

A preliminary checklist of *Rubus* species occurring in the Czech Republic

Předběžný seznam ostružiníků České republiky

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A checklist of *Rubus* species occurring in the Czech Republic (West Czechoslovakia) is given as a result of a long-term critical study. It includes 77 native and naturalized species belonging to 6 subgenera, 6 sections and 21 series. Problems of present botanical classification are discussed with special emphasis on the importance of the size of the distribution range. Data on the total distribution area and occurrence in the Czech Republic are given for native species. In addition to the numbered 77 species, the checklist also includes cultivated species (6) and species which could be found in the area studied in the future (21, with data on their nearest occurrence). Present results are compared with earlier classifications of the genus in the Czech Republic and with data from critical revisions existing for some countries of Central and West Europe. Data on the extent of distribution areas, territory elements, distribution patterns in the area studied, and numerical representation of sections *Rubus* and *Corylifolii* are given as well. Ten species new for science and 25 species new for the Czech Republic were found during the study period. The Appendix includes descriptions of two new species, two proposals of nomenclatural changes for infraspecific taxa and six proposals of new names for nothosubgenera.

Dedicated to the honorary member of Czechoslovak Botanical Society Professor H. E. Weber on the occasion of his 60th birthday.

Introduction

State of the problem

Knowledge and data on brambles of the Czech Republic collected by earlier investigation badly need a profound critical revision. Analogically to other regions of Central Europe, hundreds of species and infraspecific taxa have been given from the area of the Czech Republic, which - in light of special character of evolution of new taxa in *Rubus* subgen. *Rubus* - are worthless for working taxonomy. Botany (science on brambles) has fallen into a permanent crisis. Continued further describing and naming individual aberrations, usually in the rank of species, has led to an endless amount of taxa; therefore - for obtaining a clear view over this mass of taxa - the method of bringing these (unqualified) taxa together into more extensive complexes has been used, mostly on the basis of similarity according to some (frequently haphazard selected) morphological characters. These complexes included often entirely unrelated taxa and therefore could not have had any scientific importance. Some part in producing this bad situation in botany was played also by the fact that botanical

amateurs have contributed to its expansion to a considerable extent, working only in smaller study areas. Individual bushes of brambles have got their own names and widely dispersed taxa (especially those with a sparse occurrence) frequently have not been described at all. A further deficiency was an ambition to identify plants from a small study region with taxa described from elsewhere, including remote areas. A special response on the plenty of described taxa and further difficulties resulting from this situation was in some cases the reduction of all real taxonomic diversity of brambles of the section (and sometimes also of the subgenus) *Rubus* even to the only one species - *R. fruticosus* L., which approach certainly also did not constitute any effective contribution for taxonomy, chorology, geobotany and further botanical branches. Subgen. *Rubus* is distinctly differentiated in a series of taxa morphologically, geographically and partly also ecologically characterized and characterizable, which have to represent building stones of the classification of subgen. *Rubus* in Central Europe. The main task of botanical research is to distinguish these real taxa - species - by means of revision of the material gathered till now and of specially directed investigations. In the seventies a change came, in a considerable extent thanks to the initiative and endeavour of Professor H. E. Weber, and a new phase of botany has started, improving upon the critical state of the study of *Rubus*. New modern studies have appeared, referring to the British Isles (Edees et Newton 1988), the Netherlands (Beek 1974), Denmark (Martensen et al. 1983, Pedersen et Schou 1989) and especially to various regions of Germany: NW Germany (Weber 1973), Schleswig-Holstein (Martensen et al. 1983), Westphalia (Weber 1986), Upper Lusatia (Weber 1987a), E Brandenburg (Stohr 1982, 1984), Mecklenburg (Henker 1988) etc. Further studies were also given to Switzerland (Weber 1987b) and Austria (Weber et Maurer 1991). By this preliminary survey also the Czech Republic joins to the critical endeavour after a pragmatic taxonomy of brambles.

