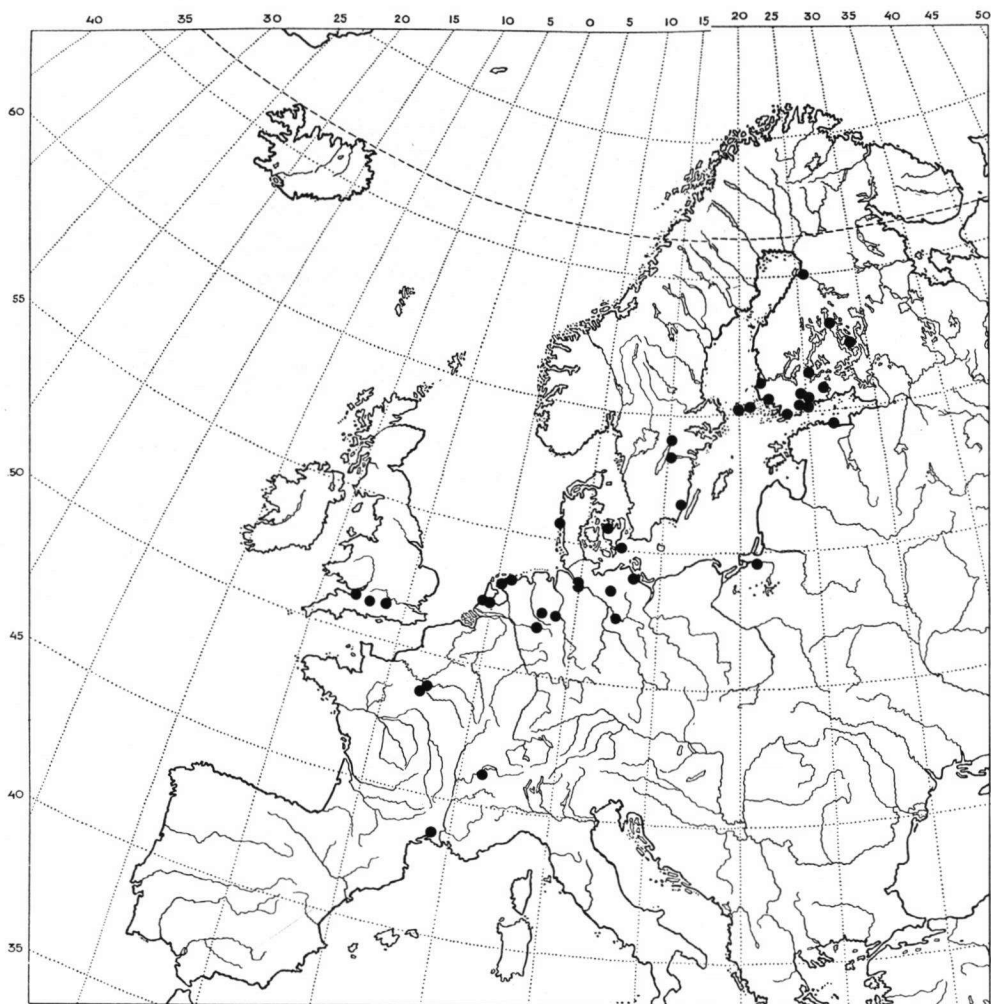


Fig. 66. Distribution of *Lamium purpureum* var. *moluccellifolium*.

- Lamium purpureum* L. var. *microdonton* Peterm., Fl. Lips. (1838) 439. - *Lamium purpureum* L. f. *microdonton* (Peterm.) Peterm. ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 90. - Type: destroyed.
- Lamium purpureum* L. var. *grandifolium* Peterm., Fl. Lips. (1838) 439. - *Lamium purpureum* L. f. *grandifolium* (Peterm.) Peterm. ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 90. - Type: destroyed.
- Lamium purpureum* L. var. *niveum* Schur, Enum. Pl. Transs. (1866) 534. - Type: Not seen. Contrary to the suggestion, Baumgarten did not publish the basionym.
- Lamium purpureum* L. var. *aznavouri* Gand. ex Azn., Bull. Soc. Bot. France 46 (1899) 147; R. Mill in P. Davis, Fl. Turk. 7 (1982) 141. - Type: *Aznavour s.n.*, Turkey, Flamour near Beşiktaş (not seen).
- Lamium purpureum* L. var. *longidens* Podp., Verh. Zool.-Bot. Ges. Wien 52 (1902) 673. - *Lamium purpureum* L. f. *longidens* (Podp.) Podp. ex Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 276. - Type: *Podpera s.n.*, Bulgaria, Haskovo, along the river Arda near Kavak Mahala (holo. BRNU).

Lamium purpureum L. var. *typicum* Bég. in Fiori & Paol., Fl. Anal. It. 3 (1903) 36, nomen inval.
Lamium purpureum L. var. *lumbii* Druce, Bot. Exch. Club Brit. Isles Rep. 1914 (1915) 156; D. Allen, Watsonia 6 (1966) 212. - Type: Great-Britain, England, Hortus Oxon. ex seed from Dalton in Furness (holo. OXF).

Lamium × *boreale* Druce, Bot. Exch. Club Brit. Isles Rep. 1923 (1924) 53; Bot. Exch. Club Brit. Isles Rep. 1928 (1929) 873. - Type: *Druce s.n.*, Great-Britain, England, W. Sutherland, Tongue (holo OXF).

Lamium purpureum L. var. *genuinum* Stoy. in Stoy. & Stephanow, Fl. Bulg. ed. 3 (1948) 959, nomen inval.

Stem (5-) 15-30 (-40) cm long. *Blade* cordate to (lower) reniform, the upper ones to ovate or obovate, faintly crenate, pubescent, especially on the upper side; *cauline leaves* ($\frac{1}{2}$ -) $1\frac{1}{2}$ -2 (-5) cm long, index (0.8-) 1.0-1.1 (-1.5); *floral leaves* (1-) $1\frac{1}{2}$ -2 (-5) cm long, index (0.8-) 0.9-1.3 (-1.5). *Verticillasters* crowded. *Calyx* $\frac{1}{2}$ - $\frac{3}{4}$ cm long, teeth usually as long as the tube. *Corolla* (1-) $1\frac{1}{4}$ - $1\frac{1}{2}$ (-2) cm long, the tube mostly not exerted from the calyx, internal ring of hairs always present. *Nutlets* (2-) $2\frac{1}{4}$ - $2\frac{1}{2}$ (- $2\frac{3}{4}$) by (1-) $1\frac{1}{4}$ - $1\frac{1}{2}$ mm.

Distribution. Most of Europe, but rare in the area N. of 60° N. lat. and in the south, absent from the Balears Islands, Sicilia and Kriti (Greece); scattered in Turkey, Syria, Lebanon and N. Africa (Algeria) including the Açores, Madeira and the Canary Islands; introduced (and naturalized?) in Greenland (Böcher et al., 1968), Iceland and Faeröer (Ostenf. & Grøntved, 1934), Japan (Ohwi, 1953), New Zealand (Sykes, 1978), Canada and U.S.A. (Britton & Brown, 1913), Tierra del Fuego (Chile and Argentina; David Moore, 1983), and Falkland Islands (David Moore, 1968) - Fig. 67.

Habitat. In fields, gardens, roadsides, thickets, on waste ground, on walls, on rubbish heaps, on slopes, in open forest; on various soils.

Altitude. From sea-level up to 1600 m (Switzerland) and to 1800 m (Turkey).

Variability. Var. *purpureum* is a rather variable taxon. There is divergence in the indumentum (*aznavourii*), in the length (*grandifolium*) and the incisions of the leaves (*integrum*, *pseudoincisum*), in the length of the calyx teeth (*longidens*, *microdonton*) and in the length (*majoriflorum*, *minoriflorum*) and the colour of the corolla (*albiflorum*, *niveum*, *roseum*).

In *Lamium purpureum* s. str. there are according to Müntzing (1932) various biotypes with a totally different periodicity: one biotype is an obligatory winter annual, other biotypes are summer or probably facultative winter annuals. Intraspecific taxa lower than the rank of variety, not mentioned in the synonymy, are listed here in alphabetical order.

f. *albiflora* Gérard, Rev. Bot. 8 (1890) 185.

f. *majoriflorum* Dom. 1944 in Soó, Syn. Fl. Veg. Hung. 3 (1968) 90.

f. *minoriflorum* Dom. 1944 in Soó, Syn. Fl. Veg. Hung. 3 (1968) 90.

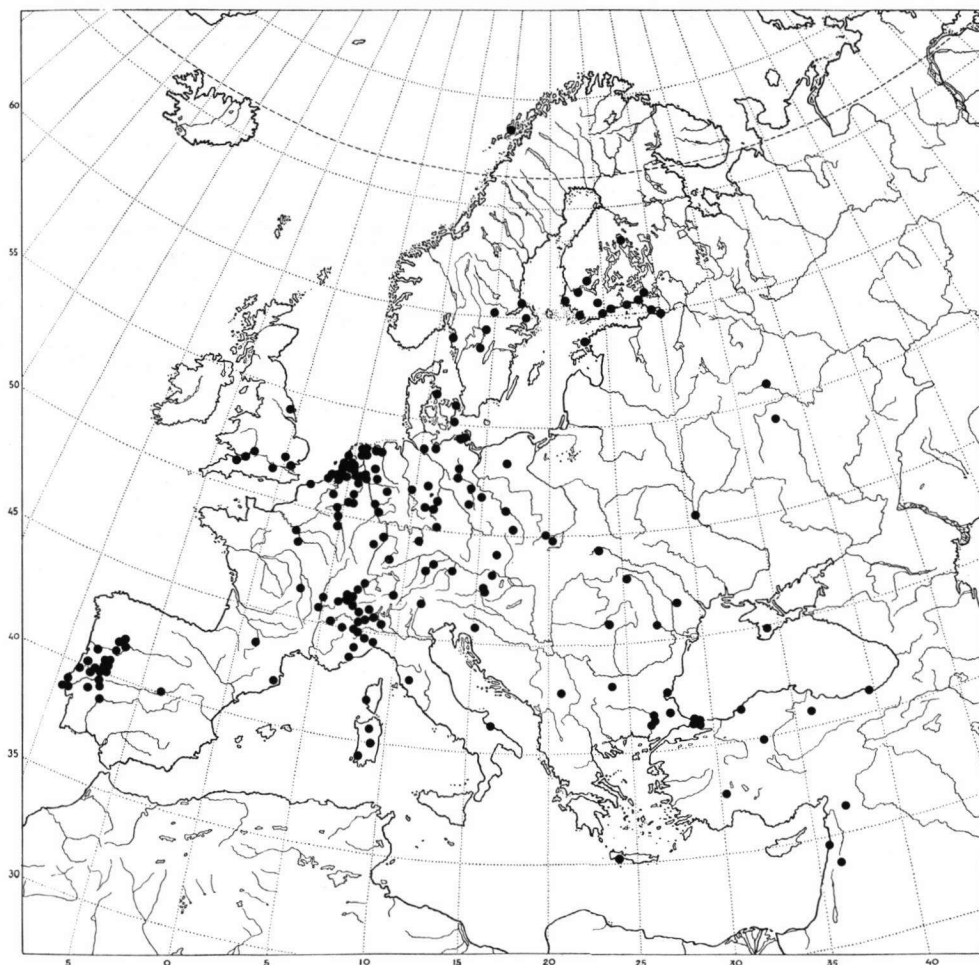


Fig. 67. Distribution of *Lamium purpureum* var. *purpureum*, without the introduced specimens.

f. *minus* Dvorak in Dom. 1942 in Soó, Syn. Fl. Veg. Hung. 3 (1968) 90.

f. *niveum* Grint., Fl. Rep. Pop. Rom. 8 (1963) 178. Contrary to the suggestion, Baumgarten did not publish the basionym. – l. *niveum* Soó, Syn. Fl. Veg. Hung. 3 (1968) 90. Contrary to the suggestion, Baumgarten did not publish the basionym.

f. *pseudoincisum* Dom. 1944 in Soó, Syn. Fl. Veg. Hung. 3 (1968) 90.

l. *roseum* Priszter, Bot. Közlem 53 (1966) 28.

Lamiopsis purpurea (L.) Opiz var. *albiflora* Opiz, Seznam (1852) 56, nomen nudum.

III. Subgenus *Orvala* (L.) Briq.

Subgenus *Orvala* (L.) Briq. in Engler & Prantl, Nat. Pflanzenfam. 4, 3a (1897) 254. – Type: *Lamium orvala* L.

Section *Orvala* Dumort., Fl. Belg. (1827) 45.

Bracts not spreading or reflexed. *Bracts* and *calyx* teeth with a very short glabrous hairy aristate apex. *Anthers* glabrous.

16. *Lamium orvala* L. – Figs. 68 and 69.

Lamium orvala L., Sp. Pl. 2 ed. 2 (1763) 808; Benth., Lab. Gen. Spec. (1834) 507; Benth. in DC., Prodr. 12 (1848) 504; Nyman, Syll. Fl. Eur. (1855) 94; Willkomm & Lange, Prodr. Fl. Hisp. 2 (1868) 437; Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2444; Hayek, Prodr. Fl. Penins. Balc. 2 (1929) 272; F. Herm., Fl. N.-Mitt.eur. (1956) 864; H. Hess et al., Fl. Schw. 3 (1972) 121; P. Ball, Fl. Eur. 3 (1972) 147; Pign., Fl. It. 2 (1982) 456. – Type: *Linn. 733/2* (holo. LINN).

Orvala garganica L., Sp. Pl. (1753) 578. – *Lamium michelianum* Tausch, Flora 14,13 (1831) 215. – Type: *Micheli*, Nov. Pl. Gen. (1729) tab. 17.

Lamium pannonicum Scopoli, Fl. Carniol. 1 ed. 2 (1771) 406. – Type: *Scopoli*, Fl. Carniol. 1 ed. 2 (1771) tab. 27.

Orvala lamioides DC., Fl. Fr. 3 ed. 3 (1805) 539, nomen illeg., homotypic synonym of *Orvala garganica* L.

Lamium phalacranthera Saint-Lager, Ann. Soc. Bot. Lyon 7 (1880) 128, nomen illeg., superfluous name.

Lamium wettsteinii Rech., Oesterr. Bot. Z. 50 (1900) 132. – *Lamium orvala* L. var. *wettsteinii* (Rech.) Hayek, Fl. Steierm. 2 (1912) 259. – Type: *Boh. Fleischer s.n.*, Austria, Steiermark, near Kojnice (not found in PR).

Lamium grandiflorum Salisb., Prodr. (1796) 81, non Pourret 1788, nomen illeg.

Perennial. *Rhizome* cauliform, woody, short, knotted, without stolons. *Stem* erect, simple or branched, 30–60 cm long, 2½–4 (–6) mm Ø, glabrous to glabrate at the base, mostly sparsely appressed pubescent towards the apex. *Leaves*: *petiole* (1½–) 3½–9 (–11) cm long, mostly shorter than the blade, the upper leaves not sessile; *blade* cordate, the upper ones ovate to ovate-oblong, with an asymmetric or (upper) truncate base and an acuminate apex, coarsely and partly (double-)seriate or crenate, sparsely appressed-pubescent on both sides; *cauline leaves* (2½–) 3½–8½ (–16) cm long, index (1.0–) 1.2–1.3 (–1.4); *floral leaves* (3½–) 9–11 (–16) cm long, index (1.1–) 1.2–1.4 (–1.6). *Verticillasters* (2–) 3–5 (–8), remote, with (8–) 10–16 (–20) flowers. *Bracts* (3–) 5–7 (–8) mm long, ½–1 mm broad, hirsute, without glandular hairs. *Calyx* 10-nerved, (1¼–) 1½–2 (–2¼) cm long, longer after anthesis, glabrate to sparsely appressed-pubescent; teeth ½–1 × as long as the tube, narrowly triangular, without glandular hairs, rather short (to ½ mm) aristate apex glabrous. *Corolla* crimson to reddish or brownish purple with purple markings, (¾–) 3½–4 (–4½) cm long; tube abruptly dilated, 1¾–2 cm long, about as long as the calyx, outside pubescent, glabrous to subglabrous at the base, inside with a perpendicular ring of hairs dorsally at 3–4 mm from the base; upper lip arched, 16–20 by 11–12 mm, truncate apex lacerate, margin faintly undulate, outside sericeous, with long patent stiff hairs on the margin, inside velutinous; lower lip about as long as the upper lip and at an acute angle to the latter, outside sparsely appressed-pubescent to glabrous, inside glabrous, lateral lobes oblique-ovate, 9–10 by 4–5 mm, with several teeth to 2–2½ mm long, median lobe 7–8 by 11–12 mm, bilobed, margin lacerate. Anterior *stamens* 14–15 mm long, c. 3–4



Fig. 68. Herbarium specimen of *Lamium orvala*.

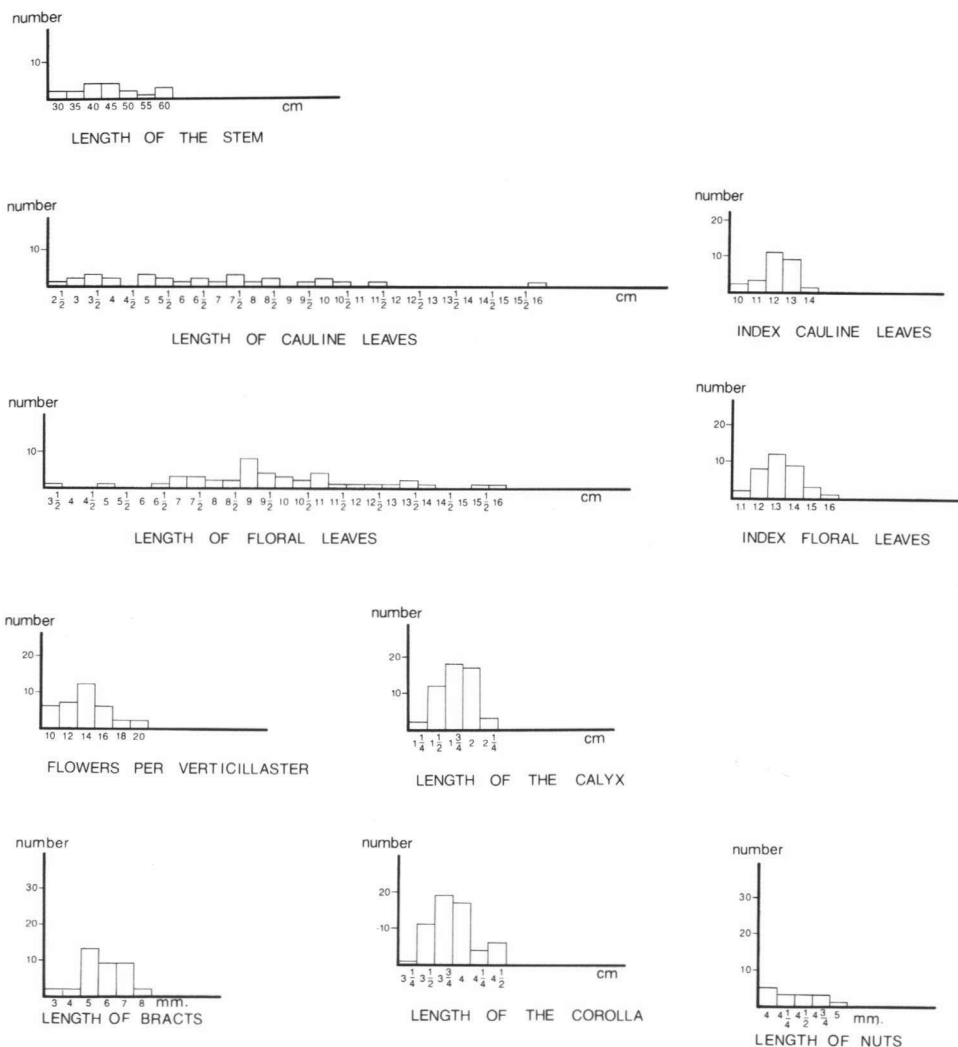


Fig. 69. *Lamium orvala*.

mm longer than the posterior ones and attached c. 3-4 mm lower; filaments without glandular hairs; anthers 3-3½ by 1¼-1½ mm, glabrous; pollen yellowish. *Disc* c. 2 mm broad. *Style* about 5 mm shorter than the corolla, glabrous. *Nutlets* 4-4¾ (-5) by 1¾-2¼ mm.

Distribution. S. Austria (Kärnten), SW. Hungary, NE. Italy (and Monte Gargano), and N. Jugoslavia; introduced in Germany, Switzerland and Spain - Fig. 70.

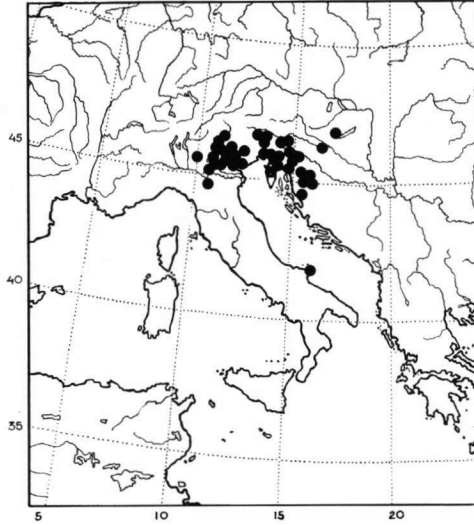


Fig. 70. Distribution of *Lamium orvala*, without the introduced specimens.

Habitat. In coppices, thickets and forests (Fagetum), also in hedges and along rivulets, prefers calcareous soil.

Altitude. From 100 m up to 1800 m (Jugoslavia).

Variability. *Lamium orvala* is a very homogeneous species. There may be some doubt about the main discriminative character of var. *wettsteinii* (*Lamium wettsteinii*), viz. the length of the corolla. Although I could not investigate the type specimen, I investigated a rather large number of plants, named by the author of *Lamium wettsteinii*. Not one of these specimens has the length mentioned in the original description, viz. 20 mm; all specimens have corolla's with the normal length for *Lamium orvala*, viz. 3½–4 cm.

The species is variable in the colour of the corolla (*albiflorum*, *lividum*, *pallens*) and in the incisions of the leaves (*fissidentatum*). Linneaus' *Orvala garganica* (*Lamium michelianum*) is a monstrum with very deeply incised leaves and quadrifid corolla's.

All infraspecific taxa I found in the literature are listed below in alphabetical order.

f. *albiflorum* Sacc. in Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2445. – l. *albiflorum* (Sacc. 1864) Sacc. ex Soó, Syn. Fl. Veg. Hung. 3 (1968): 89.

f. *fissidentata* Murr, Deutsche Bot. Monatschr. 20 (1902) 51. – var. *fissidentatum* (Murr) Murr ex Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2445.

var. *lividum* Rech., Oesterr. Bot. Z. 50 (1900) 135. – f. *lividum* (Rech.) Rech. ex Hayek, Prodr.

Fl. Penins. Balc. 2 (1929) 272. - 1. *lividum* (Rech.) Rech. ex Soó, Syn. Fl. Veg. Hung. 3 (1968) 89.
var. *pallens* Goiran in Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2445.

Note. It was not possible to investigate many ripe fruits, so perhaps the size range of the nutlets as given 4-4¾ (-5) mm, is too small. However, the dimension mentioned by Gams (1927), 2½ mm, must be erroneous.

II.5. HYBRIDS

Introduction

Contrary to some other genera of the *Labiatae* interspecific hybridization in *Lamium* occurs very rarely. After investigation of the recorded specimens many putative *Lamium* hybrids appear to belong to one of the taxa mentioned above: *Hybrida excludendae*. If material is not available it is difficult to reach a positive judgement: *Hybrida dubiae*.

With certainty only one hybrid can be mentioned, viz.

Lamium × *holsaticum* E. Krause

Lamium × *holsaticum* E. Krause in Prahl (*L. album* × *maculatum*) Krit. Fl. Schlesw.-Holst. 2 (1890) 169; E. Krause, Sturms Fl. Deutschl. 11,2, ed. 2 (1903) 137; Rouy, Fl. Fr. 11 (1909) 298; Gams in Hegi, Ill. Fl. Mitt. Eur. 5,4 (1927) 2457; Janchen, Cat. Fl. Austr. 1,3 (1958) 527; Fournier, Quatre Fl. France (1961) 827; Grint., Fl. Rep. Pop. Rom. 8 (1963) 185; Dvoráková, Publ. Fac. Sci. Univ. Purkyne 459 (1965) 46; Garcke, Ill. Fl. ed. 23 (1972) 1205; H. Hess et al., Fl. Schw. 3 (1972) 121; De Langhe et al., Fl. Belg. ed. 3 (1983) 489.

More or less intermediate between the parental species, rather variable. *Leaves* sometimes like those of *Lamium album*, sometimes more like those of *Lamium maculatum*. *Verticillasters* with 6-8 (-10) flowers. *Corolla* whitish purple. *Pollen* yellowish white to orange-like, partly abortive.

Distribution. Netherlands, France, Germany, Switzerland, Austria (Janchen, 1958), Poland, Czechoslovakia, Hungary (Gams, 1927), Romania (Grintescu, 1963) and Italy.

Notes. 1. The small number of flowers per verticillaster as well as the great percentage of abortive pollen are good characters to distinguish the hybrid from purple flowered *Lamium album* and white flowered *Lamium maculatum*.

2. It looks as if the hybrid particularly can be recorded in the border region of the areas of one of both parents species.

Hybrida excludendae

- Lamium* × *boreale* Druce (*Lamium moluccellifolium* × *purpureum*), Bot. Exch. Club Brit. Isles Rep. 1923 (1924) 53; Bot. Exch. Club Brit. Isles Rep. 1928 (1929) 873. Synonym of *Lamium purpureum* L. var. *purpureum*.
- Lamium* × *cardiaca* Cogniaux (*Lamium maculatum* × *Leonurus cardiaca*) Bull. Soc. Bot. France 20 (1873) XXIV. Synonym of *Lamium maculatum* (L.) L.
- Lamium* × *conradiae* G. Bosc (*Lamium garganicum* subsp. *laevigatum* × *corsicum*), Candollea 41 (1986) 59; Candollea 21 (1987) 72. Synonym of *Lamium garganicum* subsp. *garganicum*.
- Lamium* × *coutinho* Garcia (*Lamium amplexicaule* × *purpureum*), Bol. Soc. Brot. Sér. 2,21 (1947) 29 Synonym of *Lamium confertum* Fries.
- Lamium* × *felixii* L. Lambert (*Lamium incisum* × *purpureum*), Monde Pl. Sér. 2 8,38 (1906) 16. Synonym of *Lamium purpureum* L. var. *incisum* (Willd.) Pers.
- Lamium* × *hybridum* Vill. emend. Gams in Hegi ex Grint. (*Lamium amplexicaule* × *purpureum*), Fl. Rep Pop. Rom. 8 (1963) 185. Synonym of *Lamium purpureum* L. var. *incisum* (Willd.) Pers.
- Lamium* × *ordubadicum* Grossh. ex Menitskiy in Takht. (*Lamium amplexicaule* × *purpureum* subsp. *caucasicum*), Fl. Armen. 8 (1987) 80. Synonym of *Lamium macrodon* Boiss. & Huet ex Boiss.

Hybrida dubiae

- Lamium* × *schroeteri* Gams in Hegi (*Lamium album* × *purpureum*), Ill. Fl. Mitt.-Eur. 5,4 (1927) 2457. Specimen not found in IB.
- Lamium maculatum* × *purpureum* (Wilms) Gams in Hegi, Ill. Fl. Mitt.-Eur. 5,4 (1927) 2457. 'Ist nach Beckhaus nur eine magere Frühlingsform von *maculatum*' (Gams, 1927).

II.6 SPECIES ET VARIETATES DUBIAE

- Lamium cathariifolium* Schott & Kotschy ex Tschich., Asie Min. 3,2 (1866) 178, nomen nudum.
- Lamium iranicum* Parsa, Kew Bull. 1948 (1948) 222. - Type: *Staph s.n.*, Iran, at the foot of the Kuh Bil, in thickets (holo. K).
- Lamium kashmiriana* V. Gupta & P. Kachroo, J. Econ. Taxon. Bot. 6 (1985) 386, nomen nudum.
- Lamium maculatum* (L.) L. var. *kansuense* C. Y. Wu & Hsuan in C. Y. Wu et al., Acta Phytotax. Sin. 10 (1965) 157. *Lamium maculatum* does not occur in this area; probably confused with a purple flowered specimen of *Lamium album* L. subsp. *barbatum* (Siebold & Zucc.) Mennema.
- Lamium micranthum* J. A. Weinm., Syll. Pl. Nov. (1824) 78. - Type: unknown.
- Lamium pelasgicum* Heldr. ex Charrel, Oesterr. Bot. Z. 42 (1892) 381, nomen nudum.
- Pollichia longicaulis* Krocke, Suppl. Fl. Sil. 4,2 (1823) 150. - Type: unknown. Possibly synonym of *Lamium galeobdolon* (L.) L.

II.7. SPECIES EXCLUDENDAE

- Lamium ambiguum* (Makino) Ohwi, Bull. Nat. Sci. Mus. Tokyo 33 (1953) 85. - *Leonurus ambiguum* Makino, Bot. Mag. Tokyo 13 (1899) 319. Synonym of *Loxocalyx ambiguus* (Makino) Makino.
- Lamium anomalum* Juz., Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk SSSR 15 (1953) 269, nomen inval. as nomen alternativum for *Erianthera anomala* Juz. Synonym of *Alajja anomala* (Benth.) Ik.-Gal.
- Lamium cardiaca* (L.) Baillon, Ic. Fl. Franç. (1885-94) tab. 270. Synonym of *Leonurus cardiaca* L.
- Lamium chinense* Benth. in DC., Prodr. 12 (1848) 512. Synonym of *Matsumurella tuberifera* (Makino) Makino.
- Lamium colombianum* Schltr. in A. W. Hill, Ind. Kew. 6 (1926) 112, nomen nudum and orthographic error: Schlechter in Feddes Repert. Beih. 7 (1920) 155 published *Lanium colombianum* (*Orchidaceae*).

- Lamium coronatum* Vaniot, Bull. Acc. Int. Géogr. Bot. 14 (1904) 174. - Type: *Martin s.n.*, China, Kouy-Tcheou, near Gan-Pin, herb. Bodinier 1777 (not found in P). Non-*Lamium*.
- Lamium foliatum* Dunn, J. Linn. Soc., Bot. 38 (1908) 363. - Type: *Dunn 3247*, China, Fokkien (holo. K). Non-*Lamium*.
- Lamium formosanum* (Hayata) Nakai, in Hayata, Ic. Pl. Formos. 8 (1919) 90; Hayata ex Matsum. & Kudô, Bot. Mag. Tokyo 26 (1912) 298, nomen nudum; Nakai ex Hayata, Ic. Pl. Formos. 6, suppl. (1917) 57, nomen nudum. - *Ajuga formosana* Hayata in Matsum. & Hayata, J. Coll. Sci. Imp. Univ. Tokyo 22 (1906) 318. Synonym of *Paraphlomis gracilis* (Hemsl.) Kudô.
- Lamium humile* (Miq.) Maxim., Diagn. Pl. Nov. Asiat. 5 (1883) 806. - *Ajuga humilis* Miq., Ann. Mus. Botan. Lugd.-Batav. 2 (1865) 114. - *Stachys humilis* Matsum. & Kudô, Bot. Mag. Tokyo 26 (1912) 298, nomen nudum. - *Loxocalyx humilis* (Miq.) Makino, Bot. Mag. Tokyo 29 (1915) 281. Synonym of *Ajugoides humilis* (Miq.) Makino.
- Lamium kelungense* Hayata, Ic. Pl. Formos. 8 (1919) 91. Synonym of *Matsumurella tuberifera* (Makino) Makino.
- Lamium kouyangense* Vaniot, Bull. Ac. Géogr. Bot. 14 (1904) 175. - Type: *Bodinier 1700*, China, Kouy-Tcheou, near Kouy-Yang (not found in P). Non-*Lamium*.
- Lamium ladanum* (L.) Crantz, Stirp. Austr. 2,4 ed. 2 (1769) 260. Synonym of *Galeopsis ladanum* L.
- Lamium moluccella* (L.) E. Krause, Sturms Fl. Deutschl. 11,2 ed.2 (1903) 137. Synonym of *Moluccella laevis* L.
- Lamium multifidum* L., Sp. Pl. (1753) 579. Synonym of *Wiedemannia multifida* (L.) Benth.
- Lamium nepalense* Hedge, Notes Roy. Bot. Gard. Edinburgh 29 (1969) 30. - Type: *Mc Cosh 471*, Nepal, Beni Khola (holo. BM, iso. E). Non-*Lamium*.
- Lamium orientale* (Fischer & C. Meyer) E. Krause, Sturms Fl. Deutschl. 11,2 ed. 2 (1903) 137. Synonym of *Wiedemannia orientalis* Fischer & C. Meyer.
- Lamium rhomboideum* (Benth.) Benth., Lab. Gen. Spec. (1834) 509. - *Erianthera rhomboidea* Benth. in Hook., Bot. Misc. 3 (1833) 380. Synonym of *Alajja rhomboidea* (Benth.) Ik.-Gal.
- Lamium sibiricum* (L.) E. Jacob Cord., Fl. Ile Réunion. (1895) 488. Synonym of *Leonurus sibiricus* L.
- Lamium staintonii* Hedge, Notes Roy. Bot. Gard. Edinburgh 29 (1969) 29. - Type: *Stainton 4791*, Nepal, Khimti Khola, Panch Pokhari (holo. BM, iso. E). Non-*Lamium*.
- Lamium tetrahit* (L.) Crantz, Stirp. Austr. 2,4 ed. 2 (1769) 261. Synonym of *Galeopsis tetrahit* L.
- Lamium tuberiferum* (Makino) Ohwi, J. Jap. Bot. 12 (1936) 327. - *Leonurus tuberiferus* Makino, Bot. Mag. Tokyo 19 (1905) 146. - *Lamium chinense* Benth. var. *tuberiferum* (Makino) Murata, Acta Phytotax. Geobot. 15 (1954) 176. - *Galeobdolon tuberiferum* (Makino) C.Y. Wu in C.Y. Wu et al., Acta Phytotax. Sin 10 (1965) 158. Synonym of *Matsumurella tuberifera* (Makino) Makino.
- Lamium tuberosum* Hedge, Notes Roy. Bot. Gard. Edinburgh 25 (1963) 49. - Type: *Polunin et al. 2264*, Nepal, Dojam Khola, near Suli Gad (holo. BM, iso. CAL). Non-*Lamium*.
- Lamium uraiense* Hayata, Ic. Pl. Formos. 8 (1919) 89. Synonym of *Matsumurella tuberifera* (Makino) Makino.

III. LIST OF COLLECTIONS

For the selection of the cited collections, the spelling of the geographical names, and the abbreviations of the herbaria, see Chapter II.1.

1. *Lamium flexuosum* Ten.

FRANCE. 60 Collections in all. HÉRAULT: Montpellier, in hedge along the road to Ganges, VI.1862, *Loret s.n.* (MPU, P). Near Montpellier, in hedge, V.1893, *Sennen 3448* (COI, G, JE, M, MPU, P, Z, ZT). PYRÉNÉES-ORIENTALES: St. Antoine-de-Galamus, Roussillon, V.1928, *Meebold 2899* (M). Prades, V.1872, *Timbal-Lagrange s.n.* (JE). Casteil valley, Prades, roadside, umbrageous, 8.V.1868, *Amblard s.n.* (G). Between Ille-sur-Têt and Néfiach, roadside, 13.V.1955, *Cavelle 2604* (G). Perpignan, tree-nursery, along ditches and little streams, 15.V.1851, *Penchinat 834* (BAS, COI, G, JE, MPU, P, WAG). Perpignan, in thickets, on the banks of the river Têt, 25/30.IV.1874, *Debeaux 929* (FI, G, MPU, P). Prats-de-Mollo, s.d., *Hagenbach s.n.* (BAS). Céret, near the bridge, 29.V.1922, *Albaille s.n.* (MPU). Sorède, on grassy places, in hedges, 14.V.1903, *Conill 5101* (G, MPU). Collioure, on the banks of the river Ravel, between the roses, 18.V.1902, *Neyraut s.n.* (G). Near Port-Vendres, VI.1851, *Penchinat s.n.* (L). Banyuls, near football-ground, forest border, 24.III.1961, *Veth & Koopmans s.n.* (L).

SPAIN. GERONA: San Clemente, in hedges, 7.IV.1931, *Sennen 8081* (BM, G). Monsoli, V.1875, *Vayreda s.n.* (MPU). Cabanas, in hedges, 7.IV.1907, *Sennen 345* (FI, G, GB, JE, MPU, ZT). Empalme, along the railway to Gerona, humid place, 10.IV.1934, *Koch 34148* (ZT). Ibid., in *Alnus*-grove near the river, 35 m, 9.IV.1950, *Stauffer s.n.* (Z). Guillerias, in hedges, 26.IV.1875, *Vayreda s.n.* (FI). BARCELONA: Moncada, shady places, 23.IV.1930, *Sennen 7414* (G). GIBRALTAR: Below waterfall, 26.V.1913, *Wolley-Dod 1855* (K).

ITALY. 145 Collections in all. LATIUM: Roma, 1881, *Orto dei Semplici s.n.* (FI). MOLISE: Campobasso, near castle, V.1909, *Cavara s.n.* (GB). CAMPANIA: Above Cuma, hillside, 10.IV.1965, *Merxmüller & Wiedmann 19980* (M). Camaldoli, in forest, 17.IV.1897, *Guadagno s.n.* (FI). Napoli, hillside to Camaldoli, 29.IV.1927, *Ronniger s.n.* (W). Near Napoli, in forest, 1843, *Tenore s.n.* (G). Nola, in forest, V.1871, *Terraciano s.n.* (FI). Castellammare, VI.1907, *Guadagno s.n.* (G, MPU). Between Castellammare and Monte Faito, in chestnut-forest, c. 800 m, 3.VI.1968, *Lippert & Zollitsch 8065* (M). Sorrento, roadside, 2.V.1958, *Boom 35516* (L). Gragnano, on walls, 13.VII.1907, *Pellanda s.n.* (FI). Agerola, hillside, c. 1200 m, 15.V.1911, *Guadagno s.n.* (FI). Amalfi, roadside, in grass and under thickets, 7.IV.1928, *Boom 3469* (L). Ravella, near Fontana Caruso, in wood, 6.VI.1883, *Laicata s.n.* (BM). Scala near Salerno, near castle, in hedges on limestone rocks, c. 880 m, 21.V.1910, *Laicata s.n.* (BM, P). Monte Vervine, near Avellino, in hedges on limestone, 800-900 m, 15.VI.1907, *Burnat & Cavillier s.n.* (G). PUGLIA: Between Sannicandro and San Guiseppe, Gargano, on calcareous soil, 250-300 m, 7.VII.1915, *Fiori s.n.* (FI). BASILICATA: Montecchio, Melfi, in forest, 4.V.1884, *Poli 165* (FI). Monte Vulture, in forest, 10.VI.1898, *Fiori s.n.* (FI). Monte Ciceniello, Potenza, under *Quercus* and in brushwood, 900 m, 4.VI.1935, *Gavioli 22804* (FI, Z). Piani di Betlemma, Potenza, in hedges, on clayish limestone, c. 650 m, 23.IV.1922, *Gavioli 4169* (FI). Macchia Romana, Potenza, in hedges and under *Quercus*, on clayish limestone, 850 m, 16.V.1923, *Gavioli 10922/Fl. Ital. Exsicc. Ser. III 2942* (FI, G, TO, Z). Pignola, in forest, on siliceous soil, c. 1100 m, 4.V.1927, *Gavioli s.n.* (FI). Abriola, in forest, 1200-1400 m, 8.VII.1938, *Gavioli 26805* (FI). Monte del Papa, 1800 m, 19.VIII.1908, *Cavara & Grande s.n.* (GB). San Severino Lucano, 750 m, 22.VIII.1908, *Cavara & Grande s.n.* (GB). CALABRIA: Monte Pollino, Monte Serra delle Ciavole, in forest, 1800 m, 26.VII.1935, *Gavioli 22397* (FI). Cosenza, 22.V.1838, *Preda s.n.* (FI). Germano, La Sila, 1300 m, 6.V.1950, *Sarfatti & Corradi s.n.* (FI). Tem-

pone Morello, La Sila, 1600 m, 17.VI.1899, *Fiori s.n.* (FI). Camigliatello, La Sila, c. 1290 m, 15.V.1950, *Sarfatti & Corradi s.n.* (FI). Cuturelli, La Sila, along a rivulet, 1150 m, 11.V.1950, *Sarfatti & Corradi s.n.* (FI). San Giovanni in Fiore, 900 m, 17.IV.1910, *Lopez s.n.* (FI). Soveria, 3.VIII.1884, *von Zwielerlein s.n.* (FI). Catanzaro, under Villa Margherita, roadside, 24.IV.1896, *Micheletti s.n.* (FI, TO). Fiumarello, Catanzaro, 29.III.1883, *Fiori s.n.* (FI). Monteleone, in grass under hedges, 11.V.1877, *Arcangeli s.n.* (FI). Near Serra San Bruno, in hedges, 20.V.1884, *von Zwielerlein s.n.* (FI). Monte Pecoraro, in forest, 16.V.1877, *Arcangeli s.n.* (BM). Metramo valley, Reggio, 20.V.1907, *Laicata s.n.* (BM). Solano, Reggio, in forest, c. 600 m, 29.IV.1920, *Laicata s.n.* (BM). Above San Cristina, in mountain pasture, 21.V.1877, *Arcangeli s.n.* (FI). Aspromonte, above San Stephano, in hedge, umbrageous, on granitic soil, 900-1100 m, 30.IV./19.V.1877, *Huter et al. 167* (FI, G, GB, M, MPU, P, Z). Aspromonte, in lofty hedge, 1400 m, 12.V.1898, *Rigo 156* (BAS [*Rigo 152*]), G [also *Rigo 152*]), JE, MPU, P [*Rigo 152*]). Aspromonte, in grass in umbrageous valley, V.1898, *Rigo 4280* (G, JE, M, MPU, P, Z, ZT). Montalto, in grass, 23.VI.1877, *Biondi s.n.* (FI). SICILIA: Monte Cuccio, between Palermo and Monte Pizzuta, VII.1835, *Tordiepi s.n.* (FI). In Monte Pizzuta near Palermo, in mountain brush, 21.V.1840, *de Heldreich s.n.* (FI, P). San Martino, near Palermo, umbrageous, 2.IV.1855, *Huet du Pavillon & Huet du Pavillon s.n.* (COI, FI, G, L, M, MPU, P, WAG, ZT). Palermo, in mountain forest, V.1906, *Ross 577* (FI, G, GB, HBG, L, M, WAG, Z, ZT). Ficuzza, in forest, 1866, *Todaro s.n.* (P). Monte Busambra, in forest and hedges, 8.IV.1876, *Lojacocono s.n.* (FI). Termini, near San Calogero, s.d., *Parlatore s.n.* (FI). Le Madonie, stony places in the upper forest area, 4.VI.1925, *Reese s.n.* (BAS). Castelbuono, in *Quercus pubescens*-forest, 800 m, 6.V.1965, *Boom 44364* (L). Caronie, Bosco Moglia near Caserina, in rock-crevice, calcareous soil, 1600 m, 24.V.1923, *Fiori & Béguinot 2740* (G, P, TO, Z, ZT). Monte d'Oro, Monti Nebrodi, 18.VI., *Anon. s.n.* (JE). Mirto, in forest, V., *Todaro 645* (AHW, COI, FI, G, JE, MPU, P, TO). Above Tortorici, Messina, humid slope-forest, c. 600 m, 17.IV.1965, *Merxmüller & Wiedmann 20155* (M). Avola, in humid valley, IV/VI, *Bianca s.n.* (FI).

MOROCCO. Tanger, IV.1871, *Hooker s.n.* (K). Tétouan, in hedge, 10.III.1911, *Pitard 831* (G, P). Ibid., at the right border of the river Martin, 5.V.1921, *Pau s.n.* (FI). Beni Hozmar, umbrageous, 700 m, 30.V.1930, *Font Quer 561* (BM, G, MA, S, Z). Near Chechaouene, in grass, 700 m, 11.V.1928, *Font Quer 339* (BM, G, MA). Jebel Buhasen, dampy, umbrageous, 1200 m, s.d., *Lynes s.n.* (BM). Taza, at Bab el Métik, limestone rocks, umbrageous, 1200 m, 31.V.1929, *Jahandiez 339* (G, Z). W.-slope Jebel Tazekka, in *Cedrus*-forest, umbrageous, granitic soil, 1989 m, 9.VI.1961, *de Wilde et al. 2885* (L). Above Azrou, forest, 15.V.1934, *Reese s.n.* (BAS). Azrou, in the thickets along the Oued Tigrigra, 1200 m, 27.III.1921, *Romieux 1440* (G). Toumliline, near Azrou, in *Quercus ilex*-forest, 1500 m, 14.V.1921, *Jahandiez 324* (MPU). E. of Azrou, in valley on the road to Timhadit, 1300-1400 m, 18.V.1926, *Wilczek et al. 1320* (Z). Jbel Sgat, 1880, *Reboud s.n.* (P). Amizmiz, 900 m, V.1871, *Hooker s.n.* (K). Rhirhaia, porphyric rocks near Sidi Chamarouch, c. 2360 m, 23.VII.1923, *de Litardière s.n.* (G, P). Sidi Chamarouch, in valley of Aït Messan, in rock-crevice, c. 2350 m, *Lindberg 3722* (K). Valley of Aït Messan, on sandy rocks, 1400-2000 m, 13/16.V.1871, *Ball s.n.* (K, P). Imelil, 18 km SE. of Asni, roadside, moist, c. 1700 m, 10.V.1961, *de Wilde et al. 2256* (BM, L, WAG). Taddert, between Marrakech and Ouarzazate, hedgerows, 1600 m, *Chaworth-Musters 318* (BM).

ALGERIA. Peak of Atlas, V., *Laver s.n.* (MPU). Zegalon, ravine, 26.IV.1937, *Alston & Simpson 37575* (BM). Near Alger, Ben Koran, thicket in the field, V.1850, *Tamin s.n.* (P). Tamedjadjout, plaine, Constantine, 24.VI.1880, *Cosson s.n.* (P). Kerata, Kabylie, on limestone, umbrageous, 700 m, VI.1896, *Reverchon (1896) 148* (JE). Djebel Magris, Kabylie, on limestone, umbrageous, 1600 m, V.1898, *Reverchon (1898) 148* (BM, G, JE, P, UPS, Z). Oued Abaich, Petite Kabylie, 11.VII.1861, *Cosson s.n.* (P). Valley of Dra el Mizan, N. of Djurdjura Djebel, 23.VI.1854, *Cosson s.n.* (MPU, P). Akbou, 1.VI.1859, *Letourneux s.n.* (P). Taourirt Ighil, VI.1889, *Battandier & Trabut 569* (G, L, TO). E. of Chabet el Akra, Adaghar Amellal, 1.VII.1880, *Cosson & Douméz s.n.* (P). Djebel Achouaou, 25.VI.1880, *Cosson s.n.* (P). Djebel Babor, on limestone, umbrageous, 1700 m, VI.1896, *Reverchon (1896) 148* (G). Djebel Edough, VI.1861, *Letourneux s.n.* (P). Annaba, 3.V.1967, *Triebaut s.n.* (GB, Z). Mechroha, 1.V.1888, *Cosson s.n.* (P).

TUNISIA. Valley of Ouyed Maramel, 18.V.1888, *Cosson s.n.* (P). Ayn ad Darahim, in forest, 900 m, s.d., *Pitard s.n.* (G). Al Fajjah, Oued Barla, 20.V.1888, *Cosson & Duval s.n.* (P). Source of Baghlah Wadi Al, in *Quercus*-forest, 23.V.1886, *Cosson s.n.* (P). Bu Sharik Jabal, 1880, *Reboud s.n.* (P).

2.a. *Lamium galeobdolon* (L.) L. subsp. *flavidum* (F. Herm.) A. Löve & D. Löve

FRANCE. ISÈRE: Uriage, Oursière cascade, 21.VII.1897, *Peyron s.n.* (G).

GERMANY. BAYERN: Wendelstein, between Kreuter Alm and Hochkreut, herbs-rich spruce-forest, 5.VIII.1975, *Merxmüller & Lippert 31221* (M). Between Wallgau and Wildsee, spruce-forest, c. 1100 m, 31.VIII.1956, *Hermann s.n.* (M). Solln, near München, VII.1928, *Reiche s.n.* (M). München, s.d., *Anon. s.n.* (M). Ibid., near Freimann, along the river Isar, VII.1973, *Hamp s.n.* (M). Ibid., Grünwald, slope at foot path to Isar bridge, 28.V.1977, *Vondrovsky 721* (M). Near Grünwald, VIII.1910, *Berghart s.n.* (Z). Isartal near Höllriegelskreuth, S. of München, slope forest, between stones, 3.VI.1961, *Poelt s.n.* (M). Near Grünwald, VIII.1910, *Berghart s.n.* (Z). Untere Maisinger Schlucht, W. of Starnberg, 30.VI.1963, *Podlech 9324* (M). Between Percha and Berg, at Starnberger See, mixed forest, 5.VI.1958, *Lundberg s.n.* (GB). Altkirch, scree near stone pit, 31.VII.1906, *Bühler s.n.* (Z). Tölz, Längental, SW. of Arzbach, 1.VII.1979, *Lippert 16883* (M). Miesbach, Tegernseer Berge, from Wallberghaus over Setzberg, 'Hochstaudenflur', 11.VII.1981, *Lippert 17869* (M). Schliersee, NW.-slope of Miesing, spruce-forest, 1400 m, 23.VII.1960, *Roessler 2928* (M). Inzell, Gabelmacher, forest border, 750 m., 9.VI.1954, *Grützmann s.n.* (M). Berchtesgadener Alpen, Saugasse, between Ober- and Unterlahner, 21.IX.1978, *Lippert 16720* (M). Wetterstein, Höllentalklamm, humid slope near upper exit, 21.VI.1959, *Poelt s.n.* (M). Ibid., near lower exit above Hammersbach, 21.VI.1959, *Poelt s.n.* (M). Between Kreuzeck and Hochalm, near Garmisch-Partenkirchen, 1650 m, 29.VII.1962, *Hertel s.n.* (M).