Only compilatory surveys existed for this area till now covering the whole territory of Czechoslovakia (Dostál 1948, 1982, 1988); these were, however, burdened by many defects and mistakes of earlier approaches. For the moment, works on brambles of wide areas in C Europe are missing; present elaborations refer usually to regions of a smaller extent. Therefore Weber's treatment of *Rubus* for the third edition of *Hegi Illustrierte Flora von Mitteleuropa* (Weber, Ms.) certainly will be a considerable help for botanists of the whole C Europe. The new tendency struggles to exclude the basic mistakes of earlier botanical taxonomy - insufficient descriptions (also by using quantitative features in a greater extent), taxonomic overvaluation of morphological aberrations of the type of ecomorphoses as well as classification of individual and local types as species, and false use of names (to remedy this defect especially the study of authentic material and founding the correct use of names by their typification are needed).

Taxonomy and differentiation

In its world distribution area, *Rubus* divides into at least twelve subgenera. Four of them are represented in the native flora of C Europe. With regard to the monotypic character of three subgenera within that area, no taxonomic difficulties arise with them there. Relationships of *Rubus* subgenera are very remote and some of them were classified also as separate genera. Among native representatives of the genus in Europe the following three groups belong here: *Chamaemorus* Hill 1756 (for *R. chamaemorus*

L.), *Batidaea* (Dumort.) Greene 1906 (for *R. idaeus* L.) and *Cylactis* Rafin. 1819 (for *R. saxatilis* L.). For the naturalized species *R. odoratus* L. a further genus *Rubacer* Rydb. 1903 may be added. The possibility of classification of these groups as genera cannot be refused, but with regard to the long-term tradition of the usually accepted circumscription of the genus and existence of hybrids between various subgenera, the broadly circumscribed genus including a series of subgenera is used here by the present author, now. Therefore several new nothosubgeneric names for some hybrids between species from different subgenera are proposed in the Appendix to this paper.

Which processes do cause taxonomic problems of brambles within the fourth very diversified subgenus *Rubus* in Europe? The main reasons are incomplete (facultative) apomixis, a high level of hybridization and especially splitting of hybrids into a series of various hybridogeneous products, which in their further development may partially resexualize and in this way take part in further hybridization. New taxa result, however, from more complex hybridization processes than from some simple hybridization of two stabilized taxa. European species of subgen. *Rubus* are nearly always (though not absolutely) apomictic plants, producing a homogeneous progeny by means of pseudogamy. After stabilization of the newly arisen biotypes by apomixis the way of their evolution passes off from the stage of individuals (singular biotypes), over local populations to populations with a wider distribution. Colonizing a wider distribution area indicates vitality of a certain morphobiototype and justification for its acceptance into the botanical classification. In earlier classifications (referring frequently to small regions) numerous insignificant plants of the character of modifications (ecades) and small taxonomic aberrations as well as individual and local types prevailed having been classified as species. Owing to the character of evolution in this group, a series of individuals is produced, which cannot be classified into the range of variation of accepted and confirmed species. This is a temporary and normally transitory material (though it may be sometimes long persisting! - see below) for possible further evolution and differentiation of groups - stabilized taxa. However, only a small part of this material has prospect to develop to real functional taxa. The greatest portion of this variation represents only an extensive waste matter of this special evolutionary process. Therefore at botanical classification of this subgenus, it is necessary to find stabilized morphotypes with a wider distribution, which, according to present experience in the field distinctly prevail by their quantitative representation or by the quantity of their biomass, respectively, in the area studied or are characteristic of this area. Only such taxa merit to be classified in the rank of species now.