SWITZERLAND. Selva di Luvertico, c. 1150 m, 4.VIII.1897, *Rikli s.n.* (BAS). Rudigliana, 19.V.1940, *Dieller s.n.* (Z). URI: Maderanertal, c. 1000 m, 28.VI.1948, *van Ooststroom 10269* (L). VAUD: Mont Morcles, VII.1898, *van der Waarden s.n.* (L). TICINO: Between Gresso and Monda, Val Onserone, shady places, 15.VIII.1905, *Bär s.n.* (Z). Near Rouco, road along Lago Maggiore, 19.IV.1933, *Koopmans-Forstmann & Koopmans s.n.* (L). Navegna-schlucht, near Locarno, shady place, 3.VIII.1903, *Bär s.n.* (Z). Locarno, pasture, 12.IV.1914, *Cedercreutz s.n.* (H). Ibid., Lossone, 11.V.1914, *Boldt s.n.* (H). Vira, on wall along the road, NW. exposition, 200 m, 19.VII.1953, *Koster 4107* (L). Val Colla, between Cima dell'Aress and Catelina, light *Fagus*-forest, c. 1620 m, 29.VII.1969, *Zoller s.n.* (BAS). Carasso, 27.V.1908, *Chenevard s.n.* (G). Camoghe region, Pianezzo, Valle Mocobbia, 8.VIII.1901, *Jäggi s.n.* (Z). Carena, at foot of wall and on wall, 10.VII.1969, *Zoller s.n.* (BAS). Alpe Serpiano, San Giorgio, 27.V.1902, *Chenevard s.n.* (G). Lugano, VI.1930, *Wiersma s.n.* (L). Gandria, near Lugano, forest, 3.VII.1960, *Norrmann s.n.* (BM). Vacallo, near Chiasso, hedge, 27.V.1903, *Chenevard s.n.* (G). GRAUBÜNDEN: Val Medel, Camperio, 1200 m, VII.1902, *Keller & Keller s.n.* (Z). N. of Waltenburg, border of *Picea*-forest, 1150 m, 24.VI.1959, *de Bruijn 93* (WAG). Thusis, Via Mala, 25.VII.1923, *Skottsberg & Skottsberg s.n.* (GB). Ibid., roadside, 860 m, 16.VII.1970, *Wegmüller 109/70* (L). Cauco, Val Calanca, 24.VII.1898, *Kohler s.n.* (G). Domleschg Valley, Engadin, VII.1927, *Timmermans s.n.* (L). Val Poschiavo, above Ravisée, SSW.-exposition, 1120 m, 29.VI.1970, *Wegmüller 90/70* (Z).

AUSTRIA. VORALBERG: E. of Sulzberg, spruce-forest, 23.VI.1974, *Lippert 14982* (M). TIROL: Allgäuer Alpen, Petersberg Alpen, Hornbachtal, 20.VII.1977, *Dörr s.n.* (M). Karwendelgebirge, Mittenwald, 1040 m, 29.VII.1978, *Lotto & Lotto s.n.* (M). Ibid., foot-hills, Schulterbergalm, 8.IX.1909, *Seeger s.n.* (Z). Innsbruck, 4.VIII.1907, *Seeger s.n.* (Z). Stubai Alpen, above Gschnitz, at road to Innsbrucker Hütte, 1300 m, 11.VIII.1962, *Podlech 8540* (M). Padastertal, S. of Steinach at Brenner, c. 1450 m, 12.IX.1962, *Podlech 8605* (M). Gschnitz Tal, near Trins, s.d., *Fl. Exc. Austr.-Hung. 3296 II* (GB, H, ZT). Wilde Kaiser, between Grandner Alm and Mauk Alm, 'Hochstaudenflur', c. 1060 m, 29.VIII.1978, *Lippert 16668* (M). Brixen, forest along Salvenbach, 900 m, 1.VII.1958, *Kern 19242* (L). OSTTIROL: Osttirol, VI.1896, *Pichler s.n.* (BM). Moar Alm, above Kals, 1700-1800 m, 21.VIII.1980, *Merxmüller & Eidman 31647* (M). SALZBURG: Parsch, ditch, 21.VI.1922, *Pettersson s.n.* (H). Bad Gastein, thicket, 20.VII.1923, *Wall s.n.* (GB). St. Gilgen, road to Blombergstein, forest border, 29.VI.1953, *Färdig s.n.* (H). NIEDER-ÖSTERREICH: Leopoldsberg, in forest, IX.1882, *Beck s.n.* (PRC). Schneeberg, Krumbachgraben, 6.V.1882, *Beck s.n. p.p.* (PRC). Ibid., in meadows of foot-alps, c. 1500 m, 7.VII.1885, *Beck s.n.* (PRC). Reichenau, VIII.1924, *Buch s.n.* (H). Ibid., Talhofriese, 15.VII.1896, *von Hayek 2289* (GB). Mariabrunn, near Wien, V.1867, *Berggren s.n.* (LD). STEIERMARK: Ramsau, near Schladming, 25.VII.1902, *Baumgart-*

ner s.n. (GB). Gstatterboden, Gesäuse, in wood, 600 m, 2.VII.1932, *Wyatt 47* (K). Sannthaler Alpen, near Okreselhütte, 1450 m, 19.VII.1900, *von Hayek s.n.* (GB). Steinapel, near Frein, in thicket, calcareous soil, 950 m, 6.VI.1904, *Handel-Mazetti s.n.* (WU). Schneecalpe, N.- slope of Kramerin, 8.IX.1881, *Beck s.n.* (PRC). Ostalpen, Grazer Bergland, at road between Teichalm and Hochlantsch, *Picea*-forest, 1250-1640 m, 4.VII.1974, *Möschl & Pittoni s.n.* (L). Raacher Kogel, Gösting, near Graz, mountain forest, calcareous soil, 390 m, V.1907, *Fritsch 559* (GB, H, Z, ZT). Lassnitzklause, near Deutsch Landberg, humid ravine, *Fagus*-forest, open area with high herbs, 300 m, 6.VI.1967, *Rubers 181* (L). KÄRNTEN: Gross Glockner, 4.VII.1965, *Boon 26* (WAG). Plöckenpass, 30.VII.1960, *Merxmüller & Wiedmann 135/60* (M). N. foot of Erzberg, between Stadelbach and Rubland, ravine forest, 13.VI.1975, *Merxmüller & Lippert 29804* (M). Feistriz im Rosental, E. of Hunsdorf, roadside, 1.VI.1980, *Krach & Koeppf 10119* (M). E.-side of Königsberg, near Raibl, 10 miles W. of Klagenfurt, on shady and humid calcareous soil, VIII.1885, *Mirrich s.n.* (K). St. Kanzian, near Rakek, 29.VI.1903, *von Hayek s.n.* (GB).

CZECHOSLOVAKIA. Krkonose Mountains [Riesengebirge], Brettgrund, near Schatzlar, forest border, c. 500 m, 12.VI.1879, *Paz s.n.* (BR, G, M, Z). Harta, Fuchshübel, light forest, 430 m, 30.V.1904, *von Cypers s.n.* (G). Boubin, Sumava, *Pinus-Fagus*-forest, 3.VII.1971, *Veldkamp 5437* (L). Spisská Magura [Magura Scepusii], VII.1890, *Ullepitsch s.n.* (G).

ITALY. PIEMONTE: Valle d'Aosta, Val di Gressony, Fontainemore, shady feet of rocks, 700 m, 6.VII.1969, *de Langhe s.n.* (Herb. de Langhe). Ibid., hill W. of Lago Sirio, near Ivrea, along sunken way, in thicket, 27.VI./3.VII.1965, *Landholt & Hess s.n.* (ZT). Oropa, near Santuario, in thicket, 2/9.VII.2905, *Michelletti s.n.* (TO). Between Lanzo Torinese and Cafasse, in forest, c. 430 m, 1/8.VI.1963, *Podlech 9153* (M). Between Rivarossa and Malone, forest border, 1906, *Vallino s.n.* (TO). Between Sombardore and Rivarossa, forest, VII.1884, *Vallino s.n.* (TO). Torino, V.1813, *Bertero s.n.* (TO). Ibid., hills, in forest, s.d., *Bertero s.n.* (TO). Ibid., Val Salice, V.1888, *Ferrari s.n.* (TO). Alpi Cozie, 1880, *Rostan s.n.* (L). Rossano, near le Frese di Romano, forest, 8.V.1921, *Fontana s.n.* (TO). Dronero, between La Maira and San Marco, 22.VI.1913, *Ferrari & Gola s.n.* (TO). Bagni di Valchieri, wood, c. 1050 m, 4.VIII.1882, *Lacaita s.n.* (BM). Vernante, Vallone di Pallantrè, near Prat Colombo, 26.VII.1892, *Ferrari & Belli s.n.* (TO). Alba, forest, 1815, *Bertero s.n.* (TO). Lago Maggiore, Baveno, roadside, 21.VII.1937, *Koster 5385* (L). Valle Formazza, near Valdo, 1270 m, 20.VIII.1916, *Boggiani s.n.* (BM, BR, G, L). LOMBARDIA: Domodossola, hedge, V., *Rossi s.n.* (FI). Near Somaggia, S. of Chiavenna, swampy meadows, c. 200 m, 6.VI.1965, *Seitz s.n.* (M). Val Muggiasca, near Taceno, c. 400 m, 7.VI.1965, *Seitz s.n.* (M). Brunate, near Como, 22.V.1924, *Lindberg s.n.* (H). Monte Grigna, Lago di Como, Val Grande, rubble hill, 1450 m, 25.VIII.1903, *Geilinger s.n.* (Z). Alpi Orobie, Sarnasca, near Lesco, meadows, c. 250 m, 22.V.1911, *Chenevard s.n.* (G). Ibid., Val Borlezza, 13.IV.1913, *Chenevard, s.n.* (G). Val Sassnia, above Introbio, thicket, 2.VIII.1902, *Geilinger s.n.* (Z). Val Bembrana, Roncobello, Cima di Menna, c. 1500 m, 22.VIII.1972, *Müller s.n.* (ZT). Gardone, inner court, 12.IV.1910, *Brotherus s.n.* (H). TRENTO: C. 5 km S. of Oro, at road to Trento, thicket, 4.V.1966, *Lippert s.n.* (M). Bolzano, in forest and hedges, VI.1831, *Hausmann s.n.* (BR, G, L, M). Stream near Bolzano, 11.V.1869, *Romano s.n.* (TO). Ponte Gardena, 10.VI.1955, *Stam & Stam-Mielziner s.n.* (L). Val d'Ampola, E. of Storo, c. 600 m, 8.VI.1965, *Seitz s.n.* (M). Monte Iudica, Val di Lorina, thicket, 800 m, 1.VII.1962, *Lippert s.n.* (M). Ibid., Val Vestina, near Armo, shady wall, c. 700 m, 10.VI.1969, *Zoller s.n.* (BAS). Bono Spipla, near pit, s.d., *Anon. s.n.* (TO). Riva, Valsesia, 8.VII.1874, *Carestia s.n.* (TO). VENEZIA: Monte Baldo, Besagno, 30.IV.1961, *Vollrath s.n.* (Herb. Vollrath). Sauris, NW. of Ampezzo, forest border on slope, 1300 m, 6.VII.1966, *de Langhe s.n.* (Herb. de Langhe). Tarvisio 'Weissenfelder See', 19.VII.1899, *Arnold s.n.* (M). EMILIA: Fiumalbo, VIII.1898, *Zamfysius s.n.* (BR). TOSCANE: Etruria, in forest, s.d., *de Dieudonné s.n.* (BR). Alpi Apuane, Monte Procinato, 1177 m, 3.VI.1979, *Hartinger s.n.* (M). Val le Santa Maria del Giudice, shady forest, V.1864, *Savi s.n.* (AHW, P). Pistoia, in shadow, VIII.1845, *Savi s.n.* (P). Vernio, 25.VI.1933, *Beni s.n.* (FI). Vallombrosa, road to the lake, 14.IV.1889, *Anon. s.n.* (L). Monte Falterona, *Fagus*-forest, 1550 m, 29.VII.1934, *Skottsberg s.n.* (GB). Verna, Casentino, 5.VI.1949, *Pichi-Sermolli & Contardo s.n.* (L). MARCHE: Umto in Prieno, s.d., *Anon. s.n.* (FI). Umto, San Orsins d'Ascoli, IV.1832, *Ricasoli s.n.* (FI). CAMPANIA: Monte Sacro, near Vallo, Salerno, beech-forest, 29.VI.1935, *Lüdi s.n.* (ZT).

JUGOSLAVIA. 'Litorale', 1855, *Areschoug s.n.* (LD). Trzic, near Loibl pass, c. 1300 m, 8.VII.1965, *Veldwerkroep 1965-5485* (LEPS). Between Lesce and Radovljica, c. 500 m, forest margin, V.1979,

van Steenis 14284 (L). Maribor, Boc, near Poljcane, N.-slope, beech-forest, 650-700 m, 15.V.1978, *Krach & Koepff 3024* (M). Pekel ravine, near Ohonica, S. of Borovnica, forest, c. 500 m, 28.V.1966, *Buttler 9553* (M). Ibid., *Podlech 13967* (M). Ljubljana, 'Gross Kahlenberg', 24.V.1870, *Palmén s.n.* (H). Opatjia, IV.1956, *Amshoff s.n.* (WAG). Central Velebit, S.-slope of Bacic Kosa, NE. of Karlobag, 900 m, 31.V.1966, *Lippert s.n.* (M). Jajce, in shadow, 5.VI.1905, *Lindberg s.n.* (H). Troglav, 14.III., *Anon. s.n.* (PRC). Lapisnica ravine, near Serajewo, 28.V.1885, *Beck s.n.* (PRC). Bozur Planina, Piva, VII.1905, *Rohlena s.n.* (PRC). Ljut, Ledenica Plan, VII.1905, *Rohlena s.n.* (PRC). Oranids, VII.1902, *Kosta s.n.* (PRC).

2.b. *Lamium galeobdolon* (L.) L. subsp. *galeobdolon*

SWEDEN. 45 Collections in all. Göteborg, Säve, Tolseröd, valley of streamlet, 20.V.1930, *Fries s.n.* (GB). Småland, Eksjö, Broarp, 27.V.1903, *Lagerberg s.n.* (GB). Ibid., Höredas, Brännas, 14.VI.1866, *Dusén s.n.* (H). Ibid., Kristdala, near parish, mixed forest, 28.V.1962, *Evers s.n.* (H). Skåne, Fågelsång, 6.VI.1844, *Andersson s.n.* (H). Ibid., V.1912, *Blom s.n.* (GB, H). Between Stenbrohult and Aljunga, mixed forest, VI.1954, *Simosson & Tidestrom 14703* (B). Skåne, Spannarp, V.1891, *Delphin s.n.* (H). Ibid., Svalöv, Källstorp, 15.V.1925, *Tedin 1350* (G, GB, H, L). Bosjö kloster, V.1958, *Donk s.n.* (L). Ibid., Dahlby, V., *Ringius s.n.* (H, P). Ibid., Näsbyholm, 24.V.1899, *Hallbäck s.n.* (GB, H).

FINLAND. Kiika, Kilpijoki, 4.VI.1961, *Suominen s.n.* (H). Tampere, Viinikka, 2.IX.1973, *Lyly s.n.* (H). Härne, Hauho, Nülty, 22.VI.1915, *Charpentier s.n.* (H). Piikkiö, Hawaluoto, 8.VI.1916, *Pesola s.n.* (H). Ibid., 25.VI.1916, *Pesola s.n.* (H). Ingå, Marieberg, park, 19.VI.1927, *Alfthan s.n.* (H). Ibid., 28.VI.1927, *Alfthan s.n.* (H). Ibid., 18.VI.1941, *Ekbom s.n.* (H). Kyrkslätt, W. of Hirsala, recreation area, 18.VI.1970, *Lindén s.n.* (H). Kirkkonummi, Hirsala, shady place, 26.VI.1971, *Reinikka s.n.* (H). Helsinki, Hietolahti, 6.VI.1950, *Nevalainen s.n.* (H).

DENMARK. Horsens, Handsted Skov, 22.V.1886, *Pedersen s.n.* (COI). Fovslet Skov, near Kolding, beech-wood, 10.VI.1965, *Mathiesen & Pedersen 121* (BR, H, L, Z). Kolding, forest, under *Quercus*, 4.VIII.1971, *Kruyt & van Alphen s.n.* (L). Oxenrade, forest, 22.VIII.1929, *Andersson s.n.* (H). Longelse, 12.V.1882, *Gelert s.n.* (H). Helsingör, 1846, *Steenberg s.n.* (H). Ibid., Espergjaerde, beech-wood, 17.V.1916, *Erdmann s.n.* (GB). Vrange Skov, near Ringsted, 20.V.1919, *Wiinstedt s.n.* (G). Ibid., moist ground in beech-wood, 31.V.1972, *Pl. Vasc. Danic. Exs. 539* (M). Praetevanget, Faxø, 24.IV.1943, *Dahl 396* (BM).

GREAT-BRITAIN. ENGLAND: North Lincoln, Wilton High Wood, E. of Shendleby, edge of wood, c. 45 m, 31.V.1969, *Wegmüller s.n.* (K).

NETHERLANDS. 37 Collections in all. FRIESLAND: Rijsterbos, IX.1965, *van der Meulen s.n.* (L). Oldeberkoop, s.d., *Alberda s.n.* (L). DRENTHE: Zuidlaren, Laarwoud, mixed forest, V.1942, *van Borssum Waalkes 5349* (L). Norg, road to Roden, 19.VI.1970, *Mennema 1533* (L). Loon, near Balloërveld, W. of streamlet, forest-trail, shady, 19.VI.1970, *Mennema 1532* (L). OVERIJSSSEL: Oldenzaal, Hoge Venterink, Querceto-Carpinetum, 8.V.1948, *Wissink s.n.* (L). GELDERLAND: Hemmen, castle, forest, 1882, *Kobus s.n.* (L). UTRECHT: Hamersveld, near Amersfoort, bush, humid, shady, 17.V.1892, *Garjeanne s.n.* (L). NOORD-BRABANT: Breda, Mastbosch, near 'De Boswachter', in light *Fagus*-forest, 7.V.1971, *Mennema 1755* (L, M). Breda, Ulvenhoutsche bosch, 14.V.1944, *de Bruyn s.n.* (L). Udenhout, Kerkdreef, *Populus*-forest, 21.IV.1937, *Stoff s.n.* (L). Between Liempt and Oirschot, in woody area, 1834, *de Bruijn s.n.* (L). LIMBURG: Valkenburg, 20.V.1929, *de Leeuw s.n.* (L). Gronsveld, Schöne Grub, 25.IV.1950, *Bakhuizen van den Brink 6891* (H, L).

GERMANY. 51 Collections in all. SCHLESWIG-HOLSTEIN: S. of Fleckeby between Schleswig and Eckernförde, hedge, 17.V.1972, *Larsen et al. 176* (L, M). MECKLENBURG: Lychen, shady place, 14.V.1897, *Risch s.n.* (M). NIEDERSACHSEN: Hamburg, 1839, *Sonder s.n.* (L). Schüttoorf, *Fagus*-forest, 6.V.1972, *Inst. voor Prehistorie 565* (L). Hannover, Ulzen, near Fischerhofe, municipal forest, 15.V.1878, *Nöldeke s.n.* (Z). Near Göttingen, s.d., *Persoon s.n.* (L). SACHSEN-ANHALT: Steirne Renne, above Wernigerode, Harz, Whitsuntide 1901, *Hegi s.n.* (Z). BRANDENBURG: Nauen, near Finkenkrug, mixed forest, 8.V.1903, *Lackowitz s.n.* (G). Near Buckow, Berlin, in forest, 28.V.1882, *Hoffmann s.n.* (COI). Ober-Lausitz, s.d. *Neumann 1680* (BAS, BR, H, L, P).NORDRHEIN-WESTFALEN: Near Gummersbach, mountainous region, V., *Wirten 983 p.p.* (L).

HESSEN: Adlershorst, near Neidenburg, 24.V.1908, *Voigt 1999* (L). THÜRINGEN: Schlotheim, Königholz, forest, 4.V.1945, *de Langhe s.n.* (Herb. de Langhe). SACHSEN: Seidewitz on Mulde, 12.V.1932, *Meyer Drees s.n.* (L). RHEINLAND-PFALZ: Pfalz, in forest, V.1852, *Koh 2393* (M). BADEN-WÜRTTEMBERG: Heidelberg, 1922, *de Wever s.n.* (MAAS). BAYERN: Frankenwald, Höllental, foot of Hirschsprungfelsen, 14.VII.1972, *Vollrath s.n.* (Herb. Vollrath). Donaustauf, near Regensburg, V.1892, *Rehm s.n.* (L). München, near Hasseloh, in forest, V.1815, *Martius s.n. p.p.* (BR). Near Schwindkirchen, Mühldorf, 4.V.1966, *Schauer s.n.* (M).

POLAND. 13 Collections in all. Olsztyn, 'Jungferngrund', shady forest, 11.V.1914, *Steffen s.n.* (L). Near Szlichtyngowa, in *Alnus*-marsh, 11.V.1863, *von Schlichting s.n.* (BR). Muszkowice, near Zabkowie, mixed forest, s.d., *Golowin 137* (H). Wadowice, between Bachowice and Zygodowice, in forest, 14.V.1970, *Jasiewicz & Kucowa 262* (M).

CZECHOSLOVAKIA. 16 Collections in all. Karlovy Vary, mixed forest, 1906, *Stachmann s.n.* (H). Praha, 1839, *Breyer s.n.* (G). Novy-Ples, near Josefopolim, in forest, 28.V.1889, *Prihoda s.n.* (BR). In valley of rivulet Kacák near Srbsko, 19.V.1939, *Deyl s.n.* (BR, COI, G, H). Srepes, 'Magura', forest border, calcareous soil, 400-700 m, s.d., *Ullepitsch 3295* (G, GB, H, L, P, Z, ZT). 'Magura', forest border, V.1892, *Ullepitsch 2976* (BR, G, M, P).

ROMANIA. 15 Collections in all. Crişana, Satu-Mare, 'Voivodeasa', near Satulung, forest border, c. 110 m, 29.IV.1938, *Forstner 2041* (G, L). Iaşi-Repede, Iaşi, 8.V.1962, *Toma s.n.* (M). Baile Herculane, slope of hill, *Carpinetum orientalis*, 1.VII.1931, *Domin & Krajina 144* (PRC). Oltenia, Craiova, Lunca Mofleni-forest, c. 85 m, 10.V.1965, *Olaru & Cirtu 465* (BR, G, H, L, M). Czenk, near Orasul Stalin, *Fagus*-forest, NW-slope, 600-900 m, 20.VIII.1910, *Ginzberger s.n.* (WU). Carpati meridionali, Buzeni, wet mixed forest, 1000-2000 m, 5.VII.1971, *van der Ploeg s.n.* (L). Slanic-Moldova, in forest, c. 700 m, 22.V.1971, *Barabas & Mititelu 354* (L).

U.S.S.R. 72 Collections in all. BALTIC DIVISION: Keila, Laulasmaa, slope of hill, mixed forest, 27.VI.1934, *Luther s.n.* (H). Tallinn, Lasnamägi, 2.VI.1931, *Saxén s.n.* (H). Rakvere, 'Monplaisir', forest, 24.V.1904, *Regel s.n.* (G). In the vicinity of Ist'-Narvy, Narvskogo Zaliva, mixed forest, 7.VI.1964, *Nepli s.n.* (H, M). Taruo, Vasula, 24.V.1926, *Suomalainen s.n.* (H). Usma, Moricsala, 5.VI.1931, *Linkola s.n.* (H). 'Annenhof', humid bush, s.d., *Girgensohn 618* (LE). Riga, Kemmern, mixed forest, 4.VI.1901, *Kupffer 13702* (GB). Svetlogorsk, 8.VI.1936, *Bärlund s.n.* (H). CENTRAL DIVISION: Karelian Isthmus, Mys Glavnny, roadside in shady mixed forest, 13.VI.1932, *Salokas 1298* (COI, G, H, P). Ibid., Pervomayskoye, 4.VI.1898, *Silfvenius s.n.* (GB, H). Ibid., Komarovo, VI.1933, *Soveri s.n.* (H). In the vicinity of Leningrad, Novo-Siverskaya, *Picea*-forest, 1940, *Tsjernjakovskaya s.n.* (LE). Zvenigorod, near Tagankovo, in mixed forest, 18.V.1963, *Skuortsov s.n.* (M). Moskva, Botanic Garden of Academy Sciences, damp oak wood reserve, 500 m, 20.V.1959, *Davis 3304A* (K). Moskva, Stankiono, Botanic Garden of Academy Sciences, oak wood, 22.V.1961, *Berezina s.n.* (H). Molotof, Gubernskoye, 1876, *Schell s.n.* (LE). Kaluga, in forest, 3.V.1894, *Litwinow s.n.* (G). Rybinsk, near Semenovskoye, in coniferous forest, 29.V.1922, *Smirnov s.n.* (LE). Kiyev, in rain-forest, 4.V.1841, *Trautvetter s.n.* (LE). SOUTH-WESTERN DIVISION: Vuytovshizna, E. of Kovel, in forest, 27.IV.1918, *von Hayek s.n.* (GB). Lwow, 13.V.1911, *Fiedlerowne 720* (BR, GB). Orel, s.d., *Tautschow s.n.* (LE). Uman, in forest, 8.VI.1901, *Brzesitzky 1626* (G, H, MPU). Kodry, Kalaramanskyi, *Carpinetum*, 2.VI.1949, *Ilynskaya & Semenova s.n.* (LE).

JUGOSLAVIA. Between Lubina and Dobožispolie, 8.V.1847, *Sendtner s.n.* (G). Romanja planina, light forest, 11.VI.1885, *Beck s.n.* (PRC). Srbija, Kratilovica, in forest, V.1895, *Adamovic s.n.* (P). Near Zajecar, 20.IV.1897, *Nicic s.n.* (GB). Makedonija, near mountain cottage Cepres, Mount Jakupica, S. of Skopje, light patches in dense beech-wood, 1400-1800 m, 13.VI.1955, *Sladen s.n.* (BM).

ALBANIA. Vermosh, *Fagus*-forest, 1100 m, 9.VI.1914, *Dörfler 300* (GB).

GREECE. MAINLAND: Peristerie, Kazani ravin, bush, 1200 m, V.1918, *Gross s.n.* (M). Makedonia, Pisodarion, damp shady gully in beech-forest, 1350 m, 3.VI.1932, *Alston & Sandwith 636* (BM). Above Armensko, grassy slopes among forest, 1350 m, 2.VI.1932, *Alston & Sandwith 105* (BM). Bozdag, 20 miles NW. of Drama, beneath hazel trees, 1050 m, 12.V.1959, *Stainton 7383* (K).

BULGARIA. Backoba, in forest, 14.V.1899, *Stribrny s.n.* (P). S. of Varna, hills, 17.IV.1925, *Gilliat-Smith 1058* (K). Near Bojana, in the vicinity of Sofia, in bush, VI.1890, *Pichler s.n.* (BR). Rila Mountain, Borovec, c. 60 km S. of Sofia, c. 1200 m, 14.VI.1973, *Mennema 2159* (L). At foot of

Mount Vitosa, in bush, V.1890, *Pichler s.n.* (G, P). Rila Monastery, Rhodope mountains, in wood, 1080 m, 14.VI.1933, *Meinertzhagen s.n.* (BM). In the vicinity of Stara Zagora, s.d., *Wiedemann s.n.* (BR).

TURKEY. ISTANBUL: Belgrad forest, 29.IV.1951, *Berk s.n.* (G). Istanbul, s.d., *Olivier & Bruguière s.n.* (P).

2.c. *Lamium galeobdolon* (L.) L. subsp. *montanum* (Pers.) Hayek

NORWAY. Oslo, Tarshov (escaped from cultivation? - M.), 1855, *Moe s.n.* (H).

GREAT-BRITAIN. 33 Collections in all. SCOTLAND: Dunglass Glen, VI.1853, *Anon. s.n.* (COI). WALES: Flintshire, Hawarden, wet woodland, 15.V.1961, *Brummit et al. 61.318* (M). Glamorgan-shire, Lisvane, near Cardiff, hedge bank, 17.V.1967, *Harridon s.n.* (H). ENGLAND: Cheshire, Hazel Grove, 20.V.1865, *Bailey s.n.* (BR). Derbyshire, Disley, 29.V.1865, *Bailey s.n.* (BR). Leicestershire, Bescaby, near Waltham, in hedgerow, 18.V.1964, *Horwood s.n.* (G). Rutland, Woodhead Wood, on edge, 26.IV.1959, *Horwood s.n.* (G). Buckinghamshire, Amersham, Weedon Hill Wood, 21.V.1955, *Bangarter & Ward 222* (BR, GB, L). Somerset, between Wraxall and Tickenham, woodland, 1.VI.1934, *Sandwith s.n.* (L). Berkshire, near Newbury, hedge bottom, s.d. *Maton s.n.* (BR). London, Hampstead, 1844, *Reuterman s.n.* (GB). Surrey, Sanderstead, Mitchley Wood, at side of path, 16.V.1954, *Cannon & Cannon 2352* (COI). Sussex, Buncton Church, near Ashington, wood, 14.V.1968, *Gerrans 1381* (L). Isle of Wight, Ventnor, limestone, IV.1925, *Koster 5386* (L). CHANNEL ISLANDS: Jersey, La Saline, 11.V.1929, *Arsène s.n.* (K).

NETHERLANDS. 261 Collections in all. OVERIJSSSEL: Wijhe, Hengeveld, along the road between Wesenberg and Kloppenberg, at ditch under coppice, V.1906, *Lako s.n.* (L). Denekamp, Singraven, Achterhof, humid mixed forest along the rivulet Dinkel, 9.V.1918, *Bernink s.n.* (L). Denekamp, Austieberg, at forest border of Querceto-Carpinetum, 23.IV.1948, *Hoogland 1948/38* (G, L). Between Lossler and Oldenzaal, in thicket, 21.V.1898, *Goethart & Vuyck s.n.* (L). GELDERLAND: Beekbergen forest, 28.V.1853, *Kok Ankersmit s.n.* (L). Middachten, 1916, *van Soest 19720* (L). Near Wehl, at the edge of coppice, 23.VII.1902, *des Tombe 1052* (L). Winterswijk, Bekendelle, Querceto-Carpinetum, 3.VI.1951, *Koster 1811* (L). Neerbosch, Krommestraat, in forest, 25.IV.1926, *Kern & Reichgelt 15101* (L). Near Nijmegen, forest, 4.V.1869, *Abeleven s.n.* (AMD, BR, GRO, L, NBV). Beek, near Nijmegen, Duivelsberg, 4.VI.1950, *Jacobs 1041* (L). Hatert, near Nijmegen, at a ditch, 12.V.1948, *Kern & Reichgelt 6347* (L). UTRECHT: Nieuwersluis, Sterreschans, 11.V.1951, *van Ooststroom 15032* (L). Amersfoort, near Hamersveld, in bush, 29.VI.1904, *des Tombe 1052* (L). Woudenberg, De Roffelaar, old fortification, in thicket, 12.V.1971, *Mennema 1772* (L, M). Leersum, Kolland, humid forest, 17.V.1939, *Docters van Leeuwen 15374* (L). NOORD-BRABANT: Roosendaal, Haink, in bush, 7.V.1971, *Mennema 1754* (L). Ginneken, De Hondsdonk, 12.V.1935, *Balke s.n.* (L). LIMBURG: Ottersum, St. Jansberg, forest, 5.VI.1938, *Jansen & Stoff s.n.* (L). St. Pietersberg, near Maastricht, Slavante, 20.V.1950, *Bakhuizen van den Brink 7133* (L). SE. of Meerssen, Geuldal, Querceto-Carpinetum, 12.V.1951, *Rypkema 121* (GRO). Geulhem, VI.1895, *Redeke s.n.* (L). Keutenberg, mixed forest, along path, 23.V.1920, *Stoff 5563* (L). Eijs, Wittem, Eijserberg, forest, 30.V.1914, *Danser 1872* (GRO). Rijckholt, Schöne Grub, forest on S.-slope, 29.III.1970, *Mennema 1470* (L). Bissen, 13.VIII.1938, *de Bruyn s.n.* (L). Epen, Bovenste Bosch, roadside, shady, exposed on E., c. 180 m, 7.VI.1919, *Stoff 5414* (L).

BELGIUM: 128 Collections in all. WEST-VLAANDEREN: Wijnendael-Ichtegem, Whitsuntide 1964, *van der Ploeg et al. s.n.* (L). OOST-VLAANDEREN: Nederbrakel, hedge, 28.IV.1954, *Lawalrée 5817* (BR, L). Voorde, roadside, 7.V.1912, *Scheerlinck & Scheerlinck 240* (BR). Buggenhout, forest, 26.IV.1921, *Guns s.n.* (BR). ANTWERPEN: Wilrijk, forest, 2.V.1882, *Hennen s.n.* (BR). Waarloos, 1.V.1878, *Vandenbroeck s.n.* (BR). Zoersel, forest near rivulet, 12.X.1955, *de Ruyver s.n.* (BR). Between Oelegem and Rant, along rivulet, 27.IV.1939, *Stoff K72* (L). BRABANT: Neder-over-Heembeek, 4.V.1903, *Guns s.n.* (BR, COI, L). Ibid., 19.V.1909, *Guns s.n.* (Z). Diegem, forest, 14.V.1876, *van Heurck s.n.* (AWH). Auderghem, Forêt de Soignes, Rouge-Cloître, new ravine, 18.V.1958, *Lawalrée 9162* (BR). Louvain, Mont César, 3.V.1940, *Lawalrée 386* (BR). Aarschot, Saffraanberg, Chemin de Gehode, roadside, 16.V.1938, *Michiels s.n.* (BR). HAINAUT: Everbeek, *Fagus*-forest, 26.V.1956, *de Ruyver s.n.* (BR). Binche, forest, V.1862, *Thielens s.n.* (L). Loverval, forest, 21.V.1876, *Polchet s.n.* (BR). NAMUR: Silenrieux, Maréchaud, forest, 21.X.1965, *Lawalrée 13563*

(BR). Yvoir, Rochers de Champale, 2.V.1940, *de Langhe s.n.* (Herb. de Langhe). Lisogne, Fonds de Lefte, 8.V.1967, *Lawalrée 14365* (BR). Vresse, route de la Haizette, underwood, 11.VII.1967, *Lawalrée 14591* (BR). LIÈGE: Montagne St. Pierre, near Kanne, 25.V.1874, *Verheggen s.n.* (BR). St. Martensvoeren, near boundary mark 22, mixed forest, 11.IV.1936, *Stoff s.n.* (L). Hergenrath, E. of lake of la Calamine, forest slope, 16.V.1937, *Stoff F17* (L). Chaudfontaine, s.d., *Lejeune s.n.* (BR). Esneux, roadside, 23.V.1932, *Lucion 45* (BR). Hertogenwald, near La Hoeyne, forest, 17.V.1936, *Michiels s.n.* (BR). Near Spa, s.d., *Lejeune & Courtois 294* (L, P). Trois Ponts, route de Liège, slope, underwood, 19.V.1965, *Lawalrée 13016* (BR). LUXEMBOURG: Bouillon, wooded slope along Semois, 12.V.1935, *Lawalrée 5946* (BR). Rutte, forest, near the sources of Aunaye, 3.VI.1968, *Lawalrée 15038* (BR).

LUXEMBOURG. Diekirch, s.d., *de Dieudonné s.n.* (BR). Grundhof, along the rivulet Schwarze Ernst, under *Fagus*, 20.V.1975, *Mennema & Mennema-Moes 2390* (L). Hallerbach, near Beaufort, 6.VII.1947, *van Ooststroom 9027* (L). Müllertal, c. 250 m, 18.VI.1969, *van Balgooy 1168* (L). Echternach, Wolfsschlucht, 25.VI.1924, *van Steenis s.n.* (L). Spelzbusch, forest slope, 1.V.1967, *Verbiest 837* (L).

FRANCE. 142 Collections in all. NORD: Bois de Cysoing, 23.IV.1844, *Cussac 12* (P, Z). PAS-DE-CALAIS: Réty, roadside, 30.V.1969, *Mennema 1130* (L). SOMME: Bois de Parmont, near Pont-Noyelles, 3.V.1874, *Gonser s.n.* (P). OISE: Compiègne, forest, 1846, *Boivin s.n.* (G). AISNE: Neuilly-St. Front, forest, hedges, V.1878, *Gérard s.n.* (BR). ARDENNES: 4 km S. of Monthermé, *Fagus*-forest, roadside, 15.V.1971, *Kruyt & van Alphen s.n.* (L). MEUSE: Bar-le-Duc, Val d'Enfer, forest, 20.V.1909, *Ninck 1299* (BR). MEUSE-ET-MOSELLE: Forêt dominiale de Commercy, between Chonville and the road Commercy-Ligne sur Barrois, 14.V.1978, *Adema 973* (L). MOSELLE: Near Metz, s.d., *Coomans & Coomans s.n.* (BR). VOSGES: Between Col de la Schlucht and Gérardmer, forest, 29.VI.1962, *Gavelle s.n.* (M). BAS-RHIN: Hohwald, 1 km towards Andlau, c. 600 m, 22.V.1950, *de Wit 4513* (L). HAUT-RHIN: Herrenberg, SW. of Mittlach, wet steep hillside, shady, stony, exposed on W., 25.VI.1951, *Jacobs 1963* (L). MANCHE: Cherbourg, hedges and forest, 24.V.1888, *Corbière s.n.* (M). CALVADOS: Forêt de Carville, 23.V.1909, *Hibon s.n.* (P). EURE: Les Andelys, forest above Château Gaillard, 8.V.1881, *Delacour s.n.* (G). SEINE-ET-OISE: I In the vicinity of Paris, s.d., *Persoon s.n.* (L). SEINE-ET-MARNE: Trilport, 24.V, *Duclos s.n.* (P). FINISTERE: MMLaix, 8.V.1881, *Micios.n.* (BM). LOIRE-INFÉRIEURE: Near Bouquenais, coppice on hill, 1.V.1871, *Bureau s.n.* (P). SARTHE: Forêt de Verseigne, near Alençon, 24.V.1850, *Beautemps-Beaupré s.n.* (P). EURE-ET-LOIR: Châteaudun, forest, 19.III.1847, *Juillard s.n.* (P). LOIR-ET-CHER: Forêt de Russy, between St. Gervais and Chaille, calcareous soil, 25.IV./31.V.1861, *Mathonnet 579* (AWH, BR, G, GB, MPU). LOIRET: Augan, Bois de la Haie, 12.IV.1823, *Loret s.n.* (P). YONNE: Between Merry-sur-Yonne and St. Maré, 1846, *Sagot s.n.* (P). HAUTE-SAÔNE: In the vicinity of Conflans, forest, hedges, IV., *Perrier de la Bâthie s.n.* (G). VIENNE: St. Benoit, in humid forest, s.d., *Tulasne s.n.* (P). CREUSE: Ste. Feyrelle-Montagne, near Lac de Villefort, shady, VI.1939, *Rothkegel s.n.* (BR). CHER: in the vicinity of Sancerre, IV.1822, *Hennecart s.n.* (P). ALLIER: Forêt de Moladier, 21.VI.1891, *Lassimonne 167* (COI). PUY-DE-DÔME: Between St. Sauves and La Bourboule, V.1959, *Donk 313* (L). SAÔNE-ET-LOIRE: Les Perrières, near Mâcon, IV.1849, *Parseval s.n.* (P). JURA: Between Ruffieu and Valromey, grassy roadside under *Crataegus*, 8.V.1971, *Kruyt & van Alphen s.n.* (L). RHÔNE: Villefranche, hedges, 14.V.1878, *Tillet s.n.* (GB, L, ZT). AIN: Talloires, Lac d'Annecy, hedges, 26.IV.1959, *Bersier s.n.* (G). HAUTE-SAVOIE: Mont Musièges, S. of Genève, near Chaumont, 300-600 m, 23.IV.1949, *van Steenis s.n.* (L). ISÈRE: Vouillant, near Grenoble, foothills, forest, V.1885, *Pellat 5006* (MPU, P). SAVOIE: Near Hauteluce, under Lac de Girotta, forest, 14.IV.1863, *Perrier de la Bâthie s.n.* (G). LOZERE: Mende, shady, s.d., *Prost s.n.* (P). DRÔME: Herbasse, near Crepol, bank, 14.V.1971, *Kruyt & Van Alphen s.n.* (L). HAUTE-GARONNE: Toulouse, Tuilerie de Père David, VII., *Roumeymin s.n.* (BR). BASSES-PYRÉNÉES: In the vicinity of Orthez, 10.V.1847, *Garnier s.n.* (P). HAUTES-PYRÉNÉES: Valley of river Lavedan, between Guchen and Aulon, c. 1000 m, 30.VI.1971, *van Ooststroom 25094* (L). Gavarnie, Bois de St. Savin, 1900 m, VII.1906, *Pitard s.n.* (G).

GERMANY. 86 Collections in all. NIEDERSACHSEN: Bentheimer Wald, 12/17.V.1951, *van der Ploeg 1122-5* (L). Near Göttingen, s.d., *Persoon s.n.* (L). BRANDENBURG: Rohrdorfer Schanzen, near Liebenthal, VI.1928, *Behr & Behr s.n.* (M). Ober-Lausitz, near Nieder-Friedersdorf, s.d., *Neumann 1681* (BAS, BR, H, K [VI.1840], L, P). NORDRHEIN-WESTFALEN: Near Gummersbach, hills, V., *Wirtgen 983 p.p.* (L). Löwenburg, Siebengebirge, in forest, shady, 14.VII.1859, *Hasskarl s.n.* (L).

HESSEN: Marburg, Kernbach, road in forest, 7.VI.1951, *Henssen s.n.* (H). THÜRINGEN: Sonneberg, Stadtberg, V.1895, *Appel s.n.* (Z). SACHSEN: Quedlenburg, near Meissen, s.d., *Hasskarl s.n.* (L). Hohlberg, near Pirma, humid forest, 2.VI.1899, *Stiefelhagen 1701* (L). RHEINLAND-PFALZ: Gerolstein, 28.V.1928, *de Leeuw s.n.* (L). Rolandseck, Whitsuntide 1939, *van Hesperen 160* (L). BADEN-WÜRTTEMBERG: Heidelberg, Reichenstein, 31.V.1899, *Troedel s.n.* (H). BAYERN: Beilberg, NW. of Scharzen Pfütze, near Rottershausen, 9.V.1926, *Oberreden 6166* (BM). Leipheim, Donauwald near bridge of highway, forest of *Fraxinus* and *Quercus*, 5.V.1961, *Doppelbauer 80* (H, M). Lindau, at Boden See, 30.V.1832, *Splitgerber s.n.* (L). München, in forest near Hasseloh, V.1815, *Martius s.n. p.p.* (BR). Bad Tölz, Kalvarienberg, at the border of Haberwald, 700 m, 18.V.1964, *Zollitsch 3172* (M). Passau, Bayerisch-Böhmerisch Wald, footpath to Oberhaus, 9.IV.1961, *Vollrath s.n.* (Herb. Vollrath).

SWITZERLAND. 63 Collections in all. BASELSTADT: Münchenstein, 2.V.1844, *Preiswerk s.n.* (BAS). Grellingen-Aesch, Schlosberg, 1930, *Rilcher s.n.* (G). AARGAU: Baden, V.1929, *Timmermans s.n.* (L). ZÜRICH: Fällander Tobel, near Zürich, forest border, 19.V.1918, *Thellung s.n.* (BAS). Utlberg, 850 m, *Sinia s.n.* (L). NEUCHÂTEL: Gorge du Seyon, near Valangin, shady places, V., *Godet s.n.* (G). BERN: Elsgau, near Roche d'Or, 15 km WSW. of Porrentruy, mixed forest, c. 780 m, 3.VI.1971, *Sauer & Sauer 13139* (M). 3 Km N. of Biel, NE. of Evilard, roadside in dense coniferous forest, c. 500 m, 29.V.1969, *Hämet-Ahti 2126* (H). Near Grindelwald, along mountain rivulet, 1200 m, 12.VII.1971, *Bakhuizen van den Brink s.n.* (L). LUZERN: Luzern, s.d., *Wiki s.n.* (G). UNTERWALDEN: At foot of Pilatus, above Alpnachstad, *Fagus*-forest, calcareous, 1000 m, 15.VII.1908, *von Hayek s.n.* (GB). SCHWYZ: Brunni Alps, under stones in *Coniferae*-region, 1500 m, 15.VII.1891, *Hull s.n.* (H). GLARUS: Road Matt-Riseten Pass, grassy *Fagus*-slope, 1020 m, 12.VI.1966, *Mennema 566* (L). VAUD: Yverdon-Bretonnieres, s.d., *Anon. s.n.* (G). Morges, 1856, *de Dieudonné s.n.* (BR). Leysin, 1450 m, 1.VI.1921, *van Soest-Smit 19718* (L). GENÈVE: Meyrin, near Genève, in hedges, 16.V.1880, *Déséglise s.n.* (BR, H, M). In the vicinity of Genève, *Picea*-forest at Bonnevaux, 27.VI.1827, *de Candolle s.n.* (G). Collonges-Bellerive, near Genève, shady places, 14.V.1885, *Ayasse 5006 bis* (MPU, P).

AUSTRIA. 35 Collections in all. VORARLBERG: Sulzberg, 17.VI.1976, *Dörr s.n.* (M). SALZBURG: Salzburg, Mönchberg, at Scharnentor, 20.V.1905, *Mell s.n.* (PRC). OBER-ÖSTERREICH: Aisterhaim, V., *Kelk s.n.* (COI). Hallstadt, subalpine mixed forest, shady, 650 m, 29.VI.1967, *Pilz s.n.* (Z). NIEDER-ÖSTERREICH: St. Pölten, 16.V.1875, *Hackel s.n.* (COI). Near Reichenau, Eng valley, in thicket, on stony calcareous soil, s.d., *Fl. Exs. Austr.-Hung. 3296* (G, GB, H, K, L, P, Z, ZT). Weidling, near Klosterneuburg, thicket, 18.V.1898, *von Hayek 3699* (GB). Wien, Prater, thicket, 25.V.1888, *Von Hayek 157* (GB). Hundheimer Berge, near Hainburg, forest, 16.V.1921, *von Hayek s.n.* (GB). TIROL: Amraser Schloz, near Innsbruck, 7.VI.1874, *Obrist s.n.* (M). BURGENLAND: Leitha-gebirge, near Eisenstadt, *Quercus-Carpinus*-forest, 18.V.1964, *Schauer s.n.* (M).

POLAND. Ostromecko, Bydgosz, in shady wood, 25.V.1974, *Gugnacka 122* (L). Jawor, 22.V.1895, *Callier s.n.* (L). Strzegom, 17.V.1871, *Zimmermann s.n.* (BR). 'Görbersdorf', 'Storchberge', in shady wood, VI.1871, *Straehler s.n.* (L). Ibid., meadow, 29.V.1885, *Nordström et al. s.n.* (GB). Cieszyn, 20.V.1915, *Schneider s.n.* (G). Ibid., 16.V.1916, *Schneider s.n.* (G). Zips, at Dunajec river, calcareous soil, 400 m, V.1891, *Ullepitsch s.n.* (M). Karpati Zachodnic, Góra Klasztorna, near Kalwaria Zebrzydowskiej, in Fagetum carpaticum, 26.V.1952, *Myczkowski 469* (BR, L, M).

CZECHOSLOVAKIA. Near Pruhonice, in the vicinity of Praha, in forest, c. 300 m, 23.V.1958, *Nitka 66* (BR, COI, H, M). Valley river Vltava, under Orlik castle, in shady wood, V.1900, *Domin s.n.* (PRC). In the vicinity of Krumlov, N.-slope Kler Mountain, in Fagetis, c. 800 m, 19.VI.1954, *Klastersky s.n.* (BR). Near Jaromerice, s.d., *Haehnel s.n.* (L). Brno-Obrany, bank of river Svitava, in thicket, c. 220 m, 15.V.1963, *Dvoráková 1464* (BAS, G, H, L, M). 'Karlsbrunn', VI.1885, *Boije af Gennäs s.n.* (GB). Harta, 'Mangelwald', 440 m, 30.V.1912, *Petrak 1081* (G, Z). Ibid., 450 m, 30.V.1912, *von Cypers s.n.* (GB). Bratislava, V.1868, *Schneller s.n.* (BR). Magas Tatra, mountain 'Késmárker Stösschen', 3.VII.1900, *Filarsky s.n.* (H).

HUNGARY. Near Nadap, mountain forest, shady, V.1872, *Tauscher s.n.* (BR, Z). Budapest, Hárs-Hegy Mountain, in forest, 25.V.1909, *Kocsis s.n.* (BR). Gyorma valley, Törökbalint, near Budapest, in forest, 23.VI.1871, *Tauscher s.n.* (ZT).

ROMANIA. In Cermica-forest, 22.V.1938, *Cretzoiu s.n.* (G).

U.S.S.R. SOUTH-WESTERN DIVISION: Near Chernovtsy, 18.V.1870, *Schur 3207b* (P). Ibid., 1870, *Schur 6393* (P).

SPAIN. VIZCAYA: Rocas de Ichina, 19.VII.1946, *Guinea 834* (K). BURGOS: San Llorente, s.d., *Tremols s.n.* (BR). GUIPUZCOA: Near Irun, in forest, V.1850, *Willkomm s.n.* (COI). HUESCA: Canfrac, Los Aranoms, rocky stony slope of valley, in mixed woods, c. 1200 m, *Sandwith 5802* (K).

ITALY. BASILICATA: Minervino, s.d., *da Palanza s.n.* (FI). Lucania, Monte Sacro di Novi, in *Fagus*-forest, sandy soil, c. 1500 m, *Lacaita s.n.* (BM). CALABRIA: Calabria Mountains, s.d., *Pasquale s.n.* (P). Monte Cataracto, near Castrovillari, in shady humid forest, calcareous soil, 600-700 m, 18.VI.1877, *Huter et al. 380* (P).

JUGOSLAVIA. Ljubljana, mountain forest, clayey layered soil, 350 m, VI., *Mulley 708* (BM, GB). Dalmatia, s.d., *Petter s.n.* (COI). Lapisnica Pass near Serajevo, 650 m, 8.V.1903, *Maly s.n.* (K). Vuciahika Planina, near Sarajevo, 20.V.1895, *Fiala s.n.* (PRC). Bosnia, Ighman Dag, VI.1932, *Gilliat-Smith 3064* (K).

ALBANIA. Kuci, Korita, in plain, 23.VII.1900, *Baldacci 190* (G, K, P).

GREECE. MAINLAND: NW.-Makedhonia, Pisoderion, damp shady gully in beech-forest, 1350 m, 3.VI.1932, *Alston & Sandwith 636* (K).

TURKEY. ISTANBUL: Taillis, near Zekeriyaky, 15.IV.1901, *Aznavour s.n.* (MPU). Belgrad forest, by marsh of big dam, 50 m, 10.V.1962, *Dudley 34635* (BM). KOCAELI: Sabandja, s.d., *Wiedemann s.n.* (K, P). RIZE: Near Rize, hedges, 6.VI.1866, *Balansa s.n.* (AWH, G, K, P). Ibid., 9.VI.1866, *Boissier 888* (G). Çayeli, E. of Rize, 21.IV.1959, *Guichard 23159* (K).

IRAN. Gilan, Lomir, 14.V.1967, *Ahai 12359E* (W).

3.a. *Lamium amplexicaule* L. var. *alepicum* (Boiss. & Hausskn. ex Boiss.) Bornm.

TURKEY. MARAŞ: Ahir Dag above Maraş, near Kandil, in limestone valley, 1100 m, 2.V.1957, *Davis & Hedge 27481* (K). GAZIANTEP: Between Gaziantep and Nizip, 15 km from Gaziantep, disturbed steppe, marly soil, 850 m, 14.V.1957, *Davis & Hedge 27888* (BM, K). Between Nizip and Birecik, marly vineyards, 450 m, 14.V.1957, *Davis & Hedge 27920* (K). URFA: Birecik, near Tschiflik, on cultivated ground, 5.IV.1888, *Sintenis 209* (JE, K).

SYRIA. Near Haleb, in cornfield, calcareous soil, 15.III.1865, *Hausknecht 244* (G, JE). Ibid, in field, II.1867, *Hausknecht 801* (G, JE, P). Ibid., in field, 360 m, 6.II.1867, *Hausknecht s.n.* (AWH, BM, K). Ibid., s.d., *Rupell s.n.* (BM).

IRAQ. Arbil, Kuh Safin, near Shaqlawa, 1600 m, 16.V.1893, *Bornmueller 1711* (JE). Near Rayat, on gravelly hillside, 30-1800 m, 21.IV.1936, *Low 221* (BM). Gweya Dag, near Sulayama-niyah, *Quercus*-forest entirely destroyed, limestone, 1100 m, *Gillett & Rawi 10614* (K).

IRAN. Alvand, V.1897, *Strauss s.n.* (JE). Sultanabad, near Quazvin, corn-field, 1500 m, IV.1935, *Lindsay 86* (W). Ibid., garden weed, 1500 m, IV.1935, *Lindsay 122* (W). Ibid., corn-field, 1500 m, V.1936, *Lindsay 156* (W). 5 Km W. of Quazvin, sandy soils, 23.IV.1961, *Stutz 712a* (W). Quazvin, 1882, *Pichler s.n.* (K). Surroundings of Quazvin, steppe, 1200 m, 15.IV.1956, *Schmid 5053* (W). Karaghan, IV.1902, *Strauss 338* (JE). Kuh-i-Sefid, Arak, corn-field, 1800 m, 21.V.1963, *Bowles Scholarship Bot. Exp. 1748* (K). Arak, in field, V.1889, *Strauss 323* (JE). Near Arak, in field, 16.III.1892, *Strauss 124* (JE). Dow Rud, in field, 1.III.1941, *Koelz 17100* (W). Khunsar, in desert, 1800 m, 24.V.1915, *Pravitz 816* (W). Kuh Bil, near Dasht-e Arzhan, 19.V.1885, *Stapf 1411* (K). Chenar Rah Dar, in mountain, 1500 m, 29.I.1915, *Pravitz 521* (W).

3.b. *Lamium amplexicaule* L. var. *amplexicaule*

ICELAND. Eyrabakki, 1924, *Sambon s.n.* (BM).

NORWAY. Åkershus, Blindern, field, 15.VIII.1936, *Aalen s.n.* (BM).

SWEDEN. Sollefteå, VII.1913, *Johansson s.n.* (BM). Uppsala, s.d., *Andersson s.n.* (L). Lidsjö, 1874, *Hyllén-Cavallius s.n.* (COI). Wallsjö, VI.1876, *Hyllén-Cavallius s.n.* (COI). Gotland, Gothemsån, N. of Line, along field, 29.VII.1966, *Mennema 680* (L). Malm, V.1891, *Roth s.n.* (BM).

FINLAND. Kokkola, Ykspihlaja, near railway station, under new planted ornamental shrubs, VII.1961, *Cygnel s.n.* (H). Sauvo, Järvenkylä, W. of Marike estate, on fallow field, 8.IX.1971,

Alava & Laine s.n. (ZT). Karkku, Satakunta, Järventaka, in garden, 10.VII.1885, *Hjelt & Hjelt 337* (COI). Jääski, Järventaka, weed in field, 23.VII.1927, *Valle s.n.* (L).

DENMARK. Mølle, VII.1912, *Granvik s.n.* (BM). Kalundborg, 16.VI.1959, *Baagøe s.n.* (ZT). Copenhagen, in field, V.1849, *Lange s.n.* (P).

GREAT-BRITAIN. SCOTLAND: Morayshire, Kingston, 23.VII.1938, *Sandwith & Sandwith s.n.* (L). WALES: Anglesey, Pary Mount, waste place, 25.VIII.1974, *Leenhouts 2990* (L). Pembrokeshire, St. Davids, cultivated fields, 13.VIII.1931, *Sandwith & Sandwith s.n.* (L). ENGLAND: Yorkshire, Seamer, near Scarborough, 28.IX.1858, *Anon. s.n.* (COI). Nottinghamshire, on the edge of the Barrow Hills, Everton, sandy cultivated field, 9.VIII.1939, *Sandwith & Sandwith s.n.* (L). Norfolk, Pretty Corner, S. of Sheringham, near cross-road, at edge of barley-field, 90 m, 16.VII.1951, *Summerhayes 2448* (L). Hertford, Hitchin, Purwell Field, 18.X.1932, *Little s.n.* (ZT). Somerset, near Axbridge, fields, 8.VI.1914, *Sandwith s.n.* (L). Essex, Bradwell Waterside, cultivated field, 25.VI.1955, *Sandwith 4328* (L). Kent, The Mount, Leatherhead, 75 m, on open ground, 26/31.XII.1959, *Burkill 2195* (L).

NETHERLANDS. 308 Collections in all. WADDEN ISLANDS: Terschelling, Midsland, roadside, 13.VI.1950, *Vink 728* (L). FRIESLAND: Ferwerd, corn-field, 30.VI.1942, *van der Ploeg 1123-1* (L). GRONINGEN: Winschoten, clay field, ruderal, 30.V.1939, *Duiven 3413-1* (L). OVERIJSSSEL: Spoolde, near Zwolle, ray-field, V.1890, *Carmiggelt s.n.* (L). GELDERLAND: Warnsveld, near Zutphen, cultivated ground, 24.IX.1849, *Cop s.n.* (NBV). UTRECHT: Amerongen, near Zuilestein, in field, 20.X.1969, *Mennema 1420* (L). NOORD-HOLLAND: Bloemendaal, Boekenrode, dune plain, 8.VI.1867, *van Eeden s.n.* (NBV). ZUID-HOLLAND: Oegstgeest, Groene Kerkje, along wall of cemetery, 25.IV.1948, *van Ooststroom 9842* (L). Sommelsdijk, Christoffeldijk, in beet-field, *van Ooststroom 24790* (L). ZEELAND: Rammekens, along dike, 13.VI.1840, *Blaas s.n.* (L). NOORD-BRABANT: Bergen op Zoom, Oude Wouwsche weg, vegetable garden, 18.IV.1921, *Sloff s.n.* (NBV). LIMBURG: St. Pietersberg, near Maastricht, in field, 4.IV.1938, *van Ooststroom 1208* (L).

BELGIUM. OOST-VLAANDEREN: In the environment of Gent, III/IV.1842, *Fredericq s.n.* (AHW). St. Denijs-Westrem, field, IV.1876, *van Heurck s.n.* (AWH). NAMUR: Near Ivoir, 25.IV.1930, *Huysman s.n.* (L). Dinant, roadside, 14.VI.1879, *Gravet s.n.* (L).

LUXEMBOURG. Beaufort, along the road to Vogelsmühle, on wall 6.VII.1947, *van Ooststroom 9052* (L).

FRANCE. NORD: Ghyvelde, near the Belgian frontier, under *Colutea*-hedge, 28.V.1969, *Mennema 1114* (L). ARDENNES: Bogny, roadside, V.1885, *Gravet s.n.* (L). EURE: Between Verneuil-sur-Avre and Mortagne-au-Perche, roadside, 18.V.1966, *Bakker & Pegtel s.n.* (L). MEURTHE-ET-MOSELLE: Nancy, cultivated places, 7.VI.1857, *Fl. Gall. Germ. Exs. 2126 bis* (G, P, WAG). MORBIHAN: Between Carnac-plage and La Trinité-sur-Mer, abandoned field, 22.V.1966, *Bakker & Pegtel s.n.* (L). HAUT-RHIN: Colmar, s.d. *Kampmann s.n.* (L). VENDÉE: Fontenay-le-Comte, cultivated places, 21/30.IV.1857, *Fl. Gall. Germ. Exs. 2126* (G, P, WAG). ALLIER: Yzeure, Croix Duret, 21.III.1897, *Lassimonne 779* (COI). PUY-DE-DÔME: Le Théron, vineyard, 29.IV.1888, *Echavidre s.n.* (M). RHÔNE: St. Symphorien-sur-Coise, on wall, V.1889, *Meyran s.n.* (COI). HAUTE-LOIRE: Lavoûte-Chilhac, grassy field, VIII.1883, *Chaix s.n.* (COI). ISÈRE: Vienne, V.1889, *Lardièrre s.n.* (L). HAUTE-GARONNE: Toulouse, in field, IV.1882, *Timbal-Lagrave s.n.* (G, L, P, W). HÉRAULT: Murviel, vineyard, 13.II.1927, *Keller s.n.* (ZT). Montbazin, cultivated places, *Neyraud s.n.* (MPU). N. of Montpellier, field, 7.XII.1907, *Hess s.n.* (ZT). Montpellier, Promenade du Peyrou, along lawn in public garden, 17.V.1970, *Leenhouts 2210* (L). Creux de la Miège, SW. of Montpellier, 18.V.1970, *Mennema 1497* (L). GARD: Camargue, Phare de l'Espiquette, 14.V.1970, *Mennema 1483* (L). BOUCHES-DU-RHÔNE: Near Pâtis-de-la-Trinité, along Petite Rhône river, 4/15.IV.1977, *Exc. Leeuwenh. Inst. 2* (L). VAR: Giens, 12.V.1935, *Huysman s.n.* (L). Near Le Trayas, 19.III.1928, *de Leeuw s.n.* (L). ALPES-MARITIMES: Grasse, cultivated places, old walls, 30.III.1967, *Gavelle s.n.* (BAS). Cannes, spring 1867, *Anon. s.n.* (L). PYRÉNÉES-ORIENTALES: Roussillon, Argelès-sur-Mer, 6.III.1961, *Veth & Koopmans s.n.* (L). CORSE: Ajaccio, weed along the road, 25.IV.1935, *Boom 9558* (L).

GERMANY. SCHLESWIG-HOLSTEIN: In the vicinity of Bergedorf, s.d., *Anon. s.n.* (COI). Ahrensburg, s.d., *de Bunge s.n.* (P). Hamburg, in field, 1839, *Sonder s.n.* (L). NIEDERSACHSEN: Near Varel, on loamy field, *Beker s.n.* (GOET). Osnabrück, under the hedge, 6.VI.1930, *van Ooststroom 3222* (L). Pagenberg, near Goettingen, 2.V.1912, *Voigt 1993* (L). SACHSEN-ANHALT: Plauen, Heideschanze, fields, 15.VI.1900, *Stiefelhagen 1695* (L). BRANDENBURG: Berlin, Steglitz, 25.V.1905,

van Soest 26825 (L). Berlin, near Rixdorf, in field, 19.V.1882, *Hoffmann s.n.* (COI). Dahmsdorf, roadside, 28.V.1882, *Hoffmann s.n.* (COI). NORDRHEIN-WESTFALEN: Bonn s.d., *Treviran s.n.* (L). Siebengebirge, near Königswinter, along field, 5.IV.1859, *Hasskarl s.n.* (L). HESSEN: Near Frankfurt, 100 m, V.1911, *Peipers s.n.* (L). THÜRINGEN: Near Naunburg, 24.VI.1930, *Huysman s.n.* (L). Jena, s.d., *Anon. s.n.* (L). SACHSEN: Tharandt, Hauptsberg, 27.V.1903, *de Beaufort s.n.* (L). RHEINLAND-PFALZ: Frankenthal, s.d., *Lehmann s.n.* (ZT). BAYERN: Kissingen, VII., *Splügerber s.n.* (L). Windsheim, s.d., *Rehm s.n.* (L). Ober-Idling, near Regensburg, IV.1892, *Rehm s.n.* (L). Landshut, s.d., *Schultes s.n.* (L).

SWITZERLAND. VAUD: In the vicinity of Lausanne, in fields, cultivations and on walls, s.d., *Anon. s.n.* (L). WALLIS: Tourbillon, near Sion, 27.III.1890, *Petit s.n.* (COI).

AUSTRIA. NIEDER-ÖSTERREICH: Near Dornbach, in vineyard, V.1892, *von Pirnhoffer s.n.* (COI). Mauer, near Wien, 27.IV.1934, *Schneider s.n.* (W). Wienerwald, above Perchtoldsdorf, 1.V.1913, *Ronniger s.n.* (W). Mödling, Richardshof, 24.IV.1913, *Ronniger s.n.* (W). Moosbrunn, 5.V.1928, *Schneider s.n.* (W).

POLAND. Guhrau, Saborwitz, VIII.1890, *Scholz s.n.* (L). Wroclaw, garden weed, 120 m, 2.VI.1893, *Baenitz s.n.* (G, L, P). Wroclaw, Rothkrescham, fields, VI.1864, *Uechtritiz s.n.* (L, W). Klein Schimnitz, 13.IV.1876, *Anon. s.n.* (L).

CZECHOSLOVAKIA. Münchegrätz, cultivated land, V.1954, *Sekera s.n.* (W). Praha, IV.1849, *Opiz s.n.* (W). Near Pruhonice, in the vicinity of Praha, in field, c. 300 m, 26.X.1958, *Nitka 65* (COI). Bratislava, in field, 1864, *Uechtritiz s.n.* (AHW).

HUNGARY. Between Angern and Jakabfalva, fallow land, 23.VI.1912, *Morton s.n.* (ZT). Budapest, on sunny limestone, s.d., *Lang s.n.* (K, L). Near Rakosfalva, Budapest, on cultivated land, 18.IV.1927, *Kozzilkov 982* (BM, G, WAG, Z, ZT). Debrecen, puszta, summer 1935, *Hardick s.n.* (L).

ROMANIA. Iasi, 10.V.1962, *Toma s.n.* (BM). Moldova, Cristești, waste place, c. 40 m, 10.IV.1938, *Burduja 2042a* (L). Basarabia, Lapușna, Italianca hills near Chișinau, c. 90 m, 18.IV.1938, *Arvat 2042c* (L). Racaciuni, near Gheorge Doja, in field, c. 250 m, 16.V.1974, *Mititelu et al. 551* (L). Tecuci, near Hanul-Conachi, in sandy grassy place, c. 19 m, 5.V.1939, *Forstner 2042b* (L).

U.S.S.R. BALTIC DIVISION: Between Tartu and 'Forbushof', near 'Avro', in field, 16.VII.1860, *Gruner s.n.* (BM). Kaliningrad, near 'Liep', field, 11.VI.1873, *Baenitz s.n.* (L, W, Z). SOUTH-WESTERN DIVISION: Dublyany, garden weed, VII., *Raciborski 78* (L, P). Uman, in field, VII.1867, *Golde s.n.* (K). Kherson, Odessa, between Adrianowka and Gribowka near Ovidiopol, in garden, 8.V.1900, *Kulikowsky 1181* (COI, G [as *Kulikowsky 1188*], K). KRYM: Yalta, Nikita, waste ground near sea, 5 m, 30.V.1959, *Davis 33161* (K). CAUCASUS: Caucasus, III.1880, *Radde s.n.* (K, P).

PORTUGAL. 46 Collections in all. Viçosa, Tapada Real, A'guas Férreas, 4.V.1947, *Fernandes & Sousa 1446* (COI). Near Bragança, 18.III.1941, *Carneiro 101* (COI). Martianes, between Pinhel and Guarda, sandy field, 25.IV.1962, *Paira et al. 8405* (COI). Santarum, near Castelo, field, calcareous soil, 29.III.1954, *Matos, Matos & Santos 4616* (COI). Cotovia, near Setubal, along ditch, 17.IV.1936, *Kostermans & Kruyt 336* (L). Castelo de Vide, in field, 6.IV.1963, *Paira et al. 8909* (COI). Santiago de Cacém, roadside, 3.IV.1963, *Paira et al. 8784* (COI).

SPAIN. GUIPUZCOA: Hernani, IV.1895, *Gandoger s.n.* (COI). LERIDA: Cervera, roadside, 27.IV.1959, *Boom 36767* (L). GERONA: Figueras, building land, 31.III.1974, *Litzler 74/112* (ZT). Costa Brava, near Sagaro, corn-field, IV.1951, *Tschopp s.n.* (BAS). Ibid., Rosas Almadraba, stony open area, IV.1965, *van der Meer Mohr s.n.* (L). Blanes, 7.IV.1934, *Kruseman & Kruseman* (L). BARCELONA: Barcelona, garden, 7.III.1928, *Sennen 6643* (COI, G, W). Ibid., airport, sandy ground, 13.IV.1973, *Litzler 230/73* (ZT). TARRAGONA: Cambrils, oliveyard, in plowed soil, 21.V.1972, *van Alphen s.n.* (L). Road to Ermita del Lorita, 5.III.1962, *Veth & Koopmans s.n.* (L). MADRID: Madrid, field, 26.IV.1918, *Jeromino s.n.* (BM). BADAJOZ: Llerena, V.1906, *Gandoger s.n.* (ZT). ALICANTE: Alcoy, 30.V.1927, *Reese s.n.* (BAS). CADIZ: Near Puerto de Sta. Maria, in field, 10.II.1845, *Willkomm s.n.* (COI). MALAGA: Ronda, roadside, cultivated land, 8.IV.1924, *Reese s.n.* (BAS). Valley Castada de Peria, Sierra de Yunquiera, in alpine region between gravels, 1650-1800 m, 27.IV.1845, *Willkomm 831* (COI). Los Ventiaquiros, Sierra Tejada, 1800 m, 9.VI.1845, *Willkomm s.n.* (COI). GRANADA: Puerto de la Alazares, S. of Loja, arable field on limestone, 1000 m, 1.V.1951, *Alston 10781* (BM). Sierra Nevada, N.-side, c. 2000 m, 28.V.1936, *Reese s.n.* (BAS).

GIBRALTAR: Pelayo, 10.III.1912, *Wolley-Dod 336* (BM). ISLAS BALEARES: Mallorca, Palma, Rasca road, in cultivated field, nearly sea-level, 25.I.1921, *Godman 29* (BM). Ibid., Comim-Porto Pi, cultivated land, 15.III.1954, *Ferrer 659* (COI). Menorca, Sta. Ponsa, Alayor, cultivated field, 24.V.1874, *Rodriguez s.n.* (COI).

ITALY. 42 Collections in all. PIEMONTE: Torino, near river Po, sandy soil, 23.V.1786, *Balbis s.n.* (TO). Revello, Cascina Croce, cultivated field, 3.V.1918, *Ferrari & Fogliarza s.n.* (TO). LOMBARDIA: Bormio, 1894, *Levier s.n.* (FI). TRENTO: Bolzano, in vineyard, 1830, *Hausmann 291* (L). ELBA: Capo d'Ensola, 8.IV.1968, *Dubois s.n.* (WAG). TOSCANA: Pisa, waste place, III.1845, *Savi s.n.* (L). Casale, bank, IV.1869, *Negri s.n.* (TO). LATIUM: Tivoli, Monte Spaccato, 9.IV.1905, *Vaccari s.n.* (FI). ABRUZZI: Avezzano, between Iucile and Lago Fucino, s.d., *Vaccari s.n.* (FI). CAMPANIA: Near Napoli, IV.1833, *Splitgerber s.n.* (L). PUGLIA: Isola Tremiti, Cretaccio, 9.V.1893, *Martelli s.n.* (FI). BASILICATA: Barletta, 1869, *Bruni s.n.* (G). SARDEGNA: Sassari, inner court Botanical Garden, 15.X.1922, *Fiori & Béguinot 2737* (FI, G, K, P, ZT). Ibid., 15.X.1922, *Fiori & Béguinot 2738* (ZT). Donori, 5.IV.1894, *Martelli s.n.* (FI). SICILIA: Palermo, in vineyard, III., *Todaro 558* (AWH, K, P). MALTA: Ghammieri, 27.V.1957, *Wheeler 211* (K).

JUGOSLAVIA. Near Vrem, in Reka valley, field, 360 m, *Paulin 704* (BM). Split, 15.V.1942, *Radermacher 570* (L). Near Malfi, cultivated field, V.1898, *de Halácsy s.n.* (COI).

ALBANIA. Tirana, 19.IV.1925, *Rogers s.n.* (L).

GREECE. 32 Collections in all. MAINLAND: Between Lilikosti and Dhidhimotikhon, 24.IV.1961, *Rehinger 22072* (W). Between Derbend and Aisimi, near Alexandroupolis, 27.IV.1961, *Rehinger 22278* (W). Kalamaria, S. of Thessaloniki, 28.IV.1918, *Kench s.n.* (BM). Fthiotidos, c. 6 km S. of Dhomokos, on bare hills, near spring, on serpentine, c. 550 m, 6.V.1961, *Rehinger 22858* (W). Attiki, near Liopesi Mesogaeu, 6.V.1877, *de Heldreich 3779* (BM, K). Top of Pendelikon, 3.XI.1921, *Rikli s.n.* (ZT). THASOS: Limenas, on plain, V.1891, *Sintenis & Bornmueller 408b* (LD). SIROS: Siros, IV.1919, *Gandoger s.n.* (K). IKARIA: Ayios Kirikos, Atheras Mountain, on stony soil, c. 900 m, 18/24.IV.1934, *Rehinger 4407* (W). SAMOS: Between Ayios Konstandinos and Nenedes, on stony shady soil, c. 100 m, 6.IV.1934, *Rehinger 3767* (W). KRITI: Khora Sfakion, Levka Ori, between Potamos and Katsiveli, in pasture, c. 1600 m, 15.VI.1942, *Rehinger 13821* (G, W). Near Knosos, 25.IV.1955, *van Soest 35480* (L).

BULGARIA. Between Nova Zagora and Stara Zagora, in arable land, 12.VI.1973, *Mennema 2091* (L). Near Sliven, 188., *Velenowsky s.n.* (PRC). Burgas, 19.V.1929, *Kruseman & Kruseman s.n.* (L).

TURKEY. 32 Collections in all. ISTANBUL: Florya, W. of Istanbul, hill slope, in fallow loamy soil, c. 50 m, 2.IV.1959, *Hennipman et al. 45* (L, WAG). Heybeli Ada, waste place, 30 m, 24.III.1957, *Davis & Hedge 26224* (K). ÇANAKKALE: Thymbra, 24.III.1883, *Sintenis 107 p.p.* (P). BALIKESIR: Bigadiç, fallow field, 150 m, 21.III.1956, *Davis & Polunin 25146* (K). IZMIR: Between Karaburun and Yeniliman, near Dalyan Burnu, cultivated land, 16.III.1967, *Bocquet 4139* (ZT). At foot of Yamanlar Dagı, above Karsiyaka, roadside, 250 m, 21.II.1966, *Bocquet 1122* (ZT). Izmir, 30.IV.1812, *Reunard s.n.* (BM). Kuşadasi, open spots in oliveyard, 19.IV.1974, *van Ooststroom 25224* (L). AYDIN: Sultanhisar, between Aydın and Nazilli, fig orchard, on light soil, 30 m, 3.IV.1956, *Davis & Polunin 25602* (K). MUĞLA: Çiçekli, near Ula, among limestone rocks in Pinetum brutiae, 300 m, 1.IV.1956, *Davis & Polunin 25551* (K). Elbis Dagı, between Seki and Elmali, near melting snow, in turf, 1600 m, 1.IV.1956, *Davis & Polunin 25570* (K). ANKARA: Ankara, 4.V.1944, *Kazaphgel 329* (K). Near Çankaya, slope, IV.1931, *Görz 53* (BM). IÇEL: C. 7 km NNW. of Pozanti, E. slope with boulders, c. 1400 m, 8.V.1959, *Hennipman et al. 961* (L). Between Gülnar and Gökbelen, oak-forest, 1000 m, 14.IV.1956, *Davis & Polunin 26062* (K). AMASYA: Karaman, near Amasya, 15.V.1893, *Manissadjian 23* (M, W). Taşlık, 18.IV.1891, *Manissadjian 80* (M). KAYSERI: Kısge at W.-foot of Bakir Dagı, on walls, 1300 m, 27.VI.1952, *Davis et al. 19212* (BM, K). ADANA: Between Pozanti and Toros Dagları, in Quercetis (*Quercus coccifera*), 300-500 m, 16.III.1965, *Rehinger 27034* (W). HATAY: Yayladag, waste ground, 700 m, 28.IV.1957, *Davis & Hedge 27185* (K). GAZIANTEP: Gaziantep, 10.IV.1882, *Post s.n.* (BM). Ibid., 900 m, III.1887, *Manissadjian 12* (GOET). Yona, 25 km E. of Gaziantep, 900 m, IV.1908, *Harad-jian 1748 & 1760* (G). MALATYA: Malatya, 1000-2500 m, V/X.1932, *von Ajtai-Kovach s.n.* (W).

CYPRUS. Nicosia, III.1955, *Baker 141 & 151* (BM). Near Larnaca, to the shore, 25.II.1880, *Sintenis & Rigo 945* (P).

SYRIA. Near Ḥalab, s.d., *Rupell s.n. p.p.* (BM). Qal'at al Ḥiṣn, N. of Nahr al Kabir, calcareous limestone rocks, 400 m, 9.II.1955, *Helbaek 171* (K). Near Esh Sham, cultivated land, 600 m, II.1945, *Norris s.n.* (BM).

LEBANON. Tarabulus, fields, 3.III.1945, *Trench s.n.* (BM). S. of Ra's Bayrut, dune landscape, calcareous, 10-15 m, 21.I.1955, *Helbaek 52* (K). Riyaq, Suwayda, II/III.1926, *Berton 43* (P). Dahr al Baydar, stony ground, 1200 m, 19.II.1955, *Trott 2092* (K). Jabal Ash Shaykh, 1949, *Bernström 34* (K).

ISRAEL. Deganya, 7.IV.1945, *Cappen s.n.* (BM). Gan Shemu'el, 22.I.1906, *Aaronsohn s.n.* (MPU). Hashefela, Miqweh Ysra'el, citrus grove, sandy-loam soil, ruderal places, 4.II.1939, *Feinbrun et al. 682* (COI, G, L, P, WAG, Z, ZT). Yerushalayim, field, 3.IV.1949, *Grizi 13751* (HUJ). Ibid., *Grizi 13760* (L).

JORDAN. Nabulus, 1821, *Wallich 2074* (P). Ariha, field, 230 m, 21.II.1911, *Meyers & Dinsmore 2355* (L). Ain Hisban, Kulonieh, field, 200-800 m, 7.II.1903, *Meyers & Dinsmore 355* (L). Rumman, 10.IV.1880, *Barbey 728* (P).

IRAQ. Dihok, Mosul, disturbed waste area, 17.III.1956, *Amin 84* (COI, G, L, WAG, Z). Tigris plain, near Mosul, on waste ground, 300 m, 11.III.1936, *Low 75* (BM). Ibid., on hillside, 200 m, 17.IV.1958, *Shahwani 25172* (K). Mosul, 1845, *Botta s.n.* (P). Niniveh, irrigated tree plantation, 220 m, 5.III.1966, *Anders 520* (W). Jabal Maqlub, near Mosul, limestone mountain slope, 550-750 m, 17.IV.1958, *Shahwani 25192* (K). Salahaddin forestry enclosure, limestone, with coppiced *Quercus aegilops*-forest, 1000 m, 18.IV.1948, *Chapman 11969* (K). Rawanduz Gorge, 16.III.1930, *Guest 596* (G). Safin Dagh, Shaqlawah, under shelter of rocks and shrubs, 1350 m, 9.IV.1958, *Polunin 5027* (K). Berd Agha Gin, c. 18 km NW. of Ranya, on mountain slope, 1115 m, 12.V.1959, *Rawi et al. 28687* (K). Dukan Dam, hillside, 600 m, III.1958, *Neade 128* (BM). Jarmo, Mound wadi, damp patch in shade of rocks, 27.III.1955, *Helbaek 496* (K). Malakawa, on highway Sulaymaniyah-Penjwin, *Rhus-Quercus*-forest on hillside, 1320 m, 20.VI.1957, *Rawi 22203* (K). Ali al Gharbi, II.1919, *Graham 357* (BM). Ali al Gharbi, al Kalah Island in the river Euphrates, Ramadi, 11.III.1962, *Barkley et al. 671* (W).

IRAN. 30 Miles NE. of Bostanabad, near Ardabil, sandy slopes, 1500 m, 5.VI.1962, *Furse 2410* (W). Gilan, Lahijan, walls, VI.1936, *Lindsay 906* (BM). Yehlah, Espeyli, VI/VIII.1936, *Lindsay 1134* (BM). Ibid., corn-field, VII.1936, *Lindsay 1253* (BM). Kuh-e Saryal, in the E. foothills, 28.II.1944, *Kolenati 1247* (P). 5 Km W. of Qazvin, sandy soil, 23.IV.1961, *Stutz 7126* (W). Near Qazvin, gardens and irrigated orchards, c. 1200 m, 13.IV.1956, *Schmid 5015* (W). Sultanabad, near Qazvin, 1500 m, IV.1935, *Lindsay 36* (BM). 10 Km W. of Karaj, W.-facing slope, gravelly surface, below c. 1650 m, 22.IV.1961, *Stutz 699* (W). Near Kalak, in mountains, 1600 m, 13.IV.1948, *Rechinger 2741* (W). Kuh-e Dasht, near Karaj, 21.V.1937, *Rechinger 258* (W). 15 Miles N. of Tehran, 1650 m, 7.V.1961, *Stutz 1058* (W). Kuh-e Eybürz, between Darband and Pass Qaleh, among boulders, 6.V.1843, *Kotschy 111* (AWH, G, P). Darband, N. of Tehran, 1200-2000 m, 22.IV.1956, *Schmid 5136* (W). Varamin, field, V.1957, *Reitsma 42* (L). Kermanshah, Gilan-e Gharb, 10.VI.1966, *Kalali 6921* (L). Kermanshah, Shahabad, N.-slope with sparse and damaged *Quercus persica*, and low *Astragalus*-shrubs, 1100-1300 m, 15.IV.1963, *Jacobs 6220* (L, W). 25 Km W. of Kermanshah, Sarabe Nelufar, streamside, 4.IV.1960, *Bent & Wright 404-106* (W). 8 Km NE. of Kermanshah, Warwasid Cave, rocky hillside, c. 1350 m, 31.III.1960, *Bent & Wright 331-206* (W). 22 Km E. of Kermanshah, Qalapain, rocky waste field, c. 1260 m, 1.IV.1960, *Bent & Wright 401-103* (K). Kermanshah, below Tang-i-Knesht Cave, talus slope, 24.III.1960, *Watson 324-103* (W). Kermanshah, 8 km NW. of Bisoton, Nojubaran, roadside, 6.IV.1960, *Bent & Wright 406-307* (W). Hamedan, Bahar, 22.V.1965, *Bahai 6708* (W). 48 Km from Khorramabad to Dezful, on base of rock cliff, 900 m, 22.III.1962, *Furse 1145* (W). 60 Km NE. of Dezful, 500 m, 19.IV.1937, *Koeie 1184* (W). Ibid., 700 m, 21.IV.1937, *Koeie 1185* (W). Luristan, Dow Rud, dry bare slope, 8.IV.1941, *Koelz 17203* (P). Azna, Shuturan Kuh, foothills, rocky slope above river, almost ungrazed, 1800 m, 6.V.1962, *Furst 1760* (W). Bushehr, near Dalaki, III.1845, *Kotschy 846* (G, P). S. of Kuh Chang, E. of Kazerun, W.-facing slope, stony clay among limestone boulders and sparse *Quercus*, 2340 m, 12.IV.1966, *Archibald 1289* (W). Dasht-e Arzhan, in oak-forest, 8.IV.1940, *Koelz 14781* (W). Maskun, in field, 2400 m, 12.II.1940, *Koelz 14383* (W). 20 Km SW. of Saadatabad, along stream, 1800 m, *Grant 15433* (W). Between Khabbis and Kerman, in mountain, Diracht-inshan, IV.1859, *de Bunge s.n.* (P). Between Khabbis in Kerman, in mountain, Gardaneh-ye Sirch, IV.1859, *de Bunge s.n.* (P). Kuh-e Jebal Barez, between Bam and Jiroft, 1948, *Rechinger 3834* (G, W). Ibid., above Deh Bakri, c. 2400 m, 1/10.V.1948, *Rechinger 3765* (W).

AZIATIC U.S.S.R. TURKMENIYA: Ashkhabad, in mountain above Nephton, 9.IV.1900, *Sintenis 50* (BM, G, K, P, Z). Tengi Sharam, V.1881, *Capus s.n.* (P). Voroukischl, 1881, *Capus 1084* (P).

UZBEKISTAN: Tashkent, 18 & 29.III.1895, *Chaffanjon s.n.* (P). Baldschuan, 18.V.1833, *Regel s.n.* (K). *Ibid.*, 18.IV.1884, *Regel s.n.* (BM, P).

AFGHANISTAN. Bala Morghab, Morghab, in fields, 500 m, s.d., *Koeie 3510* (W). Nuristan, Gusalak, 1000 m, 16.III.1948, *Edelberg 223* (W). Herat, 22.IV.1956, *Amsel s.n.* (W). Kabul, Behzud, irrigated field, 2800 m, 23.VII.1962, *Rechinger 18617* (G, W). Paghman, field, 2250 m, 26.VI.1937, *Koelz 12077* (W). Istalif, sandstone, 1900 m, 1.V.1967, *Rechinger 33613 & 33614* (W). Chavikar, Pule Surkh, clover-field, 12.IV.1950, *Neubauer 708* (W). Khost, in gorge of Kurram river, between Chakmanni and Ahmad Khel, 1850 m, 6.VI.1967, *Rechinger 35670* (W). Qal'at os Seraj, 13.V.1951, *Volk 1943* (W). Jalalabad, beet-field, 600 m, 15.II.1950, *Gilli 3610* (W). *Ibid.*, garden, 5.III.1952, *Volk 2422* (W). Girishk, lawn in hotelgarden, 880 m, 21.II.1951, *Gilli 3611* (W). Kandahar, corn-field in hotelgarden, 1020 m, 26.II.1951, *Gilli 3612* (W).

PAKISTAN. Chitral, Pechus, irrigated field, 3250 m, 7.III.1968, *Stamm & Wöhr 43* (W). Chitral, wheat-field, 1500 m, 10.IV.1958, *Stainton 2160* (BM). Bank of Swat river, near Mingora, 3.VI.1965, *Rechinger 30670* (W). Quetta, Sariab S Quetta, irrigated field, 1700 m, 7.V.1965, *Rechinger 28832* (G, W).

INDIA. MAINLAND: NW. Himalaya, 1800-3000 m, s.d., *Hooker f. & Thomson s.n.* (L, P). Tehri-Garhwal, Hiala, Ganges valley, 2400-2700 m, 28.VI.1883, *Duthie 163* (BM). Almora, Kumaon, 1500 m, s.d., *Strachey & Winterbottom 1* (P). Almora, King, Chumbi, 1500 m, 24.VII.1884, *Strachey & Winterbottom s.n.* (BM). KASHMIR: Satpura, Battistan, in cultivated ground, 2700-3000 m, 13.VII.1892, *Duthie 12032* (BM). Prahnu, Skyoh river, Bathistan, sides of irrigation channels, 2790 m, 28.VI.1928, *Ludlow s.n.* (BM). Henu, Ladakh, along stream, 3300 m, 6.VIII.1931, *Koelz 2565* (L). Bragnak, Ladakh, in fields, 3900 m, 1.IX.1931, *Koelz 2790* (L). Pahlgam, 2160 m, 10.VI.1958, *Thaphyal Raizadai s.n.* (L). Leh, Ladakh, 15.VII/5.VIII.1856, *Schlagintweit 959* (P). BHUTAN: Bhutan, s.d., *Griffith 2371* (G). Bunthang Tang, near Bunthang, in open places near cultivation, 2700 m, 19.V.1949, *Ludlow et al. 18902* (BM). Ha, in corn-field, 2700 m, 10.IV.1949, *Ludlow et al. 16032* (BM). Wong Chu, Namselling, field, 2160 m, 7.V.1966, *Bowes Lyon 3061* (BM). Phobsika, on open grassy hillslopes, 3000 m, 25.V.1937, *Ludlow & Sherriff 3109* (BM).

NEPAL. Uttar Ganga, near Shorpatan, among rocks and small shrubs, 3090 m, 26.IV.1954, *Stainton et al. 2618* (BM). Padmara, NE. of Jumla, 2700 m, 11.V.1952, *Polunin et al. 4041* (BM, L, P). Jumla, in cultivation terraces, 2250 m, 6.V.1952, *Polunin et al. 920* (BM). Phalabang, corn-field, 1200 m, 28.III.1952, *Polunin et al. 694* (BM). Tarakhola, W. of Beni, corn-field, 2250 m, *Stainton et al. 214* (BM). Chingao, N. of Tukucha, at edge of field, 2700 m, 3.VI.1954, *Stainton et al. 887* (BM). Tukucha, Kali Gandaki valley, open grass slopes, 3000 m, 21.VIII.1954, *Stainton et al. 7379* (BM). N. of Katmandu, 3300 m, III.1952, *Proud 12* (BM). Langtang, waste ground, 3450 m, 22.VI.1949, *Polunin 520* (BM). *Ibid.*, wall side, VI.1949, *Polunin 611* (BM). *Ibid.*, 1949, *Polunin 1000* (BM). Melung, 2820 m, 24.IV.1931, *Sharma 231* (BM). Tamur valley, Mewa Khola, S. of Topke Gola, at edge of village, 3750 m, 18.V.1956, *Stainton 350* (BM).

CHINA. Tschupanata, s.d., *Fedtschenko s.n.* (K). Ichang, W.-China, s.d., *Wilson 120* (K). Ichang, s.d., *Henry 3372* (P). SW.-China, 1908, *Monberg s.n.* (L). TIBET: Moupin, IV.1869, *David s.n.* (P). Adung valley, Burma frontier, on the highest patches of cultivation, 2100-2400 m, 25.III.1931, *Kingdon-Ward 9317* (BM). Chayul Chu, Charme, weed of cultivation, 3900 m, 25.X.1938, *Ludlow et al. 6409* (BM). Nang, Takpo, 3300 m, 13.V.1938, *Ludlow et al. 4237* (BM). Shoga Dzong, dry ground, 3150 m, 14.IX.1947, *Ludlow et al. 15712* (BM, UPS). Lamdo, Tsangpo valley, Kongbo, on wettish mud around small pond, 2940 m, 30.V.1938, *Ludlow et al. 4570* (BM). Layoting Tongkyuk Chu, Pome, in open grassy spaces, 2550 m, 8.I.1947, *Ludlow et al. 12080* (BM). Gyadzong, Yigrong Chu, Pome, on edge of cultivation 2250 m, 18.I.1947, *Ludlow et al. 12156* (BM, UPS). Tungolo, Kiala, 1893, *Soulié s.n.* (G, L). SZECHWAN: Drayul Gomba, edge of cultivation, 25.IX.1922, *Smith 4480* (UPS). Near Kangting, 1897, *Mussot s.n.* (K, P). *Ibid.*, near Tibetan frontier, 2700-4050 m, s.d., *Pratt s.n.* (K). Tien-Chuan-Hsien, 1400 m, 14.IV.1936, *Chu 2331* (BM). Pao-Hsing-Hsien, roadside, 1850 m, *Chu 3830* (BM). SENSI: S.-Shensi, III.1873, *David s.n.* (P). Kuang-Yuan-Chen, fields, 24.II.1883, *Delavay s.n.* (P). Chin-Ling-Shan, III.1873, *David s.n.* (P). KIANGSU: Nanking, 24.III.1919, *Chen 667* (K). *Ibid.*, 29.V.1920, *Tsu 667* (K). Kao-Chiao, roadside, 25.IV.1934, *Read 1088* (BM). Chin Kiang, V.1922, *Kolthoff 168* (UPS). Shanghai, VIII/IX.1886, *Faber s.n.* (K). *Ibid.*, IV.1908, *Schindler 265* (BM, K). Zi-Ka-Wei, Hui-Tchu-Fu, 10.IV.1920, *Courtois s.n.* (P). CHEKIANG: Ningpo, cultivated places, V.1863, *Franchet s.n.* (P). Near Mei-Chi, 16.IV.1881, *Forbes 2415* (BM). YUNNAN: Li-Chiang valley, 2400-2700 m, V.1906, *Anon.*

2046 (P). Near Yunnanhsien, s.d., *Maire 636 & 2043* (K). Yuman-Fu, culture, VI.1908, *Myotte s.n.* (L). Lunan, 10.V.1885, *Henry s.n.* (K). Meng-Tsu, gardens and wastes, II.1893, *Hancock s.n.* (K). Che-Wu-Shou, near Ta-Pintro, fields, 2000 m, 20.I.1887, *Delavay s.n.* (P). KWANGSI: Feng-Huang-Shan-Chiao, hills, 10.IV.1875, *de Poli s.n.* (P).

TAIWAN. Tamsui, 1864, *Oldham s.n.* (BM, K).

KOREA. Fusan, in field, 18.V.1906, *Faurie s.n.* (BM). Seoul, Ai O Quoi, 26.II.1894, *Sontag s.n.* (BM). Ibid., Chemolpo, 17.III.1894, *Sontag s.n.* (K, P). Ibid., Nanninsan Mountain, 28.III.1894, *Sontag s.n.* (K). Cheju Do, Honguo, in field, 28.III.1908, *Taquet 4688* (G).

JAPAN. Japan, s.d., *von Siebold s.n.* (L). Hokkaido, s.d., *Faurie 376* (P). Kominato, 3.V.1886, *Faurie 246* (P). Kuroishi, IV.1886, *Faurie s.n.* (K). Aomori, near Gonohe, 10.V.1886 *Faurie 326* (P). Honshu, Juzenji, 7.IV.1954, *Hashimoto 1143* (COI, G). Komoro, roadside, 9.VII.1912, *Fox s.n.* (BM). Fuchu, c. 17 miles W. of Tokyo, in waste places among stones and grass, 6.VI.1968, *Kenyon 61* (K). Myeno, Tokyo, VI.1888, *Anon. s.n.* (P). Tokyo, 25.IV.1892, *Faurie s.n.* (P). Hondo, Hiratsuki, Sagami, 18.IV.1951, *Ohui & Okamoto 216* (COI, G, L, P). Yokosuta, cultivated places, s.d., *Savatie 980* (K, P). Honshu, Kyoto, Nakauchi-Cho, gardenside, 30.III.1963, *Hutch 24564* (L). Tosa, Nanokawa, 11.III.1888, *Watanabe s.n.* (ZT). Nagasaki, Kosido, on walls, II.1862, *Oldham 449* (K). Ibid., roadside bank leading up through town, 9.IV.1935, *Whiting & Stewart 314* (K). Nagasaki, 1863, *Maximowicz s.n.* (BM, P). Ibid., 1862, *Oldham s.n.* (ZT). Ibid., 1863, *Oldham 599* (L, P).

AÇORES. Sao Miguel, 1865, *Godman s.n.* (K).

MADEIRA. Porto Moniz, Funchal, V.1895, *Anon. s.n.* (BM).

CANARY ISLANDS. ? Near Mount Church, VII.1862, *Clarke 1985* (K). LA PALMA: San Miguel, El Paso, Bario Fatima, garden, 600 m, 31.I.1969, *Staple 2* (BM). TENERIFE: Ladera de Guimar, field, 700 m, II.1906, *Pitard 638* (G, L). GRAN CANARIA: Monte Gran Canaria, weed, 5.V.1894, *Murray s.n.* (K). LANZAROTE: Lanzarote, 28.V.1875, *Lowe s.n.* (BM). Ibid., s.d., *Hartung s.n.* (ZT). San Miguel, field, s.d., *Bourgeau 3* (K).

MOROCCO. Tetuan, Beni Hozmar, dry soil, 1000 m, 8.IV.1911, *Pitard 830* (P). Jebala, Jebel Mago, 29.III.1923, *Lynes s.n.* (BM). Jebala, Tazerout, 1350 m, moist soil, s.d., *Lynes s.n.* (BM). Jbel Hammane, Bokoia, 300 m, 1.III.1929, *Font Quer 385* (BM, G, S, Z). Beni Bou Yah, Djebel Kerher, 850 m, 22.IV.1934, *Sennen & Mauricio s.n.* (BM). Djebel Takhount, 18.VII.1884, *Ibrahim s.n.* (MPU). Fès, III.1930, *Forthewy 307* (K). Taza, at Daya Chiker, schistose rocks, 1200 m, 31.V.1929, *Jahandiez 341* (BM). El Hajeb, near Meknès, rubble, at foot of escarpment, 26.III.1921, *Romieux 1439* (G). Aïn Leuh, lawns, 28.III.1923, *Wilczek & Dutoit s.n.* (G). Ifrane, thin woods, 1650 m, 6.IV.1936, *Garnett 4118* (BM). Ibid., 1650 m, 27.III.1952, *Bannerman s.n.* (BM). Moyen Atlas, above Azrou, in Querceto ilicis, c. 1800 m, 12.IV.1936, *Samuelsson 6756* (S). Aguelman de Sidi Ali, lakeside tundra, 1900 m, 4.V.1968, *Holliday 15f* (BM). Haut Atlas, Ari N'ayachi, from Tagouilelt, 2300 m, 23.VI.1954, *van Steenis 19455* (L). Safi, II.1931, *Forthewy 143* (K). Magador, II.1934, *Forthewy 39* (K). Lalla Meriem Yahia, 10 km S. of Tamanar, 4.IV.1926, *Lid s.n.* (K). Djebel Lalla Aziza, 5.VII.1884, *Ibrahim s.n.* (BM). Ibid., 1883, *Ibrahim s.n.* (MPU). Haut Atlas, Tizi N Test, 1920 m, 22.III.1952, *Bannerman s.n.* (BM). Haut Atlas, Ait Mesan valley, above Arround, in subalpine region, 2000-2530 m, 13/15.V.1871, *Ball s.n.* (P). Telouet, 2100 m, 17.IV.1931, *Alice & Godman 334* (BM). Gorge du Todra, near Tinrhir, limestone gorge, corn-field, 1700 m, 4.IV.1969, *Davis & Davis 49118* (BM). Agadir, 187., *Mardochée s.n.* (MPU). Irherm, marshy hollow, corn-field, 1750 m, 29.III.1969, *Davis & Davis 48875* (BM). Anti Atlas, Oasis Tarkijt, between Bou Izakarn and Foun el Hassane, 30.IV.1961, *de Wilde et al. 1937* (L).

ALGERIA. Oran, field, II.1914, *d'Alleizette s.n.* (P). Ibid., IV.1920, *d'Alleizette* (P). Ibid., 24.II.1937, *Faure s.n.* (ZT). Ibid., 17.IV.1937, *Faure s.n.* (ZT). N. of Djebel Aissa, grassy rocks, 1700 m, 2.VI.1901, *Hochreutiner 583 bis* (G). Near the well of Djebel Mekter, near Aïn Sefra, 1780 m, 6.IV.1910, *Rikli & Schröter s.n.* (ZT). Near Chrea, above Blida, waste land, 6.VI.1932, *Reese s.n.* (BAS). Lodi, field, 900 m, 11.III.1921, *Maire 3882* (P). Sante Eugène, Birmandreis, hills, 15.II.1883, *Meyer 3861 bis* (G, P, Z). Kouba, near Alger, vineyard and field, 9.I.1879, *Gandoger 820* (BM, LY, P). Ibid., 29.IV.1879, *Gandoger 889* (BM, FI, P). Tell Atlas, glacier above Blida, c. 1400 m, 26.III.1910, *Rikli & Schröter s.n.* (ZT). Aïn Taya, III.1900, *Anon. s.n.* (MPU). Boghar, 1856, *Debeaux s.n.* (P). Near Aumale, ravine, 5.IV.1857, *Charoy s.n.* (P). Summit of Djebel Gourou, 1700 m, s.d., *Bertram 506b* (B). Chebket Rharbia, near Djelfa, stony field, 1200 m, s.d., *Bertram*

506a (B). Djebel Senalba, near Djelfa, V.1854, *Reboud s.n.* (P). Bou Saada, 1860, *Reboud s.n.* (P). El Guerrah, 8.IV.1912, *Hess s.n.* (ZT). Bône, s.d., *Motelay s.n.* (MPU).

TUNISIA. Taburbah, 6.V.1883, *Cosson et al.* (P). Guelaat, on rocks with W.-exposition, 12.V.1886, *Letourneux s.n.* (P). Sidi Hasan fort, near Tunis, 5.V.1883, *Cosson et al.* (P). Ghar Al Milh, 9.IV.1884, *Letourneux s.n.* (P). An Nafidah, Battaria, 27.VI.1886, *Letourneux s.n.* (P).

LIBYA. Tripoli, s.d., *Cliff s.n.* (L). Suburbs of Tripoli, half shaded by high walls, in cultivated ground, 6.I., *Scott Elliot 3149* (BM). Gharyan hills, in barley-field, 19.III.1952, *Guichard 274* (BM). Shahat, motel garden, 650-750 m, 28.III.1970, *Davis 50216* (K). Ras el Hilal, 18.II.1961, *Kranz 1071* (K).