Importance of the distribution area for classification

The phenomenon of distribution, and especially its extent, is thus taken in addition to sufficient morphological distinctness of taxa as an important criterion for accepting taxa as species in subgen. *Rubus*. With regard to the possibility of existence of a very distinct morphological identity also in singular and local types, the extent of the distribution area is done the effectual factor at recognizing a certain taxon as a species. By Weber (1973, 1986 etc.) a scale of distribution extents was established for purposes of taxonomic classification which has been widely accepted by further authors. In this scale the diameter of distribution area to 20 km is accepted for local types, the diameter of 20-250 km for regional species and the diameter more than 500 km for

widespread species. A large gap between 250 and 500 km is surprising in this scale as this gap covers with certainty a rather considerable number of distribution areas of various bramble species. It is then not clear to which group the corresponding brambles should be classed, whether to widespread or to regional species; however, in any case they represent real *Rubus* species. A somewhat different scale has been proposed by Newton (1980); a similar gap also does exist here, but unfortunately it is placed between the spheres of local and regional distribution areas. Newton (1980) determined the upper limit of the diameter of local distribution areas as 30 km, and the lower limit for regional distribution areas as 50 km; the gap 30-50 km is in some cases very decisive. In the latter variant of this scale (Edees et Newton 1988) the extents are changed to 50 km being valid both as the upper limit for local areas and as the lower limit for regional areas. The diameter of 50 km for local types seems to be relatively very wide, especially if we take into account the earlier Newton's position (in Stace 1975), where the extent of 100 square kilometers (i.e. 10 x 10 km) was required for accepting a taxon as a *Rubus* species. Recognizing species according to the scheme of the scale of extents of distribution areas certainly has not to be (and cannot be) considered in all cases the only correct way in the taxonomic classification of brambles. Nevertheless, the acceptance of the distribution area as the criterion for species rank is for the pragmatically directed classification of brambles, which we urgently need now, the best methodological basis for determination of importance of very numerous morphotypes among European brambles. The extent of distribution areas cannot be used schematically and the interior structure of the distribution area and the abundance of the taxon within its area must be respected - especially when distinguishing the (still) local from the (already) regional types. The scale used by the present author is as follows:

- A. Widespread (distribution area with diameter more than 350 km)
- B. Regional (distribution area with diameter 20-350 km)
- C. Local (distribution area with diameter less than 20 km)

The group B - regional species - may be divided into three groups, the two marginal of them being:

- a) Narrowly distributed regional species (diameter 20-100 km).
- b) Widely distributed regional species (diameter 250-350 km).

Theoretically, the distribution area may occur having only a very low number of localities (e.g. 2), with the distance between them being larger than the limit between the local and regional distribution areas. Such cases require further studying and approaching from viewpoints other than those based only on the scale given above. The criterion of species rank by means of the distribution area (of course not schematically applied) could have been easily accepted by the present author owing to his certain inducement in his study years from one of his teachers and friends - M. Deyl (*1906 - †1985) who accentuated for taxonomic evaluation of a certain taxon as a species the phenomenon of its "role in the Nature", i.e. specific occupation of the area by the taxon from the viewpoint of phytogeography, ecology and sociology in comparison with related taxa. In connections with these problems, the fact can be stressed, that taxonomically more valuable cases in *Rubus* subgen. *Rubus* are represented by species with widespread distributions, whereas the taxa from other taxonomic groups with narrow distribution evaluated highly in phytogeography (as microendemics, neoendemics or relicts) are less evaluated among brambles or not

accepted as species at all, being excluded from surveys of taxonomically justified species. Among European brambles the extent of distribution areas is at least partly (many times perhaps from a greater part) a function of the age of the taxon and many regional species with small distribution areas can therefore be relatively very young products of a subrecent evolution. Man certainly has had a substantial influence on the origin of new species of brambles by clearing and felling woods, what contributed to great dispersion of earlier existing types and to the contact of species, whose distribution areas were initially separated. Also the ornithochorous way of dispersion of brambles on longer distance played its part in this respect. Brambles manifest a certain level of affinity to man-made habitats (which is higher in the sect. *Corylifolii* than in sect. *Rubus*) and under a moderate influence of Man on the landscape, their qualitative and quantitative representation has distinctly increased; their taxonomic evolution was markedly conditioned and supported by this fact.