EGYPT. Alexandria, IV.1877, *Hurst s.n.* (BM). Al Qabbari, fields, 6.IV.1872, *Duvarques s.n.* (BM). Dumyât, fields, 1820-1826, *Ehrenberg 508* (L). Cairo, in crops, II.1928, *Meinertzhagen s.n.* (BM). Near Cairo, fields, 1880-1885, *Burdet 153* (G).

ETHIOPIA. Ethiopia, 1853, *Schimper 292* (K). Gaffat, fields, 2460 m, 14.VIII.1863, *Schimper 1153* (BM). Tigre, 17 km S. of Maichew, along the road to Dessye, 2600 m, 3.IX.1970, *de Wilde et al. 6941* (WAG). Ankober, IX.1842, *Rohn s.n.* (K).

ZIMBABWE. S. Rhodesia, introduced, s.d., *Hislop s.n.* (K).

TRANSVAAL. Pretoria, at park in garden, 23.IX.1958, *Repton 4889* (K).

SOUTH-AFRICA. Cape of Good Hope, Great and Little Brak river, 27.XI.1950, *Robertson s.n.* (K). Ibid., Grahamstown, cultivated places, 600 m, 25.IX.1976, *Bayliss 7620* (WAG). Alice, Battlesden garden, weed, 600 m, 26.VII.1942, *Acocks 8985* (K).

GREENLAND. Ivigtut, 22.VIII.1883, *Berlin s.n.* (UPS).

CANADA. Mosse Factory, Hudson Bay, 10.VIII.1882, *Haydon s.n.* (K). ONTARIO: Preston, 8.VI.1938, *Grob s.n.* (K). QUEBEC: Rupert House, James Bay, 7.IX.1885, *Macoun 1795* (BM).

U.S.A. WASHINGTON: Whitman County, near South Bay, 8 miles NE. of Olympia, 9.IV.1936, *Meyer 30* (K). Whitman County, near Wawawai, fields and roadsides, 21.IV.1936, *Meyer 96* (K). Whitman County, Pullman, 3.V.1936, *Meyer 169* (BM, COI). OREGON: Corvallis, College Farm, 29.IV.1916, *Gilbert s.n.* (COI). CALIFORNIA: Amador County, Drytown, 150 m, 8.IV.1896, *Hansen 1177* (BM, K). Sacramento County, Isleton, 23.III.1933, *Rose 33031* (BM). Santa Clara County, Stanford University, in weedy grain field, 3.II.1932, *Keck 1388* (K). N. of Claremont, Los Angeles, E.-side Indian hill, Rancho Santa Ana Botanic Garden, 16.XII.1953, *Balls 9735* (BM). MISSOURI: S. of Saint Louis, 14.IV.1896, *Kellog s.n.* (K). ILLINOIS: Peoria County, fallow field, 21.IV.1958, *Chase 15038* (K). OHIO: S. of Oxford, Butler County, open field, 3.V.1958, *Belk 28* (COI).

PENNSYLVANIA: Havesford, s.d., *Smith s.n.* (K). MASSACHUSETTS: Amherst, campus, 17.V.1967, *Ahles 65627* (BM). Harvard Botanic Garden, Cambridge, Middlesex County, weed, 13.V.1942, *Smith et al. 1277* (BM, K). CONNECTICUT: Connecticut, s.d., *Gray s.n.* (BM). RHODE ISLAND: East Greenwich, cultivated field, 2.V.1871, *Congdon s.n.* (ZT). NEW YORK: New York, introduced, s.d., *Browne s.n.* (K). TEXAS: Courtney, waste ground, 6.V.1927, *Bush 11316* (K). LOUISIANA: Shreveport, Caddo Parish, waste ground, 26.III.1915, *Palmer 7375* (K). Natchitoches, waste ground, 25.IV.1915, *Palmer 7076* (K). Alexandria, s.d., *Hale s.n.* (K). New Orleans, 1832, *Drummond 246* (BM). KENTUCKY: Fayette County, 154 Transcript, 1.IV.1941, *Briggs s.n.* (L). Lexington, ploughed field, III.1834, *Peter s.n.* (K). Ibid., common weed in gardens, s.d., *Short s.n.* (BM, K). Owsley County, in open field along highway, 22.IV.1967, *Jackson 64* (L). NORTH CAROLINA: Biltmore, waste places, 2.IV.1897, *Anon. 616b* (K). SOUTH CAROLINA: Newberry County, highway 176 ay Kings Creek, 11.III.1957, *Freeman 5725* (K). GEORGIA: Statesboro, Southern College Campus, 27.III.1960, *Boole 1055* (BM). Ibid., 30.III.1960, *Wright 5* (BM). FLORIDA: Apalachicola, 1.V.1880, *Chapman 616c* (BM).

BERMUDA. Bermuda, s.d., *Moseley s.n.* (BM). S. Shore, weed in cultivated ground, 27.XI.1915, *Collins 421* (K). The Laurels Prospect, cultivated ground, 11.IV.1933, *Rendle 533* (BM).

PERU. 1 Km N. of Huancavelica, among limestone boulders, 3700 m, 9.III.1939, *Stork & Horton 10819* (K).

ARGENTINA. Bella Vista, Sarmiento, 1.IX.1946, *Hunziker 1626* (K). Santa Cruz, Puerto San Julian, 11.XI.1927, *Blake 36* (K).

FALKLAND ISLANDS. East Falklands, Stanley, garden at Government House, 2.I.1950, *Sladen 17150* (BM).

AUSTRALIA. QUEENSLAND: Main Range, between Spring Bluff and Murphy's Creek, weed on railway track, sandy soil, 240-450 m, 2.VIII.1930, *Hubbard 3492* (K). Burnett, Kingaroy,

17.IV.1947, *Smith 3094* (K, L). SOUTH AUSTRALIA: 4 Miles N. of Moontia, 14.VIII.1964, *Symon 2931* (K). NEW SOUTH WALES: Quirindi, introduced, 8.IX.1912, *Stofford 429* (BM). Gloucester, in garden, 23.VIII.1975, *Coveny & Hind 6638* (L).

3.c. *Lamium amplexicaule* L. var. *bornmuelleri* Mennema

TURKEY. HATAY: Amuk plain, between Nur Daglari and Kurt Dag, IV.1907, *Haradjian 954* (G).

LEBANON. Jebel ash Sharqi, in alpine region near snowy top, above Ba'labakk, 1800-2000 m, 31.V.1910, *Bornmueller 12290* (BM, G, JE).

SYRIA. Jebel ash Sharqi, between Dimashq and Zebdani, 6.V.1933, *Wall s.n.* (S).

JORDAN. Between Bir ad Dabbaghat and Shaubak, roadside, 1500 m, 20.IV.1945, *Davis 9132* (K).

IRAQ. Kurdistan, near Penjwin, Sulaymaniya, in bare mountain, 1600 m, 19/20.VI.1957, *Rechinger 12272* (W).

IRAN. Near Shahrud, V.1858, *de Bunge s.n.* (P).

3.d. *Lamium amplexicaule* L. var. *incisum* Boiss.

GREECE. MAINLAND: Mikro Karaburnu, near Thessaloniki, on dry slope, 26.III.1934, *Rechinger 3366* (W). Thessaloniki, near Kapoutsides, in field, 19.I.1917, *Charrier 399* (MPU).

TURKEY. ÇANNAKALE: Thymbra, 24.III.1883, *Sintenis 107 p.p.* (BM). HATAY: Near Hamam, 450 m, 20.IV./4.V.1908, *Haradjian 2576* (G).

U.S.S.R. AZERBAJDZHAN: Muganskaya Step', Dzhaparchan, 7.IV.1928, *Hejdeman s.n.* (K).

SYRIA. Halab, in field, V.1841, *Kotschy s.n.* (P). Near Halab, in field, II.1867, *Hausknecht s.n.* (G). Manbij, in desert, 300 m, 6.III.1867, *Hausknecht s.n.* (BM, P). Qalat Najin, near river Euphrates, in calcareous grassland, 270 m, 6.III.1867, *Hausknecht s.n.* (BM, G, K, P).

IRAQ. Niniveh, irrigated tree plantation, 220 m, 16.III.1967, *Anders 1028* (W). Jarmo, first year's fallow field, 19.III.1955, *Helbaek s.n.* (K, W). Baghdad, I.1919, *Graham 306* (BM).

IRAN. Tehran, 15.X.1936, *Parsa s.n.* (P).

3.e. *Lamium amplexicaule* L. var. *orientale* (Pacz.) Mennema

U.S.S.R. The banks of the river Wolga, s.d., *Pallas s.n.* (LINN). Near Wolgara, 1835, *de Bunge s.n.* (P). Bukeyevskaya steppe, s.d., *Sergatscheff s.n.* (LE). SOUTH-WESTERN DIVISION: Kirovograd, 6.V.1873, *Lindermann s.n.* (COI). Near Krivoy Rog, near the border of the governments Ekaterinoslav and Kherson, s.d., *Fedchenko s.n.* (LE). Ekaterinoslav area, 1851, *von Graff s.n.* (LE). Near Woronesch, in fallow, 3.V.1870, *Gruner s.n.* (BM, K). Sumskiy, near Grebennikovka, country seat count Tolstoi, 21.IV.1906, *Avdrossov s.n.* (LE). Woriljoffka, Poltava, IV.1903, *Roth s.n.* (LD). Near Karlovka, Poltava, in bush, 8.V.1905, *Bordzilowski s.n.* (LE). Artemosk, c. 40 km N. of Gorlovka, Ekaterinoslav area, 1882 and 1884, *Sredinski 385* (LE). SOUTH-EASTERN DIVISION: Bobrovkiy, on stony soil, 14.IX.1913, *Orlov s.n.* (LE). 2nd Bonskig okrug, N. of Chikov, expanded plain, 30.V.1915, *Kandaurov 164* (LE). Malye Tschapurniki, c. 15-20 km S. of Volgograd, along ditch, 12.V.1970, *Skvortsov s.n.* (M). Sareptana river, grassland, s.d., *Becker s.n.* (LE). Ulyanovskaya oblast, Novospaakig area, Adoevskaya ravine, in bush of *Artemisia abrotanum* 1961, *Micheeb s.n.* (LE). At Bascunczak lake, Astrakan area, 26.IV.1890, *Paczosky s.n.* (LE). Astrakan, s.d., *Ledebour s.n.* (LE). Uralsk oblast, Krutoy okrug, in garden, 16.IV.1921, *Larin 56* (LE). Corn-sovchoz Pogromin, Samarskig, right bank of Buzuluk river, wheat-field, 7.VI.1930, *Gorodkov & Selivaev 240* (LE). Userganskaya, Zilairsky area, extending stony peak, 18.VI.1928, *Grebner 217* (LE).

4. *Lamium eriocephalum* Benth.

TURKEY: Pisidia, 1838, *Dux de Württemberg s.n.* (M). Toros Daglari, 1836, *Kotschy 467* (G, K, M, S, UPS, W). Ibid., s.d., *Fraas s.n.* (M). SE. Anatolia, s.d., *Siehe 232* (JE). Karli Bogaz, mobile slope, 1800-2000 m, 1896, *Siehe 340* (B, G, HBG, JE [1895], K, P [1895], WU). ISPARTA: Dedegöl Dag, above Dedegöl Tarn, scree, 3.VIII.1949, *Davis 16002* (K). Dedegöl Dag, c. 2200 m, 1.VII.1965, *Sorger s.n.* (Herb. Sorger). ANTALYA: Bozburum Dag, above Tozlu Çukur Yayla, scree, 1900-2100 m, 25.VII.1949, *Davis 15621* (K). Gebiz, Bozburun Dag, scree at foot of E. cliff, 25.VII.1949, *Davis 15703* (C, E, K). Geyik Dag, W.-side of summit, in steep scree, 2500-2700 m, 31.VIII.1947, *Davis 14566* (K). KONYA: Yelibel Dag, N.-side, between Ermenek and Karaman, mobile slope of limestone, 2000 m, 10.VI.1948, *Huber-Morath 8183* (Herb. Huber-Morath, Herb. Basler Bot. Ges.). NIGDE: Ala Dag, scree, 3200 m, 23.VIII.1938, *Ellenberg 338* (B). Ala Dag, scree, 3100 m, 5.IX.1938, *Ellenberg 1039* (B). Ibid., 1938, *Ellenberg 3182* (B). Demirkazik, between Bereketli and Parash, mobile slope, 2800 m, VII.1909, *Siehe 303* (JE, W, Z). Above Bulgarmaden, alpine region, VII/IX.1885, *Balansa 503* (C, G, GOET, HBG, JE, K, MPU, P, Z). Ibid., 3000 m, VII/IX.1906, *Diuta s.n.* (B). IÇEL: Bolkar Dag, chain of Koschan, Gisyb Deppe, at the top of a mobile slope, 2700 m, 15/30.VII.1853, *Kotschy 114* (G, GOET, JE, K, L, M, MPU, P, PR, S, UPS, W, WAG, WU, Z). ADANA: Bolkar Dag, near Meydan Yayla, above Pozanti, 2500 m, 2.IX.1949, *Davis 16550* (K).

SYRIA/LEBANON. Syria, Tharsus-Bayrut-Lebanon, 1838, *Dux de Württemberg s.n.* (M).

5. *Lamium macrodon* Boiss. & Huet ex Boiss.

TURKEY. SE. Anatolia, s.d., *Siehe 15* (JE). Armenia, s.d., *Calvert & Zohrab 32* (K). ANKARA: Cubuk plain, 900 m, V.1929, *Bornmueller 14533* (B). KONYA: Sultan Dag, in alpine mountain ridge above Akşehir, 1900 m, 21.VI.1899, *Bornmueller 5446* (B, G, JE, M, P, W, WU). ANTALYA: Pass above Akseki, rocky slopes in *Abies*-forest, 1500 m, 9.VI.1956, *Davis & Polunin 25790* (BM, K). NIGDE: Near Tyana, on stony waste places, 9.VII.1898, *Siehe 105* (JE). IÇEL: Gusguta valley, mobile slope, 1400 m, 1896, *Siehe 220* (B, G, JE, P, W). Toros Daglari, subalpine, s.d., *Siehe s.n.* (GB). Toros Daglari, near Findikpinari, subalpine region, 1400 m, V.1909, *Siehe 209* (JE, W, Z). Near Ortaköy, between Namrun and Tarsus, rocky places at edge of corn-plots, 1000 m, *Davis & Hedge 26403* (K). KAISERI: Erciyas Dag, above Irseun, on sandy slopes between stones, c. 1800-2000 m, VI.1902, *Zederbauer s.n.* (W, WU). Ibid., above Hacilar, on sandy slopes, c. 2000-2200 m, V.1902, *Zederbauer s.n.* (W, WU). Ibid., corn-field, subalpine region, c. 2100 m, 10.VII.1856, *Balansa 210* (G, K, P). Ibid., 30.V.1859, *Kotschy s.n.* (PR). Ibid., 2700 m, 18.VI.1890, *Bornmueller 2163* (B, JE). 25 Km SSE. of Kaiseri, lower alpine region of Masmeneu Dag, VIII.1855, *Balansa 562* (G). Kısge, at W.-foot of Bakir Dag, on walls, 1300 m, 27.VI.1952, *Davis et al. 19212* (BM, K). Bakir Dag, above Kısge, at Bakıroluğu Yayla, 1800 m, 28.VI.1952, *Davis et al. 19245* (K). Bakir Dag, above Kısge, near Akoluk Yayla, 2300 m, 29.VI.1952, *Davis et al. 19524* (BM, K). ADANA: Bozoglan Dag, at Obruk Yayla, Saimbeyli, around stunted *Berberis*-bushes, 1400 m, 13.IV.1957, *Davis & Hedge 26684* (K). GÜRÜMZE, Kassan Oghlu Mountain, in *Cedrus*-forest, on gravelly place, 1800 m, 18.V.1859, *Kotschy 116* (BM, G, JE, L, P, PR, S, UPS, W, ZT). MARAŞ: Sar Dag, near Elbistan, rocky limestone slopes facing N., 1500 m, 7.V.1959, *Davis & Hedge 27655* (K). Koyunoluk Dag, between Göksun and Maraş, stony places, 1300 m, 4.V.1957, *Davis & Hedge 27589* (K). HATAY: Karlık Tepe, above Soguk Oluk, Belen, igneous scree, 1200 m, 4.IV.1957, *Davis & Hedge 27059* (K). GÜMÜŞANE: Near Gümüşane, waste land, 18.V.1862, *Bourgeau 580* (G, P, W). Venk, among rocks in mountains, 28.V.1894, *Sintenis 5477* (B, JE, LD, PR, PRC, W, WU, Z). Godena, among rocks, 8.V.1894, *Sintenis 5477b* (JE, LD). Keliando, on walls, 6.VI.1894, *Sintenis 5477c* (G, JE, LD, P). ELÂZIG: Above Elâzig, W. of Harput, igneous hillsides, 1400 m, 6.VI.1957, *Davis & Hedge 29181* (BM, K). Harput, Şuşnaz, VI.1889, *Sintenis s.n.* (LD). URFA: Kara Dag, road to radar station, 1750 m, 17.V.1966, *Watson et al. 1107* (K). ERZURUM: Near Tortum, in cultivated land, VI.1853, *Huet du Pavillon s.n.* (G, K). Near Erzurum, 1851, *Calvert s.n.* (G, JE). Between Pasinler and Horasan, igneous scree, 1650 m, 12.VI.1957, *Davis & Hedge 29400* (K).

U.S.S.R. CAUCASUS: Abovyanikiy region, Gadis, S. slope, 30.V.1967, *Menitskiy s.n.* (L). Mount Soyukh, above Ordubad, Nakhichevan, 2700 m, 28.V.1923, *Grossheim s.n.* (LE). NW. of Kartchevan, Megri, among rocks in light forest, 1300-1400 m, 26.IV.1934, *Karjagin s.n.* (LE).

LEBANON. Batrun, near Baton, 3.VI.1880, *Blanche 86* (G).

IRAQ. KURDISTAN. ROST MOUNTAIN. N. of Rost, limestone, 2400-3000 m, 19.V.1951, *Thesinger 954* (W). Hajj Omran, *Astragalus*-thorn cushion zone, 1750 m, 3.VI.1948, *Chapman & Chapman 12276* (K). Ibid., at Iranian border, S. aspect on loose shale (scree), 1800-2050 m, 23.IV.1951, *Mooney 4269* (K). Ibid., near Rayat, stony hillside, 1800 m, 1.V.1956, *Guest c.s. 15503* (K).

IRAN. Kurdistan, above Gilas, hills, near a snow drift, 29.V.1929, *Cowan & Darlington 1350* (K). Ser, hills, 2100 m, 16.V.1929, *Cowan & Darlington 2230* (K).

6.a. *Lamium album* L. subsp. *album*

NORWAY. Oslo, s.d., *Blytt s.n.* (L).

SWEDEN. Loka, Västmanland, VII.1877, *Hamnström s.n.* (COI). Årby, near Ramsta, c. 15 km SW. of Uppsala, waste area, 26.VII.1969, *Mennema 1259* (L). Alsike, Uppland, ditch at the road between Kungshamn and the highway bridge at Flottsund, 8.IX.1957, *Alm 3007* (COI, ZT). Tullstorp, VI. 1866, *Johnsson s.n.* (H).

FINLAND. Suodenniemi Eskola, Satakunta, bank of river Mouhijoki, 23.VI.1970, *Jokela s.n.* (L). Alastaro, Satakunta, in the yard of Vuolle farmhouse, 12.VII.1962, *Alho s.n.* (COI). Turku, Kupittaa railway station, along road, 5.VI.1936, *Valle s.n.* (ZT). Helsinki, Kajsaniemi, in wood, 3.X.1876, *Hjelt & Hult 339* (COI, P).

DENMARK. N. of Aarhus, Kasted Mose bog, roadside, 26.V.1966, *Pedersen 220* (L). Lyngby, Sjaelland, 31.V.1891, *Mortensen s.n.* (COI).

GREAT-BRITAIN. WALES: Anglesey, near Aberffraw, roadside, 3.VII.1966, *Mennema 729* (L).

ENGLAND: Blaydon, Durham, roadside, 13.X.1954, *Sowerby 82* (L). Cayton Carrs, 12.IX.1958, *Anon. s.n.* (COI). Tickenham Hill, 25.XI.1953, *Sandwith s.n.* (L). Kew, fields outside herbarium, 14.V.1941, *Sandwith s.n.* (L). Near Leatherhead, moist bank of river Mole, 17.V.1967, *Gerrans 1309a* (L). Southend, 3.IX.1829, *Bentham s.n.* (K).

NETHERLANDS. 328 Collections in all. GRONINGEN: Oude Pekela, waste under shrubs, 28.V.1940, *Duiven 3417-2* (L). GELDERLAND: Nijmegen, Ubbergseweg, VII.1964, *Reichgelt s.n.* (L). UTRECHT: Near Utrecht, roadside, among grasses, 18.V.1954, *Leeuwenberg s.n.* (COI, U). ZUID-HOLLAND: Katwijk aan de Rijn, roadside, 17.V.1949, *van Ooststroom 11256* (L). ZEELAND: Renesse, near Zoute Haard, roadside, 1.IX.1965, *Mennema 339* (L). LIMBURG: St. Pietersberg, Slavante, roadside, 20.V.1950, *Bakhuizen van den Brink 7144* (L).

BELGIUM. OOST-VLAANDEREN: St. Denijs-Westrem, roadside, 17.V.1877, *van Heurck s.n.* (AWH). BRABANT: Neder-over-Heembeek, Beyzegem, 13.V.1924, *Guns s.n.* (COI). LIÈGE: Near Spa, s.d., *Lejeune & Courtois 293* (L, P). NAMUR: Louette-Saint-Pierre, in hedges, 15.V.1867, *Gravet s.n.* (L).

LUXEMBOURG: Bois de Dillingen, 9.V.1967, *Verbiest 860* (L).

FRANCE. 22 Collections in all. PAS-DE-CALAIS: Cap Gris-Nez, waste area, 29.V.1969, *Mennema 1124* (L). ARDENNES: 4 km S. of Monthermé, roadside of *Fagus*-wood, 15.V.1971, *Kruyt & van Alphen s.n.* (L). MEURTHE-ET-MOSELLE: Near Nancy, in hedge, V.1858, *Fl. Gall. Germ. Exs. 2515* (G, P, WAG). ORNE: Near Alençon, hedges along roads, 16.V.1888, *Beaudouin 5664* (BM, COI, G, P). Côte-d'Or: Bank of river Ouche, near Dijon, 20.IV.1873, *Bonnet s.n.* (L). HAUT-RHIN: Near Colmar, waste place, s.d., *Leresche s.n.* (L). DEUX-SÈVRES: Niort, Bois de la Vachette, 14.V.1895, *Dugleux 555* (COI). ALLIER: Yzeure, IV.1894, *Lassimonne 602* (COI). RHÔNE: Arnas, IV.1898, *Gandoger s.n.* (G, MPU). Villefranche-sur-Saône, Mongré, hedges, 15.VI.1876, *Tillet s.n.* (COI). AIN: Near Sainte Croix, s.d., *Anon. s.n.* (L). Sathonay, 26.V.1889, *Meyran s.n.* (COI). HAUTE-LOIRE: Le Puy, VI.1898, *Travares s.n.* (COI). PYRÉNÉES-ORIENTALES: Mont Cambras d'Aze, on N. slope, siliceous soil, 2200 m, 25.VII.1944, *Rechinger 1041* (L).

GERMANY. 21 Collections in all. SCHLESWIG-HOLSTEIN: Hütener Berge, W. of Kiel, sandy roadside, 2.VI.1976, *Larsen et al. 272* (L). In the vicinity of Bergedorf, s.d., *Anon. s.n.* (COI). SACHSEN-ANHALT: Near Klotzsche, V., *Stiefelhagen 1700* (L). BRANDENBURG: Dahmsdorf, roadside, 28.V.1882, *Hoffman s.n.* (COI). NORDRHEIN-WESTFALEN: Duisburg, 22.V.1909, *Voigt 1998* (L). Near Königswinter, hedges, 25.VI.1859, *Hasskarl s.n.* (L). HESSEN: Darmstadt, s.d., *Ruben s.n.* (L).

Bad Nauheim, on shady bank of a lake, 7.V.1902, *Chabert s.n.* (FI). THÜRINGEN: Jena, VII.1888, *Hallier s.n.* (L). RHEINLAND-PFALZ: Heiken, near Koblenz, thicket, s.d., *Wirtgen 982* (L). BADEN-WÜRTTEMBERG: Heidelberg, near castle, s.d., *de Candolle s.n.* (G). BAYERN: Windsheim, s.d., *Rehm s.n.* (L). Kumpfmühl, near Regensburg, V.1892, *Rehm s.n.* (L). Regensburg, in forest, s.d., *Fürnovsky s.n.* (M). Near Landshut, 1844, *Anon. s.n.* (L).

SWITZERLAND. GENÈVE: Vessy, in shade of wall, 550 m, 25.III.1959, *Walsh 78* (WAG). VAUD: Aubonne, s.d., *Leresche s.n.* (COI). Montcherand, Rusille, hedges, 12.VI.1840, *Anon. s.n.* (L).

AUSTRIA. TIROL: Innsbruck, s.d., *Kerner s.n.* (COI, P). NIEDER-ÖSTERREICH: Above Hollenthalmühle, 24.IX.1858, *Sendtner s.n.* (M). Schottwien, 1.VIII.1874, *Richter s.n.* (COI). STEIERMARK: Near Seckau, in waste places, c. 850 m, s.d., *Pernhoffer 2646* (L, P, Z). Mixnitz, VI.1912, *Sabransky s.n.* (L). BURGENLAND: Bernstein 28.V.1917, *Ronniger s.n.* (W).

POLAND. Morag, 'Horn', village street, 7.VI.1914, *Steffen s.n.* (L). Torun-Rybaki, former riverbed, in *Salix*- and *Populus*-coppice, 13.V.1974, *Gugnacka 123* (L). Pradnik Czerwony, near Krakow, in coppice at river, 27.V.1951, *Jasiewicz 567* (G, L).

CZECHOSLOVAKIA. Karlova Vary, s.d., *Anon. s.n.* (L). Pruhonice, near Praha, waste places, c. 300 m, 26.V.1958, *Nitka 68* (COI). Dobris, between Mnisek and Cisovice, grassland, c. 350 m, 24.V.1964, *Dolezalová 25* (PRC). Horazdovice, along hedge, 1.VII.1971, *Veldkamp 5429* (L).

ROMANIA. Brusturoasa, waste place, c. 500 m, 2.VIII.1972, *Mititelu & Barabas 456* (L). Near Vilcele, Transsylvania, c. 620 m, 30.VIII.1938, *Pauca 2040* (L). Sinaia, Monti Carpatii, roadside, 1.VII.1911, *Post s.n.* (G).

U.S.S.R. BALTIC DIVISION: Nowogrodek, at Wojnow, 1.VI.1893, *Dybowski 230* (BM). CENTRAL DIVISION: Leningrad, s.d., *Kühlewein s.n.* (P). Verkhoturys, in thickets, humiferous soil, VII. 1872, *Clerc s.n.* (ZT). In the vicinity of Voiska Donskogo, VIII.1910, *Vysotskiy & Stepunin 232* (LE). SOUTH-WESTERN DIVISION: Rakhovo, in grassy orchard, V.1876, *Vagner s.n.* (L). Yelizavetgradka, 18.IV.1873, *Cindemann s.n.* (COI). Marianovka, Dnepropetrovsk, s.d., *Anon. s.n.* (LE). In the vicinity of Starobelsk, Kharkov, 9.V.1903, *Kuznetsov s.n.* (LE). Donetsk, 'Chomutovskijii step', Novoazoviensis, 6.VI.1954, *Dobroczejeva s.n.* (LE).

SPAIN. El Almorán, cork oak wood, 21.IV.1951, *Alston 10486* (BM). ASTURIAS: Vega de Socellares, 1800 m, 24.VII.1957, *Lainz s.n.* (COI). LERIDA: W. of Llesuy, 12 km of Sort, open grassland along road, 18.VI.1970, *Schiess 11* (L). GERONA: La Cerdana, Llivia, Estavar, hedges, 16/17.VI.1926, *Sennen 5859* (BM, G).

ITALY. LOMBARDIA: Val Brembana, Valle di Mezzeno, 'Hochstaudenflur' near alpine cottage, c. 1590 m, 27.VI.1964, *Hess & Landolt s.n.* (ZT). PIEMONTE: 12 Collections in all. Alpi di Ponte Chianale, Valle di Varnita, 1845, *Anon. s.n.* (TO). Mondovi, Vallone dell' Ellero above Gròs delle Pisse, 18.VI.1894, *Ferrari s.n.* (TO). TRENTO: St. Anton, near Bolzano, 15.IV., *Wettstein s.n.* (WU). VENEZIA: Padova, between Albano and Praglia, along road, humid soil, V.1912, *Fiori & Béguinot 1943* (BM, Z, ZT). TRIESTE: Opcina, rocky place, VI.1878, *Marchesetti s.n.* (FI). ABRUZZI: Top of Monte Morrone, calcareous soil, 1800 m, 29.VII.1875, *Porta & Rigo 573* (GOET, JE, W). Monte Morrone, in pasture, 9.VII.1899, *Rigo 118* (B, G, MPU).

JUGOSLAVIA. Istra, Porec, VI.1866, *Marchesetti s.n.* (FI). Vyeten Gora, near Klisura, upper reaches of rivulet Kamenitditsa, swampy place, VII., *Anon. 17* (PRC).

ALBANIA. Pejës, near Okol, 1.VIII.1933, *Schütt s.n.* (G). Top of Zrokar, near Kuc, 4.IX.1902, *Baldacci 209* (P).

TURKEY. 40 Km S. of Posanti, crevices with blackish humus, 1100 m, 8.V.1959, *Hennipman et al. 979* (K, L, WAG). AMASYA: Amasya, s.d., *Manisadjan 1032* (K). GİRESUN: Between the spring of Erimezköy and Kulakkaya, along the road Giresun-Kulakkaya, siliceous soil, 1420 m, 6.VII.1958, *Simon s.n.* (BAS). E. above Eribel pass, pasture, 2200 m, 7.VII.1958, *Simon s.n.* (BAS). TRABZON: Mountains on the right bank of Karshut-darasa, c. 5 km N. of Karshut-bazar, c. 85 km WSW. of Trabzon, 24.XI.1916, *Turkewicz 171* (LE). Slope to Sumela Monastery, c. 50 km SE. of Trabzon, c. 1200 m, V. 1980, *Lebbink 16* (L). RİZE: Valley of Djimil, Lazistan, c. 2000 m, VIII.1866, *Balansa 894* (G, P, ZT). Ortakoy, Hemsin, edge of fields, 2300 m, 2.IX.1952, *Davis & Dodds 21247* (K). GÜMÜŞANE: Fecelim Dagı, near Gümüşane, among rocks, 26.V.1862, *Bourgeau 222* (COI, MPU, P). Kopal Dagı, Bayburt, limestone screes, 2310 m, 20.VII.1934, *Balls 1787* (BM). ERZURUM: Erzurum, s.d., *Zorab s.n.* (K). Near Setchauth, in mountains between Erzurum and İspir, 1800-2100 m, VI.1853, *Huet du Pavillon s.n.* (BM, G, P, WAG). KARS: NE. slope of Agri Dagı, near Serdar Bulak, rocky igneous slope, 2500 m, 27.V.1966, *Davis 43725* (K). İÇEL: Between

Findikpinariköy and Akarea, along rivulet, shaded place, humus soil, 900 m, 20.V.1959, *Hennipman et al. 1099* (L, WAG). C. 40 km S. of Pozanti, grey granite rock, crevices with blackish humus, 1100 m, 8.V.1959, *Hennipman et al. 979* (K, L, WAG). BITLIS: 18 km SE. of Bitlis, Qor Dagi, 2500 m, 12.VI.1939, *Frodin 262* (UPS, W). 10 km SE. of Pelli, 2550 m, *Davis & Polunin 22540* (BM, K). HAKKARI: Cilo Tepe, Rocky slope, 3150 m, 8.VIII.1954, *Davis & Polunin 24083* (BM, K).

IRAQ. Penjwin, 1400 m, 23.IV.1947, *Rawi 8838* (BM).

IRAN. Assalem, Gilan, 200 m, 16.VI.1965, *Ejandrarri 6993E* (W). Southern foothills of Kuhha-ye Sabalan, W. of Ardabil, pasture slopes, 2100 m, 6.VI.1962, *Furse 2447* (K, W). Kuhha-ye Sabalan, under rocks, dry area, 3300 m, 7.VIII.1961, *Harrington 237* (K). Ibid., amongst rocks, 2700-3600 m, 7.VIII.1961 *Harrington 301* (K). Kuh-e Sahand, 5 km E. of Kandujan, semidesert, 2900 m, VII.1964, *Grant 16269* (W). Mountains S. of Hashtpar, near Navrud, 1250 m, 16/25. VII.1968, *Steiner s.n.* (K). Between Pahlavi and Rasht, in shady moist wood, 13/14.V.1937, *Rehinger 21* (W). Between Chalus and Shahsavar, Mazandaran, coastal strip, 20 m, 23.III.1966, *Baker s.n.* (W). Pol-e Zanguleh, Chalus valley, Mazandaran, 20.VI.1956, *Sabeti 12345E* (W). 25 Km. S. of Shahi, Mazandaran, in *Carpinus-Acer*-forest, 300 m, 31.III.1965, *Grant 17364* (W). 16 Km N. of Husainabad, between Sanandaj and Saqez, wet marshy ground between hills, 2340 m, 20.V.1966, *Archibald 2086* (K). Mountains above Tafresh, Arak, VII.1897, *Strauss s.n.* (JE). Kuh-e Safid Khanesh, Arak, 21.VI.1909, *Strauss s.n.* (B, JE). Chal-e Kalagh, between Shiraz and Tal-e Khosravi, 24.VII.1949, *Behboudi 1179E* (W).

ASIATIC U.S.S.R. CAUCASUS: Yurievskvi, Sukhumi, fields, 6.IV.1902, *Woronov 223* (MPU). Larsi, Osetiya, 24.V.1881, *Brotherus 634* (BM). ARMYANSKAYA: Razdanskiy rayon, Tsakhunuyats Mountains between Tekhensis and Skhopali, above Megradzor, 17.VII.1981, *Chandjian s.n.* (ERE). TÜRKME NIYA (?): Tsurramy Mountains, 2700 m, 6.VII.1881, *Fetissow s.n.* (K). KAZAKHSTAN: Near Merke, mountain, 23.IV.1895, *Chaffanjon s.n.* (P). Vyernyi, Saminjechensk, Zailiyskiy Alatau, 11.VI.1907, *Sokalsky 187* (BM). KIRGIZIYA: Taldyk Pereval, 20.VI.1893, *de Ponsins s.n.* (P). Sumbe valley, 1877, *Fetissow s.n.* (P). IRKUTSKAYA: In the vicinity of Irkutsk, in taiga, 6.VII.1969, *le Fleming s.n.* (K). Irkutsk, municipal park, VI.188., *Karo s.n.* (P). Ozero Baykal, N. bank, 1855, *Radde s.n.* (K). AMUR: Vernoye, 1895-1896, *Chaffanjon s.n.* (P). Amur river, VI., *Littledale s.n.* (K). PRIMORSK KRAY: Near Vladivostok, 10.VII.1959, *Svetlova s.n.* (M). MAGADAN: Tunguska, 1873, *Czekanowski & Müller s.n.* (BM). KAMCHATKA: Mamypa, in riparian forest, 7.VII.1909, *Komarov s.n.* (K). Ibid., 8.VII.1909, *Komarov s.n.* (P).

CHINA. MONGOLIA: Altai, 1873, *Ledebour s.n.* (BM). Ibid., s.d., *Ledebour s.n.* (M). Ibid., s.d., *de Bunge s.n.* (P). MANCHURIA: Ozero Khanka, 1867, *Przewalski s.n.* (BM, K, P). Turga Roche, 15.VII.1899, *Bohnhof 132* (K, MPU, P).

U.S.A. NEW YORK: Richfield Springs, adventitious, s.d., *Gilbert s.n.* (AHW).

6.b. *Lamium album* L. subsp. *barbatum* (Siebold & Zucc.) Mennema

ASIATIC U.S.S.R. AMUR: Amur, s.d., *Maximowicz s.n.* (G, K, L, P, UPS). SAKHALIN: Sakhalin, 1872, *Miquel s.n.* (K). Ibid., s.d., *Augustinowicz s.n.* (K). Ibid., *von Schmidt s.n.* (K). Vladimirov, in grassland, VII.1908, *Faurie s.n.* (BM, G). Korsatov, 31.VI.1937, *Uno 19800* (G). PRIMORSK-KRAY: At Sedemi river, s.d., *Jankowsky s.n.* (L). Suyfun river, near Nizolcz, 13.V.1896, *Komarov s.n.* (BM). Pervaya Rechka, V.1920, *Zedtwid s.n.* (M). Vladivostok, VI.1877, *Sonne s.n.* (C). Ostrov Russkiy, in thickets, VII.1920, *Zedtwid s.n.* (M).

CHINA. 56 Collections in all. MANCHURIA: Sedemi river, s.d., *Jankowski s.n.* (L, ZT). Amur river near Sakhalin, VII.1905, *Karo s.n.* (K, P). Kailar valley, steppe, 26.VI.1896, *Chaffanjon s.n.* (P). KIRIN: Lao-Yeh-Ling, 19.VII.1928, *Licent 8515* (BM). Kang-Chai Horca, 6.VI.1910, *Mills s.n.* (K). LIAONING: Ku-Shan, 3 & 7.VI.1897, *Hugh 75 & 181* (BM). PEKING: Kan-Son to Chen-men, 7.V.1919, *Licent 5204* (BM, K, P). SHENSI: Miao-Uan-San, 1898, *Hugh s.n.* (BM). Hua-Shan, 19.VIII.1932, *Hao 3067* (K). SHANSI: Near Chiao-Ch'eng, 25.VI.1916, *Licent 2115* (P). Chiao-Ch'eng, Pa-Shui-Ko-Shan, in deep pit, c. 2100 m, 28.VIII.1924, *Smith 7306* (UPS). Yüan-Ch'ü, Ye-Cho-Shan, in high-stemmed mixed forest, c. 1500 m, 18.VII.1924, *Smith 6465* (UPS). Yüan-Ch'ü, Shui-Wang-Ping, in subalpine forest, c. 2100 m, 24.VII.1924, *Smith 6513* (UPS). King-Hien, 5.V.1916, *Licent 1769* (BM, P). SZECHWAN: Between Hai-T'ang and Pin-Yi-P'u, c. 1900 m, 24.V.1922, *Smith 1970* (UPS). Nan-Ch'uan, at roadside, 2400-2700 m, 24.V.1928, *Fang 882* (K,

P). HUPEH: Hupeh, 1885-88, *Henry 5403* (BM). Ch'ang-Yang, s.d., *Wilson 1121* (K). KIANGSU: Su-Chuen, Chen-Ke'u-Tin, s.d., *Farges s.n.* (P). Nanking, 26.IV.1920, *Tsu 666* (K). Ibid., Lotus-lake along edge, V.1927, *Chiao 14821* (Z). Ibid., 19.V.1927, *Chiao 14829* (K). Ibid., in light woods, 16.IV.1931, *Teng 125* (Z). Chio Shan, V.1863, *Hace s.n.* (BM). She-Shan, 15.VI.1947, *Law s.n.* (K). Shang-Hai, 1865, *Hélot & d'Argy s.n.* (P). Ibid., along ditches in gardens, IV.1894, *Bodinier s.n.* (P). Ibid., Hsü-Chia-Hui, 10.IV.1920, *Courtois 25132* (P). HUNAN: Ping-T'ou Shan, T'ang-Wan, Yi-Chang, sandy soil, swamp, shrubs, s.d., *Tsang 23701* (BM, G). KIANGSI: Chiu-Chiang, Ch'ang Chiang, s.d., *Faber 695* (K). CHEKIANG: Haia-Chih-Tsao, Tien-Chu-Hong-Chow, hillside, 19.V.1934, *Read 1116* (BM). Ning-Po, on the graves, V.1863, *Franchet s.n.* (P). Ning-Po, V.1886, *Rainer-Kesslitz s.n.* (W).

KOREA. Dagelet Island, 31.V.1917, *Nakai 4533* (TI). Musan, Tumin Gan river, near Czan-Pen, 10.VI.1897, *Komarow s.n.* (K). Kyongson, 14.VI.1930, *Ohwi 934* (UPS). Mokpo, in grassland, V.1909, *Taquet 3102* (G). So-To, V.1859, *Wilford 711* (K). Chejo Do, Hongu, in field, 1.IV.1908, *Taquet 4689* (G).

JAPAN. 66 Collections in all. Japan, 1777, *Thunberg s.n.* (L). Ibid., s.d., *Bürger s.n.* (GOET, K, L, UPS). Ibid., *Eykman s.n.* (UPS). Ibid., *Petersen s.n.* (UPS). Ibid., *von Siebold s.n.* (G, K, L, M). Komara, 9.VII.1912, *Fox s.n.* (BM). Yokoska, s.d., *Savatie 981* (P). Ibid., shady, on walls, 1866-74, *Savatie 981 bis* (K, P). HOKKAIDO: Hako-Dake, 1860, *Hodgson s.n.* (K). Mountains W. of Sapporo, 2.VI.1887, *Faurie s.n.* (G, P). Near Sapporo, in grassland, 10.VI.1907, *Takeda s.n.* (BM, K). Hakodate, hillside, in shady places, 1853-56, *Wright s.n.* (L, P). Hakodate, 1861, *Albrecht s.n.* (K). Ibid., *Maximowicz s.n.* (BM, K, P). SADO: Sado, 28.VI.1888, *Faurie s.n.* (P). HONSHU: Mountains of Aomori, 25.V.1886, *Faurie 446* (P). Aomori, 17.VI.1897, *Faurie s.n.* (G, P). Ibid., V.1902, *Faurie s.n.* (BM, G). Hirosaki, Park, near the moat in front of the Police House, 30.V.1977, *Senba s.n.* (L). Koyoshi Kawa, Musashi, 29.IV.1893, *Watanabe s.n.* (K). Ozuchi Wan, 30.IX.1889, *Faurie s.n.* (G, P). Oyasu, 19.IV.1877, *Bisset s.n.* (BM). Omori-Dake, 18.V.1930, *Claraz s.n.* (Z). Kakudayama, s.d., *Faurie s.n.* (P). Fukuyama, VI.1889, *Faurie 3822* (K, P). Haze, Hukuchi-Yamashi, Kyoto, shady place on the bank, 12.V.1968, *Mutata & Iwatsuki 642* (L, P). Shiga, between Ohkubo in Ibuki-Mura and the top of Ibuki-Yama, c. 700 m, 5.VI.1960, *Hiroe 13789* (L). Shiga, Ibuki-Yama, on grassy slope of calcareous soil, c. 600 m, 19.V.1963, *Murata & Koyama 75* (L, M, P). Chicibu, Musashi, V.1887, *Anon. s.n.* (P). Fuchu, c. 17 miles W. of central Tokyo, shady hedges and roadsides, 6.V.1968, *Kenyon 19* (K). Tokyo, Botanical Garden, weed, 9.V.1912, *Fox s.n.* (BM). Ibid., Hibiya Park, V.1929, *Dorsett & Morse 161* (P). Tokyo, 19.V.1903, *Uno 129* (BM). Ibid., 13.V.1910, *Onuma s.n.* (Z). Ibid., V., *Yatabe s.n.* (UPS). Ooiso, Sagami, 18.IV.1951, *Ohwi & Okamoto 203* (COI, G, L, P, UPS). SHIKOKU: Takamatsu, Yashida, roadside, 24.IV.1964, *Degener 28915* (W). KYUSHU: Eshikosan, 3.V.1907, *Faurie 120* (G). Nagasaki, 1862, *Oldham s.n.* (GOET, K, L, M, P). Ibid., 1863, *Maximowicz s.n.* (BM). Ibid., 14.V.1879, *Yatabe s.n.* (G). Ibid., s.d., *Eykman s.n.* (UPS). Hakozaki, near Fukuoka, 2 m, 10.V.1928, *Ichikawa 99* (BM).

6.c. *Lamium album* L. subsp. *crinitum* (Montbr. & Auch. ex Benth.)

Mennema

TURKEY. East Cappadocia, 1834, *Montbret s.n.* (G, K, W). Cappadocia Mountains, s.d., *Aucher 1684* (G, K, P). KASTAMONU: Near Hambarlu, in field, 4.V.1892, *Sintenis 3753* (JE, LD). Tosya, Küçük, Ilgaz Dag, in alpine pasture, 4.VI.1892, *Sintenis 4161* (B, G, JE, P). AMASYA: Ak Dag, subalpine region, 1400-1600 m, 18.VI.1899, *Bornmueller 635* (B). Ibid., 8.VI.1893, *Manisadjan 25b* (LD, M, P, PR, S, UPS, W). Ibid., 1.VI.1896, *Foerster s.n.* (B, MPU, PRC). KAYSERI: between Bakirdagi and Saimbeyli, 17 km of Bakirdagi, near Girkane, 1670 m, scrub, rocky limestone, 18.VI.1951, *Simon s.n.* (BAS). Bakir Dag, above Kiske, 1400-1700 m, 28.VI.1952, *Davis & Dodge 19315* (BM, K). SIVAS: Yildiz Dag, in alpine mountains, 2300 m, 7.VI.1890, *Bornmueller 2160* (B). Göl Dag, VI.1893, *Bornmueller 3502* (B, JE, W, WU). Near Gurun, near spring, 1650 m, 15.V.1859, *Kotschy 92* (G, L, P, ZT). HATAY: Gavur Dagliari, Dumanli Dag, 700-1200 m, VII.1911, *Haradjian 3640* (K). GÜMÜŞANE: Tempede, on rocks, 22.VIII.1894, *Sintenis 7423* (JE, LD). Ibid., below rocks, 22.VIII.1894, *Sintenis 7428* (B, PR, W, WU, Z). ERZINCAN: Keşiş Dag, above Cimin, among rocks, 2800 m, 28.VII.1957, *Davis & Hedge 31817* (BM, K). TUNCELI: along the road Elâzig-Erzurum, c. 5 km N. of Pülümür, grassy NE.-slope with clayish soil, 2000 m, *Hen-*

nipman et al. 1622 (K, L, WAG). ÇORUH: Savval Tepesi, above Murgul, igneous, rocky gully, 2700 m, 12.VIII.1957, *Davis & Hedge 32323* (K). Kordevan Dag, Yalnızcan Dağları, near Kütül Yayla, banks in *Picea*-forest, 2000 m, 28.VI.1957, *Davis & Hedge 30247* (K). KARS: Karaorgan, grassy banks, 1900 m, 13.VI.1957, *Davis & Hedge 29466* (K). SW.-side of Kisir Dagı, between Kars and Ardahan, among volcanic rocks, 2200 m, 16.VI.1957, *Davis & Hedge 29628* (K). AĞRI: Büyük Ağıri Dagı, c. 2700 m, 11.VIII.1910, *van Dijk Post s.n.* (G). BİTLİS: Tatvan to Kücüksü, deciduous oak scrub, 1750 m, 19.V.1966, *Davis 44310* (K). SİIRT: Sasun Dağları, Halkis Dag Massif, slopes above Sason, 1600-1850 m, 21.V.1966, *Albury et al. 1222* (K). HAKKARİ: Kara Dag, above Cölemerik, 2700 m, 13.VIII.1954, *Davis & Polunin 24318* (BM, K). Cilo Dag, below Cilo Yayla, 2700 m, 10.VIII.1954, *Davis & Polunin 24230* (BM, K). Samdi Dag,, dry unstable soil, 2700 m, VII.1965, *Rix 59* (K).

IRAQ. Gali Warta, c. 30 km NW. of Ranya, among *Quercus*-forest, 1300-1400 m, 13.V.1959, *Rawi et al. 28735* (K). Arbil, Algurd Dah, in alpine region, 2700 m, 26.VI.1893, *Bornmueller 1708* (JE). Ibid., in valley above Nowanda, c. 2600-3000 m, 10/14.VIII.1957, *Rehinger 11466* (W). Arbil, Qandil Mountains, on E.-slope above Pushtashan, in *Astragalus*-zone, c. 1800 m, 28.VII/1.VIII.1957, *Rehinger 11103* (W). Ibid., near rivulet, c. 2000-2200 m, 28.VI/1.VIII.1957, *Rehinger 11102* (W). Riwandous, Sakri Sakran mountains, 2300 m, 23.VI.1893, *Bornmueller 1710*, (B, JE). Qandil Mountains, on S.-slope, *Astragalus*-zone, 30.VII.1957, *Rawi & Serhang 24068* (K). Serin Mountain, on road to Qandil, *Astragalus*-zone, 1620-2380 m, 30.VII.1957, *Rawi & Serhang 24005* (K). Malikh Mountain, on S.-slope, *Astragalus*-zone, 2400-2600 m, 30.VII.1957, *Rawi & Serhang 24027* (K). Kodo, near Hajji Omran, mountain side, 2300 m, 22.VI.1947, *Rawi 9194* (K). E. Karokh, between Kunar and Kani Grawi region, mountain slope, red stony soil. 1500-1600 m. 11.VI.1959 *Albac et al. 27637* (K). Near Peniwin cultivated hillside in *Quercus*-forest, 1280 m, 21.VI.1951, *Rawi 22577* (K). Ibid., cultivated hillfoot near stream, 1350 m, 21.VI.1951, *Rawi 22618* (K). Ibid., 1400 m, 23.IV.1947, *Rawi 8909a* (K). Ibid., clay schiefer, in *Quercus*, 1500 m, 19/20.VI.1957, *Rehinger 10517* (W). Ibid., serpentine rocks, c. 1590 m, 21.VI.1957, *Rawi 22750* (K). *Rawi 22671* (K). Ibid., 1600 m, 9.VI.1948, *Rawi 12184* (K).

IRAN. Qotur Su, N.-side of Kuhhay Sabalan, SW. of Khiyav, mountain slope, c. 2500 m, 13.VII.1971, *Lamond 4710* (M). 15 Miles SE. of Mahabad, earthy bank, 1500 m, 20.V.1962, *Furse 2163* (K, W). SE.-slopes of Kuh-i Sahand, in low scrub, on dry stony ground, 2250 m, 24.V.1960, *Furse & Synge 232A* (K). Sarab-Kuh Sabalan, 26.VII.1968, *Termé 13219E* (W). Ardehjan, valley in dense and very wet forest, 500-800 m, 13.IX.1956, *Schmid 6623* (G). Shahu mountain, 2700 m, IX.1867, *Hausknecht s.n.* (JE). Marivan, mixed deciduous forest, c. 1500 m, 7.V.1963, *Jacobs 6526* (L, W). W. of Sanandaj, between Sanandaj and Marivan, oak-woodland, c. 1740 m, 20.V.1960, *Bent & Wright 520-506* (K, W). Between Khorramabad and Soltanabad, V.1937, *Koelz 1187* (C, W). Siahsharad, steep bank in open forest, c. 900 m, 12.V.1955, *Mooney 6581* (W). Karand, Kuh-e Richab, 10.V.1910, *Strauss s.n.* (B, JE, W). Kuh Gasavand, 1.VII.1909, *Strauss s.n.* (B, JE). Shah Pass, N.-ridge Kuh Alvand, shaly slopes, 2400 m, 12.V.1962, *Furse 1953* (K, W). Hamadan, Alvand Mountain, 15.V.1895, *Strauss s.n.* (JE). Ibid., VI.1902, *Strauss s.n.* (B, JE, W). Ibid., 8.VI.1905, *Strauss s.n.* (B, JE). Arak, Rasvand, in ravine, VII.1902, *Strauss 443* (JE). Latetar Mountain, 6.IV.1895, *Strauss s.n.* (B). Ibid., 10.VIII.1895, *Strauss s.n.* (JE). Kuh-e Sefid Khaneh, 21.VI.1909, *Strauss s.n.* (B). Bakhtiari, Gahar, 2700 m, 1.VI.1941, *Koelz 17996* (W). Luristan, Dow Rud, in patches, 1650 m., 23.V.1940, *Koelz 15781* (W). Ibid., along stream, 9.V.1941, *Koelz 17473* (W). Oshoran Kuh, VIII.1903, *Strauss s.n.* (B, JE). Ibid., S. of Arak, rocky stony slopes, 2250 m, 22.V.1963, *Bowles Scholarship Bot. Exp. 1844* (K). Kuh Rang, c. 2400 m, 31.V.1959, *Wendelbo 967* (W). Fars, Ardakan, 25.VI.1967, *Kashkoulı 12347E* (W). Kuh-e Dinar, in alpine shingle, 10.VII.1842, *Kotschy 604* (AWH, C, G, GOET, JE, K, L, M, MPU, P, S, UPS, W, WAG, WU, ZT). Near Firouzabad, valley, 1000-2000 m, 12/16.X.1956, *Schmid 6672* (G). Gilan, Asalem, 9.V.1965, *Dezfoulian & Sasavi 6438E* (W). Ibid., in forest, 16.VI.1965, *Esfandrarı 6305E* (W). Lomir, 14.V.1967, *Ahai 12359E* (W). Lahijan, hedges, ditches, VI.1936, *Lindsay 768* (BM). Kandavan Mountain, SW.-slope, oak- and maple-forest, 1800 m, 10.V.1961, *Stutz 1139* (W). Between Gach Sar and Chalus, 0-3000 m, 18.V.1956, *Schmid 5799* (G). Alborz, near Chalus, in foothills, on mossy rocks in shade, 450 m, 17.III.1962, *Furse 1077* (K, W). Warahosul, 1847, *Buhse s.n.* (G). Galand Rud, 11.V.1956, *Sabeti 217* (W). Kelerd, Harâz valley, 30 km S. of Amol, in ravine of rivulet, in wood on calcareous soil, c. 400 m, 15.IV.1976, *Lambinon 76/240* (M). Between Sari and Behshahr, in forest, 18.IV.1967, *Rehinger 33079* (W). Robat-e Qozloq, in forest,

15.VII.1940, *Koelz 16243* (W). Behshahr, s.d., *Bunge s.n.* (P). Bandar-i Gaz, in hedges and thickets, III.1901, *Sintenis 1432* (G, P, Z, ZT). Gorgan, Gonbad-e Kavus, 1.V.1958, *Mirzayan 6192E* (W). Gorgan, Loveh, in deciduous forest, 400 m, 19.IV.1976, *Rechinger 33110* (W). Golestan, ENE. of Gompad-e Cabus, among mossy stones and grass under tall forest oaks. 600 m. 28.III.1964. *Furze 5089* (K). Road between Chalus and Karadj, wooded slopes under *Parrotia persica*, 14.VI.1953, *Bowes Sinuarsipur Div. Exp. 605* (K). Ab Maalan, humid forest, 0-500 m, 10/11.X.1956, *Schmid 6667* (G). Alborz, Tuchal Mountain, Emamzadeh Davud, c. 2600 m, 29.V.1902, *Bornmueller 7947* (B, BM, HBG, K, LD, P, PR, PRC, W, WU, ZT). Ibid., near Shahrestanak, c. 2200 m, 4.VI.1902, *Bornmueller 7948* (B, JE, MPU). Ibid., Shimran, 2700 m, 29.V.1902, *Bornmueller 7946* (B). Ibid., 8.IV.1928, *Hund 355* (B). Tuchal Mountain, 27.V.1843, *Kotschy 194* (AWH, BM, G, GOET, L, M, P, W, WAG, ZT). Ibid., 1.VII.1968, *Termé 13231E* (W). Mazanderan, E.-side of Qadamgah, 60 km E. of Firuzkuh, on rocks, c. 2600 m, 23.VII.1948, *Aellen & Behboudi 806* (W). Ibid., Qomrud Bala, 60 km E. of Firuzkuh, in garden, c. 2400 m, 24.VII.1948, *Aellen & Behboudi 803* (W). Ibid., Talar valley, E. of Gaduk, near Kahud-Tscheschmeh, on rocks, 2300 m, 22.VII.1948, *Aellen & Behboudi 804* (W). Ibid., *Aellen & Behboudi 805* (W). Damavand Mountain, above Ab-e Garm, 3000 m, s.d., *Gauba & Esfandiari 1120* (W). Ibid., above Rehne, under stone blocks. 3200-3800 m. 23.VII.1936. *Gilli s.n.* (W). Rostamahad. near Tehran, IV.1886, *Capus s.n.* (P). Hazarband, ravine, 2800 m, 14.VII.1935, *Gauba 882* (B).

ASIATIC U.S.S.R. TURKMENIYA: Iagnaous valley, 3.VII.1881, *Capus s.n.* (P). Kizyl-Arvat, Sund-sulagi Mountain, Kakaia, 18.V.1901, *Sintenis 1730* (B, LD, F, W, WU). Suluklu, near Iranian border, 'Rohrplatte', 29.VII.1900, *Sintenis 1798 bis* (B, LD). Jugo-Zapadnyj Kopetdag, on S.-slope of Sjunt-Chosardaskoj chain, 900 m, 9.V.1976, *Nikitin & Ivanov s.n.* (M).

AFGHANISTAN. Nuristan, between Nishei and Ningalam, 14.VIII.1951, *Neubauer 791* (W). At Ashpi Pass, 17.VIII.1951, *Neubauer 1051* (W).

PAKISTAN. Chitral, Drosh, dry streambed, 3150 m, 31.VII.1958, *Bowes Lyon 184* (BM). Chitral, Ziarat, 2200 m, VI/VII.1908, *Toppin 435* (K). Ibid., amongst shrubs, 2400 m, 2.VI.1958, *Stainton 2562* (BM). Chitral, Bromalus, 3300 m, VI.1909, *Toppin 835* (K). Swat, Utror, near Kalam, siliceous soil, 2200 m, 6.VI.1965, *Rechinger 30805* (W). Ibid., Ushu, granitic soil, 2000-2200 m, 5.VI.1965, *Rechinger 30776* (W). Nathiagali, grassy hill, 2700 m, 17.VI.1959, *Jafri & Ali 3202A* (K).

INDIA. 47 Collections in all. NW. Himalaya, 1800-3000 m, s.d., *Hooker f. & Thomson s.n.* (G, L, M, P). Gruhwal, VI.1845, *Thomson 1253* (BM). Mari, VIII.1880, *Young s.n.* (BM). Gulwang, amongst grass under bushes, 2400-2700 m, V.1936, *Tornin 142* (BM). Khelanmarg, bushy ground, 3250 m, 11.VIII.1956, *Polunin 5 6/169* (BM). Murree wood, 1914-15, *Prescott-Decie s.n.* (BM). Murree, Rawalpindi, damp shady places, 1.IX.1969, *Nasir & Grohmann 5893* (L). Poonch, Serimang, in forest, 1800-2100 m, s.d., *Rashid et al. 25538* (BM). Sonamarg, 24.VI.1984, *Willems 1128* (Herb. Willems). Gagangir, 2350 m, 17.VI.1984, *Willems 1091* (Herb. Willems). Near Guhnarg, 2100-2400 m, 4.VI.1892, *Duthie s.n.* (BM). Ibid., 2700-3000 m, VIII.1922, *Barbour s.n.* (BM). Tangimarg, c. 2160 m, s.d., *Thapliyal Raizadas 26434* (L). Kishtvár to the Pir Patsashi, 17.VIII.1950, *Schugimweil 1720* (BM). Naranag, summer 1969, *Polunin 9627* (BM). Dalhousa, 1800 m, 19.IX.1874, *Clarke 22715* (BM). Ibid., in forest, c. 3300 m, VIII.1879, *Drummond 923* (K). Vernag, Benhatti, 2952 m, 21.VII., *Jacquemont s.n.* (P). Ladian, Aghamashad, 24.IV.1965, *Institut des Forêts et paturages à Karadj 179* (W). Lahul, Manali, 2400 m, 29.VI.1938, *Bor 12054* (K). Ibid., 17.V.1941, *Bor 14472* (K). Simla, 20.V.1878, *Collett s.n.* (K). Ibid., 29.V.1917, *Rich 547* (K). Ibid., in forest, 1800 m, 1884, *Drummond 1911* (BM, P). Ibid., 2400 m, 16.VI.1877, *Gamble 4376A* (K). Ibid., amongst rocks, 2400 m, 28.V.1885, *Drummond 2077* (K). Himachal Pradesh, Narkanda, grassy slope near Resthouse, 2750 m, 4.VIII.1964, *Maas Geesteranus 14037* (L). Chakrata For. Div., Riknar 14b, 2400 m, 12.XI.1960, *Heybroek 218* (L). Janusar, Deoban, 2400 m, VI.1891, *Gamble 22809* (K). Kunawar, 1885, *Drummond 22344* (G, K, P). Tehri-Garhwal, Ganges valley below Daragulla, 1800-2100 m, 16.VI.1883, *Duthie 156* (G). Ibid., Damdar valley, 3000-3300 m, 4.VII.1883, *Duthie 157* (G). Naini Tal, Kumaon, 24.VI.1957, *Mueller s.n.* (ZT). Ibid., 2250 m, s.d., *Strachey & Winterbottom 2* (BM, K, P).

NEPAL. Lokwa, forest damp bank, 2400 m, 11.VII.1953, *Gardner 1248* (BM). Ganesh, Shiar Kola, wet dripping cliff face, 3750 m, 15.VII.1953, *Gardner 1314* (BM). Near Kuinekhani, in evergreen forest, 2550 m, 25.V.1954, *Stainton et al. 2855* (BM). Manjet Khola, moist, deciduous woodland, 2400 m, 16.V.1962, *Bowes Lyon 133* (BM). Near Ihongundanda, shady place, 1500 m, 14.V.1965, *Shrestha 4110* (BM). Doli, Bhalma village, shrub, 20.V.1929, *Bis Ram 431* (BM).

Dillikot, edge of cultivation, 2400 m, 19.IV.1952, *Polunin et al. 3921* (BM, G, P). Okhaldhoneagaon, S. of Dhorpatan, at edge of forest stream, 2400 m, 30.IV.1954, *Stainton et al. 346* (BM, UPS). Lumsum, among rocks in shady ravine, 2200 m, 30.V.1954, *Stainton et al. 2907* (BM, UPS). Tarakhola, W. of Beni, beneath forest trees, 2550 m, 25.IV.1954, *Stainton et al. 205* (BM, UPS). Lete, S. of Tokocha, Kali Gandaki, 2400 m, 7.VII.1954, *Stainton et al. 1623* (BM). Dhumpu, S. of Tokocha, Kali Gandaki, at edge of stream, 2550 m, 5.VI.1954, *Stainton et al. 915* (BM, UPS). Bakhri Kharha, N. of Poktarn, on grassy bank among shrubs, 1650 m, 24.IV.1954, *Stainton et al. 5044* (BM). Chihinagoan, shady wood, 1800-2250 m, 13.VII.1949, *Polunin 999* (BM, UPS).

7. *Lamium galactophyllum* Boiss. & Reuter ex Boiss.

TURKEY. TRABZON: Trabzon, cultivated places, very rare, 24.VI.1862, *Cosson s.n.* (P). Trabzon, very rare, 4.VII.1862, *Cosson s.n.* (P). GÜMÜŞANE: Ruphena, in mountain field, 13.V.1894, *Sintenis 5538* (B, G, JE, K, L, LD, P, PR, PRC, W, WU, Z). E. of Gümüşane, on dry stony ground, 1800 m, 18.V.1960, *Furse & Synge 22* (K). Above Gümüşane, among rocks, 2.VI.1862, *Bourgeau 223* (C, COI, G, GOET, JE, K, LD, MPU, P, UPS, W, WU, Z). Beşkilise, on rocky slope, 8.V.1894, *Sintenis 5478* (BM, G, JE, L, P, Z). ERZINCAN: C. 25 km N. of Erzincan, along the road to Trabzon, rather dry loamy E.-slope, along neglected field, c. 1800 m, 30.V.1959, *Hennipman et al. 1685* (K, L, WAG). ERZURUM: Erzurum, s.d., *Zohrab 518* (K). Near Erzurum, 1853, *Calvert s.n.* (G). Kop Dag Pass, on steep sliding white limestone scree, 2550 m, 9.VIII.1962, *Furse 3820* (G). Between Horasan and Karaorgan, c. 25 km from Horasan, rocky igneous S.-slope, 2000 m, 13.VI.1957, *Davis & Hedge 29494* (K). KARS: Between Sarikaniş and Selim, earthy igneous scree in ravine, c. 1900 m, 13.VI.1957, *Davis & Hedge 29540* (K). Agundic, 7.VII.1903, *Koenig s.n.* (MPU). Kosor, among rocks, 7.VI.1904, *Koenig s.n.* (WU).

8. *Lamium maculatum* (L.) L.

NETHERLANDS. 374 Collections in all. OVERIJSSSEL: Zalk, in hedge, VII.1846, *Bondam s.n.* (NBV). GELDERLAND: Lathum, along the river IJssel, 4.V.1918, *van Soest 19748* (L). Huissen, opposite to Looweer, roadside near the river Rhine, 16.IV.1977, *Weeda s.n.* (L). Millingerwaard, in hedge along the river Waal, 13.IX.1970, *Mennema 1655* (L). Ubbergen, near source at the highroad, V.1942, *Kern & Reichgelt 4255* (L). Beek, near Nijmegen, along rivulet, 15.VIII.1874, *Oudemans 1020* (AMD, GRO, L, NBV). ZUID-HOLLAND: Kedichem, S. border of the river Linge, in osier bed, 20.VIII.1957, *van Ooststroom & Reichgelt 20677* (L). Gorinchem, in outer marches of the river Merwede, 21.V.1944, *de Bruyn s.n.* (L). LIMBURG: Mook, in hedges along the river Maas, 8.V.1930, *Jansen s.n.* (NBV). Vlodrop, at escarpment of the river Roer, 23.IV.1935, *Sloff s.n.* (NBV). Nuth, Kathagen, near the river Geleen, 1929, *de Wever s.n.* (MAAS). Oud-Valkenburg, road along the river Geul, 7.IV.1928, *van Ooststroom 1234* (L). Gulpen, in hedges, VII.1917, *van Steenis s.n.* (NBV). Terwinselen, roadside near Ehrensteyn, 7.IV.1950, *de Wilde 3606* (L).

BELGIUM. LIMBURG: Near Kanne, s.d., *Nyst s.n.* (BR). Between Eben and Eben Emael, in hedge of pastures along the river Jeker, 9.IV.1936, *Sloff s.n.* (L). LIÈGE: Near Visé, s.d., *Hardy s.n.* (COI). Mabrouck, between Teuven and Remersdael, roadside, 24.IV.1976, *Bakker s.n.* (L). Near Spa, s.d., *Lejeune & Courtois 217* (L, P). Fonds des Forêts, 18.VI.1893, *Bris s.n.* (MPU). HAINAUT: Near Tournay, s.d., *Dumortier s.n.* (L). NAMUR: Namur, s.d., *Bommer s.n.* (BR). Near Namur, 1862, *Devos s.n.* (L). Ibid., in hedges, 14.IX.1865, *Thielsens & Devos 59* (L). Marche-les-Dames, IV.1862, *Devos 24-6* (L). Ibid., roadside, 28.VIII.1894, *Ogterop s.n.* (L). Yvoir, 4.VI.1935, *Anon. 688* (L). Houx, near Dinant, roadside, 8.VII.1871, *Gravel s.n.* (L). Anseremme, s.d., *Dumortier s.n.* (BR). Ibid., in hedges, 8.VII.1871, *Gravel s.n.* (L). Freyr, shady forest, 5.VII.1867, *Gravel s.n.* (L).

LUXEMBOURG. Grundhof, near bridge over Schwarze Ern, 20.V.1975, *Mennema & Mennema-Moes 2391* (L). Vogelsmühle, S. of Grundhof, in beech-forest, 6.VII.1947, *Hoogland 1947-252* (L). Echternach, VIII.1923, *Tinbergen s.n.* (L). Consdorf, in hedges, 28.VI.1924, *van Steenis s.n.* (L). Luxembourg, in hedges, s.d., *Tinant s.n.* (L). Bois de Dillingen, 9.V.1967, *Verbiest 861* (L).

FRANCE. 62 Collections in all. VILLE DE PARIS: Bois de Vincennes, 15.IV.1884, *Legrand s.n.* (L). MEURTHE-ET-MOSELLE: Nancy, s.d., *Persoon s.n.* (L). LOIRET: Auguste-de-St.Hilaire, near Orléans, s.d., *Persoon s.n.* (L). HAUT-RHIN: Faubourg de Belfort, in hedge, 4.V.1849, *Pariset 435* (G, P, WAG). CHER: Aubigny, in hedge, 100-200 m, VII/VIII., *Fuglar s.n.* (ZT). DOUBS: Morre, near Besançon, VII.1856, *Bavoux 435 bis* (G, P, WAG). JURA: Between Ruffieu and Valromey, grassy roadside under *Crataegus*, 8.V.1971, *Kruijt & van Alphen s.n.* (L). ALLIER: Bank of the river Guenne, 28.V.1891, *Lassimonne 166* (COI). RHÔNE: Gleizé, 11.IV.1876, *Gandoger 991* (COI). Villefranche-sur-Saône, Mongré, in hedge, 29.IV.1875, *Tillet s.n.* (COI). Villeurbanne, 9.IV.1807, *Persoon s.n.* (L). HAUTE-SAVOIE: Beau-Rivage, Lac d'Annecy, 3.VIII.1950, *Timmermans s.n.* (L). CORRÈZE: Ussel, Marmitoux, 22.VI.1893, *Gonod d'Artemare s.n.* (MPU). ISÈRE: Uriage, VIII.1930, *Blanchet 1869* (MPU). Grenoble, I.a Tronche. 13.X.1934, *Siertsema 3158* (L). DRÔME: Bank of the river Herbasse, near Crepol, under *Corylus* and *Alnus*, 14.V.1971, *Kruijt & van Alphen s.n.* (L). HAUTES-ALPES: Vannières, along wall, 1200 m, 9.V.1971, *Kruijt & van Alphen s.n.* (L). BASSES-PYRÉNÉES: Between La-Pierre-St.Martin and Arette, calcareous soil, 1640 m, 8.VII.1974, *Litzler 71/114* (ZT). HAUTES-PYRÉNÉES: Val de l'Aspe, S. of Sarrance, along highway, calcareous soil, 340 m, 7.VI.1970, *Schiess 1* (L). Hospice de France, near Luchon, 1350 m, *Dorgelo & de Wilde s.n.* (L). AUDE: Vallon des Bailleurs, near St.Colombe-sur-Aiguette, pasture border, 24.VI.1887, *St.Lager s.n.* (G). PYRÉNÉES-ORIENTALES: Col de Jau, near Prades, VII.1830, *Endress s.n.* (L, LAU, P). GARD: Between Le Vigan and Molières, in hedge, 8.IV.1917, *Noack s.n.* (ZT). BOUCHES-DU-RHÔNE: Ste.Baume, in forest, 19.VII.1860, *Roux s.n.* (G). Ibid., among rocks, 10.VI.1866, *Roux 3469* (MPU). VAR: Mont de Lachens, s.d., *Maille s.n.* (MPU). ALPES-MARITIMES: Grasse, Villa Flore, uncultivated places, 1.V.1964, *Gavelle s.n.* (COI). Sospel, winterbed of rivulet, 26.III.1928, *de Leeuw s.n.* (L). Ibid., epiphyte on *Salix*, 26.III.1928, *de Leeuw s.n.* (L). Near Giandola, on wall, 5.V.1893, *Haussknecht s.n.* (JE).

GERMANY. 44 Collections in all. NIEDERSACHSEN: Horn, near Hamburg, in hedge, s.d., *Bruinsma s.n.* (NBV). Dransfeld, border of rivulet, 25.V.1879, *Kobus s.n.* (L). SACHSEN-ANHALT: Magdenburg, s.d., *Kotschy s.n.* (JE). BRANDENBURG: Frankfurt an der Oder, s.d., *Bulk s.n.* (L). NORDRHEIN-WESTFALEN: Witten, s.d., *Hasse s.n.* (GOET). Heimbach, on rocks along the river Rur, 30.VII.1930, *van Ooststroom 3756* (L). HESSEN: Königswald, V.1826, *Neumann s.n.* (L). THÜRINGEN: Sondershausen, in deciduous forest, s.d., *Ekart & Irmisch s.n.* (JE). SACHSEN: Schierke, forest, VI.1910, *Boldt s.n.* (H). Near Karlmarxstadt, s.d., *Weiker 843* (L, P). RHEINLAND-PFALZ: Near Nieder-Erbach, NW. of Limburg, moist flat along the rivulet Erbach, 7.VII.1975, *Leenhouts 3076* (L). SAARLAND: Nennig, near Roman palace, pasture near the river Mosel, 9.V.1984, *M.J. Mennema s.n.* (L). BADEN-WÜRTTEMBERG: Heidelberg, Rohrbacher Chaussée, 17.IV.1832, *Koch s.n.* (L). Badenweiler, s.d., *Koch s.n.* (L). BAYERN: Erlangen, s.d., *Koch s.n.* (L).

SWITZERLAND. 28 Collections in all. SCHAFFHAUSEN: Schaffhausen, 5.V.1889, *Appel s.n.* (Z). BASELSTADT: Rinsau, near Basel, IV.1914, *Christ s.n.* (Z). AARGAU: Brugg, VIII.1927, *Siertsema 3157* (L). ZÜRICH: Richterswil, 17.V.1929, *Schnyder s.n.* (Z). APPENZELL: Between Wasserauen and Seetalpsee, roadside, 18.VI.1939, *Timmermans s.n.* (L). BERN: Schynige Platte, c. 2000 m, 29.VI.1977, *ten Broek & ten Broek-Groen s.n.* (L). LUZERN: Luzern, V.1874, *van Heurck s.n.* (AWH). GLARUS: Unterfriteren, between Linthal and Klausenpass, on overgrown wall, 1250 m, 4.VI.1966, *Mennema 474* (L). Near Nyon, s.d., *Gaudin s.n.* (LAU). Leysin, 1500 m, *van Soest 19743* (L). FRIBOURG: Creux-dessus, 13.VII.1879, *Deséglise 122* (MPU). URI: Above Jägerbalm, between Linthal and Klausenpass, under inclining rock, 1500 m, 4.VI.1966, *Mennema 461* (L). GRAUBÜNDEN: Chur, Plessur valley, 7.VIII.1932, *van Soest 4561* (L). GENÈVE: Genève, 1826, *van Salis* (ZT).

AUSTRIA. 33 Collections in all. VORARLBERG: Bregenzer Wald, Damülser Mittagspitz, S.-slope, open area, among rocks, 1850-1950 m, 4.VII.1952, *Jacobs 3523* (L). TIROL: Rofengebirge, Jenbach, c. 500 m, 23/25.VIII.1951, *Huizing s.n.* (L). SALZBURG: Salzburg, in hedges and on walls, c. 420 m, s.d., *Fl. Exs. Austr.-Hung. 2648* (COI, L, P, ZT). OBER-ÖSTERREICH: Traunsee, E.-bank near Moaristidl, 23.VIII.1937, *Ronniger s.n.* (W). NIEDER-ÖSTERREICH: Near Hirschenstein, N. of Karlstift, 4.VII.1887, *Beck s.n.* (PRC). Schneeberg, Krumbachgraben, in pasture, c. 1260 m, 10.VII.1882, *Beck s.n.* (PRC). Königswart, near Hainburg, 16.XI.1939, *Galvani s.n.* (W). KÄRNTEN: Heiligenblut, 31.VIII.1928, *Schneider s.n.* (W). STEIERMARK: Waltendorf, near Graz, roadside, 30.VII.1930, *Wimmer s.n.* (W).

POLAND. Silesia, s.d., *Treviranus s.n.* (L). Tuchola, valley of the river Brda, 7.VII.1911, *Preuss & Steffen s.n.* (L). Olsztyn, 'Jungferngrund', 18.V.1914, *Steffen s.n.* (L). Near Sroda, 'Herrenhofen', s.d., *Bothe s.n.* (B). Teremiski, W. of Biatowieza, edge of field, 15.VIII.1980, *Heukels 1643* (L). Lissa, 'Bischwiz, bank of a canal, V/VIII., *Anon. s.n.* (L). Cieczkowice, Bochnia, bank of the river Raba, 21.IV.1968, *Fl. Polon. Exs. 64* (G).

CZECHOSLOVAKIA. 30 Collections in all. Brectanova rokle, opposite to Mseno, c. 250-300 m, 10.VIII.1941, *Domin s.n.* (PRC). Praha, near Pruhonice, in forest, c. 300 m, 16.V.1958, *Nitka 67* (COI). Vitonice, opposite of Bystrice, c. 260 m, 6.VI.1941, *Zavrel s.n.* (PRC). 'Gamsberg', near Bratislava, 22.V.1877, *Wiesbaur s.n.* (L). Nizke Tatry, Dumbier Mountain, Bystro dolina valley, at Brezno, in forest, 800 m, 22.VII.1928, *Cejp s.n.* (PRC). 'Hohe Tatra, Zips', calcareous soil, VI.1889, *Ullepitsch s.n.* (COI, G, LD, M, MPU, P, PR, W). 'Zipser Kalkalpen', 1600 m, 6.VII.1889, *Ullepitsch s.n.* (BAS, GOET, JE, LD, M, PR, W, WU). Ibid., 6.VII.1892, *Ullepitsch s.n.* (G, JE, P, Z). Ibid., 'Pinninenpass', VII.1890, *Ullepitsch s.n.* (B, JE, MPU, S, W). 'Pinninenpass', calcareous soil, c. 500 m, s.d., *Fl. Exs. Austr.-Hung. 2649* (B, C, GOET, L, LD, M, P, PR, S, W, WU, Z, ZT).

HUNGARY. ? Tematin, in Neutzner Comit, 1.V.1872, *Holuby 6716* (P).

ROMANIA. 25 Collections in all. Moldova, Iași, in forest, c. 120 m, *Fl. Roman. Exs. (Cluj) 2039 b* (G, L). Hemeiuiș, in forest, c. 300 m, 28.IV.1972, *Fl. Exs. Distr. Bacov. (Roman.) 552* (L). Arpaș Mountain, subalpine, in shadow, VII., *Schur s.n.* (W). Munc Mountain, near Baile Herculane, on slope in *Carpineto orientalis*, 1.VII.1931, *Domin & Krajina 159* (PRC). Fagaraș Mountain, Bulea Valley, in forest, 1150-1230 m, 12/14.VIII.1910, *Ginzberger s.n.* (WU). Piatra Craiului, limestone, 1800-1950 m, 12.VIII.1850, *Kotschy 231* (GOET, K, P, W). Brașov, upper tree-region of Cristianul Mare, 1400-1700 m, 28.VI.1912, *Bornmueller s.n.* (B, JE). Buzaului Mountain, S.-slope near Skit la Ialomnita monastery, limestone conglomerate, 1500 m, 3.VIII.1873, *Frey n.s.n.* (W). Ibid., Sinaia, c. 900 m, 8.VII.1931, *Domin & Krajina 500* (PRC). Orsova, Cazane pass near Dubova, wooded slope, 100 m, 9.V.1895, *Baenitz s.n.* (G, JE, L, LD, P, PR, WU). Oltenia, Doljești, near Leamna, c. 90 m, 4.V.1965, *Fl. Olten. Exs. 720* (BM). Muntenia, Ilfov, near Pantelimon, in *Quercetis*, 79 m, 20.IV.1938, *Fl. Roman. Exs. (Cluj) 2039a* (G, L).

U.S.S.R. BALTIC DIVISION: Kaliningrad, in forest, 23.V.1875, *Baenitz s.n.* (L, P). Ibid., near Ladushkin, 30.V.1869, *Baenitz s.n.* (K). Wojnowo, Nowogrodek, on peaty soil in Alnetum, V.1892, *Fl. Polon. Exs. 65* (BM). CENTRAL DIVISION: Moskva, mixed woodland on clay, 800 m, 26.V.1959, *Davis 33079* (K). Kiev, s.d., *Trautvetter s.n.* (P). SOUTH-WESTERN DIVISION: Kirovograd, VIII.1873, *Cindemann s.n.* (COI). KRYM: Jaila, above Nikitam, 29.V.1927, *Wariljed s.n.* (COI). CAUCASIA: Ordzhonikidze, 16.V.1881, *Brotherus & Brotherus 641* (BM, K, P).

PORTUGAL. 76 Collections in all. Melgaço, Sao Gregorio, VI.1894, *Moller s.n.* (COI). Povo, Serra de Montezinho, VI.1884, *Moller s.n.* (COI). Douro Litoral, Espinho, Caminho, in the direction of Granja, in hedge, 3.VII.1946, *Silva et al. 1515* (L). Serra do Gerez, XI.1917, *Felgueiras 22* (COI). Bragança, Serra de Rebordaos, IV.1874, *Paulino s.n.* (COI). Braga, Pico dos Regalados, IV.1909, *Ferreira s.n.* (COI). Vimioso, Argoselo, s.d., *Miranda Lopes 261* (COI). Tras os Montes e Alto Douro, Serra de Bornes, 22.IV.1955, *Malato-Beliz 1981* (COI). Vizella, VII.1889, *d'Araujo* (COI). Amarante, Maçadalenia, 28.III.1899, *de Carnalho s.n.* (COI). Villa Real, Abhacas, III.1910, *Panao s.n.* (COI). Castello de Paiva, IV.1898, *Salema s.n.* (COI). Macinhata do Vouga, Agenda, s.d., *de Mella & Gorga s.n.* (COI). Penalva do Castello, Castenda, 490 m, VII.1885, *Ferreira s.n.* (COI). Guarda, VII.1885, *Ferreira s.n.* (COI). Toboaco, IV.1892, *de Lima s.n.* (COI). Serra de Caramulo, V.1892, *Moller s.n.* (COI). Cantanhede, pasture, V.1903, *Rocha s.n.* (COI). Bussaco, V.1883, *Loureiro s.n.* (COI). Oliveira do Conde, IV.1886, *Moller s.n.* (COI). Coimbra, IV.1887, *d'Araujo & Castro 1215* (COI, BM). Santo Antonio dos Ollvais, c. 90 m, 9.IV.1936, *Kostermans & Kruyt 32* (L). Serra da Estrela, Sabugueiro, VII.1886, *Moller s.n.* (COI). Serra da Estrela, Souto do Bispo, Chestnut-forest, 29.V.1972, *Landolt s.n.* (ZT). Unhais da Serra, Covilha, s.d., *Vaz Serra 3* (COI). Between Penela and Espinhal, near Ponte do Eça, 28.III.1953, *Fernandes et al. 4316* (COI). Pedrogao Pequeno, 22.IV.1954, *Fernandes et al. 4699* (COI). Figueiro dos Vinhos, IV.1888, *de Freitas s.n.* (COI). Ferreira do Zezere, V.1914, *Ferreira s.n.* (COI). Quinta da Comenda, between Bodiosa and Sao Pedro do Sul, 15.III.1951, *Fernades et al. 6550* (COI).

SPAIN. 22 Collections in all. LUGO: Puertos de Piedrafita, VI.1909, *Gandoger s.n.* (COI). OVIEDO: Sama de Langreo, humid pastures, 16.V.1864, *Bourgeau 2689* (COI, G, P, ZT). LEON: Pico de las Corvas, near Combento de Arvas, rocks, 9.VII.1864, *Bourgeau s.n.* (P). Villafranca del Bierzo,

15.VII.1851, *Lange s.n.* (COI). BURGOS: Ona, 1881, *Arraiano s.n.* (COI). SCAYA: Near Bilbao, V.1850, *Willkomm s.n.* (COI). GUIPUZCOA: Near Irun, V.1850, *Willkomm s.n.* (COI). LERIDA: 36 km E. of Vieilla, above hotel Los Abetos, roadside, sunny place, 1500 m, *Schiess 10* (L). ANDORRA: Canillo, along path through pastures, open among high herbs, 1560 m, *Schiess 12b* (L). GERONA: Mollo, Puigsaletmitus, s.d., *Coste 77* (COI). Camprodon, shady bank of the Rio Ter, 25.VI.1975, *Bonnier s.n.* (L).

ITALY. 62 Collections in all. PIEMONTE: Near Castellamonte, highway to Torino, in hedge, 1903, *Vallino s.n.* (TO). Oropa, near Alpe Pissa, 19.V.1918, *Ferrari & Mascagni s.n.* (TO). In the valley of Luserna and Torrele, 1880, *Rostan s.n.* (L). Stupinigi, in thickets, 15.V.1903, *Fontana s.n.* (TO). Alba, in hedge, 1815, *Bertero s.n.* (TO). Near Limone, VII/VIII.1843, *Anon. s.n.* (TO). LOMBARDIA: Gardone, 19.III.1910, *Brotherus s.n.* (H). VENETIA: Vicenza, Colli Berici, in hedge and forest margin, V.1912, *Fl. Ital. Exs. Ser. II 1944* (ZT). TRIESTE: Trieste, 9.X.1885, *Post s.n.* (BM). TOSCANA: Monte Pisano, III.1846, *Anon. s.n.* (L). Caprile, near La Chiesa, pasture, *Pichi-Sermolli 6526* (FI). Monte Amartia, top, beech-forest, 1700 m, 22.VI.1935, *Lüdi s.n.* (ZT). UMBRIA: Chiusi, IV.1933, *Corradi s.n.* (FI). MARCHE: Near Macerata, roadside, IV.1877, *Anon. s.n.* (WU). LATIUM: Tivoli, Villa Gregoriana, IV.1902, *Vaccari s.n.* (FI). Grottoferrato, near Roma, *Quercus*-forest, 300 m, 26.IV.1933, *Lüdi s.n.* (ZT). ABRUZZI: Monte Morrone, calcareous soil, 2000 m, 7.VIII.1877, *Huter et al. 499* (M, P, WU). Monte Velino, 1833, *Orsini s.n.* (P). La Majella, calcareous soil, 2000 m, *Rigo 608* (WU). CAMPANIA: Monte Corno, s.d., *Maurd s.n.* (C). Montagna del Matese, mountain pasture, VII.1821, *Terraciano s.n.* (WU). Monte Taburno, near Benevento, 'Hochstaudenflur', 1300 m, 14.VI.1938, *Lüdi s.n.* (ZT). Napoli, s.d., *Shuttleworth s.n.* (BM). PUGLIA: Gargano, 22.IV.1830, *Schouw s.n.* (C). Barletta, 1860, *Bruni s.n.* (Z). CALABRIA: Monte Pollino, beech-forest, calcareous soil, 1900 m, *Huter et al. 391* (WU). Cosenza, San Giovanni in Fiore, siliceous soil, 800 m, *Fl. Ital. Exs. Ser. III 2739* (P, ZT). SICILIA: Nebrodes Monte d'Oro, s.d., *Reinecke s.n.* (JE).

JUGOSLAVIA: 25 Collections in all. Near Kranjska Gora, 700-900 m, V.1979, *van Steenis 24273* (L). Near Srebrenica, Igrisnik forest, 1400-1500 m, *Wettstein s.n.* (WU). Istria, Rovinj, highway to Kuvri, 8.VI.1935, *Ronniger s.n.* (W). Opatija, near Rijeka, X.1933, *Siertsema 3161* (L). Ostarje, near Lubicko-brdo, on warm and calm place, VII.1881, *Pichler s.n.* (WU). Rab island, in marsh, 15.IV.1900, *Ginzberger s.n.* (WU). Lisina, Mrkonjic Grad, VIII.1894, *Vandas s.n.* (PR). Preslica top, 25.VII.1936, *Däniker s.n.* (Z). Jahorina, S. of Sarajevo, under *Acer heldreichii*, 800 m, 22.VII.1962, *Boom 42223* (L). Split, s.d., *Anon. s.n.* (L). Biokova Planina, 1880, *Pichler s.n.* (WU). Pirot, field, VI.1897, *Adamovic s.n.* (L). Krivosije, near Orahovaz, under shady rock, VI.1885, *Pichler s.n.* (Z). Lumbardska Planina, near Peć, calcareous soil, 1900 m, 8/9.VII.1933, *Rechinger f. & Scheffer 487* (K). Babuna Planina, between Isvor and the pass, 26.V.1963, *van Ooststroom 23277* (L).

ALBANIA: Malcija, gully of Rapsa, sources, c. 750 m, 13.V.1914, *Dörfler 106* (W). Peshkopi, serpentine, 1290 m, V.1918, *Bourcart s.n.* (P). Mal' i Thatë, serpentine region, V., *Bourcart s.n.* (P).

GREECE. 12 Collections in all. MAINLAND: Kozani, Pieria Mountain, above Kataphygon, near mountain rivulet, siliceous soil, 1600-1900 m, 9/12.VII.1956, *Rechinger 17892* (W). Kotos Mountains, 15 km SE. of Thessaloniki, 8.VII.1918, *Ramsbottom s.n.* (BM). Leila Mountain, near Nomos Serron, siliceous soil, 1500 m, 12.VII.1936, *Rechinger & Rechinger 10874* (W). Boz Dag, 15 km N. of Drama, edge of wheat field, 300 m, *Stainton 7321* (K). Between Xanthi and Shahin, along highway among brushwood of rocky places, 60 m, 17.IV.1930, *Tedd 204* (K). Kallithea Mountain, Boukate Dag, 10 km N. of Esimi, Nomos Evros, *Quercus*-forest, 800-900 m, 5/28.VI.1965, *Bauer & Spitzenberger 1826* (W). Malevos Mountains, near Ayios Petros, in shadow, 900 m, 26.IV/8.V.1857, *Fl. Graec. Exs. 543* (COI, P). THASOS: in orchard, s.d., *Grisebach s.n.* (GOET).

BULGARIA: Stara Plowna, near Petrokhanski Prokhod, among rocks, calcareous soil, VIII.1887, *Velenowsky s.n.* (PRC). Eminska Planina, c. 5 km W. of Banya, c. 400 m, 11.VI.1973, *Mennema 2035* (L). Golo Burdo, near Slajev, in orchard, calcareous soil, 2.XI.1968, *Vihodevsky s.n.* (PR). Between Sofia and Samakov, c. 20. km S. of Sofia, along road, c. 600 m, 14.VI.1973, *Mennema 2191* (L). Between Samokov and Rila Monastery, in wood, 2.IX.1912, *van der Post s.n.* (G). Beglika, Rhodope Mountain, c. 25 km SE. of Velingrad, c. 1500 m, 13.VI.1973, *Mennema 2157* (L). Backovo Monastery, c. 10 km S. of Asenovgrad, 800-100 m, 12.VI.1973, *Mennema 2108* (L). Near Belovo, 1871, *Dingler s.n.* (JE).

TURKEY. 36 Collections in all. ISTANBUL: Büjükdere, earthy slopes, 100 m, 17.III.1956, *Davis & Polunin 25115b* (E, K). KASTAMONU: Ilkaz Dag, in open pasture, 1830 m, 6.VI.1954, *Davis 21584*

(BM, K). Ibid., pass, 1770 m, 29.VI.1958, *Simon s.n.* (BAS). Büyük İlkaz Dag, Tosya, in alpine pasture, 28.V.1892, *Sintenis 4008* (LD). ANKARA: Kizilcahamam, Çamlidere forest, 7.VI.1944, *Kasapligil 330* (K). ANTALYA: Between Korkuteli and Kizilcadag, c. 50 km from Korkuteli, limestone ledges and scree, 1350 m, 31.V.1962, *Dudley 35273* (K). GİRESUN: Between Tamdere and Yavuzkmal, near Karınca, roadside, 1500 m, 13.VIII.1952, *Davis et al. 20711* (E, K). TRABZON: Pontic Alps, Zigana Pass, rocky clearings in spruce-forest, 1200 m, 17.V.1960, *Furse & Sygne 182* (K). GÜMÜŞANE: 'Stadodopi', 4.VI.1894, *Sintenis 5732* (BM, G, K, L, P). 3 Km S. of Hamsiky, c. 45 km SSW. of Trabzon, mixed forest of *Picea* and *Fagus*, humid loamy soil, c. 1900 m, 5.VI.1959, *Hennipman et al. 1846* (K, L, WAG). RİZE: 14 Km E. of İkizdere, mixed *Picea-Fagus*-forest, 1330 m, 1.IX.1965, *Awishai 320* (HUJ). Hemşin, between Çat and Meydankobaca, 1100-1300 m, 2.IX.1952, *Davis & Dodge 21215* (E, K). MARAŞ: Andirin, 12 km S. of Çatak, deciduous forest, 900 m, 17.V.1965, *Cooder & Jones 1157* (E, K). Ahir Dag, near Maraş, V.1899, *Haradjian s.n.* (P). ADANA: Feke, damp rocky stream sides, 900 m, 12.V.1965, *Mathew & Tomlinson 4117* (K). Between Kozan and Feke, c. 25 km. from Kozan, under hedges on igneous slope, 550 m, 11.IV.1957, *Davis & Hedge 26585* (E, K). Dumanli Dag, 700-1200 m, VII.1911, *Haradjian 3640* (G). Ibid., near Haruniye, ledge banks above stream, 700-900 m, 19.IV.1957, *Davis & Hedge 26860* (E, K). HATAY: Gavur Daglari, summer 1906, *Haradjian 292* (G). Near Belen, in hedge, 27.II.1865, *Hausknecht 242* (G, JE). Ibid., Karlik Tepe, near Sogukoluk, *Quercus coccifera*-maquis on limestone substrate, 900 m, 23.IV.1957, *Davis & Hedge 27039* (E). Kuslici Dag, 1500-1950 m, VIII.1908, *Haradjian 2525* (G, P). Antakya, 23.III.1930, *Rogers 719* (G, K). 30 Km S. of Antakya, thickets, 800 m, 8.VI.1938, *Dinsmore 10356* (S, Z). Between Antakya and Yayla Dag, near Senky, hedge banks, 1000 m, 28.IV.1957, *Davis & Hedge 27166* (E, K).

SYRIA. Haleb, VI.1914, *Egger s.n.* (K). Jabal an Nuşayriyah, Bahamra, c. 22 km E. of Lattakia, c. 300 m, IV.1909, *Haradjian 2775* (G, S, W). Nebi Shiek, above Bayun, shady places, 1050-1200 m, 14.VI.1943, *Davis 6322a* (K). Banyas, rocks, shady, V.1846, *Boissier s.n.* (G).

LEBANON. 23 Collections in all. Tripoli, Dervichain valley, 3.IV.1866, *Blanche 490* (G, JE, P). Above Hādshit, deeply shaded N. facing limestone cliff, 1370 m, 29.II.1966, *Archibald 1006* (K). Dahr al Arz, shady place under cedars, c. 1925 m, 9.VI.1932, *Samuelsson 2245* (S). Ghazir, aqueduct, 20.IV.1889, *Gaillardot 2961* (G, JE, P, W). Kasrawan, V.1855, *Blanche 3708* (G, JE). Between Beirut and Farayya, just below Rayfoun, roadside, in the shade of rocks and bushes, 21.IV.1971, *Townsend 71194* (K). Faytroun, 11.V.1882, *Peyron 1341* (G, P). Ibid., 6.VI.1883, *Peyron 1341* (P). Bikfayya, 7.IV.1889, *Peyron s.n.* (P). Ibid., 17.IV.1889, *Peyron s.n.* (MPU). Ayn Zhalta, rocks, 14.IV.1928, *Dinsmore 5613* (K). Nab' al Maydanah, Haramoun, mulberry plantation, in hedge, 10.IV.1860, *Gaillardot 2961 bis* (G, JE).

CANADA. British Columbia, Vancouver, Roadside West 18, 30.X.1945, *Bird 230* (BM). Ibid., Roadside Spanish Banks, 2.IV.1956, *Bird 2085* (BM).

9.a. *Lamium moschatum* Miller subsp. *micranthum* (Boiss.) Mennema

TURKEY. KASTAMONU: Merzifon, cultivated land, 28.III.1891, *Manissadjian 34* (M). Ibid., sandstone hill, 1891/1892, *Manissadjian 28* (LD, M, P, S, Z). Ibid., in garden, 24.IV.1892, *Manissadjian s.n.* (M, W). AMASYA: Ak Dag, Tafra, cultivated land, 1300 m, 25.V.1890, *Bornmueller 1821* (JE, K, P). TRABZON: Trabzon, near Esiroglu, rocky places, 20.IV.1894, *Sintenis 5417* (JE). İÇEL: Anamur, ledge bank, 5 m, 14.IV.1956, *Davis & Polunin 25946* (BM, K). HATAY: Iskenderun, 22.III.1930, *Rogers 647* (K). Antioch, near St. Peter's church, rocky limestone slopes, 150-300 m, 27.IV.1957, *Davis & Hedge 27231* (K). 30 Km S. of Antioch, thickets, 800 m, 8.VI.1938, *Dinsmore 10356* (K). RİZE: Near Rize, VI.1866, *Balansa 892* (G).

CYPRUS: 21 Collections in all. Ayios Yeoryios, near Liveras, in clefts of limestone boulders, sea-level, 29.III.1962, *Meikle 2410* (K). Karavas, Paleaosophos road, in moist shady places, 5.III.1968, *Ezoyomides 1093* (K). St. Hilarion, damp grassland, shady area, 600 m, 8.IV.1963 *Luart 97* (K). Kyrenia, waste land near castle, 9.III.1949, *Casey 263* (K). Buffavento, moist shady slopes at foot of cliffs on N.-side of ridge, 810 m, 23.III.1941, *Davis 2800* (K). Pentadaktylos, V.1880, *Sintenis & Rigo 125* (K). In the vicinity of the Armenian Monastery, 600-900 m, 26/30.V.1912, *Haradjian 359* (K). Lefka, in orchard, above sea-level. 28.III.1932, *Syngrassides 42* (K). Paphos, fields, 20.III.1884, *Deflers 992* (MPU). Kolossi castle, in roadside banks, 29.III.1955, *Merton 2064* (K).

SYRIA: Bernît, IV.1846, *Post s.n.* (BM). Jabal an Nuşay-riyah, Bahamra, 15 miles E. of Al Ladhîqiyah, c. 300 m, IV.1909, *Haradjian 2845* (K). Baniyas, 210-300 m, III.1945, *Norris s.n.* (BM).

LEBANON: 20 Collections in all. Tarabulus, garden, 19.I.1866, *Gaillardot s.n.* (JE). Amyun, banks in olive grove, 390 m, 23.IV.1959, *Polunin 5379* (K). Bayrut, 29.III.1851, *Michon s.n.* (P). Ibid., roadside, 9.IV.1895, *Peyron s.n.* (G, P). Ayn 'Nub, 115 m, III.1959, *Mailand 356* (K). In the vicinity of Sayda, fields, 16.II.1854, *Gaillardot 1385* (AWH, G, GB, JE, K, L, MPU, P, ZT). E. of Sayda, garden, 29.III.1862, *Gaillardot s.n.* (G, JE). Rashayya, vineyards, 1250 m, 4.IV.1925, *Berton 68* (P). As Suwaydah, dry stream bed, s.d., *Herbette s.n.* (P).

ISRAEL: 30 Collections in all. Hula valley, Lahavot Habashan, basalt hill, 6.IV.1954, *Jaffe 13782* (L). Haifa, 4.IV.1899, *Eggers s.n.* (JE). Majdal, shady places, 200 m, 28.II.1912, *Meyers & Dinsmore 635b* (K). Susita, fields, 200 m, 3.IV.1911, *Meyers & Dinsmore 356b* (K). Even Yehuda, Kurkur Hill, near Roman cutting, 17.III.1967, *Hepper 3212* (K). Tel Aviv, II.1968, *Baayens s.n.* (L). Miqwe Yisrael, 12.III.1922, *Eig s.n.* (HUJ). In the vicinity of Hartuv, mountain, 7.III.1924, *Eig s.n.* (HUJ). Qiryat Anavim, valley, 21.III.1924, *Eig s.n.* (HUJ). Aqua-Bella, ruderal, 23.II.1951, *Feinbrun 13784* (L). Near Yerushalayim, IV.1846, *Boissier s.n.* (P). Yerushalayim, temple, 3.IV.1880, *Barbey 729* (G, MPU, P, Z). Ibid., in olive grove, 3.V.1933, *Amdursky 283* (BAS, G, GB, K, P).

JORDAN: Nabulus, valley, III.1851, *Michon s.n.* (MPU). Ibid., orchard, 29.III.1906, *Aaronsohn s.n.* (MPU). Ibid., fields, 600 m, 26.III.1911, *Meyers & Dinsmore 2356b* (L). E. of Jordan, 1873, *Paine s.n.* (K). Jarash, 1928, *Crowfoot 90* (BM). Ibid., shady places, 500 m, 3.V.1911, *Meyers & Dinsmore 356* (K). Ibid., near the ruins, 21.IV.1963, *Mailand s.n.* (K). Ariha, 1863/1864, *Lowne s.n.* (K). Wadi Shaib, Amman, fields, 26.III.1933, *Wall s.n.* (GB). Ayn Hisban, fields, 660 m, 27.IV.1911, *Meyers & Dinsmore 356* (G, K, L). Hisban, III.1872, *Hayne s.n.* (K). Ayn Musa, shady places, 500 m, 22.IV.1911, *Meyers & Dinsmore 1607* (L). Al Khalil, 1837, *Schubert s.n.* (M). Ash Shawbak, chalk slopes of castle, 21.IV.1945, *Davis 8790* (K).

9.b. *Lamium moschatum* Miller subsp. *moschatum*

BULGARIA: Dobrostan, in thicket, IV.1908, *Stribny s.n.* (GB).

GREECE. 55 Collections in all. MAINLAND: Kerata, above Eleusia, 1885, *Haussknecht s.n.* (JE). Near Delphi, Fokidhos, 18.III.1899, *Leonis 380* (G, MPU). Thivai, waste ground, hedges, 600 m, IV.1932, *Atchley 1154* (K). Near Athinae, IV.1842, *Boissier s.n.* (COI, G, JE, L, MPU, P, TO). Ibid., 19/31.III.1854, *Orphanides 441* (BM, COI, GB, L, M, P, WAG, ZT). Ibid., stony places, IV.1857, *de Heldreich 469* (AWH, G, JE, P, ZT). Ibid., Akropolis, at walls and among rocks, 27.IV.1877, *de Heldreich 91* (COI, G, GB, JE, P). Falirou, 23.IV.1854, *de Heldreich s.n.* (L, M, MPU, P). Mycenae, ruins hill, 17.IV.1911, *von Hayek s.n.* (GB). Under Arakhnaion, limestone rocks, 1.V.1964, *Rechinger 24553* (W). Epidhavros, III.1830, *Zuccarini s.n.* (M). Near Galatas, among rocks, 25.V.1964, *Philos 1872* (M). Tirins, ruins, 17.IV.1911, *von Hayek s.n.* (GB). Navplion, 29.III.1893, *Marchesetti s.n.* (FI). Near Astros, 6.V.1929, *Guiol 550* (BM). EVVOIA: Evvoia, 1874, *Anon. s.n.* (L). KEA: Kastro, schistose soil, 21/24.V.1898, *de Heldreich s.n.* (P, Z). KHIOS: Khios, s.d., *Aucher-Eloy 1686* (G, K, MPU, P). SAMOS: Samos, s.d., *d'Urville s.n.* (P). Akra Taverna, near Vathi, limestone, 29.III.1934, *Rechinger 3373* (W). Tigani, maritime sand, 2.IV.1934, *Rechinger 3646* (W). KALIMNOS: Kalimnos, 7.IV.1887, *Forsyth Major 14* (COI, G, K, MPU, Z). RHODOS: Filierino, stony hills, 20.V.1870, *Bourgeau s.n.* (AWH, G, K, LY, MPU, P). KARPATOS: Karpathos, 17.VI.1886, *Forsyth Major 413* (P, ZT). KRITI: Foinikia, s.d., *Forbes s.n.* (K).

TURKEY. EDIRNE: Çatal Tepe, near Enez, in bush, 360 m, V., *Grisebach s.n.* (GOET). ÇANAK-KALE: in Dümrek valley, 30.IV.1883, *Sintenis 92* (G, GOET, JE, K, MPU, P, Z, ZT). ISTANBUL: Istanbul, s.d., *Aucher-Eloy 1691* (G). BURSA: Çiplak Tepe, above Armutlu, forest, c. 600-700 m, 22.V.1935, *Reese s.n.* (BAS). IZMIR: Bergama, among the ruins on the Acropolis, 23.V.1963, *Townsend 63/88* (K). Manisa Dagi, 3 km of Akpınar, in ravine, rocks, shady, 1.V.1966, *Bocquet 2248* (ZT). Izmir, 1812, *Rennard s.n.* (BM). Ibid., roadside, 24.IV.1854, *Balansa 304* (G, GOET, JE, K, MPU, P, Z). Ibid., road to the hill of the Cardelia mill, 1870, *Pernin s.n.* (G). Ibid., agora, 18.IV.1974, *van Ooststroom 25222* (L). Above Izmir, old castle, shady, III.1889, *Pichler 40* (WU). Kuşadasi, stony roadside, 11.IV.1974, *van Ooststroom 25208* (L). Balat, S. of Kuşadasi, on the ruins,

17.IV.1974, *van Ooststroom 25220* (L). MUGLA: Marmaris, between Cunali and Cnidus, fallow fields, under tree, 50-100 m, 17.IV.1965, *Davis 41262* (K). Bozburun harbour, limestone sea cliffs, 50-100 m, 8.VI.1962, *Davis 35474* (E).

10. *Lamium tomentosum* Willd.

TURKEY. Asia Minor, s.d., *Aucher 5120a* (P). Armenia, s.d., *Willdenow 10858* (B). NIGDE: Ala Daglari, near Elmali, rocky places, 4.VII.1883, *Pichler s.n.* (WU). GÜMÜŞANE: Karakaya Tepesi, N. of Bayburt, 3000 m, 24.VII.1934, *Balls 1834* (BM, K). Karagoellidagh, in scree at Büyükgöl, near the snow, 2700 m, 31.VII.1894, *Sintenis 7007* (BM, JE, LD, Z). RIZE: Cagrankaya, Germanin Tepesi, above Cimil, on S. slope, among rocks, 3200 m, 29.VIII.1952, *Davis & Dodge 21055* (BM, K). ERZURUM: Near Erzurum, s.d., *Calvert s.n.* (JE). KARS: Aşagi Dag, 29.VII.1871, 3000 m, *Radde s.n.* (LE). AGRI: Büyük Agri Dagı [Mount Ararat], 1836, *Ledebour s.n.* (P, S). Ibid., 1897, *von Kerner s.n.* (WU). Ibid., s.d., *Ledebour s.n.* (C, K, W). Ibid., s.d., *Reichenbach f. s.n.* (W). Dogubayazit-Büyük Agri Dagı, Ibrahim kara Yayla, arid rocky, mountain pasture, 3000 m, 28.VII.1966, *Allen 5* (K). Büyük Agri Dagı, near Serdarbulak, 1.IX.1912, *Rikli s.n.* (ZT). Ibid., rocky volcanic slopes, c. 2400 m, 20.VII.1966, *Davis 46974* (K). VAN: Müküs, Agerowdagh, 3600 m, IX.1859, *Kotschy 672* (G, S, W, ZT). HAKKARI: Gelamemi Dagı, above Hoz between Aşutka and Çatak, 2750 m, 28.VII.1910, *Nábelek 1557* (SAV, not BRA, as Mill, 1982 mentioned). Kara Dag, sheltered placed, 2850 m, 15.VIII.1954, *Davis & Polunin 24398* (BM, E, K). Cilo Dag, Avaspi glacier, 2600 m, 17.VIII.1968, *Vogel s.n.* (M). Cilo Tepe, loose mats in scree, 3300 m, 8.VIII.1954, *Davis & Polunin 24060* (BM, E, K).

ASIATIC U.S.S.R. CAUCASUS: Caucasus, s.d., *Meyer s.n.* (K). Ibid., *Wagner s.n.* (GOET, M). Source of the Teberda river, gravelly rocks, 3000-3300 m, 13.VIII.1899, *Desoulavy 685* (C, P, PRC, W, WU). Mount Elbrus, 2700-2800 m, 22.VIII.1890, *Sommier & Levier 1111* (B, G, JE). Ibid., 2800 m, 9.IX.1890, *Sommier & Levier 1111* (WU). Ibid., 3000 m, 10.IX.1890, *Sommier & Levier 1111* (L). Terek, near Bezengi, 25.VII.1842, *Lipsky s.n.* (K). Bezengi river, Misses-Kosh valley, stony, s.d., *Wisniewski 507* (K). Ermani, slope of the first crater of the Aridar, mountain pasture station of S. Osetinskiy, 21.VII.1939, *Sharova s.n.* (W). Kazbek, 14.VIII.1844, *Kolenetti s.n.* (W). Kazbek, alpine region, VIII.1881, *Brotherus & Brotherus 633* (G, P, S). Ibid., Devdorak glacier, 25.VII.1967, *Students Excursion s.n.* (C). Daghestan, source of the Kara-Kvissu river, stony, 20.VII/1.VIII.1898, *Kusnezow s.n.* (B). Rtsyvaschki, deposits of Tsaker-Matly-Schisen, 2900 m, 4.VII.1925 *Busch & Busch 17* (S). Sktulu, mountain pass, on rubble, 3200 m, 23.VII.1927, *Busch & Busch s.n.* (K). Ibid., in alpine cave, c. 3000 m, VII.1935, *Wisniewski 506* (B, K). Kurusch, s.d., *Becker s.n.* (K). ARMYANSKAYA: Ozero Sevan, S.-bank, 14.VI.1856, *Seidlitz s.n.* (P). Megrinskiy Rayon, slope of the Zangezurskiy Mountains, near Varnanadzor, on a wet slope near a rivulet, VII.1956, *Egorova et al. 1768* (LE). AZERBAJDZHANSKAYA: Kuba, in alpine pasture, 20.VII.1930, *Sachokia s.n.* (LD). Ibid., near Aput, in alpine pasture, 26.VII.1930, *Kasumov s.n.* (S). Kuba, on S.-slope of Schachdag, on calcareous scree, 3420 m, 30.VII.1898, *Alexeenko s.n.* (JE). Schachdag, above Leze, on calcareous scree, 2600-2800 m, 19.VII.1935, *Karjagin s.n.* (S). Pass at the Murov-dag, 2900 m, 19.VII.1912, *Schelkovnikov s.n.* (LE).

IRAQ. NE. of Qandil, on mountainside, 2800-3100 m, 26.VIII.1957, *Rawi & Serhang 24412* (K). Qandil Mountain, E. of Qala Diza, 1800-3000 m, 11.VII.1951, *Thesinger 1166* (W). Top of Qandil Mountain, 3000 m, 29.VIII.1957, *Rawi & Serhang 24594* (K). Algurd Dag, among rocks, 3600 m, 22.VII.1932, *Guest 2885* (K). Ibid., stady alpine rocks, 3500 m, *Gillet 12342* (K). Ser Kurawa, crannies in metamorphic rocks, 3000 m, *Gillet 9733* (K).

IRAN. N. Iran, 1843, *Kotschy 566a* (UPS). Ibid., s.d., *Anon. s.n.* (W). Takht-i Suleiman, among boulders, 3200 m, *Forster & Forster s.n.* (M). Valleys near Tehran, damp places, 1500 m, *Trott 86* (K). Damavand Mountain, s.d., *Aucher 5120* (G, K, P, W). Ibid., 1847/1848, *Buhse s.n.* (AWH, G). Ibid., alpine region, 3700-3800 m, 17.VII.1902, *Bornmueller 7946* (G, JE, K, LD, MPU, P, PRC, W, WU, Z, ZT). Ibid., on rocks, 3700 m, 17.VII.1902, *Bornmueller 7950* (JE). Ibid., W.-side, VIII.1843, *Kotschy 566* (AWH, P, W). Ibid., volcanic rubble, 1843, *Kotschy 567* (UPS). Ibid., W.-slope, volcanic tufa, 7.VIII.1963, *Jardine 807* (W). Ibid., S.-slope, in crevices, 4000 m, *Wendelbo 1671* (W). Ibid., S.-slope, gravelly ground, 4800 m, *Starmuehlnner 210* (W). Ibid., above Reneh, 3200-3800 m, 23.VII.1936, *Gilli s.n.* (W). Ibid., above Reneh, rubble slope, 4000 m, 23.VII.1936,

Gilli s.n. (W). Ibid., E.-slope, rocky fell, near upper limit of the vegetation, 4220 m, 28.VII.1964, *Grant 16530* (W). Tuchal Mountain, above Tehran, Darya-i Jakh, 23.VII.1843, *Kotschy 565* (AWH, G, GOET, K, M, P, W, WAG, ZT). Ibid., *Kotschy 565a* (P). Tuchal Mountain, near the snow, 3800 m, 8.VII.1902, *Bornmueller 7945* (G, MPU, P, Z).

11. *Lamium bifidum* Cirillo

PORTUGAL. Beira Baixa, Pampilhosa da Serra, estate of Sao Martinho, 27.III.1956, *Brito s.n.* (COI). Beira Baxa, Soalheira, 1899, *Zimmerman s.n.* (COI). Between Castelo de Vide and Alpalhao, along the road and on banks, 27.III.1961, *Fernandes et al. 7752* (COI). Castelo de Vide, in thicket and on cultivated land, 6.IV.1963, *Paira et al. 8900* (COI). Ibid., Pombal, Olival Grande, along wall, 8.III.1977, *Malato-Beliz & Guerra 13085* (M). Road between Castelo de Vide and Marvao, under *Castanea sativa*, 27.III.1961, *Fernandes et al. 7738* (COI).

SPAIN. AVILA: Poyales del Hoyo, in wall crack, 18.II.1980, *Castroviejo & Morales 1550* (M).

FRANCE. CORSE: 37 Collections in all. Near Bastia, Cardo rivulet, 20.IV.1867, *Mabille 264* (JE, MPU, P, Z). Algajola, harbour, 10 m, 14.III.1916, *Kükenthal s.n.* (G). Monte Grosso, s.d., *Soleirol s.n.* (BM). SE.-slope of Monte Cinto, near sheep-shed of Ascia, 1500 m, 5.VI.1963, *Roessler 4522* (M). Corte, in alluvium of Tavignano, 20.IV.1926, *Ruppert s.n.* (M). Road between Evisa and Vico, s.d., *Soleirol 3209* (COI). Col de Vizzavona, open slope with *Juniperus* near Fort de la Foce, c. 1100 m, 29.IV.1952, *van Royen 2738* (L). Between Glusoni and Col de Sorba, on granite slope, 750 m, 19.IV.1938, *Sloff 264* (L). Bocognano, 1841, *de Fournier s.n.* (G). Bastelica, 10.V.1878, *Reverchon 67* (AWH, COI, MPU, P). Near Ajaccio, Monte Pozzo di Borga, in meadow, 17.IV.1900, *Kügler s.n.* (JE). Zonza, 15/23.IV.1938, *van Ooststroom & Henard 8213* (L). Near Sartène, Serra di Scopamène, 2.VI.1879, *Reverchon 76* (JE, L, MPU, P, Z). Bonifacio, s.d., *Jordan s.n.* (UPS).

ITALY. 92 Collections in all. TOSCANA: Pisa, in shady forest, IV.1842, *Savi s.n.* (MPU, TO). Chiusi, IV.1933, *Corradi s.n.* (FI). Elba, Monte Capanne, 3.V.1936, *Pichi-Sermolli s.n.* (FI). Giglio island, near Pagana, 26.III.1894, *Sommier s.n.* (MPU). LATIUM: Roma, San Paulo-tre-Fontana, waste ground along the road, 4.IV.1883, *Neyra 4226* (G, MPU, P). Tivoli, near San Giovanni-bridge, 7.IV.1912, *Vaccari s.n.* (FI). Lago di Albano, under shrubs, 3.IV.1928, *Boom 3374* (L). Colli Lalciati, IV.1923, *Rogers 609* (K). Genzano, along the Lago di Neni, 19.IV.1928, *Boom 3718* (L). ABRUZZI: Passo di Croci, mountain ridge, between Scanno and Roccapia, near shepherd's cottage, 1600 m, 26.VI.1887, *Levier s.n.* (FI). CAMPANIA: Caserta, in Real Parco, on sunny grassy place, III.1832, *Terracciano s.n.* (UPS, ZT). Lago d'Agnano, in a densely grown field, 11.III.1841, *de Heldreich s.n.* (G, P, WAG). Camaldoli, in hedge, 200 m, IV.1901, *Guadagno s.n.* (JE, L). Near Napoli, s.d., *Reynier 507* (MPU). Monte Vergine, in shady shrubs, 1200 m, 8.V.1913, *Pellanda s.n.* (JE). Near Avellino, field-track, IV.1897, *Micheletti s.n.* (TO). Capo di Orlando, on sunny, moist, grassy place, s.d., *Eodorus 842* (JE). Pompei, on wall, 1812, *Sieber s.n.* (G). Scafati, at bank of Sarno river, IV.1908, *Guadagno s.n.* (G, MPU). Above Gragnano, in vineyard, 250 m, 25.III.1910, *Pellanda s.n.* (GB). Monte Faito, near Castellammare di Stabia, 900 m, IV.1960, *Merxmüller 14217* (M). Tramonti, above Pocara, on shady place, 18.IV.1908, *Lacaita s.n.* (BM). Paestum, near Poseidon temple, 6.IV.1928, *Boom 3415* (L). PUGLIA: Near Sannicandro, border of a field, c. 150 m, 5.IV.1875, *Porta & Rigo 550* (K). Monte Gargano, between Monte San Angelo and Vico del Gargano, in mixed forest, 22.IV.1964, *Podlech 9733* (M). Foresta Umbra, in *Fagus*-forest, 7.V.1958, *Boom 35732* (L). C. 1 km N. of Ruggiano, upland plain N. of Manfredonia, fields and stony places, c. 520 m, 21.IV.1964, *Damboldt s.n.* (M). BASILICATA: Montecoreale, Potenza, on grassy place, alt. 820 m, 28.IV.1944, *Gavioli s.n.* (L). San Basilio, Terra d'Otranto, in rubble, c. 300 m, 20.IV.1920, *Laicata s.n.* (BM). CALABRIA: Catanzaro, in estate just outside Porta Marina, 25.IV.1896, *Micheletti s.n.* (TO). Gioia Tauro, Reggio, in vineyard, sandy soil, 2 m, 8.III.1906, *Fiori 960* (TO, Z, ZT). SARDEGNA: Near Olbia, in shadow, III.1885, *Forsyth Major 353* (FI). Oliena, in mountain, 15.V.1885, *Forsyth Major 163* (FI). Near Arizto, Monte Cresia, in forest, 24.V.1879, *Biondi s.n.* (FI). Between Ussassai and Seni, in mountain forest, 30.IV.1872, *Sommier s.n.* (FI). San Vito, Giovannibono, in forest, c. 700 m, 23.IV.1872, *Sommier s.n.* (FI). SICILIA: Monte Busambra, grassy place, 1828, *Gassone s.n.* (G). Ficuzza, submountain, moisty grassy place, s.d., *Todaro 842* (AWH, COI, MPU, P, TO). Bosco di Cefalu, in forest, sunny grassy place, V.1887, *Locajono 264* (M). Pedara, Etna region, between lava-blocks, 15.III.1970, *Boom 45898* (L).

JUGOSLAVIA. Mont Crni vrh, in rocky forest, 360 m, IV.1848, *Pancic s.n.* (PR). Mont Krstilovica, among rocks, IV.1895, *Adamovic s.n.* (K). Vrmac, near Kotor, IV.1929, *Schütt s.n.* (G). Near Scaljari, Kotor, on wall, 14.V.1928, *Korb s.n.* (W). Road from Petrovac to Virpazar, E. of pass, c. 200 m, 22.IV.1962 *Merxmüller 14216* (M). Zajecar, vineyard, 19.IV.1898, *Nicic s.n.* (GB). Vranje, on sunny slope, V.1895, *Adamovic s.n.* (M). Ibid., grassy place, V.1896, *Adamovic s.n.* (B). Skopje, waste land, 1200 m, IX.1966, *Southern Zagros Bot. Exped. to Iran s.n.* (K). Mont Babuna, above Han-Abdi-pass, among rocks, 5.V.1918, *Bornmueller 4864* (JE, HBG). Above Dedeli, near Kisil-Doganli, Dojran region, on forest slope, 300-400 m, 21.IV.1918, *Bornmueller 4856* (JE, HBG). Nikolić, at Dojransko Jezero, III.1917, *Burgeff 1187* (M). Ibid., IV.1917, *Burgeff 1245* (M).

ALBANIA. Between Mikra Karaburun and Kapiyilar, 24.IV.1918, *Rambottom s.n.* (BM).

GREECE. MAINLAND: Pisodherion, stony shady slope, 1350 m, 27.V.1932, *Alston & Sandwith 513* (BM, K). Near Thessaloniki, 19.V.?, *Berton 78* (P). Above Sminopetra, on way to Karyaes, Akti, high up in the woods, 13.IV.1934, *Hill et al. 2304* (K). Ayion Oros, IV.1935, *Guiol 551* (BM). Pindhos Oros, in Katara mountain ridge, near Metsovo, on serpentine, c. 1700 m, 10.V.1961, *Rechinger 23139* (W). Peristeri ravine, 1200 m, IV.1918, *Gross s.n.* (M). Khaliki, in Negerli valley, 28.VI.1896, *Sintenis 1516* (G, JE, M, P). Kalabaka, near Ayios Stefanos, VI.1896, *Sintenis 1516b* (JE). Velestinon, 1884, *de Heldreich s.n.* (JE). Near Lamia, s.d., *Spruner s.n.* (G). Parnis Oros, c. 1930, *Guiol s.n.* (BM). Patrai, s.d., *Leresche s.n.* (L). Kalavrita, Akhaia, 17/18.IV.1921, *Schwarzenbach s.n.* (Z). Megalou Spilaïou, Akhaia, roadside, 18.IV.1921 *Rikli s.n.* (UPS, ZT). Near Navariti, 24.II.1829, *Daenzer s.n.* (G). Olimbia, ruins, 13.IV.1911, *von Hayek s.n.* (GB). Messinia, forest, IV.1862, *Mill s.n.* (K). Near Chora, road to Kalamai, valley of a rivulet, 3.IV.1978, *de Langhe 101/78* (L). Near Adriani, valley of a rivulet, IV.1979, *de Langhe s.n.* (L). Argos, along ditch, s.d., *Berger s.n.* (M). Navplion, at Dimitri Monastery, s.d., *Zuccarini s.n.* (M). Between Xerókambi and Ayios Ioánnis, IV.1862, *Mill s.n.* (K). Karvelas, at the foot of Taïyeto Oros, IV.1862, *Mill s.n.* (K). KORKIRA: Pelekas, 7.IV.1902, *Griani von Grimburg s.n.* (W). Near Kerkira, 31.III.1883, *Laicata s.n.* (BM). Kerkira-Ste Canone, roadside, 12.IV.1911, *von Hayek s.n.* (GB). ZAKINTHOS: Zakinthos, s.d., *Boissier s.n.* (G). Ste Lippio, s.d., *Anon. s.n.* (BM). EVVOIA: Near Artemision, spring 1866, *Wiedemann s.n.* (G). Combatze, IV.1852, *Leutwein de Fellenberg s.n.* (Z). Xerovouni Oros, V.1876, *Pichler s.n.* (K).

BULGARIA. Yulin Mountain, near Kujajevo, 26.VI.1929, *Stojanoff s.n.* (K). Zemen, on dry, calcareous hill, in thicket, 700-1000 m, 15.IV.1934, *Achtaroff s.n.* (PR).

12. *Lamium confertum* Fries

FAERÖER. Sandö, cultivated ground, 3.VIII.1937, *Vevers & Evans 135* (BM). Syderö, Kvalbö, VIII.1867, *Feilberg & Rostrup s.n.* (GB).

NORWAY. Trondheimsfjord, 3 km S. of Hambaara, roadside near peat, 31.VIII.1961, *Duyffes & Kanis 167* (L). Laerdal, near Blåflaten, 16.VII.1875, *Baenitz s.n.* (M, TO). Oslo, s.d., *Anon. s.n.* (L).

SWEDEN. 57 Collections in all. Ekshärad, in garden, 18.VIII.1895, *Fröding s.n.* (GB). St. Skedvi, Nyberget, VII.1902, *Samuelsson s.n.* (BM, GB, M). Sunne, Berga, in rye-field, 18.V.1914, *Fröding s.n.* (GB). Mo, Öjersbyn, in orchard, IX.1905, *Larsson s.n.* (BM). Kila, Storbacken, in garden, 21.X.1904, *Fröding s.n.* (GB). Karlskoga, 12.VIII.1877, *Reuterman s.n.* (G, L, M). Lerno, Knutsta, 9.VII.1913, *Erdmann s.n.* (GB). Lurs, Resön, 15.VII.1928, *Blom s.n.* (GB). Degeberg, s.d., *Lindgren s.n.* (UPS). Torsby, Ranneberg. 26.V.1927. *H. Fries s.n.* (GB). Göteborg, 14.VIII.1882, *Winslow s.n.* (M). Göteborg, Västra Frölunda, 5.VII.1927, *Blom 1354* (G, GB, L). Örnunga, VIII.1905, *Kyleri s.n.* (G). Wallsjö, in field, 1874, *Hyllén-Cavallius s.n.* (COI). Hämön, Ägnö, 1906, *Tengvall s.n.* (BM). Oskarshamn, 24.V.1919, *Köhler s.n.* (L). Hvembo Kyrkan, in edge of field, 12.VI.1968, *Mennema 1985* (L). Södra Sandsjö, VII.1911, *Hård af Segerstad s.n.* (GB, L). Malmö, VI.1888, *Johansson s.n.* (BM). Lund, V.1818, *E. Fries s.n.* (UPS).

FINLAND. 98 Collections in all. Kajaani, garden, 31.VII.1920, *Kyyhkynen s.n.* (H). Sotkamo, near church, potato-field, 4.VIII.1905, *Lindberg s.n.* (H). Iisahuon, 20.VI.1953, *Aktola s.n.* (H). Maaninka, hedge near school, 4.X.1945, *Kyyhkynen s.n.* (H). Kuopio, garden, 6.IX.1920, *Kyyhkynen s.n.* (H). Nilsia, near house, 6.IX.1950, *Kyyhkynen s.n.* (H). Liperi, inner court, 14.VII.1950, *Rauhala s.n.* (H). Ikaalinen, field, 29.VI.1956, *Lähteenmaki s.n.* (H). Hämeenkyrö, in

garden, 22.VII.1910, *Printz s.n.* (H). Oripää, in garden, 24.VIII.1972, *Suominen 2456* (H). St. Eura, s.d., *Lindberg s.n.* (H). Vampula, garden in village, 15.VIII.1972, *Suominen 2315* (H). Loimaa, Pappinen, inner court, 4.VII.1973, *Suominen 2675* (H). Mellilä, 0,5 km W. of station, garden, 4.VII.1973, *Suominen 2669* (H). Ypäjä, along ditch near beet-field, 2.VIII.1962, *Kantee s.n.* (H). Messukylä, potato-field, 5.VIII.1915, *Bärlund s.n.* (H). Tampere, in potato-field, 21.VIII.1907, *Sola s.n.* (H). Satakuuta, Teisko, potato-field, 7.VIII.1907, *Idmann s.n.* (H). Epilä, near school, potato-field, 17.VIII.1960, *Ulvinen s.n.* (H). Hattula, garden, 15.VII.1967, *Motila 1772* (H). Hollola, Kastari, 2.VIII.1959, *Saarisalo-Taubert & Ulvinen s.n.* (H). Rantasalmi, Tammenlahti, Harjulan house, 18.VIII.1960, *M. & P. Isoviita s.n.* (H). Villmarstrand, potato-field, 13.VIII.1905, *Buch s.n.* (H). Imatra, Tainionkoski, garden, 5.VIII.1964, *Viitanen s.n.* (H). Kümlinge, Björkö, 29.VII.1923, *M. & A. Palmgren s.n.* (H). Musikaupunki, garden, 25.VIII.1957, *Sältin s.n.* (H). Pargas, Piukkala, potato-field, VIII.1899, *Arrhenius s.n.* (H). Hvittis, Aelsa, orchard, 12.VIII.1906, *Printz s.n.* (H). Paimo, Santala, 30.VI.1953, *Kukkonen s.n.* (H). Finby, Kålsjö, Sannamäki, orchard, 13.VII.1970, *Federley 70/54* (H). Koski, Vaha-Sorvasto, garden, 28.VII.1936, *Tonnatoven s.n.* (H). Perniö, Paarskylä, estate, carrot-field, 13.VIII.1959, *Laine s.n.* (H). Vichtis, Orkkala, pea-land, 28.VII.1877, *Hällström s.n.* (H). Nurmijärvi, Perttula, garden weed, 18.IX.1909, *Ashola 6704/537* (H). Lojo, Jalassaari, Ekeberga, garden, 22.VII.1933, *Lindberg 1295* (COI, G, H, P). Punapeippi, Tire Pispala, sandy inner court, 15.VII.1951, *Järvinen s.n.* (H). Kyrkslätt, Getberg, potato-field, 20.VI.1912, *Lindberg 893* (COI, G, H, P). Helsinki, in the opposit of Eria hospital, 22.IX.1912, *Hayrén s.n.* (H).

DENMARK. Jonstrup Aa, 10.V.1882, *Mortensen s.n.* (ZT). Copenhagen, 16.V.1863, *Baagøe s.n.* (ZT). Near Copenhagen, field, VII/XI.1865, *Lange s.n.* (BM, L, M, MPU). Ibid., V.1868, *Lange s.n.* (ZT).

GREAT-BRITAIN. ORKNEY: Swanbister, IX.1852, *Syme 830* (AWH, COI). SCOTLAND: Outer Hebrides, Lewis, Barvas, 28.VI.1909, *Samuelsson s.n.* (UPS). Near Edinburgh, 1842, *Babington s.n.* (UPS, WAG). Near North Berwick, VII.1853, *Anon. s.n.* (COI).

NETHERLANDS. FRIESLAND: Pietersbierum, s.d., *Albarda 784* (L). Franeker, potato-field, 1922, *Danser 4469* (L). Jelsum, IV.1850, *Hinx s.n.* (L). Ibid., in field, 30.IV.1862, *de Boer s.n.* (NBV). Kollumerpomp, corn-field, 6.V.1950, *van der Ploeg 1126-2* (L). GRONINGEN: Appingedam, field, V.1942, *van Borssum Waalkes 6116* (L). Nieuwe Statenzijl, near sluice Westerwoldske Aa, cultivated ground, 8.VI.1985, *Wierstra & Willemse 1167* (Herb. Willemse). GELDERLAND: Apeldoorn, V.1877, *Kok Ankersmit s.n.* (L). NOORD-HOLLAND: Wieringen, Hipolytushoef, 17.VI.1928, *van Soest 2417* (L). Wieringen, Westerklijf, arable land, IX.1928, *Kruseman & van Soest s.n.* (L). Schagen, 25.V.1931, *Kloos s.n.* (L). Ibid., waste land, V.1931, *van Soest 3533* (L). Ibid., industrial area Witte Paal, 11.VII.1981, *Wolfskeel s.n.* (Herb. Wolfskeel). Beemster, Rijperweg, sugarbeet-field, autumn 1973, *Ballintijn s.n.* (Herb. Ballintijn). ZUID-HOLLAND: Wassenaar, Zuidwijk, weed in garden, 10.V.1955, *van Ooststroom 18068* (L). Near Minkeloos, in shaggy garden near old house, VIII.1973, *Wildschut s.n.* (L). NOORD-BRABANT: Sint Oedenrode, Cathelijnepad, roadside, 13.VI.1986, *Bruinsma s.n.* (Herb. Bruinsma). Son, brickyard, on clay hill, 28.IX.1986, *Bruinsma s.n.* (Herb. Bruinsma). Ibid., Brouwerskampweg, maize-field, 1.XI.1986, *Bruinsma s.n.* (Herb. Bruinsma). Mierlo, in edge of field, 4.V.1977, *Looye s.n.* (L).

GERMANY. NIEDERSACHSEN: Flottbeck in field, 1839, *Sonder s.n.* (UPS). Jever, s.d., *Anon. s.n.* (ZT). Varel, 1853, *Kurz s.n.* (ZT). Ibid., s.d., *Bertram s.n.* (ZT). Ibid., loamy field, s.d., *Boeckeler s.n.* (COI, GB, HBG, WAG, ZT). Hameln, 1867, *Pflümer s.n.* (GOET). MECKLENBURG: Stralsund, field, 6.XI.1891, *Berg s.n.* p.p. (H). Ibid., s.d., *Schnelle s.n.* (COI). SACHSEN-ANHALT: Magdenburg, Loitsche, station, V.1916, *Becker s.n.* (M).

U.S.S.R. 23 Collections in all. NORTHERN DIVISION: Kovda, 25.VII.1870, *Malmborg s.n.* (H). Kasurandt, in field, 16.VIII.1888, *Kühlmann s.n.* (H). Säämäjärvi, Pauroinkylä, 30.IX.1941, *Kottilainen s.n.* (H). Sortavalla, Kymölä, oat-field, 18.X.1899, *Vartiainen s.n.* (H). BALTIC DIVISION: Hüumaa, Kärda, weed in garden, 22.VII.1903, *Kupffer 18695* (GB). Sovetsk, near the Memel river, in field, 3.V.1868, *Heidenreich s.n.* (ZT). Kaliningrad, field, 7.V.1874, *Baenitz s.n.* (L, M, P, UPS, Z, ZT). Nizovye, rye-field, 28.IV.1866, *Körnische s.n.* (L).

PORTUGAL: Pinheiro de Cima, near Mangualde, field, granitic soil, 15.II.1961, *Matos & Santos 7628* (COI). Ponte Seca, near Abrunhosa-a-Velha, 14.III.1959, *Fernandes et al. 6546* (COI). Between Ribeira do Mondego and Celorico da Beira, 9.V.1944, *Garcia 333a* (COI, UPS). Celorico

da Beira, 9.V.1944, *Garcia 333* (COI). *Ibid.*, 23.IV.1952, *Fernandes et al. 4125* (COI, UPS). *Ibid.*, s.n., *Lucas s.n.* (COI). Torriao, near Guarda, 24.IV.1952, *Fernandes et al. 4151* (COI, UPS).
ITALY. SICILIA: Sicilia, 1888, *Johnson s.n.* (GB).

13.a. *Lamium garganicum* L. subsp. *corsicum* (Gren. & Godron) Mennema

FRANCE. CORSE: Monte Cinto, summit, above 2000 m, 1843, *Bernard s.n.* (P). *Ibid.*, rocks, VIII.1901, *Soulié s.n.* (G). *Ibid.*, shepherd's cot Pulella, 10.VII.1910, *Jacquet s.n.* (Z). *Ibid.*, near shepherd's cot, VI.1911, *Burdon s.n.* (BM). Col de Bocca Buona, between Corscia and Asco, 1400 m, 28.VIII.1908, *Rotgès s.n.* (G). Monte San Pietro, summit, 1833, *Sivard s.n.* (P). Bastelica, Monte Renoso, shepherd's cot Latina, stony pasture, 1160-1200 m, *Simon 7271* (BAS).

ITALY. SARDEGNA: Monte d'Oliena, V.1862, *Gennari s.n.* (FI). *Ibid.*, calcareous rocks, 15.V.1884, *Forsyth Major s.n.* (FI, JE, MPU, P, UPS). *Ibid.*, rocks in forest, 3.VI.1894, *Martelli s.n.* (FI). *Ibid.*, 13/16.VI.1895, *Martelli s.n.* (FI). Monte Corراسi, near Oliena, dolomite rocks, 29.V.1906, *Herzog s.n.* (ZT). *Ibid.*, above Nuoro, calcareous rock with grassy places, 1000-1300 m, 31.V.1960, *van Steenis 20169* (L). Monte Genargentu, summit, porphyry boulders, 1800 m, 29.VI.1863, *Ascherson & Reinhardt s.n.* (FI). *Ibid.*, near Fontana, 23.VI.1897, *Martelli s.n.* (FI). *Ibid.*, Valle Is Arenas, 24.VI.1898, *Martelli s.n.* (FI). *Ibid.*, E-slope of the Punta la Marmora, 2.VI.1906, *Herzog s.n.* (ZT). Surroundings of Ariutzo, 1935, *Porru s.n.* (FI).

13.b. *Lamium garganicum* L. subsp. *garganicum*

DENMARK. Risingo Memory, Odense, escaped, 30.V.1878, *Poulsen s.n.* (ZT).

FRANCE. 75 Collections in all. AUDE: Muge de Tauch, W. of Tuchan, *Buxus*-vegetation, 800-900 m, 15.VI.1984, *Biol. Stud. Wageningen 35-84* (WAG). Corbières, Gorges de Galamus, shady chasm, calcareous soil, 500 m, 10.VII.1944, *Rechinger & Sleumer 518* (L). PYRÉNÉES-ORIENTALES: Corbières, St. Antoine de Galamus, V.1928, *Meebold 2899* (M). St. Paul, grassy places, 10.VI.1908, *Conill s.n.* (G, GB, L). DRÔME: Forêt du Bac d'Establet, 1000 m, 7.VII.1886, *Flahault s.n.* (MPU). HAUTES-ALPES: Pic de Chabrière, above Choreyes, 30.VII.1868, *Burle s.n.* (ZT). Montagne de Chorges, forest and pastures, 13.VII.1862, *Burlefrères et Borel 157* (AWH, G, GB, JE, MPU, P, W). Mont Morgon, 1400 m, 15.VII.1900, *Girod s.n.* (M). VAUCLUSE: Mont Ventoux, VI.1827, *Requien s.n.* (K). BASSES-ALPES: Sérénnes, at the bridge of Chastelet, 25.VI.1885, *Proal 1265* (BAS, G, MPU, P). Aurent, shady rocks, 27.VI.1885, *Reverchon 27* (AWH, G, JE, P). VAR: S.-side of Gorges du Verdon, Source de Vaumale, 'Corniche sublime', 1180 m, 12.VI.1967, *Roessler 5823* (M). ALPES-MARITIMES: Mont Mounier, near Beuil, 4.VII.1931, *Ronniger s.n.* (W). Gorges de Clans, 18.V.1935, *Huysman s.n.* (L). La Madone de Fenestre, rocks, 1800 m, 3.VIII.1903, *Arbost s.n.* (MPU). Between Le Boréon and Cougourde, roadside, 1600-2100 m, 8.VIII.1970, *Merxmüller & Zollitsch 26240* (M). Col de Tende, broken stones, 12.VII.1961, *Bourgeau 222* (COI, G, MPU, P, W, Z). In the vicinity of Menton, VI.1881, *Favrat s.n.* (GOET). CORSE: Montagne de Nino, shady rocks, 15.VI.1885, *Reverchon 448* (AWH, G, JE, P). Monte San Pietro, 3.VII.1905, *Gysperger s.n.* (G, GB, JE). *Ibid.*, summit, 1766 m, 30.VI.1910, *Gysperger s.n.* (G, JE, M, MPU, ZT).

GERMANY. Near Witten, accidentally, 1881, *Hasse s.n.* (M). *Ibid.*, s.d., *Hasse s.n.* (GB, JE, L). Ludwigshafen, harbour, accidentally, V.1910, *Zimmermann s.n.* (L).

SWITZERLAND. Neuchâtel, among stones in lake, accidentally, 10.VI.1885 *Jäggi s.n.* (ZT). *Ibid.*, among rocks under the former Botanical Garden, probably escaped, V.1886, *Sire s.n.* (ZT).

ROMANIA. 25 Collections in all. Caraşova, rocks, 7.VI.1896, *Wagner s.n.* (B, JE, LD). *Ibid.*, s.d., *Heuffel s.n.* (BP, W). Between Plavişevita and Dubova, Cazane valley, on rocks and walls, 10.V.1870, *Janka s.n.* [JE, PR, PRC, WU (11.V.1870)]. *Ibid.*, 30.IV.1870, *Janka s.n.* (C, COI, W, WU). *Ibid.*, limestone, 1894, *de Degen s.n.* [BAS, JE (20.IV.1894), LD, MPU (20.IV.2894), WU (30.IV.1894)]. *Ibid.*, 23.V.1970, *Richter s.n.* (G, GB, PR, S, W, ZT). Baile Herculane, Prolaz ravine, chasm, 7.VI.1895, *Baenitz s.n.* (B, G, JE, L, LD, P, PR, WU). *Ibid.*, 22.VII.1897, *de Degen s.n.* (B, BP, COI, G, GB, PRC). *Ibid.*, 500-700 m, 27.V.1923, *Borza & Nyárády 1561* (C, G, GB, P, W, Z). *Ibid.*, s.d., *Fl. Exs. Austr.-Hung. 2650* (C, L, M, P, PRC, W, WU, Z, ZT).

SPAIN: San Juan de la Pena, IV.1908, *Pujot s.n.* (GB).

ITALY: 81 Collections in all. PIEMONTE: Vinadio, 4.VIII.1843, *Reichenbach s.n.* (W). Valdieri, near baths, rocks, VII.1882, *Burnat 3862* (G, MPU, P, Z). Limone, above Maira Cross, calcareous slope, mountain pasture, 1400-1800 m, 28.VII.1951, *Merxmüller & Wiedmann 14222* (M). Above Ormea, Val Tanaro, mountain slope, VIII.1889, *Vallino s.n.* (TO). LATIUM: Monte Cimino, beech forest, 1000 m, 18.VI.1935, *Lüdl s.n.* (ZT). Monte Vettore, VI.1888, *Batelli s.n.* (M, MPU). Rieti, Monte Terminillo, open slope, c. 1600 m, 19.VIII.1965, *Merxmüller & Grau 20691* (M). Tivoli, Monte Ripoli, V.1902, *Vaccari s.n.* (FI). Monte Sant'Angelo, above Formia, VI.1898, *Vaccari s.n.* (ZT). ABRUZZI: Gran Sasso, stony, calcareous, c. 2000 m, VII.1906, *Rigo s.n.* (G, GB). Ovindoli, Val d'Avario, 1400 m, 29.VI.1903, *Vaccari s.n.* (FI). Canella valley, stony, humid, 8.VIII.1856, *Huet du Pavillon 410* (COI, G, GOET, JE, K, L, M, MPU, P, Z). Majella Mountains, Scrimacavallo, stony pasture, calcareous soil, 900-1500 m, 24.VII.1875, *Porta & Rigo 21* (M, P, Z). Ibid., 2000 m, 24.VIII.1898, *Rigo 443b* (G, P, PRC, M). PUGLIA: Monte Gargano, 30.V.1877, *de Sardagna s.n.* (FI, GOET, WU). Ibid., s.d., *Tenore s.n.* (M, P). Monte San Angelo, summit, V.1812, *Anon. s.n.* (COI, JE). Ibid., walls, rocks, 600-720 m, 25.VI.1874, *Porta & Rigo s.n.* (M, P, PRC). Ibid., walls fortification, 300-600 m, 20.VI.1875, *Porta & Rigo 321* (GB, JE, P, WU). Ibid., castle, 29.III.1893, *Martalli s.n.* (BAS, G, GB, MPU, PRC, Z). BASILICATA: Basilicata, XI.1825, *Tenore s.n.* (K). CALABRIA: Calabria, 1826, *Tenore s.n.* (MPU). Monte Pollina, roadside to Col di Dragonet, 31.V.1968, *Merxmüller & Lippert 23734* (M). Ibid., Serra Crispo, rocks, calcareous, 1800 m, 27.VIII.1935, *Gavioli 22378* (FI). Ibid., 1400-1700 m, 8/13.VI.1877, *Huter et al. 365* (M, MPU, P, WU).

JUGOSLAVIA. 80 Collections in all. 'Trajans Tafel', 70 m, 15.V.1895, *Baenitz s.n.* (L, LD, P, PR, W, WU, Z). Praca ravine near Borovsko, between pebbles, calcareous soil, 580 m, V.1909, *Maly 5155* (B, C, G, GB, JE, LD, M, MPU, P, PR, S, W, WU, Z). Suha Gora, ravine in forest, VII.1885, *Beck s.n.* (PRC). Cacak, V.1896, *Wujicić s.n.* (WU). Zdrijelovići, Lovćen Mountain, VI.1934, *Pejović s.n.* (PR). Zalazi, near Njegusi, in chasm, VII.1925, *Garcević s.n.* (K). Ibid., in thicket, VII.1933, *Pejović 119-1939* (B, G, PR, PRC, S, ZT). Ibid., VII.1935, *Pejović s.n.* (C, G, P, PRC, S, W). Strbac, rocks in forest, V.1872, *Pancić s.n.* (WU). Kosovo-Metohija, W. of Kušiste, between Peć and Andrijevića, in valley of river Pećska Bistrica, 29.VI.1965, *van Ooststroom & Hennipman 24186* (L). Mitrovica, Zvečan, at field, 2.VI.1917, *Bornmueller 1784* (JE). Jelasnica, near Nis, rocks, 10.V.1907, *Schneider 117* (BM, W). Basata, near Pirot, sunny rocks, 1300 m, 20.V.1894, *Adamović s.n.* (B, BAS, G, L, M, P, W, Z). Vranja, sunny rocks, VI.1893, *Adamović 197* (PRC). 'Scardus', Kobilica Mountain, in chasm, c. 2000 m, 13.VII.1870, *Dörfler s.n.* (W, WU). Sar Planina, Kobilica Mountain, stony plain, 2000 m, 13.VII.1934, *Hruby et al s.n.* (PRC). Near Skopje, above Gornje Voda, rocks, 3.V.1893, *Dörfler 306* (G, JE, W, WU). Ibid., Sisevo, Treska ravine, in chasm, 28.IV.1893, *Dörfler 307* (JE, K, LD, W, WU). W. of Mavrovo, valley of river Radika, on rocks, 12.VI.1955, *Rechinger 15798* (M, W). Ibid., 23.VI.1965, *van Ooststroom & Hennipman 24045* (L). Ostri Breg, summit, 1500 m, 20.V.1917, *Bornmueller 1787* (JE). Tobolka ravine, dry rocks, 16.V.1917, *Bornmueller 1781* (B, JE, HBG). Pljackavica Mountain, forest, c. 700 m, 11.V.1896, *Adamović s.n.* (GOET, JE). Kadijica, 1800 m, 11.VI.1937, *Thompson & Thompson 923* (K). Demir Kapija, c. 30 km W. of Stroemitsa, ravine, W.-slope, 500 m, 6.I.1973, *van Alphen & van Tol s.n.* (L). Belasica Planina, Visora Csura, forest, c. 1600 m, *Burgeff 1211* (M). Ohrid, Galicica Planina, above Vojtina, 5.VI.1968, *Weber s.n.* (BAS). Baba Planina, 31.VII.1862, *Orphanides 1042* (G, GB, JE, P, UPS). Bitola, rocks, V.1904, *Bierbach s.n.* (JE, M).

ALBANIA. Mal i dep, meadows, 1800 m, 22.VI.1930, *Guisseppi 27* (K). Lumës ravine, near Podbreg, rocks, 22.V.1918, *Dörfler 530* (GB, WU). Smollik ravine, near Xhyrë, boulders, c. 500 m, 29.V.1918, *Dörfler 595* (GB, W). Këlcyrë between Prunet and Tepelenë, Vjösëç valley, rocks, 23.V.1932, *Mueller s.n.* (Z). Gjinokastër, limestone cliff, 300 m, 7.VI.1933, *Alston & Sandwith 1441* (K).

GREECE. 83 Collections in all. MAINLAND: Bigala Planina, near Gopes, 1100-1200 m, V.1918, *Schultes s.n.* (B). Vermion Oros, near Naussa, calcareous soil, 30.V./1.VI.1936, *Rechinger 8627* (G, M, W). Kissos, near Thessaloniki, 20.V.1857, *Orphanides s.n.* (P). Boz Dag, near Serrai, c. 1300 m, 15.VI.1936, *Rechinger 11022* (W). Ibid., 20 miles NW. of Drama, stony slopes, 1200 m, 12.V.1959, *Stainton 7371* (K, W). Pangaion Oros, 20 miles W. of Kavala, amongst shrubs, 150 m, 24.V.1959, *Stainton 7530* (W). Papikion Oros, near Komotini, S.-slope, rocky siliceous soil, c. 1200 m, 2.VII.1936, *Rechinger 10493* (W). Kallidhea, Boukate Dag, 10 km N. of Esimi, Nomos Evros, forest of *Quercus* and *Fagus*, 800-900 m, 5/28.VI.1965, *Bauer & Spitzenberger 1931* (W). Vourinos

Oros, above Tservena, E.-slope, calcareous rocks, c. 1400 m, 5.VII.1956 *Rechinger 17618a* (W). Olimbos Oros, valley near Litokhoron, 400-1800 m, V.1961, *Seitter s.n.* (Z). Athos, near Prodhromos, stony places, 200 m, IV.1909, *Dimonie s.n.* (W, WU). Emin Agha, c. 35 km S. of Ioannina, pass, calcareous, c. 600 m, 12.V.1961, *Rechinger 23297* (W). Pindhos Oros, near Witono Monastery, in forest, 14.V.1896, *Sintenis 304* (G, JE, P, PR, W). Khalikion, Turnara, subalpine, 26.VI.1896, *Sintenis 682* (G, JE, LD, PRC). Pindhos Oros, Karava, summit, 1650-1950 m, 1/3.VII.1885, *Hausknecht s.n.* (JE). Pilion Oros, near Volos, 800-1500 m, 4.V.1961, *Rechinger 22678* (W). Timfristos Oros, summit, Petra, 1800 m, 6.VIII.1857, *Samartini & Guicciardi 3303* (FI, F, P, TO). Kalampaka, Ayios Stefanos, 4.V.1896, *Sintenis 36* (B, G, JE, LD, M, P, PR, S, W, WU). Oiti Oros, 1890 m, 11.VI.1937, *Balls & Balfour Gourlay 3241* (BM). Paliopirgos, near Navpaktos, 700-1000 m, 23.V.1964, *Rechinger 25423* (W). Delphi, 9.IV.1938, *Coulson s.n.* (BM). Parnis Oros, 1000 m, 28.V.1938, *Reese s.n.* (BAS). Imittos Oros, IV.1842, *Boissier s.n.* (G, GOET, JE, L, MPU, P). *Ibid.*, 150-750 m, 15/27.IV.1852, *Orphanides 97* (COI, FI, G, L, M, P, WAG, WU, Z, ZT). *Ibid.*, Attiki, 22.IV.1854, *de Heldreich s.n.* (L, M, MPU, P, ZT). *Ibid.*, IV.1876, *Pichler s.n.* (FI, P, WU). KERRIRA: Near Gastourion, IV.1912, *Rechinger s.n.* (W). Pandokrator, summit, amongst stones, 917 m, 3.V.1896, *Baenitz s.n.* (L, M, P, PRC, W, WU, ZT). KEFALLINIA: Kefallinia, 6.VII.1938, *Savetti s.n.* (FI). Aenos Oros, 1.IV.1934, *Guiol 2370* (BM). THASOS: Limenaria, rocks, 19.V.1891, *Sintenis & Bornmueller 412* (W). W.-coast, roadside, 50 m, 21.V.1972, *Price 1116* (K). EVVOIA: Telethron Oros, 18.IV.1902, *Leonis 195* (M, WU, ZT). Xiron Oros, near Ayia Anna, calcareous soil, 750-950 m, 2.VI.1955, *Rechinger 17068* (W). LESVOS: Olimbos Oros, near Ayiassos, summit, calcareous rocks, c. 940 m, 19.V.1934, *Rechinger 5541* (LD, W). SAMOS: Kierki Ores, calcareous rocks, c. 1200 m, 16/23.VI.1932, *Rechinger 1968* (W). S. of Vourliotes, N. exposed cliffs, ravine, 400-900 m, 27.V.1962, *Runemark et al. 19907* (LD).

BULGARIA. 23 Collections in all. Above Dragoman, stony mountain path, VII.1889, *Velenovsky s.n.* (PRC). Near Gabrovo, 1897, *Urumoff 227* (PRC). Above Korten, rocks, VII.1887, *Velenovsky s.n.* (PR, WU). Chatal Balkan, near Sliven, rocks, 20.VII.1893, *Wagner 140* (BM, G, P, W, WU). Konyavska Planina, near Skakavets, shady rocks, 30.III.1930, *Stoyanoff s.n.* (K). Rila, at river Bistritsa, Blagoevgrad, rocks, c. 600 m, 21.VI.1931, *Stoyanoff & Georgieff s.n.* (K). Pirin Planina, valley of Banderica lake, at E.-foot of Vikhren, granitic soil, c. 1400 m, 24.VIII.1936, *Dostal 4001* (PRC). Belovo, 1910, *Urumoff 119* (GB). Asenovgrad, stony places, V.1909, *Stribrný s.n.* (G, L). Bachovo Monastery, Rhodopa Planina, 29.IV.1893, *Stribrný s.n.* (JE, P, Z). *Ibid.*, 800-1000 m, 12.VI.1973, *Mennema 2106* (L). Above Knezovo, calcareous rocks, VIII.1887, *Velenovsky s.n.* (PRC).

TURKEY. 34 Collections in all. KIRKLARELI: 2-4 km SW. of Demirköy, 6.V./5.VI.1967, *Bauer & Spitzenberger 743* (W). ISTANBUL: Terkos Gölü, on way to dam, desert conditions, on dunes, in forest fixation plantation, 8.V.1962, *Dudley 34561* (BM, K). ÇANAKKALE: Menderes Dagh, Dumbrek valley, 12.IV.1883, *Sintenis (IV.1883) 110* (G, GOET, JE, MPU, P, ZT). Kaz Dagi [Mount Ida, near Kareikos, in forest, 13.VII.1883, *Sintenis (VII.1883) 110* (G, WU, Z). BALIKESIR: Kapidagi Yarimadan, c. 3 km NE. of Ocaklar, between rocks in light *Quercus*-forest, SW.-exposition, c. 700 m, 10.IV.1971, *Urmi s.n.* (Z). Edremit Avalar höyü, 250 m, 9.V.1966, *Peşmen 462* (G). BURSA: Bursa, s.d., *Grisebach s.n.* (GOET). IZMIR: Bergama, Kozak, Madran Cayi, meadow, 15.V.1966, *Peşmen 539* (G). Nif Dagh, above Kemalpaşa, N.-slope, 12.V.1969, *Fitz & Spitzenberger 450* (W). Samsun Dag, above Guzelçamli, N.-slope, banks in mixed forest, schistose substrate, 24.IV.1865, *Davis 41692* (E). MANISA: between Demirci and Simav, Akçakertik, *Pinus pallasiana*-forest, 1310 m, 25.VI.1964, *Huber-Morath 17227* (Herb. Huber-Morath). MUĞLA: 27 km NE. of Muğla at the road to Denizli, mountain forest, 6.VI.1938, *Reese s.n.* (BAS). ZONGULDAK: Kel-Tepe, above Karabük, among limestone rocks, 1950 m, 3.VIII.1962, *Davis & Coode 38919* (E, K). KASTAMONU: Between Azdavay and Cide, 40 km from Azdavay, rocky limestone cliff and earthy scree, 800 m, 31.VII.1962, *Coode & Yaltrik 38678* (E, K). Kure Nahas, near Ekitschai, in forest, 3.V.1892, *Sintenis 3754* (BM, G, GOET, JE, K, LD, P). AMASYA: Logman Dagh, in chasm, in shadow, 400-600 m, 10.V.1861, *Bornmueller 633* (BAS, FI, GB, JE, LD, M, P, ZT). GİRESUN: Between Giresun and Süşehri, in valley N. of mountain pass in Yedigözü Dagh, near Tamdere, rocky soil in forest, 1400 m, 1.VII.1955, *Simon s.n.* (BAS). IÇEL: Between Namrun and Tarsus, 750 m, 17.IV.1933, *Balls 197* (K).

CYPRUS. Kornos mountain, N.-slope, limestone rock in forest, 600 m, 9.III.1951, *Merton 219* (K). Kyparissovouno, N.-side, in cleft of limestone rocks, slight shade, 990 m, 1.IV.1962, *Meikle*

2427 (K). Moutoullas, on wet field border on dry stone terrace, 900 m, 23.IV.1937, *Syngnanides 1551* (K). Pedhoulas, hedges, stones, banks, 28.III.1932, *Syngnanides 51* (K). Ibid., on damp walls, 960 m, 29.V.1955, *Merton 2363* (K).

SYRIA. Above Jayyid, shady banks and rocky places, 900-1200 m, 14.III.1943, *Davis 5401* (K).

LEBANON. Lebanon, III.1850, *Michon s.n.* (P). Wadi in Tripoli suburbs, shady places, 7.V.1945, *Norris s.n.* (BM). Aynât, 1863-1864, *Lowne s.n.* (K). Reifun, 16.V.1933, *Reese s.n.* (BAS). Above and E. of Khan Mudayrij, rocks, 16.V.1876, *Gaillardot s.n.* (JE). 26 km E. of Bayrut, under Dahr al Baydar, limestone rocks, 1500 m, 24.V.1957, *Rechinger 13278* (W). Lebanon Mountains, Ayn Zhalta, slope, 1100-1300 m, 26.V.1877, *Ball 2239* (K). Jabal al Baruk, 1600 m, 16.II.1958, *Mailand 143* (K). Jabal ash Shaykh, near the snow, IV.1924, *Smolly s.n.* (HUJ).

ISRAEL. Har Meron, shady rocks with plenty of humus, 8.I.1943, *Davis 5139* (K). Ibid., 11.IV.1951, *Zohary 13797* (HUJ). Ibid., slope to Wadi Abu-'Ali, 11.IV.1951, *Amdursky 13804* (HUJ). Ibid., thicket, 14.III.1963, *Zohary s.n.* (HUJ). Ibid., thicket, humous soil, 1000-1200 m, 12.IV.1963, *Zohary s.n.* (HUJ). Ibid., W.-slope, 13.IV.1964, *Feinbrun s.n.* (HUJ, L). Ibid., near summit, 1.V.1966, *Plitmann s.n.* (HUJ, L). Har Kefir, rocks facing N., 28.III.1940, *Halevi 13796* (HUJ).

ALGERIA. 36 Collections in all. In the vicinity of Alger, 'Capiomont', 29.VI.1846, *Cosson 784* (P). In the vicinity of Sour el Ghozlane, Ouled Guergour, shady places, 23.III.1856, *Charoy s.n.* (P). S. of Djebel Tamgout, surrounding of Draa el Mizan, 3.VII.1854, *Cosson s.n.* (MPU, P). Col de Tirourda, 1700 m, 10.VI.1939, *Gombault s.n.* (P). Djebel Dréat, V.1888, *Battandier & Trabut 474* (G, L, MPU, P, Z). Kef el Akhdar, V.1882, *Letourneux s.n.* (P). Djebel Megris, forest, limestone, 1600 m, VI.1898, *Reverchon 363* (BM, JE, P, PRC). Djebel Bou Taleb, 6.V.1862, *Letourneux s.n.* (P). Djebel Ta Babor, 20.VI.1880, *Cosson s.n.* (P). Batua, N.-mountain slope, 28.VI.1853, *Balansa 837* (BM, G, GOET, MPU, P, WAG). Ibid., Djebel Tougar, E.-slope, 26.IV.1892, *Neyraut 868* (MPU). Djebel Aurès, VI.1853, *Cosson s.n.* (P). Djebel Mahmel, 7.VI.1892, *Cosson s.n.* (MPU). Djebel Chélia, near Medina, *Cedrus*-forest, 2000 m, 9.V.1971, *Endress 2569* (Z). Djebel Taya, 12.V.1877, *Letourneux s.n.* (P). Djebel Sidi Rerhis, VI.1883, *Reboud s.n.* (P). Djebel Eghis, Ain Beida, 1889, *Julien s.n.* (MPU). In the vicinity of Bone, s.d., *Letourneux s.n.* (P).

TUNISIA. Al Kaf, rocks, 24/25.V.1887, *Letourneux s.n.* (P). Qalat El Harrad, near Suq Al Jumah, 28.V.1887, *Letourneux s.n.* (P). Qalat El Feghara, 21.V.1887, *Letourneux s.n.* (P). Jabal, Zaghwan, high rock, 13.VII.1854, *Kralik s.n.* (G, MPU, P). Ibid., 1.VI.1883, *Cosson et al. s.n.* (P).

13.c.1. *Lamium garganicum* L. subsp. *striatum* (Sibth. & Smith) Hayek var. *armenum* (Boiss.) Mennema

TURKEY. KASTAMONU: Tossia, Büyük Ilgaz Dağları, summit, 2700 m, 23.VII.1892, *Sintenis 4764* (B, G, GOET, JE, K, L, LD, P, PR, S, W, WU, Z). Ibid., N.-side unstable limestone screes, 2200 m, 28.VII.1962, *Davis et al. 38405* (K). Ibid., Cazikgedigi, SW. of Çatalilgaz, lower mountain ridges, limestone screes, 2000 m, 17.X.1967, *Watson et al. 3822* (E). Ibid., E. of pass, on scree of summit, 2000 m, 19.VII.1969, *Darrah 61* (E). Ibid., Çankiri, 2000 m, 20.VII.1976, *Nydegger 11344* (Herb. Huber-Morath). TRABZON: Zigana Dağları, c. 2300 m, 22/24.VII.1956, *de Lesse s.n.* (P). Ibid., 2300 m, 22.VII.1956, *Baytop 4718* (ISTE). GÜMÜŞANE: Kop Dagi, sliding stone scree, 2700 m, 3.VII.1960, *Furse & Synge 870* (E, K, W). Ibid., 2550 m, 9.VIII.1962, *Furse 3820* (G, K). ERZINCAN: Keşiş Dağları, near Erzincan, s.d., *Aucher-Eloy 1682* (G, K, MPU, P). Ibid., *Montbret 2454* (K, P, W).

U.S.S.R. CAUCASUS: S. part of Khulo, Yaily Cirukhi, alpine rocks, 28.VII.1951, *Anon. s.n.* (LE).

13.c.2. *Lamium garganicum* L. subsp. *striatum* (Sibth. & Smith) Hayek var. *microphyllum* (Boiss.) Mennema

GREECE. MAINLAND: Timfristos Oros, above Karpenision, between shingles, c. 2300 m, 16.VII.1938, *Grebenschikoff s.n.* (K). Parnassos, above Dhipotamo, alpine region, 6.VIII.1852, *de Heldreich 2753* (FI, G, W). Ibid., shady rocks, 1800 m, 2.VIII.1938 *Davis 320* (K). Lakonias,

Taiyetos Oros, near Chupata, alpine region, 26.VI.1902, *Leonis 186* (B, ZT). EVVOIA: Evvoia, mountain top, V., *Mazziari 440* (W).

TURKEY. 'Caria', 1843, *Pinard s.n.* (BM, G, GOET, P, W, WAG, ZT). IZMIR: Izmir, IX.1896, *Whitall 735* (K). DENIZLI: above Cadmi, rocks, VI.1842, *Boissier s.n.* (G, GOET, K, P, TO, UPS, W). MUĞLA: Sandras Dag, above Köyceğiz, serpentine rocks in N. gully below snowpath, 2200 m, 23.VII.1947, *Davis 13548* (E, K). Ibid., above Ağa, serpentine rocks, 1350 m, 25.VII.1947, *Davis 13597* (K). Fethiye, Çal Dagi, unstable limestone screes, near the snow, c. 2600 m, 7.VII.1938, *Schwarz 430* (JE). Ibid., Baba Dagi, limestone screes, c. 1950 m, 26.V.1976, *Polunin 14009* (E). ANTALYA: Ak Dag, stony alpine region, 3.VII.1860, *Bourgeau 215* (C, COI, G, GOET, K, MPU, P, W). Ibid., S.-summit, 17.VII.1882, *Luschan s.n.* (WU). Bey Dag, 8.VII.1883, *Barbey s.n.* (K, P, WU, Z). Ibid., N.-side, screes, 17.VII.1883, *Pichler s.n.* (WU). Ibid., near Elmalu, V/VII.1883, *Pichler s.n.* (Z). Tahtali Dag, N.-face, 2200 m, 16.VIII.1947, *Davis 14170* (K). Ibid., N.-screes, 2100-2200 m, 10.VII.1947 *Davis 15092* (C, E, K).

LEBANON. Jabal al Makmal, Dahr-el-Kodib, stony soil, c. 2600-2800 m, 27.VI.1931, *Zerny s.n.* (W).

13.c.3. *Lamium garganicum* L. subsp. *striatum* (Sibth. & Smith) Hayek var. *striatum*

ITALY. LATIUM: Monte Terminillo, under Lossefelli, vallone Rocchette, broken stones, 1200 m, 6.IX.1949, *Montelucci s.n.* (FI). ABRUZZI: Monte Meta, alpine rocks, c. 2000 m, 8.VIII.1872, *Levier s.n.* (FI). Monte Velino, 18.X.1910, *Vaccari s.n.* (FI). Monte Sirente, above Ovindoli, subalpine pasture on W.-slope, 1.VIII.1876, *Levier s.n.* (FI, P). CALABRIA: Monte Pollino, Serra delle Ciavole, 26.VII.1880, *Biondi s.n.* (FI). Ibid., in limestone chasm, 4.VIII.1929, *Gavioli s.n.* (FI). SICILIA: Sicilia, 1867, *Hooker s.n. p.p.* (K).

JUGOSLAVIA. Above Fusa Rudnice, mobile screes, c. 1900 m, 16.VII.1914, *Dörfler 458* (B, G, GB, Z). Majam, summit, alpine stones, at the snow, 11.VIII.1892, *Baldacci 309* (FI). Korab, Mavrovi Anovi, c. 2400 m, 21.VII.1934, *Behr s.n.* (W). Galicica, above Otesevo, open limestone ridge, in crevices of rocks, c. 1900 m, 8.VII.1979, *Touw 21405* (L). Ibid., c. 5 km of the pass height of the highway Trpezica-Otesevo, forest edge, 23.VI.1980, *Erben s.n.* (M).

ALBANIA. Above Abat, scree, c. 1800 m, 7.VIII.1918, *Dörfler 380* (GB). Above Tiranë, slope down Dajti range, 600 m, 28.V.1934, *Pennington 123* (K). Nëmërçkë Mountains, Draçovë, near Përmet, alpine mobile screes, 22.VII.1894, *Baldacci 101* (FI, P, TO).

GREECE. Collections in all. MAINLAND: Timfi Oros, Astraka, summit, N.-slope, gravelly crevices of limestone rocks, c. 1900 m, 14.VII.1958, *Rechinger 21382* (G, M, W). Pieria Ori, near Kozani, S.-slope, siliceous rocks, c. 1900 m, 9/12.VII.1956, *Rechinger 18066a* (M, W). Korakas, 13.V.1899, *Leonis 363* (G, UPS). Ibid., alpine region, summit, 1800-2300 m, 23.VII.1879, *de Heldreich s.n.* (AWH, FI, G, M, P). Parnassos, alpine region, 9.VIII.1852, *de Heldreich 2752* (COI, FI, G, GOET, K, M). Ibid., on shady rocks, 11.VIII.1852, *de Heldreich 2752bis* (FI, G, GOET, P, UPS, WAG). Ibid., near 'Trypios Vrachos', c. 1800-2100 m, 13/25.VII.1854, *Orphanides 440* (COI, FI, G, GB, K, L, M, P, UPS, WAG, ZT). Ibid., alpine region, VIII.1855, *Guicciardi s.n.* (FI, K, L, M, MPU, P, ZT). Ibid., shady defile, c. 1950-2100 m, 19.VIII.1856, *de Heldreich 54* (JE, K, M, MPU, P, UPS). Ibid., on stony place, c. 1050-1200 m, 29.VI.1857, *Samaritani & Guicciardi 727* (FI, G, K, L, M, P, UPS). Parnis Oros, in *Abies*-region, 900-1200 m, 6.V.1895, *de Heldreich 1271* (G, JE, M, P, PRC, Z). Ibid., c. 1200-1400 m, 17.VII.1956, *Rechinger 18158* (G, M, W). Imittos Oros, mountain pass, IV.1844, *de Heldreich s.n.* (FI, G, TO, Z). Ibid., 450-900 m, IV.1855, *de Heldreich 468 p.p.* (G, JE p.p., K, P, WU). Killini Oros, near 'Flambouritza', 1050 m, 23.IV./5.V.1854, *Orphanides 2663* (BM, FI, G, GB, PRC). Mainalon Oros, above Vitina, in *Abies*-region, 1100-1400 m, 14.VI.1958, *Rechinger 20496* (W). Taiyetos Oros, Kakkochori, alpine region, 9.VIII.1844, *de Heldreich 91* (G, K). Ibid., near Spanaiika, rocks at eternal snow, VII.1897, *de Heldreich 1467* (B, G, GB, JE, K, M, P, PRC). Ayios Petros, at Artemision Oros, 2.IV.1875, *de Heldreich s.n.* (FI, G). KERRIRA: Pandocrator, 3.V.1887, *Gelmi s.n.* (WU). KEFALLINIA: Aenos Oros, in *Abies*-region, 1050-1650 m, 9.V.1861, *de Heldreich 3561* (G, P). Ibid., 1400-1500 m, 13.V.1926, *Bornmueller 1234* (JE, Z). ZAKINTHOS: Mountain, s.d., *Anon. s.n.* (BM). THASOS: Trapeza, rocks, 17.V.1891, *Sintenis & Bornmueller 412* (JE, P). Valley between Prinos and Kalives,

in marble cave, 200 m, 6.VII.1973, *Greuter 11404* (Herb. Greuter). SAMOTHRAKI: Korifi Fengari, siliceous soil, 1200 m, 18/20.VI.1936, *Rechinger 9764* (G, M, W). EVVOIA: Dhirfis Oros, in middle region, 1200 m, 19.IV./1.V.1865, *Orphanides 500* (G, GB, PRC). Okhi Oros, summit, in crevices of rocks, c. 1350 m, 21/24.V.1955, *Rechinger 17128* (G, M, W). LESVOS: Ordhimnos Akra, at Ipsilon Monastery, N.-facing volcanic cliffs with scattered *Quercus*-trees, 500 m, 14.V.1978, *Edmondson & McClintock 2627* (E). Vatoussa, in shade of thicket at streamlet, 18/24.V.1934, *Rechinger 5842* (W). SAMOS: Samos, 6.V.1887, *Forsyth Major 413* (FI, G, P, Z, ZT). Kierki Ores, limestone rocks, shady, c. 1200 m, 15.IV.1934, *Rechinger 4135* (W). KRITI: Levka Ori, Malotira, near shepherd's cottage Kolokithas, limestone rocks, c. 1700 m, 17.VI.1942, *Rechinger 13895* (G, W). Kidonia, near Eos-Katafijo, S. of Kambi, N.-slope, in thickets, limestone, 1350 m, 11.IV.1962, *Greuter 4117* (W, Z, Herb. Greuter). Dhikti Ori, rocks, 1500 m, V.1846, *de Heldreich s.n.* (G, GOET, P, WAG).

TURKEY. 166 Collections in all. IZMIR: Yamanlar Dag, rocky soil, c. 800 m, 24.III.1966, *Bocquet 1634* (ZT). Nif Dag, at the edge of stony slope, 31.V.1966, *Bocquet 2768* (ZT). Boz Dag, 19.V.1969, *Fitz & Spitzenberger 568* (W). Ciplak Dagh, above Armutlu, 980 m, 22.V.1935, *Huber-Morath 2485* (Herb. Huber-Morath). AYDIN: Karacasu, Baba Dag, above Seki, shady rocks, 1400 m, 22.IV.1965, *Davis 41628* (E, K). MUGLA: Between Fethiye and Susuz Dag, 10.V.1967, *Peşmen et al. 7041* (G). BURSA: Ulu Dag, 1837, *Aucher 1683 p.p.* (G). Ibid., VII.1842, *Boissier s.n.* (AWH, G, GOET, JE, L, P, TO, UPS, ZT). Ibid., among stones, 15.VIII.1850, *Clementi s.n.* (G, P, TO, W). Ibid., in forest, V.1874, *Pichler 153* (COI, FI, G, P, W, WU). Ibid., in shady valley on N.-slope, VI.1874, *Pichler 66* (FI, JE, M). Ibid., in subalpine region, 1300-1600 m, 31.V.1899, *Bornmueller 5442* (G, JE, LD, M, P, PR, PRC, W, WU, Z). Ibid., c. 18 km SE. of Bursa, rather dry open place in low *Juniperus*-shrubbery, c. 2000 m, 19.VI.1959, *Hennipman et al. 2077* (K, L, WAG). BILECIK. BİLECİK, limestone gorge behind station, rocks, 300 m, 27.IV.1900, *Davis 42133* (K). Near Bilecik, rocks, 1.VI.1933, *Reese s.n.* (BAS). KÜTAHYA: C. 7 km SE. of İnönü, oak-forest, 900-1000 m, 23.IV.1966, *Davis 42112* (K). Near Kütahaya, in crevices in limestone rock, 800 m, 3.IV.1934, *Balls 633* (BM, K). ISPARTA: Sultan Dağları, S.-side, between Gelendost and Aşkehir, roadside, 1600 m, 3.VI.1935, *Reese s.n.* (BAS). Davras Dagi, 1800 m, V.1845, *de Heldreich s.n.* (E, G, K, P, W). Dedegöl Dagi, at Dedegöl tarn, shady side, 2400 m, 3.VIII.1949, *Davis 16028* (K). ANTALYA: S.-side of Avlan Gölü, E.-slope, dry stony slope with *Quercus*-shrubs, c. 1050 m, 28.IV.1959, *Hennipman et al. 709* (HUJ, K, L, WAG). Elmali Dag, alpine region, rocks, 26.V.1860, *Bourgeau 217* (C, E, G, GOET, K, W). Calbaldi Dag, among shady rocks, 2000-2100 m, 14.VII.1969, *Davis 15281* (K). Bozburun Dagi, above Toslu Çukur, foot of N. cliffs, 25.VII.1949, *Davis 15611* (K). Ak Dag, S. of Geyik Dag, near little lake, 2100 m, 28.VIII.1947, *Davis 14385* (K). ZONGULDAK: Kel Tepe, above Sorgun, limestone rocks, 1700 m, 20.VIII.1962, *Davis et al. 37885* (K). KONYA: Carşamba gorge, between Konya and Bozkir, rocky slope, 14.VI.1948, *Reese s.n.* (BAS). Between Göhsu Valley and Yelibel Dag, limestone rocks, 8.VI.1948, *Reese s.n.* (BAS). NIGDE: Hasan Dag, near Taspınar, volcanic scree, 2600 m, 16.VI.1952, *Davis et al. 18962* (K). Ala Dag, scree, 2700 m, 1.IX.1938, *Ellenberg 1015* (B). Ibid., base camp, scree, 2500 m, 29.VI.1964, *Wood & Gibson 117* (E). Toros Dağları, above Bulgarmaden, alpine region, 1855, *Balansa s.n.* (P). IÇEL: Bolkar Dağları, Gusguta Valley and Kizil Tepe, among rocks, 1800-2400 m, 25.VI./30.VIII.1853, *Kotschy 17* (G, K, P, UPS, WAG). Dümbelek Dag, N.-side, in crevices, 200 m, 1895, *Siehe 200* (BM, G, JE, P, WU). Between Gülek and Bogaz, limestone crevices, 1100 m, 4.IV.1957, *Davis & Hedge 26372* (K). Findikpinari, 1000 m, III.1909, *Siehe 271* (JE, W, Z). Between Toros Dağları and Kuzucubelen, on limestone rocks, 400 m, 5.IV.1957, *Davis & Hedge 26467* (K). Between Tarsus and Namrun, near Ortaköy, shady rocky places, 1000 m, 4.IV.1957, *Davis & Hedge 26399* (K). Pozat Dag, E.-slope, 1400 m, 1950, *Atilla 91* (K). Between Camurla and Olucak, 18.VIII.1949, *Davis 16295* (K). Between Gülnar and Gökbelen, limestone rocks in oak-forest, 1000 m, 14.IV.1956, *Davis & Polunin 26059* (BM, K). AMASYA: Göllü, near Amasya, 16.VI.1893, *Frey 1015* (M). Ibid., *Manissadjian 1015* (W). KAYSERİ: Ercyas Dagi, alpine region, 1200 m, 19.VII.1856, *Balansa 1092* (G, GOET, P, Z, ZT). Ibid., near N.-crater, among rocks, 2900-3100 m, VII.1902, *Zederbauer s.n.* (WU). Bakir Dag, at Akoluk, above Kiske, 1900 m, 29.VI.1952, *Davis et al. 19447* (K). ADANA: Bozoglan Dag, above Saimbeyli, rocky slopes, 1300 m, 13.IV.1957, *Davis & Hedge 26689* (K). Between, Karanfil and Ala Dag, cedar-forest, 2200 m, 23.IX.1938, *Ellenberg 773* (B). Kassan Oghlu Mountain, near Gürümze, subalpine, among rocks, 1500 m, 22.V.1859, *Kotschy 166* (G, JE, K, L, P, UPS, ZT). Pozanti, near Bürücek, under

Cupressus-bushes on dry stony ground, 1000 m, 21.IV.1956, *Davis & Polunin 26138* (BM, K). Bahçe, Dumanli Dag, above Haruniye, crevices of metamorphic rocks, 1200 m, 19.IV.1957, *Davis & Hedge 26837* (K). HATAY: Gavur Daglari, Kurt Dagi, VII.1908, *Haradjian 2365* (G, K). Jebel Akra, 1800 m, VII.1907, *Haradjian 1596* (G, K, W). SIVAS: Mountain area SE. of Ulas, limestone scree, c. 1700 m, 17.VI.1939, *Reese s.n.* (BAS). Highway Kangal-Sivas, between Deliktas and Ulas, limestone scree, 1750 m, 28.VI.1955, *Simon s.n.* (BAS). MARAŞ: Binboga Dag, above Yalak, in ravine, 2000 m, 14.VII.1952, *Davis et al. 19969* (K). Dar Dag, near Afşin, VI.1914, *Tölg s.n.* (W). Between Berit Dag and Elbistan, rocky lava slopes, 2000 m, 16.VI.1960, *Stainton & Henderson 5602* (E). Koyunoluk Dag, between Maraş and Göksum, limestone rocks in shade, 1200 m, 4.V.1957, *Davis & Hedge 27559* (K). Berit Dag, Süleymanli, crevices in limestone rocks, 1600 m, 10.V.1935, *Balls 1029* (BM, E). Ibid., 2400-2700 m, 12.VIII.1865, *Hausknecht s.n.* (G, JE). GAZIANTEP: Sof Dag, 27.VI.1865, *Hausknecht 942* (JE). MALATYA: Malatya, limestone rock faces, 1400 m, 14.V.1935, *Balls 2287* (BM, K). Between Perveri and Gölbasi, scree, 1210 m, 26.V.1956, *Huber-Morath 14219* (Herb. Huber-Morath). ADIYAMAN: Nemrut Dag, VI.1883, *Luschan s.n.* (WU). Ibid., near Kjachta, stony, calcareous ground, c. 1950 m, 12.VII.1910, *Handel-Mazzetti 2143* (WU). TRABZON: Trabzon, 1836, *Aucher-Eloy s.n.* (G). Ibid., N. of Bayburt, stony slopes, 1500 m, 4.VII.1960, *Furse & Synge 873* (K). Slope to Sumelak Monastery, c. 50 km SE. of Trabzon, 1200 m, V.1980, *Lebbink 17* (L). GÜMÜŞANE: Fecelem Mountain, near Gümüşane, among rocks, 2.VI.1862, *Bourgeau 221* (COI, G, JE, LD, MPU, P, UPS). Gümüşane, at Wang, among rocks, 28.V.1894, *Sintenis 5688* (JE, Z). Kirkpauli, near Gümüşane, among rocks, 10.VI.1894, *Sintenis 5688b* (FI, G, P). Kemaliye, Sandik, on wall, 26.V.1890, *Sintenis 2390* (JE). TUNCELİ: Moinzur Dag, above Ovacik, limestone rocks, 2800 m, 17.VII.1957, *Davis & Hedge 31229* (K). ELAZIG: Harput, Buslutasch, 20.V.1889, *Sintenis 375* (G, P, W). ÇORUH: Kordevan Dagi, near Kütül, limestone rocks, 2000 m, 28.VI.1957, *Davis & Hedge 30184* (K). ERZURUM: Ispir, growing from rock crevices below castle and along river, 1200 m, 21.VI.1968, *Barclay 722* (K). Between Bayburt and Erzurum, near Zazalar Hané, in cave, V.1853, *Huet du Pavillon s.n.* (BM, G, K, P). Karagol Dag, at the border of Böyükgöl, among pebbles, 2700 m, 31.VII.1894, *Sintenis 7007* (G, JE, K). MARDIN: Mardin, on rocky slope, 9.VI.1888, *Sintenis 1031* (G, P, WU, Z). Mardin castle, shady limestone rocks, 1200 m, 20.V.1957, *Davis & Hedge 28339* (K). Cudi Dag, above Hessana, near Silopi, 1500 m, under shady cliff, 1500 m, 11.V.1966, *Davis 42825* (E, K). SİRT: SE. of Pervari, upland plain, 1900 m, 16.VI.1936, *Frödin 201* (UPS). BITLİS: Kambos Dag, among shady limestone rocks, 1800 m, 31.VI.1954, *Davis & Polunin 23491* (BM, K). 20 Km S. of Bitlis, c. 1800 m, 27.V.1961, *Stutz 1441* (W). VAN: 6 Km from Timar to Van, limestone rocks, 1850 m, 3.VI.1966, *Davis 44182* (K). 2 Km NE of Van, among limestone rocks in shade, 1800 m, 5.VI.1966, *Davis 44280* (K). Between Van and Bitlis, spring 1879, *Barré de Lamy 2560* (G, JE). HAKKARI: Samdi Dag, disturbed ground on valley floor, 2250 m, VII.1965, *Rix 212* (K).

U.S.S.R. CAUCASUS: Terek, in crevices of rocks, 600 m, 6.IV.1867, *Hausknecht 800* (G, JE, P, W).

SYRIA. Tall Husayn, Harmal, among rocks, 1140 m, 24.IV.1943, *Davis 5801* (K). Falita, 'Jalaar House', 1950-2250 m, 22.VI.1943, *Davis 6631a* (K). Above Bludan, at foot of rocks, shady, 1800 m, 6.VI.1855, *Kotschy 55* (G, P, UPS). Ibid., Ayn Ansur, among rocks, 1950 m, 6.VI.1943, *Davis 6166a* (K).

LEBANON. 39 Collections in all. Above Aynat, 8.IX.1898, *Post s.n.* (K). Near Farayya, earthy places, 1500 m, 19.IV.1959, *Polunin 5333* (K). Djurd Hasrun, 13.VI.1886, *Blanche 484* (JE). Gadisha, V.1890, *Julien s.n.* (MPU). Above Arz Lubnan, 1846, *Boissier s.n.* (P). Arz Lubnan, 7.VI.1855, *Blanche 3710* (JE, P). Between Arz Lubnan and Aynat, in mountain ridge, 2400 m, 30.VII.1855, *Kotschy 701* (G, P, W). Near Bsharri, 23.VIII.1898, *Post s.n.* (B, BM). Near Balabakk, in mountain ridge, 1836, *Kotschy 700* (W). Jabal Sannin, alpine region, 2000-2300 m, 16.VI.1897, *Bornmueller 1315* (B, JE, P, W, WU). Bayrut, 25.III.1933, *Meinertzhagen s.n.* (BM). Jabal Ash Shaykh, 1800 m, 1863/1864, *Lowne s.n.* (BM, K). Ibid., W. slope, 1800 m, VI.1855, *Kotschy 577* (G, P, S, W). Ibid., foothills, IV/V.1945, *Norris s.n.* (BM).

ISRAEL. Nazerat, 1858, *Roth 313* (M). Between Nablus and Bethel, 31.V.1881, *Letourneux s.n.* (FI).

IRAQ. 30 Collections in all. N. of Rust, limestone, 2400-3000 m, 19.V.1951, *Thesiger 949* (BM). Karokh Mountain, E.-side, between Sir Waka and Dangala, slope of stony mountain, 1600-2000 m, 11.VI.1959, *Kass & Nuri 27610* (K). Sakri Sakran Mountain, near Rawandiz, alpine region,

2200 m, 23.VI.1893, *Bornmueller 1709* (B). Kuh Safin, upper region, 1400-1600 m, 21.V.1893, *Bornmueller 1749* (G, WU). Qandil range, E.-side of slope, 26.VIII.1957, *Rawi & Serhang 22478* (K). Algurd Dagh, near Berma Sard lake, 2800-3000 m, 3.IX.1957, *Rawi & Serhang 24782* (K). Sharanish, near Zakho, among rocks, c. 1600 m, 4/9.VII.1957, *Rechinger 10905* (W). Jabal Khan-tur, mountain side, 1700 m, 10.V.1947, *Rawi 8595* (K). Ibid., 11.V.1947, *Rawi 8699 & 8699a* (K). Pira Magrun, W. of Sulaymaniyah, scree slopes above tree line, 1800 m, V.1958, *Poore 596* (K). Avroman and Shahu, calcareous, 2700 m, VI/VII.1867, *Hausknecht 797* (G, K, W). Ibid., above Darimar, crannies in limestone rocks, 2000 m, 8.VI.1949, *Gillet 11854* (K).

IRAN. Below Sivik, in the shade of a rock, 2250 m, 20.V.1929, *Cowan & Darlington 1295* (K). Shahu Mountain, limestone, 2700 m, VIII.1865, *Hausknecht s.n.* (JE). Ibid., calcareous rocks, 2700 m, VII.1867, *Hausknecht 798* (G, P). Ibid., V.1909, *Strauss s.n.* (JE, WU, Z). Kuh-e Girdell, near Mian Takh, V.1910, *Strauss s.n.* (JE).

14. *Lamium glaberrimum* (K. Koch) Taliev

U.S.S.R. KRYM: Kozmo-Demian Monastery, on rubble slope, 6.VI.1900, *Bogosharov s.n.* (B). [The Russian handwritten label makes it impossible to give more information].

15.a. *Lamium purpureum* L. var. *ehrenbergii* (Boiss. & Reuter ex Boiss.) Mennema

TURKEY. Elmali, alpine region, 25.VI.1860, *Bourgeau s.n. p.p.* (G, P).

SYRIA. Ainette, 1660 m, 1858, *Anon. s.n.* (W). Near Halab, in field, calcareous soil, 15.III.1865, *Hausknecht 244 p.p.* (JE). Makmal Mountains, near the snow, VII.1822, *Ehrenberg 326* (G). Heights of Bludan, 23.IV.1878, *Post s.n.* (K). Jabal ash Shaykh, 8 or 9 km NE. of summit, to the ridge, 2150 m, 15.V.1927, *Berton 370* (P).

LEBANON. Al Batrun, in Ayn Kattur, near Baton, 3.VI.1880, *Blanche 86 p.p.* (G). Jabal Sannin, alpine region, 1.VII.1879, *Peyron 607* (G). Ibid., 2300 m, 16.IV.1897, *Bornmueller 1314* (B). Jabal al Kanisah, alpine top, 2000-2100 m, 24.VI.1910, *Bornmueller 12289* (B). Jabal al Baruk, above 1900 m, 24.V.1877, *Wall 2055* (P).

15.b. *Lamium purpureum* L. var. *hybridum* (Villars) Villars

FRANCE. SEINE-ET-OISE: St. Brice-sous-Forêt, 5.V.1889, *Mouillefarine s.n.* (COI). Sèvres, near Paris, IV.1825, *Vahl s.n.* (GOET, M). SAÔNE-ET-LOIRE: Autun, s.d., *Planchon s.n.* (MPU). CÔTE-D'OR: between St. Apollinaire and the railway near the Paquier fountain, fields, 2.IV.1902, *Gérard 826/2* (MPU). CREUSE: Ahun, fields, 20.III.1843, *Pailoux 915 bis* (COI, L, MPU, WAG). LOT-ET-GARONNE: St. Maurain, garden, III/IV.1889, *Arnaud s.n.* (COI). ARDÈCHE: St. Georges-les-Bains, IV/V.1932, *Kruseman & Kruseman s.n.* (L). PYRÉNÉES-ORIENTALES: Above Banyuls-sur-Mer, 20.IV.1913, *Noack s.n.* (ZT).

SWITZERLAND. SOLOTHURN: Grenchen, 1.IV.1906, *Lüscher s.n.* (Z). VAUD: Bex, 1838, *Schimper s.n.* (M). Near Bex, s.d., *Thomas 1446* (H, L, P, WAG). GENÈVE: Compétières, near Genève, s.d., *Moller s.n.* (B). Genève, Chemin des Savoises, s.d., *Correns s.n.* (M).

PORTUGAL. Bragança, Capela de S. Yorge, 11.IV.1943, *Carneiro s.n.* (COI). Ibid., road along the hedge of the seminary, 27.III.1941 & 4.IV.1943, *Carneiro 99* (COI). Arrifana, Guarda, 22.IV.1943, *Garcia 104* (COI). Barreiro, near Arrifana, Guarda, in forest, 11.IV.1944, *Garcia 276* (COI). Quinta das Covas, near Guarda-Gare, 20.IV.1943, *Garcia 101* (COI). Porto da Carne, tavern, Vale do Mondego, Guarda, 23.IV.1952, *Fernandes et al. 4127* (COI). Quinto do Prado, Guarda, IV.1945, *Fernandes s.n.* (COI, H). Louza, s.d., *Vianna de Lemos s.n.* (COI). Coimbra, between Estação and Choupal, 23.IV.1956, *Matos & Cardoso s.n.* (COI).

SPAIN. Catalonia, Cabanas, roadside, 26.III.1907, *Sennen 344* (ZT). SALAMANCA: Sierra de Pena de Francia, VI.1902, *Gandoger s.n.* (M). LERIDA: La Seo, 1928, *Sennen s.n.* (COI).

ITALY. ABRUZZI: Monte dei Fiori, s.d., *Orsini s.n.* (TO). PUGLIA: Barletta, Bruni, 1869, *de Candolle s.n.* (G).

MADEIRA. Santo da Serra, cultivated ground near the church, 5.IV.1973, *Hansen 500* (C).

MOROCCO. Tanger, dunes, III.1883, *Kersten 79* (JE). In the vicinity of Rabat, III.1970, *Andreas & Schotsman s.n.* (WAG).

ALGERIA. Djebel Bou Zegza, III.1885, *Letourneux s.n.* (P). Col des Oliviers, railway between Constantine and Philippeville, 7.IV.1912, *Thellung s.n.* (Z).

15.c. *Lamium purpureum* L. var. *incisum* (Willd.) Pers.

ICELAND. Bessastadir, 30.VIII.1947, *Whitaker s.n.* (BM).

SWEDEN. 53 Collections in all. Bomhus, forest, 6.VIII.1946, *Sundberg s.n.* (L). Uppland, Sing, *Trauwik*, 26.VI.1922, *Ringselle s.n.* (GB). Dalarna, Bengtsbo, near Säter, weed, 17.VII.1935, *Rübel & Ludi s.n.* (ZT). Värmland, Karlstad, 23.VIII.1901, *Hülphers s.n.* (BM). Ibid., Ölme, VII.1876, *Falk s.n.* (Z). Ibid., Karlskoga, Bofors, 27.IX.1881, *Reutermann s.n.* (GB, UPS). Strängnäs, near Långberget, in field, 12.VIII.1924, *Samuelsson 1352* (GB, L). Närke, Svennevad, Sörgården, 3.VII.1941, *Kjellmert s.n.* (GB). Västergötland, Kinnekulle, in the vicinity of Blomberg, 24.X.1913, *Stalin s.n.* (GB). Göteborg, Änggården, 16.V.1948, *Blom s.n.* (GB). Gotland, Bro, Eriks, 10.VI.1894, *Vestergren s.n.* (GB). Småland, Kalmar, 31.VII.1886, *Wickbom s.n.* (COI). Öland, S. Möckleby, border of arable field, 19.V.1965, *Norrman s.n.* (BM). Skåne, Svalöv, 7.X.1923, *Tedin 1353* (G, GB, L). Ibid., Lund, 1846, *Andersson s.n.* (UPS). Ibid., Malm, V.1894, *Johansson s.n.* (BM). Ibid., Ystadt, V.1897, *Engfeldt s.n.* (GB).

FINLAND. 430 Collections in all. Oulu, Korkeasaari, 1.IX.1878, *Mela s.n.* (H). Kajaani, Brahenkatu 8, inner court, 23.VII.1958, *Heikkinen s.n.* (H). Kyrkbacke, in garden, 3.IX.1905, *Dahl s.n.* (M). Iisalmi, near church, potato-field, 17.VII.1878, *Sahlberg & Sahlberg s.n.* (H). Vesanto, Vesijärvi, Jaakkola, heap of earth, 2.VIII.1967, *Nordström s.n.* (H). Kuopio, in field, X.1901, *Lönnbohm s.n.* (GB, H). Räisälä, Tomtaskoski, potato-field, 23.VII.1909, *Aro s.n.* (H). Satakunta, Hämeenkyrö, Kierikkala, Ollila, in garden, VII.1911, *Florström 894* (COI, GB, H). Musikaupunki, Iso Birkholma, 16.VI.1878, *Hollmén s.n.* (H). Punkalaidun, Orieniemi, garden in the centre of the village, 8.VIII.1972, *Suominen 2297* (H). Lojo, Jalassaari hohne, Ivars, pea-field, 25.VII.1943, *Lindberg s.n.* (GB, H). Tavastia, Tyrväntö, Lepaa, in garden, 17.VII.1952, *Pankakoski s.n.* (GB, H). Vehkalahti, Kitula, Lähdekorpi, tree-plantation, 13.VII.1967, *Fagerström s.n.* (H). Kirvu, Sairala, garden, 9.VIII.1942, *Kytoniemi s.n.* (H). Åland, Finström, near Godby, field, 20.VII.1881, *Björkstén s.n.* (H). Ibid., Sottunga, field, 4.VII.1972, *Nordström s.n.* (H). Salo, 31.VII.1932, *Inrén s.n.* (H). Tvärminne, 23.VI.1924, *Hallström s.n.* (H). Loio, Solhem, field, 7.VIII.1906, *Lindberg 338* (COI, H, M). Högfors, field, 10.VII.1926, *Salvén s.n.* (H). Kyrkslätt, Strömsby, orchard, 26.VIII.1910, *Lindberg s.n.* (H). Esbo, Svinö, 8.VIII.1869, *Granlund s.n.* (H). Helsinki, field, 9.IX.1924, *Tuomikoski s.n.* (H). Borga, potato-field, 20.VII.1924, *Hellström s.n.* (H). Pernaja, Kabbölen, potato-field, 15.VII.1953, *Kalela s.n.* (H). Pernä, Hardom, potato-field, 13.VIII.1953, *Klingstedt s.n.* (H). Pyttis, Mogenporto, Tuuskas, flower-border, 26.VII.1939, *Fagerström s.n.* (H). Kymi, Mussalo, Turankyla, potato-field, 5.VIII.1929, *Ulvinen s.n.* (H). Hamina, 14.VIII.1899, *Bergroth s.n.* (H). Aspö, Haapsaari, potato-field, 4.VIII.1950, *Fagerström s.n.* (H). Virolahti, Pyterlahti, inner court, 6.VII.1931, *Taube s.n.* (H).

DENMARK. Jylland, Skovgaard, vegetable field, 6.VIII.1945, *Scholz s.n.* (B). Ibid., near Holme, arable land, 10.VIII.1945, *Scholz s.n.* (B). Fyn, 24.VI.1928, *Wünstedt s.n.* (L). Jyderup, garden weed, VI.1965, *Hjorth-Olsen D42* (BM). Sjaelland, near Lyngby, field, 29.IV.1900, *Wünstedt s.n.* (G).

GREAT-BRITAIN. ORKNEY: Swanbister, IX.1852, *Syme 830* (COI). SCOTLAND: Near Edinburgh, 1836, *Shuttleworth s.n.* (M). Ibid., VI.1837, *Young s.n.* (ZT). Balgreen, Edinburgh, IX.1850, *Syme 831* (COI). Between Musselburgh and Dalkeith, 1.VI.1895, *Spragne s.n.* (L). ENGLAND: Yorkshire, Scarborough, VI.1852, *Anon. s.n.* (COI). Lancashire, Liverpool, roadside, 11.IV.1877, *Harbord s.n.* (H). Huntingdonshire, Holme, 20.IV.1885, *Linton s.n.* (GB). Ibid., 15.V.1888, *Linton s.n.* (ZT). Ibid., Norman Cross, V.1837, *Stevens s.n.* (M, ZT). Norfolk, Rockland, dry hedge bank, 3.V.1915, *Robinson 1361* (L). Suffolk, Barningham, 25.IX.1882, *Linton s.n.* (ZT). Ibid., S. of Easton Broad, sandy hedge bank, 13.V.1933, *Milne-Redhead 1899* (L). Gloucestershire,

Knightswood, Tickenham, 11.V.1929, *Sandwith & Sandwith s.n.* (L). Buckinghamshire, West Wycombe, cultivated ground, 25.V.1924, *Sandwith s.n.* (L). Bedfordshire, Westoning, at base of railway embankment, 75 m, 24.V.1950, *Milne-Redhead 6194* (COI). Cambridgeshire, Fen Road, Bassingbourn, among potatoes, 6.IX.1961, *Sell 61/622* (GB, H). Surrey, Fetcham, roadside, 75 m, s.d., *Burkill 139* (L). Dorset, Bailey Gate, 13.VIII.1890, *Linton s.n.* (GB).

NETHERLANDS. 273 Collections in all. WADDEN ISLANDS: Ameland, NW. of Hollum, near lighthouse, 21.VIII.1970, *Mennema 1610* (L). Schiermonnikoog, along Badweg, waste ground, 24.VIII.1956, *van Ooststroom 19803* (L). FRIESLAND: Ferwerd, flax-field, 2.VII.1955, *van der Ploeg 1124* (L). GRONINGEN: Appingedam, field, V.1942, *van Borssum Waalkes 6115* (L). DRENTHE: Annen, VII.1865, *de Vries s.n.* (NBV). OVERIJSSSEL: Zwolle, Schellerlure, vegetable garden, VII.1907, *Lako s.n.* (L, NBV). GELDERLAND: Between Ruurlo and Groenlo, roadside at a ditch, V.1886, *Ensink s.n.* (L). UTRECHT: Between Utrecht and De Bilt, s.d., *van der Trappen s.n.* (NBV). NOORD-HOLLAND: Kennemerduinen, in 'Halve Bos', in *Betula*-grove, 26.V.1952, *van Ooststroom 15706* (L). Amsterdam, road to Zeeburg, clayish arable land, 17.V.1872, *Oudemans 816* (AMD, GRO). Naarden, summer 1933, *Bottelier s.n.* (L). ZUID-HOLLAND: Katwijk-aan-Zee, dunes N. of mouth of river Rijn, at the border of a field, 11.IV.1952, *van Ooststroom 15615* (L). Oegstgeest, Groene Kerkje, grassy roadside, 25.IV.1948, *van Ooststroom 9834* (L). Rotterdam, St. Jobsweg, waste ground, 15.IX.1966, *Mennema 699* (L). Sommelsdijk, Christoffeldijk, at the border of a field, 2.VII.1968, *van Ooststroom 24789* (L). ZEELAND: Between Gapinge and Serooskerke, arable land, VIII.1888, *Lako s.n.* (AMD). Near Hoek, on field, 21.VIII.1859, *Walraven 385* (BM, L, MPU, P, WAG). NOORD-BRABANT: Roosendaal, N. of watermill, bank of the Molenbeek, 14.IV.1937, *Sloff 218* (NBV). LIMBURG: E. of Lomm, near Venlo, grassy edge of field, 29.IV.1975, *Adema 436* (L). Nuth, 25.VII.1916, *de Wever s.n.* (L).

BELGIUM. OOST-VLAANDEREN: Ichtegem,, Bois de Wijnendale, uncultivated field, 47 m, 17.IV.1975, *Stieperaere 1596* (M). ANTWERPEN: Deurne, cultivated field, 18.IV.1878, *Vandenbroeck s.n.* (AWH). HAINAUT: Near Maisières, on fields, 23.IV.1862, *Martinis 385 bis* (AWH, L, WAG). Obourg, fields, VIII.1861, *Martinis s.n.* (L).

FRANCE. EURE: Bois-Jérôme, 11.XI.1902, *Toussaint s.n.* (M). SEINE-ET-OISE: Le Perray, cultivated field, 100 m, IX., *Juglar s.n.* (ZT). St. Brice-sous-Forêts, 5.V.1889, *Mouillefarine s.n.* (COI). VILLE-DE-PARIS: Bois de Boulogne, sandy glade, 20.IV.1846, *Kralik 915* (BAS, G, L, MPU, P, WAG). Ibid., V.1856, *Kok Ankersmit s.n.* (L). MEURTHE-ET-MOSELLE: Nancy, Plateau de Malzéville, waste ground, Jura-limestone, 3000-350 m, 11.IV.1906, *Garnier s.n.* (COI). Ibid., fields, Jura-limestone, 300 m, 14.IV.1908, *Garnier s.n.* (GB). Ibid., 26.IV.1908, *Garnier s.n.* (L, MAAS). Malzéville, fields, 20.V.1908, *Petilmengin s.n.* (M). HAUT-RHIN: Habsheim, shifted ground, 240 m, 20.V.1973, *Rastetter 6805* (L, M). MAYENNE: Martigné, cultivated ground, s.d., *Anon. s.n.* (P). MAINE-ET-LOIRE: Combrée, cultivated ground, clayish soil, 2.II.1863, *Ravain 1120 bis* (BM, COI, G, GB, H, L, M, MPU, P, WAG). SARTHE: Le Mans, cultivated ground, 8.VI.1903, *Coilliot s.n.* (B). LOIR-ET-CHER: La Bidaudière, near Maray, 26.VII.1862, *Deséglise s.n.* (K). CHER: Baugy, 22.VIII.1903, *Lambert s.n.* (P). NIEVRE: Dornes, 22.III.1897, *Lassimonne 780* (COI). CÔTE-D'OR: Auxonne, sandy field, 12.IV.1964, *Litzler s.n.* (ZT). SAÔNE-ET-LOIRE: Branges, near Autun, in field, 11.III.1873, *Gillot s.n.* (ZT). LOIRE: In the vicinity of Montbrison, walls, 18.IV.1867, *le Grand 1120* (COI, G, GB, GOET, L, M, MPU, P, Z). Andrézieux, along the Loire river, uncultivated field, 14.IV.1872, *le Grand s.n.* (ZT). RHÔNE: Lyon, La Pape, s.d. *Jordan s.n.* (ZT). ISÈRE: Grenoble, on rocks, 21.III.1912, *Görz s.n.* (BM). LOT-ET-GARONNE: St. Maurin, garden, III/IV.1889, *Arnaud s.n.* (COI). HAUTES-ALPES: Monétier, garden, 25.VII.1929, *Faure s.n.* (MPU). AVEYRON: La Salvétat, Gorgenuie, 28.VIII.1866, *Gandoger s.n.* (K). HAUTE-GARONNE: Toulouse, s.d., *Cauvet s.n.* (AWH). HÉRAULT: Montpellier, 1864, *Loret s.n.* (K). ALPES-MARITIMES: St. Martin-d'Entraunes, uncultivated field, 10.V.1878, *Reverchon s.n.* (AWH). ARIÈGE: Foix, vineyard, 10.III.1889, *Giraudias s.n.* (COI). CORSE: Ajaccio, roadside, 7.III.1909, *Thellung s.n.* (BAS, Z).

GERMANY. SCHLESWIG-HOLSTEIN: Kiel, IV.1910, *Christiansen s.n.* (GB, MAAS, MPU). Kellenhusen, cultivated field, VII.1906, *Fitschen s.n.* (M). Hamburg, road to Bahrenfeld, 12.V.1892, *Bruns s.n.* (L). Ibid., Rolandsmühle, vegetable field, 1861/1862, *Klatt s.n.* (B). Ratzeburg, near Carlow, fields, 25.VIII.1883, *Köppel s.n. p.p.* (L). Ibid., near Stove, 22.V.1885, *Köppel s.n.* (B). MECKLENBURG: Stralsund, field, autumn 1889, *Berg s.n.* (M). Ibid., 6.XI.1891, *Berg s.n. p.p.* (H). Ibid., s.d., *Schnelle s.n.* (B). Neuenkirchen, near Greifswald, V.1856, *Arnds s.n.* (B).

Gütskow, near Pentiner Fischerhaus, 25.VIII.1880, *Ross s.n.* (M). Lübbersdorf, road to Neu-Pennewitt, forest border, 3.X.1910, *Hahn s.n.* (B). NIEDERSACHSEN: Norderney, cultivated ground near inn, VIII.1885, *Scheele s.n.* (Z). Misselwarden, V.1896, *Gerken s.n.* (GB). Varel, s.d., *Boeckeler s.n.* (GB, L). BRANDENBURG: Lenzen, IX.1882, *Schütz s.n.* (GOET). NORDRHEIN-WESTFALEN: Minden, s.d., *Boeckeler s.n.* (PR). Coesfeld, edge of field, 6.IX.1968, *Mennema 1086* (L). Münster, s.d., *Bönninghausen s.n.* (L). Ibid., s.d., *Schultes s.n.* (L). Hamm, V.1883, *Runge s.n.* (M). Ibid., V.1887, *Runge s.n.* (M). Holzwickede, garden, 22.VIII.1881, *Demandt s.n.* (M). Ibid., fields, 10.X.1883, *Demandt s.n.* (Z). BAYERN: Landshut, s.d., *Schultes s.n.* (L).

SWITZERLAND. Near Validière, cultivated ground, 8.IV., *Anon. s.n.* (M). VAUD: In the vicinity of Midde, near Payerne, cultivated ground, s.d., *Chavin s.n.* (L). In the vicinity of Bex, in field, s.d., *Anon. 66* (H, M). Bains de Lavey, IV., *Anon. s.n.* (M). GENÈVE: Banks of the river Arve, VI.1860, *Bernet s.n.* (H). Compesières, garden, II.1854, *Chavin 1743* (BM, P, WAG).

AUSTRIA. TIROL: Near Kitzbühl, c. 1850, *Traunsteiner 1478* (WAG).

POLAND. Swinoujście, 'Westermole', 24.IX.1893, *Anon. s.n.* (GOET). Polczyn Zdroj, potato-field, *Römer s.n.* (M). Braniewo, between the railway station and 'Bullenteich', fields, 6.VI.1882, *Seijeller s.n.* (M). Olsztyn, garden, 1.VIII.1924, *Steffen s.n.* (GB, M).

PORTUGAL. Lameiros de Lamelas, 23.VI.1928, *Miranda Lopes 613* (COI). Vale Pradinhos, 5 km of Macedo, road of Macedo to Bragança, 13.VI.1958, *Fernandes et al. 6282* (COI). Front of Castelo Bom, road of Guarda to Vilar Formoso, 19.IV.1952, *Fernandes et al. 4011* (COI).

SPAIN. BURGOS: Ayuelas, hedges, 22.IV.1906, *Sennen s.n.* (H, ZT). TARRAGONA: cross-road of road from Valls to Tarragona, Francoli nursery-garden, 27.II.1962, *Veth & Koopmans s.n.* (L). BARCELONA: Riera de Vallvidrera, Tibidabo-massive, 19.IV.1924, *Sennen 5039* (MPU).

ITALY. PIEMONTE: Val d'Aosta, Cogne, potato-field, c. 1550 m, 11.IX.1966, *Sulger-Büel s.n.* (ZT). Vallebona, near Bordighera Liguria, 8.V.1901, *Bicknell s.n.* (TO). VENEZIA: Giardino Giusti, wooded slope, c. 80 m, 12.V.1951, *Merxmüller 14233* (M). SARDEGNA: Monte Rasu, Catena del Marghine, *Quercus pubescens*-forest, 24.VI.1923, *Schmid s.n.* (Z). Monte Linas, 1000 m, 1.VI.1932, *Schmid s.n.* (Z). SICILIA: Isole Lipari, San Elmo, pumice soil, 28.IV.1877, *Lojacono s.n.* (PAL). Isole Lipari, Pirrera, 28.IV.1877, *Lojacono s.n.* (PAL).

U.S.S.R. 36 Collections in all. BALTIC DIVISION: Vormsi, orchard, 30.VI.1926, *Eklund s.n.* (H). Haapsalu, 'Horm', cultivated ground, 27.VI.1912, *Lindberg s.n.* (H). Vana-Vändra, 'Ehall', agricultural land, 31.VIII.1905, *Buch s.n.* (H). Saaremaa, between Nassa and Jerve, potato-field, 25.VIII.1907, *Kupffer 23109* (GB). Ibid., S. of Kellamäe, W. of Kuressaare, 18.V.1901, *Kupffer 13194* (GB). Tartu, s.d., *Anon. s.n.* (LE). Sovetsk, cultivated ground, VII.1879, *Heidenreich s.n.* (GB, M, TO, ZT). Kalingrad, 'Koenigsthor', fields, 4.X.1873, *Baenitz s.n.* (GB, Z). Ibid., 'Fliedermühle', fields, 7.V.1874, *Baenitz s.n.* (COI, L). Ibid., 'Liep', fields, 29.IX.1877, *Baenitz s.n.* (L, P, Z). Nizovye, arboricultural school, 13.VII.1863, *Körnicker s.n.* (Z). Gusev, near 'Sodeiken', fields, 16.X.1877, *Peter s.n.* (L). Yasnaya Polyana, near Nesterov, roadside, 18.V.1884, *Kühn s.n.* (L). CENTRAL DIVISION: Lesogorskiy, potato-field, 22.VIII.1888, *Lindén s.n.* (H). Seleznévka, garden weed, 11.VII.1933, *Kannisto s.n.* (H). Vyborg, 25.VII.1934, *Mukamo s.n.* (H). Volkovo, potato-field, 9.VIII.1914, *Pesola & Linkola s.n.* (H). In the vicinity of Leningrad, in field, VI/IX.1860, *Herb. Fl. Ingrica 501* (H p.p., K). Moskva, S. border, cultivated ground, 6.IX.1962, *Skvortsov s.n.* (M). Tula, near Melechovka, in garden, 9.VIII.1897, *Zinger 28* (H).

JUGOSLAVIA. Serbia, Zelenska Stena, on rocks, V.1868, *Pancic s.n.* (GOET).

ROMANIA. Baile Herculane, summit of Suscubii, limestone rocks, 1300 m, 24.VI.1905, *Lindberg s.n.* (H).

GREECE. KRITI: Levka Ori, Monte Psilaphi, N.-slope, Selinos, among boulders, 26.IV.1942, *Rechinger 12373* (BM, G, W). Ibid., Xyloskalo pass, c. 1230 m, 1.V.1978, *Willemsse 25* (L).

TURKEY. BILECIK: Boz Dag, s.d., *Bernström 82* (K). IÇEL: Anamour, IV.1872, *Pérouin s.n.* (K).

SYRIA. Haleb, in orchard, III.1867, *Hausknecht s.n.* (K p.p., P).

ALGERIA. Ain Caya, 1899, *Battandier s.n.* (P). Saïda, cultivated ground, 12.II.1872, *Warivey s.n.* (K). Djebel el Assa, glade in *Quercus*-forest, c. 2000 m, 19.V.1901, *Hochreutiner 383* (P). In the vicinity of Algiers, St. Eugène, Diamandreis, banks, 14.II.1893, *Meyer 5661 vis p.p.* (F). Bône, road of Ste Anne to the orphanage of Ste Monique, 6.III.1890, *Luizet s.n.* (P).

FALKLAND ISLANDS. East Falkland, Stanley garden, s.d., *Sladen 11911* (BM).

15.d. *Lamium purpureum* L. var. *moluccellifolium* Schum.

SWEDEN. Närke, Hjersta, VI.1900, *Bägenholm s.n.* (BM). Östergötland, Skänninge, s.d., *Goej s.n.* (UPS). Kallebäck, V.1905, *Palmer s.n.* (UPS).

FINLAND. Oulu, s.d., *Nylander s.n.* (H). Kasurila, Kuopio, vegetable garden, 9.IX.1919, *Kyyhkynen s.n.* (H). Heinävesi, 24.VI.1974, *Savola s.n.* (H). Rauma, seminary park, 4.VI.1938, *Hayrén s.n.* (H). Padasjoki, Virtaila, Hoapola, at the border of sandy ground, 17.VI.1954, *Lindholm s.n.* (H). Iitti, Hietalahden, main road, 21.VII.1925, *Aalberg s.n.* (H). Åland, Finström, Godby, in field, 26.VI.1878, *Arrhenius & Kihlman s.n.* (H). Ibid., Björkö, Kumlinge, 29.VIII.1923, *Palmgren & Palmgren s.n.* (H). Mynämäki, garden, 25.VII.1897, *Cajander s.n.* (H). Pohja, Pinjainen, dry garden, 4.VI.1958, *Alanko 18* (H). Lohja, Koivala, 2.VI.1910, *Leino s.n.* (H). Hyvinkää, Suolijärvi, roadside, 10.VI.1933, *Eloranta s.n.* (H). Helsinki, Käpyla, 2.VI.1926, *Aiers s.n.* (H). Tuusula, Hyrylä, 31.V.1959, *Leppänen s.n.* (H). Helsinki, Herttoniemi, dry field, 7.VI.1954, *Manner s.n.* (H).

DENMARK. Jylland, Grøndal, 3.V.1890, *Raunkjaer s.n.* (COI). Jederup, garden weed, VI.1961, *Hjorth Olsen s.n.* (BM). Møn, Klintholmhavn, border of rapeseed-field, 7.VI.1968, *Mennema 980* (L).

GREAT-BRITAIN. ENGLAND: Somerset, Uphill Rocks, at the foot, 21.IV.1922, *Sandwith & Sandwith s.n.* (L). Somerset, near Hallatrow, 29.IV.1916, *Sandwith & Sandwith s.n.* (L). Berkshire, near Aldermaston railway station, arable field, 13.V.1956, *Sandwith 4530* (L).

NETHERLANDS. FRIESLAND: Hantum, rapeseed-field, 3.V.1952, *van der Ploeg 1124-8* (L). Between Kimsward and Pingjum, rapeseed-field, 18.V.1966, *van der Ploeg s.n.* (L). DRENTHE: Zeegserloopje, debouchement, ditch bank, 28.V.1975, *Bakker s.n.* (L). NOORD-HOLLAND: IJmuiden, on transported clay, 22.V.1962, *Groenhart s.n.* (AMD). Amsterdam, s.d., *Anon. s.n.* (L). Ibid., Kromboomsloot, uncultivated ground, 7.V.1983, *Westhoff s.n.* (L).

BELGIUM. OOST-VLAANDEREN: Munte, V.1881, *Schammel s.n.* (AWH).

FRANCE. VILLE-DE-PARIS: In the vicinity of Paris, s.d., *Vahl s.n.* (C). SEINE-ET-OISE: Sèvres, near Paris, IV.1825, *Vahl s.n.* (GOET). GARD: Sommières, Rhône, 28.IV.1877, *Gandoger s.n.* (L).

GERMANY. SCHLESWIG-HOLSTEIN: Varel, s.d., *Boeckeler s.n.* (ZT). Ottensen, near Hamburg, waste heap, s.d., *Klatt s.n.* (L). Niendorf, near Hamburg, VII.1864, *Klatt s.n.* (B). MECKLENBURG: s.d., *John s.n.* (L). Güstrower Brunnen, forest, V/VI., *John s.n.* (L). Near Greifswald, fields, V.1867, *Minks s.n.* (B, GB). NIEDERSACHSEN: Osnabrück, s.d., *Anon. s.n.* (GOET). BRANDENBURG: Brandenburg a/H, near Beetzsee, in field, 10.IV.1921, *Görz s.n.* (BM). NORDRHEIN-WESTFALEN: Minden, Steinlake, 1823, *Bernhardi s.n.* (TO). Ibid., s.d., *Weihe s.n.* (L). Hamm, cultivated ground, V.1899, *Runge s.n.* (M). Ibid., in field, 27.IV.1890, *Runge s.n.* (M).

SWITZERLAND. GENÈVE: Jardins de Plainpalais, VI.1876, *Sandos 34* (L).

U.S.S.R. BALTIC DIVISION: Aseri, 20.V.1913, *Syreishishikov s.n.* (LE). Nizovye, near the Botanical Garden, 27.IV.1866, *Körnicker s.n.* (L).

15.e. *Lamium purpureum* L. var. *purpureum*

ICELAND. Vestmannaeyjar, Kaupstadur, Heimaeij, British Vice Consuls' potato patch, 15 m, 2 IX.1950, *Crosby-Browne s.n.* (BM).

FAERÖER. Saudi Island, sand, 29.VIII.1897, *Harz & Ostenfeld s.n.* (K).

NORWAY. Nordland, Vesterålen, Hadseløy, Ongstad, cultivated field, 14.VIII.1966, *Smith 4775* (BM).

SWEDEN. Stora Skedvi, Stocksbro, in garden, 22.VII.1918, *Samuelsson 1351* (G, L). Gävle, Lövudden, garden-weed, 11.VII.1959, *Nannfeldt 16025* (COI, G). Uppsala, s.d., *Andersson s.n.* (L). Ibid., Botanical garden, weed, 17.IX.1960, *Alm 4090* (COI, G, ZT). Ölme, VII.1875, *Falk s.n.* (COI). Fiskebäckskill, roadside, 25 m, 16.IX.1961, *Duyffes & Kanis 376* (L). Vallsjön, VI.1876, *Hyllén-Cavallius s.n.* (COI).

FINLAND. 251 Collections in all. Iisalmi, potato-field, 17.VII.1878, *Sahlberg & Sahlberg s.n.* (H). Pöljä, rocks, 24.IX.1920, *Kyyhkynen s.n.* (H). Teisko, near Teiskola, in garden, 2.VII.1919, *Idman 1297* (COI, G, H, P). Satakunta, Tyrvää, in garden, 26.VII.1915, *Heikiheimo 1296* (COI, G, H, P). Uusikaupunki, Björkholm, 16.VI.1878, *Hollmén s.n.* (H). Ypäjä, Kuusjoki-Perttula,

7.VI.1959, *Kantee s.n.* (H). Uhkola, s.d., *Bonsdorff s.n.* (H). Jääski, Haikola, in garden, 7.VIII.1913, *Valle 892* (COI, G, H, P). Järvenkyla, Sauvo, Ryssänlampi, as weed on the edges of a hay-field, 30.V.1961, *Alava 2627* (COI, ZT). Helsinki, field, 10.VII.1926, *Salvén s.n.* (H). Emsalö, tongue in sea, artichoke-field, 17.VII.1917, *Boldt s.n.* (H).

DENMARK. E. of Aebeltoft, roadside, 8.V.1968, *Fl. Jul. Exs. 399* (L). Møn, Klintholmhavn, along colerapee-field, 7.VI.1968, *Mennema 981* (L). Copenhagen, in field, s.d., *Lange s.n.* (L).

GREAT-BRITAIN. ENGLAND: Gayton, Cheshire, roadside, 13.IV.1977, *Pl. Brit. Exs. II 30* (L). Scarborough, Castle Holmes, 24.IX.1858, *Anon. s.n.* (COI). Holine-next-the-sea, Norfolk, ruderal area, 3.IX.1977, *Mennema 2631* (L). Fleam Dyke, Cambridgeshire, roadside, 14.V.1962, *Sell 62/84* (H). Between Combe Dwigle and Mectury-on-Iry, Gloucester, weed on allotment-ground, 30.III.1935, *Sandwith & Sandwith s.n.* (L). By the Avon near Ira Mills, Gloucester, 7.III.1935, *Sandwith & Sandwith s.n.* (L). Near Maldon, Beeleigh Abbey, Essex, 11.IV.1954, *Jermyn 78 & 78a* (L). Tickenham, Knightswood, Somerset, 10.V.1938, *Sandwith s.n.* (L). Berrow, Somerset, 20.IV.1935, *Sandwith & Sandwith s.n.* (L). Leatherhead, Surrey, weed of cultivated ground, 75 m, s.d., *Burkill 1345* (L). *Ibid.*, 75 m, 17.V.1958, *Burkill 1462* (L). *Ibid.*, The Mount, sprawling herb on bare ground, 75 m, 26/31.XII.1959, *Burkill 2200* (L). CHANNEL ISLANDS: Jersey, NW. of Gorey, roadside, 29.VII.1977, *Mennema 2599* (L).

NETHERLANDS. 194 Collections in all. WADDEN ISLANDS: Terschelling, Midsland, 13.VI.1950, *Vink 70* (L). GRONINGEN: Near Nieuw-Beerta, arable land, clay soil, 23.VII.1938, *Nannenga s.n.* (H). FRIESLAND: Kollumerpomp, corn-field, 6.V.1950, *van der Ploeg 1125-5* (L). DRENTHE: Valthermond, bank of a ditch along field, 17.III.1980, *Weeda s.n.* (L). OVERIJSEL: Between Delden and Almelo, near the bridge over the Twickeler rivulet, along cycle track, on heap of stones, 28.VII.1948, *van Royen 437* (L). GELDERLAND: Sonsbeek, near Arnhem, rough area, 10.IV.1898, *des Tombe 1049* (L). UTRECHT: Zuilestein, near Amerongen, in field, 20.X.1969, *Mennema 1419* (L). NOORD-HOLLAND: Amsterdam, roadside, 27.IV.1869, *Oudemans 342* (AMD). ZUID-HOLLAND: Wassenaar, Zuidwijk, weed in flower garden, 10.V.1955, *van Ooststroom 18068* (L). ZEELAND: Burgh, Schouwen, Boeyes Bosch, sandy soil, 30.III.1969, *Mennema 347* (L). NOORD-BRABANT: Schijndel, at culvert, IV.1983, *Peters s.n.* (L). LIMBURG: Kamerig, sunken way to the Geul valley, 9.IV.1966, *Mennema 366* (L).

BELGIUM. Belgium, s.d., *Lejeune & Courtois 292* (L, P). BRABANT: Laeken, cultivated field, 22.IV.1924, *Guns s.n.* (COI). Uccle, Chasseur vert, 5.VII.1879, *Evrera s.n.* (MPU). Yvoir, 24.IV.1934, *Huysman s.n.* (L). Louette-Saint-Pierre, cultivated field, 20.VI.1866, *Gravet s.n.* (L).

FRANCE. Laval, glacier, 30.III.1888, *Gagnaire s.n.* (MPU). NORD: Ghyvelde, in hedge of *Colutea arborescens*, 28.V.1969, *Mennema 1115* (L). YVELINES: Noisy-le-Roy, 13.VI.1908, *Happe s.n.* (H). SEINE-ET-MARNE: Bourron, 16.IV.1953, *van Soest 35572* (L). MEUSE: Liny-devant-Dun, border of *Quercus-Fagus*-forest and cornfield, 6.V.1971, *Kruyt & van Alphen s.n.* (L). BASSE-RHIN: Haguenau, VII.1853, *Schmidt s.n.* (L, WAG). ALLIER: Yzeure, IV.1890, *Lassimonne 538* (COI). AIN: 2 Km W. of Pont-de-Veyle, road embankment by the river Saône, 4.V.1968, *Luotamo s.n.* (H). RHÔNE: Bron, near Lyon, Boulevard Pinel, in garden, 7.XII.1967, *Luotamo s.n.* (H). HAUTES-ALPES: Monétier, garden, 20.VII.1897, *Faure s.n.* (MPU). Vannières, along wall, 1200 m, 9.V.1971, *Kruyt & van Alphen* (L). HAUTE-GARONNE: Toulouse, 22.IV.1889, *Giraudias s.n.* (COI). TARN: Albi, IV.1894, *Anon. s.n.* (ZT). BOUCHES-DU-RHÔNE: Between Stes Maries-de-la-Mer and Pâtis-de-la-Trinité, roadside, 4/15.IV.1977, *Exc. Leeuwenh. Inst. 7* (L). ALPES-MARITIMES: Grasse, old wall, 15.III.1965, *Gavelle s.n.* (COI). CORSE: Bastia, field, III.1830, *von Salis s.n.* (ZT). *Ibid.*, shady and ruderal, 75 m, 4.X.1911, *Spencer s.n.* (ZT). Ajaccio, roadside, among herbs, 11.III.1884, *Anon. 74* (L).

GERMANY. 30 Collections in all. NIEDERSACHSEN: Near Bergedorf, s.d., *Anon. s.n.* (COI). Pagenberg, near Goettingen, 2.V.1912, *Voigt 1996* (L). MECKLENBURG: Carlow, field, 25.VIII.1883, *Köppel s.n.* (L, P). SACHSEN-ANHALT: Halle, s.d., *Anon. s.n.* (L). BRANDENBURG: Löwenberg, in garden, IX.1811, *Persoon s.n.* (L). Berlin, Rixdorf, 19.V.1882, *Hoffmann s.n.* (COI). NORDRHEIN-WESTFALEN: Sauerland, Bigge-Olsberg, among paving bricks, 12.IV.1971, *Mennema 1746* (L). Königswinter, near Bonn, in garden, 6.IV.1859, *Hasskarl s.n.* (L). Near Koblenz, vineyard, s.d., *Wirtgen 980a* (L). THÜRINGEN: Gotha, 1800, *von Bridel-Brideri s.n.* (H). Lausnitz, near monastery, 9.VI.1892, *Haussknecht s.n.* (ZT). BADEN-WÜRTTEMBERG: Heidelberg, vineyard, s.d., *Schimper s.n.* (L). BAYERN: Nürnberg, near Forchheim, pasture, 25.III.1951, *Moggi s.n.* (FI). München, waste land and field margin, 470 m, 17.IX.1972, *Uotila 20937* (H).

SWITZERLAND. SOLOTHURN: Grenchen, 1.IV.1906, *Lüscher s.n.* (Z). BERN: Near Oberlindach Wald, 21.XI.1897, *Popta s.n.* (L). VAUD: Lausanne, cultivated field, s.d., *Chavin s.n.* (L). Chailly, IV.1880, *Brenner s.n.* (H). Clarens, III.1880, *Brenner s.n.* (H). Leysin, 1500 m, 14.V.1921, *van Soest 2421* (L). GENÈVE: Laconnex, in vineyard, 440 m, 17.IV.1963, *Vautier & Bersier 154* (H). Chancy, 1860, *Bernet s.n.* (H). GRAUBÜNDEN: Plessur area, Prada, garden, 1180 m, 22.V.1920, *Beger s.n.* (Z). Davos, rubbish dump, 1563 m, 1.XI.1918, *Noack 183* (Z). TICINO: Bosco, s.d., *Elzi s.n.* (Z).

AUSTRIA. OBER-ÖSTERREICH: Aisterhaim, s.d., *Kelk s.n.* (COI). NIEDER-ÖSTERREICH: Wien, roadside, s.d., *Oudemans s.n.* (L). Wienerwald, VIII.1898, *Tavares s.n.* (COI). Weissenbach, near Gloggnitz, field, VIII.1891, *Keller s.n.* (W). Wöppling, near Ternitz, 23.IV.1916, *Ronniger s.n.* (W).

POLAND. Rugia, near Bobbin, 18.V.1855, *Anon. s.n.* (L). Kwidzyn, field, VI.1906, *Scholz s.n.* (M). Wrocław, in garden, VI.1876, *Uechtritz s.n.* (G). Toruń-Bielany, in grass near library, 25.IV.1975, *Gugnacka 124* (L). Klekotowo, 7 km E. of Drokiczyn, field, 20.VIII.1980, *Heukels 1751* (L). Slask, Biala Prudnicka, in garden, 17.VII.1961, *Fl. Siles. Exs. 520* (H). Pradnik Czerwony, near Krakow, in field, 27.V.1952, *Pl. Polon. Exs. 568* (BM, G, H, L). Skrzydlna, in cultivated field, 7.V.1971, *Fl. Polon. Exs. 367* (H).

CZECHOSLOVAKIA. Cheb, 'Konradsgrün', rubbish, 15.VII.1907, *Jahn s.n.* (L). Pruhonice, near Praha, field, 300 m, 26.V.1958, *Nitka 69* (COI, H). Brno, Vinohradky, edge of field, c. 350 m, 26.V.1963, *Slavonovsky 1463* (H, L).

ROMANIA. Lapusna, near Cojusna, in field, c. 50 m, 3.V.1937, *Arvat 2043* (L). Tirddenii Mari, 1840, *Gay s.n.* (K). Sibiu, shady, IV.1849, *Schur 3204* (P). Yrechesti, uncultivated field, c. 130 m, 25.IV.1971, *Sava 266* (L).

U.S.S.R. NORTHERN DIVISION: Vyborg, Kärenmäki, garden, 15.VI.1942, *Töllinen s.n.* (L). BALTIC DIVISION: Vormsi Island, Hullo, orchard, 27.VI.1926, *Eklund s.n.* (H). Kaliningrad, 'Sackheimer Thor', field, 16.X.1872, *Baenitz s.n.* (ZT). CENTRAL DIVISION: Near Leningrad, 1802, *Anon. s.n.* (H). Moskva, Ostankino, *Quercus*-forest, 25.V.1962, *Abramova s.n.* (H). Tula, Melekhovka, garden, 9.VIII.1897, *Zinger 28* (MPU). Kiev, s.d., *Trautvetter s.n.* (P). SOUTH-WESTERN DIVISION: Dublany, in garden, VII., *Rosl. polsk. 77* (L). KRYM: Simferopol, 29.IV.1900, *Andrejew 1084* (H).

PORTUGAL. 39 Collections in all. Bragança, road along the hedge of the seminary, 4.IV.1943, *Carneiro 99a* (COI). Vimioso, Valle de Frades, VI.1888, *de Mariz s.n.* (COI). Larinho, near Moncorvo, V.1887, *de Mariz s.n.* (COI). Castelo de Paiva, IV.1898, *Salerna s.n.* (COI). Celorico da Beira, edge of a cultivated field, 23.IV.1952, *Fernandes et al. 4125a* (COI). Coimbra, IV.1887, *d'Araujo & Castro 1015a* (COI). Ibid., Setes Fontes, III.1888, *Moller 499* (COI, P). Unhais da Serra, near Covilha, s.d., *Vaz Serra s.n.* (COI). Beira Baixa, Pampilhosa da Serra, 27.III.1956, *Brito s.n.* (COI). Quinto do Prado, Guarda, IV.1945, *Fernandes s.n.* (COI, H). Marinha Grande, III.1886, *Pimentel s.n.* (COI). Sernache do Bomjardim, College, in hedge, 3.V.1889, *Calixto Netto 103* (COI). Castelo de Vide, in field, 6.IV.1963, *Paira et al. 8907* (COI). Valongo, III.1883, *Schmitz s.n.* (COI). Estremadura, Torres Vedras, in bank of railway, 27.III.1953, *da Silva 1452* (COI). Lisboa, Arcos das aguas livres, V.1880, *Coutinho s.n.* (COI). Caparide, near Cascais, IV.1887, *Coutinho 1015* (COI). Alto-Alentejo, Elvas, Quinta de Sta. Eita, waterworks, 24.I.1954, *Guerra 122* (COI).

SPAIN. GERONA: Notre Sierra de la Salud, field, 1000 m, 16.IX.1920, *Sennen s.n.* (MPU). MADRID: Aranjuez, in field, 30.III.1926, *Lindberg 103 & 138* (H).

ITALY. 24 Collections in all. PIEMONTE: Domodossola, III/V.1888, *Rossi s.n.* (FI). Oropa, near Pissa Mountains, 24.VII.1918, *Ferrari s.n.* (TO). Giaveno, in hedge, 6.III.1921, *Fontana s.n.* (TO). Alba, ruderal ground, 1816, *Bertero s.n.* (TO). Cuneo, in garden, 16.IV.1864, *Romano s.n.* (TO). LOMBARDIA: Milano, 4.V.1832, *Splitgerber s.n.* (L). TRENINO: Bolzano, vineyard, 1830, *Hausmann 292* (L). Riva, uncultivated field, 70 m, V.1908, *Porta s.n.* (TO). VENEZIA: Between Puise and Meda, Veneto, rocks, 28.VII.1919, *Vaccari s.n.* (FI). TOSCANA: Near Cassale, III. 1869, *Negri s.n.* (TO). PUGLIA: Barletta, Bruni, 1860, *de Candolle s.n.* (G). SARDEGNA: Fiorentino, Bultei, forest, granitic soil, 670 m, 2.IV.1912, *Fiori s.n.* (FI). Near Aritzo, 1935, *Porru 74* (FI). Iglesias, N. slope, siliceous soil, 600 m, *Fiori s.n.* (FI).

JUGOSLAVIA. Novo Mesto, in field, 200 m, IV., *Zupancic 705* (BM). Bosna, 1848, *de Candolle s.n.* (G). Near Rudare, 1891, *Ilic s.n.* (W).

GREECE. MAINLAND: Between Lilikosti and Dhidhimotikhon, 24.IV.1961, *Rechinger 22074* (W). Dhidhimotikhon, s.d., *Dingler s.n.* (JE).

BULGARIA. Dragalevci, near Sophia, in field, siliceous soil, c. 680 m, 13.IV.1952, *Stoyanow 283* (COI, G, H, L). Eminska Mountain, c. 5 km W. of Banya, c. 400 m, 11.VI.1973, *Mennema 2030* (L). Burgas, near Iablonovstj, s.d., *Velenowsky s.n.* (PRC).

TURKEY. EDIRNE: Maritza river near Edirne, in forest, 40 m, 19.IV.1961, *Rechinger 21794* (W). KIRKLARELI: Between Kırklareli and Pınarhisar, open *Quercus*-park, 200 m, 19.IV.1966, *Davis 41980* (K). ISTANBUL: Belgrad forest, c. 25 km N. of Istanbul, roadside, 200 m, 10.IV.1972, *Uotila 15486* (H). Istanbul, s.d., *Aucher-Eloy 5180* (BM, G, P). Ibid., s.d., *Wiedemann s.n.* (K). Ibid., spontaneous in park near airport, 10.IV.1974, *van Ooststroom 25205* (L). Beylerbey, in field on hill slope, c. 100 m, 10.IV.1959, *Hennipman et al. 481* (K, L, WAG). Heybeli Ada, waste ground, 30 m, 24.IV.1957, *Davis & Hedge 26225* (K). Büyükdere, earthy slope, 100 m, 17.III.1956, *Davis & Polunin 25115* (BM, K). ZONGULDAK: Between Zonguldak and Mezarlıh, 13.II.1945, *Bezalet-Sazi 148* (K). ANKARA: Slope near Çonkaya, 700 m, IV.1931, *Görz 53* (BM). ISPARTA: Davras Dagi, 1800 m, V,1845, *de Heldreich s.n.* (P). AMASYA: Amasya, s.d., *Manissadjian s.n.* (M, W). Ibid., in garden, 24.IV.1893, *Manissadjian 1032* (W). TRABZON: Trabzon, uncultivated field, 27.IV.1862, *Bourgeau s.n.* (P). ÇORUH: Artvin, near Sirya, on stony slope, 11.IV.1908, *Woronow s.n.* (LE).

SYRIA. Halab, in orchard, III.1867, *Hausknecht s.n.* (BM, K, P). El Ashara, s.d., *Bernström 84* (K). Damscus, waste land, 600 m, II.1945, *Norris s.n.* (BM).

LEBANON. Tripoli, bank of a ditch, 1.IV.1894, *Blanche 1377* (P).

MADEIRA. Porto Moniz, mountain, V.1892, *Anon., s.n.* (BM).

CANARY ISLANDS. ? Mount Church, roadside, 10.VI.1831, *Lowe s.n.* (BM).

ALGERIA. In the vicinity of Algiers, Djebel Mouzaia, forest, 19.V.1859, *Durando s.n.* (MPU).

JAPAN. Miyagi, Sendai-shi, Kawachi, in wet and slightly sunny place, 10.V.1971, *Ohba 71502* (WAG). Tokyo, Setagaya, Soshigaya, on the margin of a field, 22.IV.1970, *Tateishi 704001* (BM, K, WAG).

NEW ZEALAND. Auckland, Remuera, garden weed, 2.VII.1972, *Goulding 323* (K).

CANADA. Cape Breton Island, North Sydney, on ballast heaps, 11.VII.1883, *Macoun 1796* (BM). Newfoundland, old garden site head of Mauve Bay, 12.VIII.1915, *Fernald et al. 28958* (K). Avalon Peninsula, shores of Conception Bay, dry roadsides, carbonear, 6/7.VIII.1911, *Fernald & Wiegand 6118* (K).

U.S.A. WASHINGTON: Fort Lewis, Pierce County, on the prairie, adventive, 16.IV.1938, *Eyerdam 1354* (BM, Z). OREGON: Near Salem, rocket waste ground, 25.IV.1928, *Thompson 4135* (K). OHIO: 3 Km N. of Oxford, Butler County, Morning Sun Road, roadside, 29.IV.1958, *Cobbe 29* (COI). MASSACHUSETTS: Nantucket Island, Nantucket, 29.IV.1966, *Mac Kever 946* (BM). NEW YORK: Bailey Hortorium garden, Tompkins County, weed, 19.IV.1954, *Dewolf s.n.* (COI). Ibid., *Gadeceau 1189* (BM). NEW JERSEY: Watchung, Somerset County, waste ground, 10.IV.1938, *Moldenke 10407* (BM). MARYLAND: Beltsville, common weed in experimental fields, 30.III.1960, *Boom 38004* (L). Cub Hill, Baltimore County, weed, 21.V.1972, *Reed s.n.* (ZT). Near Plummer Island, low woods near Potomac River, 20.IV.1928, *Blake 10561* (K). WASHINGTON D.C.: Near Chainbridge, along Chesapeake-Ohio canal, roadside, 13.IV.1947, *Holthuis 17* (L). KANSAS: 1½ km E. of Lawrence, hillslope, open woodland, loamy soil, 250 m, 24.IV.1940, *McGregor 296* (L). KENTUCKY: Woodford County, near bridge in Clifton area, abundant, 29.III.1947, *Briggs s.n.* (L). Brush Creek Christian Church, Liberty Quadrangle, Devonian Geological Region, in bottoms, numerous, 250 m, 11.IV.1962, *Murphy 198* (ZT). VIRGINIA: Staunton River, Roanoke River, on US Rt 501, N. of North Halifax County, roadside, 17.IV.1966, *Ahles 63228* (BM). NORTH CAROLINA: Orange County, University of North Carolina campus, Chapel Hill, weed in shrub planting, 2.IV.1900, *Ahles 53171* (K).

FALKLANDS ISLANDS. East Falkland, Teal inlet, garden weed, 13.V.1949, *Sladen 117/3* (BM).

16. *Lamium orvala* L.

GERMANY. RHEINLAND-PFALZ: Ludwigshafen, harbour, V.1910, *Zimmermann s.n.* (BAS, L).

SWITZERLAND. ZÜRICH: Uetliberg, near Zürich, VI.1884, *E.K. s.n.* (Z). THURGAU: Frauenfeld, VI.1892, *Brunner s.n.* (Z).

AUSTRIA. KÄRNTEN: 25 Collections in all. Hukes, near Grades, Wippachtal, 300 m, 18.IV.1933, *Engelhardt s.n.* (GB). Mauthen, Gail Tal, in bush, 710 m, 14.VIII.1939, *Panc s.n.* (M). Plöckenpass,

among stones, 1600 m, 27.VII.1933, *Boom 7409* (L). Arnoldstein, V.1906, *Müller s.n.* (G). Märchenwies, 5 km NW. of Loibl Pass, c. 1100 m, 3.VII.1965, *LEPS 187* (L). Loibl Tal, at the border of a forest, calcareous soil, c. 650 m, s.d., *Fl. Exs. Austr.-Hung. 2645* (G, L, LD, P, TO, Z, ZT). Karawanken, at road Zell Pfarre-Koschuttahaus, 9.VIII.1949, *Poelt s.n.* (M). Ebriach Bach, 600 m, 22.VII.1888, *Correns s.n.* Blakkendorfer Graben, Petzen Mountain, near Bleiburg, 16.VIII.1871, *Kristof s.n.* (JE).

HUNGARY. 'Schaffer', s.d., *Aeppli s.n.* (Z). Near Lendawa, s.d., *Bartling s.n.* (LD). Keszthely Mountain, in humid shady forest, VII.1853, *Schur s.n.* (P).

SPAIN. Galloca, Castello de Neçeda, in mountain coppice, VI.1917, *Pajol s.n.* (L, Z).

ITALY. 118 Collections in all. LOMBARDIA: Valbondione, at foot of Tombea Mountain, 12.VI.1873, *Burnat s.n.* (LD). Under Sarnico, s.d., *Rhodeger s.n.* (G). Between Preseglie and Barghe, road to Brescia, humid forest, 360 m, 10.IV.1966, *Düll s.n.* (JE). Near Baitoni, Judicarian Mountains, shady coppice, calcareous soil, 500-700 m, 5.V.1897, *Cimarolli s.n.* (BAS, GB). Balle di Suro, NW. of Gardone, 700 m, 17.V.1951, *Roessler 542* (M). Bosco, near Mantova, V.1896, *Mori s.n.* (G). TRENTO: Bolzano, 1858, *Hausmann s.n.* (JE). Salorno, forest, V.1836, *Hausmann 290* (G, L, M, TO). Trento, 18.IV.1883, *Gelmi s.n.* (LD, M). Sardagna, near Trento, 2.IV.1912, *Vollmann s.n.* (M). Arco, calcareous, 100 m, V.1908, *Diettrich s.n.* (LD). Varone, near Riva, at the church, 21.IV.1886, *Correns s.n.* (M). Lecho Tal, near Riva, 29.IV.1898, *Dilmi s.n.* (Z). Val di Ledro, mountain forest, calcareous soil, 900-1200 m, VI.1873, *Porta s.n.* (JE). Val Lorina-Val Ampola, 12.VI.1873, *Burnat s.n.* (G). Above Mori, 500 m, 19.V.1888, *Correns s.n.* (M). Vallarsa, Piano di Fugazze, 1150 m, 10.VI.1965, *Merxmüller s.n.* (M). In the vicinity of Borgo, Val Sugana, alps, 23.VI.1873, *Burnat et al. s.n.* (G). VENETIA: Avio, at foot of Monte Baldo, 26.IV.1884, *Correns s.n.* (M). Vicentine alps, near Recoaro, lower region, VI.1872, *Ball s.n.* (P). Tregnano, 1850, *Massalongo s.n.* (L). Montorio Veronese, in hedge, III.1879, *Goiran s.n.* (TO). Codemondo, in hedge, 1.V.1886, *Mori s.n.* (BAS). Ibid., Villa Cassoli, in hedge, 1.V.1886, *Ferrari s.n.* (TO). Between Crespano and Boccaoro, 19.V.1919 *Vaccari s.n.* (FI). Cozzuolo di Vittorio, c. 145 m, 9.IV.1899, *Pampanini s.n.* (G, TO, Z). Ibid., in hedge, calcareous soil, 150 m, 18.V.1904, *Pampanini 647* (G, TO, Z, ZT). Colli Euganei, at foot Monte Rosso, in hedge, siliceous soil, 15 m, 30.IV.1907, *Fiori & Béguinot 647 bis* (BM, G, Z, ZT). Padova, in hedge, IV.1881, *Penzig s.n.* (LD). Near Venetia, in ditch, s.d., *Vaillant s.n.* (P). FRIULI: 'Kanal Tal', V.1878, *Ressmann s.n.* (L, P). Near Malborghetto, V.1879, *Pichler s.n.* (P). Tarvisio, calcareous soil, 14.V.1894, *von Stutzer s.n.* (JE). Gorizia, in Coppice at slope near castle, 20.V.1911, *Mayer s.n.* (M). TRIESTE: Trieste, IV.1826, *Fleischer s.n.* (G). Piscianzi, near Trieste, in coppice, 150 m, 10.V.1971, *Feoli 6129* (L, M). Monte Spaccato, coppice, 28.IV.1888, *Crouvé s.n.* (GB, JE). Ibid., along streamlet, 16.IV.1896, *Engelhardt s.n.* (GB, LD). Ibid., c. 400 m, 24.V.1897, *Steuere s.n.* (JE, LD). Lipizza, s.d., *Tomasini & Noé s.n.* (G, JE, TO). Ibid., forest, 23.IV.1855, *Mirich s.n.* (JE, L, ZT).

JUGOSLAVIA. 85 Collections in all. Near Kranjskagora, 700-800 m, V.1979, *van Steenis 14278* (L). Sempeter pri Gorici, in grassy coppice, calcareous soil, 25.V.1928, *Rechinger s.n.* (LD). Klecica Alps, 27.VI.1864, *Pichler s.n.* (JE, P). Lasko, hedge, calcareous soil, 225 m, V.1905, *Cetina 292* (G, GB, LD, Z, ZT). Near Zidani Most, Savinja valley, 29.IV.1907, *Ronniger s.n.* (M). Skocjan, 420 m, 21.V.1951, *Mayer s.n.* (M). Near Maribor, at the river Drava, 1889, *Murbeck s.n.* (LD). At Vosca Mountain, near 'Pölschach', V.1903, *von Hayek s.n.* (GB). In the vicinity of Varazdin, arboretum Opeka, near Vinica, spontaneous, 6.V.1956, *van Ooststroom 18718* (L). Slavnik Mountain, above Piesnica, coppice, limestone, 1000 m, 5.VI.1875, *Freyn s.n.* (COI). SE. of Divaca, St. Canzian cave, 29.V.1955, *Merxmüller & Wiedman 14228* (M). Nanos Mountain, 26.V.1898, *Müllner s.n.* (LD). Near Idrija, limestone mountains, 20.IV.1851, *Dolliner 132* (COI, G, L, MPU, P). Near Postonja, 9.V.1896, *Mulley s.n.* (LD). Near 'Franzdorf', coppice, calcareous soil, 320 m, V., *Paulin 703* (BM, GB). Krim Mountain, under the top, 1100 m, 11.VII.1897, *Steiger s.n.* (BAS). Ljubljana, Iska valley, 30.IV.1862, *Petter s.n.* (LD). Near Lipa, in shady coppice, VI., *Noé 325* (BAS, GB, JE, L, MPU, P). Veliki Sneznik [Schneeberg], in coppice, 1796 m, 13.VII.1886, *Poscharsky s.n.* (COI). Vela Mcka, bank of a rivulet, calcareous, 1050 m, 20.V.1877, *Freyn s.n.* (COI). Lovrana, 20.V.1899, *Sandany s.n.* (LD). Donji Rukavac, near Matulji, 19.V.1899, *Sandany s.n.* (LD). Opatija, calcareous soil, VI.1909, *Richter s.n.* (LD). Rijeka, s.d., *Noé s.n.* (L). Source of river Recina, humid forest, 18.VI.1898, *Saint-Lager s.n.* (G). Ricicko Bilo, in forest, c. 950 m, VIII.1922, *Domin 324* (PRC). Klek Mountain, near Ogulin, 22.V.1904, *de Degen s.n.* (G, GB). Ostarje, E.-side of Velebit Planina, *Fagus*-forest, 800 m, 12.VI.1970, *Markgraf & Markgraf 37* (Z). Karlovac,

s.d., *Boller s.n.* (M). Velebit Planina, Karlobag, VII.1907, *Sagorski s.n.* (L). Between Mali Radic and Bihac, 5.V.1897, *Fiala s.n.* (G, JE).

Hybrid *Lamium* × *holsaticum*

NETHERLANDS. OVERIJSEL: Zalkerbos, between parents, 2.V.1978, *Smit & Eenkhoorn s.n.* (L). Ibid., 1980, *van Raamsdonk s.n.* (Herb. van Raamsdonk). LIMBURG: Hoosten, St. Odiliënberg Monastery, 4.V.1980, *Hekking s.n.* (U).

FRANCE. MEURTHE-ET-MOSELLE: Malzéville, le Chateau, between parents, Summer 1908, *Schwarz s.n.* (COI). Ibid., 2.X.1909, *Petitmengin s.n.* (TO). RHÔNE: Villefranche-sur-Saône, Parc de Mongré, hedge, 16.VI.1876, *Tillet s.n.* (COI).

GERMANY. THÜRINGEN: Dornburg, near Jena, s.d., *Anon. s.n.* (L).

SWITZERLAND. AARGAU: Seengen, roadside, 8.VI.1947, *Bakhuizen van den Brink 5947* (L). SANKT GALLEN: Quinten, 12.VII.1906, *Julie Schinz s.n.* (Z).

POLAND. Szczecin [Stettin], V.1910, *Paul s.n.* (L).

CZECHOSLOVAKIA: 'Nordböhmen', 1853, *Karl s.n.* (ZT). 'Baumgarten', near Praha, in meadow, shady, between parents, s.d., *Fl. Exs. Austr.-Hung. 2647* (GOET, L, ZT).

ITALY. LOMBARDIA: Bergamasker Alpen, Val Membrana, Valle Mezeno, c. 1590 m, with parents, 27.VI.1964, *Hess & Landolt s.n.* (ZT).

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vulgaris 44
Psilopsis 26
Stachys
humilis 138
Wiedemannia
multifida 138
orientalis 138

SUMMARY

The present study deals with the systematics and taxonomy of the genus *Lamium* (*Lamiaceae*). The taxonomic revision is mainly based on the study of herbarium collections, and to a smaller degree on field observations and abstracts from literature. The research was done at the Rijksherbarium, Leyden, while many other Herbaria were shortly visited.

As the genus *Lamium* was never before monographed, a short survey is given of the taxonomic history of *Lamium*, which goes back as far as Linnaeus (1753). In this short survey of the taxonomic history of the genus *Lamium* the general history of taxonomy and its changing emphasis on different geographical regions can be recognized.

It is difficult to give a definition of *Lamium* in which it stands out from related genera by means of one or preferably two characters. As with so many genera, *Lamium* can only be defined polythetically: no single character suffices. An important character is the chromosome number: the base number $x = 9$ is rather uncommon in other genera of the *Stachyioideae* to which *Lamium* belongs.

As morphological outline of the genus *Lamium* can be given: annual or perennial herbs, usually not higher than about $\frac{1}{2}$ m, with cordate or reniform, shallow incised leaves; flowers in verticillasters in the axils of the uppermost (= floral) leaves; calyx campanulate with an oblique mouth and with subequal teeth; corolla 2-lipped, the tube straight or sigmoid, the lower lip usually with two rounded lateral lobes, each with one or two teeth; nutlets obovoid with a truncate apex and in cross-section trigonous with one convex and two flat sides.

The genus is divided into 3 subgenera; one subgenus (*Lamium*) is divided into 3 sections, of which one section (*Amplexicaule*) is new. A number of 162 names of *Lamium* species and a more or less equal number of names of infraspecific taxa were known. In this revision 16 *Lamium* species, 11 subspecies, and 13 varieties are accepted, and also one hybrid. 9 New combinations are made. Type specimens are recorded for all taxa and an identification key to all taxa is given.

In all c. 10,000 collections were examined. The most important quantitative characters were measured in 2700 collections, representing specimens from the entire distribution area of individual taxa. To show the variability of these quantitative characters diagrams are added, as diagrams give more information than minimum, average and maximum values. The percentage of ripe fruits appears to vary strongly in herbarium specimens of *Lamium*: all species with a percentage of ripe fruits higher than 55% are annuals, and all species with a percentage of ripe fruits lower than 20% are perennials. Random studies in other genera led

to the same result: the ripening of fruits of annual species takes place in a shorter period than the ripening of fruits of perennial species.

Distribution maps of all *Lamium* taxa are given. The distribution of the genus *Lamium* may be characterized as temperate Eurasiatic (holarctic), but the centre of diversity is obviously found in the Irano-Turanian and the Mediterranean regions.

The habitats of the taxa of the genus *Lamium* roughly can be listed under two categories: forests on the one hand and rocky mountain slopes/cultivated fields on the other.

The differences in habitats and also in distribution areas were the starting point for an intuitive phylogenetic reconstruction of the genus *Lamium*, in which *Lamium galeobdolon* is included, in spite of a number of deviating morphological and chemical characters.