Even though the local (or very narrowly regional) types are excluded as subjects of the present batological taxonomy and classification, it will be necessary to pay a certain attention to them in further research. In some cases it cannot be excluded that a species with the distribution wider than that of only a local type may exist here, for example with a narrow regional distribution area (as this appeared during the process of recognizing the new species *R. vramensis*). Some of these local types may represent species that is to be a "species in spe". Though the main project of the present batology is to give a survey of all those species with wide distribution areas or having distinct geographical distribution, for all that a certain attention to the local types will have to be given, especially when these taxa are confined to a certain natural distribution area or to a certain geographic unit. The greater part of local types can disappear during not a long period of time. However, some local types have survived in their localities for long, as e.g. *R. sieberi* H. Hofm. and *R. misniensis* H. Hofm. in Saxonia (cf. Ranft 1987); according to my experience it is possible to mention *R. posoniensis* Sabr. from the surroundings of Bratislava. It seems, that British authors do not completely oppose description of certain local types as species. In the course of my investigation of brambles in the Czech Republic I have arrived at the conclusion that about 50-80 distinct local types exist here, some of which (e.g. *Rubus* topodeme "Jelení Palouky" = "*R. cervopratorum*" from the Hřebený Mts.) regarding their distinct morphological character and initial stages of their dispersion (expressed by present insignificant extent of their distribution areas) could be justifiably described as species. Weber (1987b) considers presence of thousands local types in Switzerland, which number seems to be really very high for brambles of this type. Describing local types (or adopting earlier described local types, respectively) should be a very slow process with a prudent proceeding, following only after summarizing the knowledge of more widely distributed taxa in the given area.

Special problems

The most difficult taxonomic group of European brambles is ser. *Glandulosi*. In comparison with other groups in which the capacity of singular morphotypes against that of real species is low, it seems that a non-taxonomic variation prevails in ser. *Glandulosi*, represented by singular morphotypes or narrowly distributed local taxa, respectively. The group is distributed mainly in mountains of C Europe (s.l.) and in adjacent hilly countries. It is difficult to describe taxonomically the considerable morphological variation of characters in members of this group, as with regard to the slightly developed apomixis and severe hybridization populations of unstabilized morphotypes originate, representing extensive swarms of forms of spontaneous hybrids and their derivatives, with very heteromorphous individuals, strongly and aggressively vegetatively propagating themselves into extensive colonies. In addition to the great extent of very differentiated variation also isophenous (morphologically identical) biotypes occur, being of a polyphyletic origin.

The cases of heterophyletic convergence of character sets may be also only hardly distinguished from each other; to some taxa accepted as species, there are parallel, very similar but taxonomically not identical types as it is known for example for *R. lividus* or *R. guentheri*. However, it is necessary to mention that in the last time a certain development of opinions occurred also in this taxonomically difficult group. So the number of species accepted in that group by Weber earlier has increased after his investigation of certain C European areas (especially of Upper Lusatia - Weber 1987a). Distinguishing of numerous taxa within this group and their subordination on the basis of a schematic arrangement of characters in the determination key done by Sudre (1913) led to a fully unnatural classification within the series and was rejected by the new batological school. On the basis of connection of similar morphotypes to a certain unit, "pseudotaxa" originated in classification without any taxonomic justification. The group requires a long-term special study, which will be, however, difficult to carry out in future as well because of, in addition to the objective difficulties, the necessity to compare the accepted species with very numerous earlier described taxa. Somewhat analogical,

but minor problems, appear in a smaller extent also in the neighbouring group with glandular plants ser. *Hystrices* (and perhaps also in ser. *Pallidi* and ser. *Radulae*).

In addition to the objective difficulties indicated above, batology also suffers from problems arisen by the activity of scientists involved in studies of the genus *Rubus*. In the course of time, numerous names have been falsely interpreted and used in a sense completely different from their original conception. Rather frequently, various, many times unrelated species, were being brought together into one species as its infraspecific taxa. Sudre's monograph (Sudre 1908-1913) is strongly embarrassed by this approach. In our literature superfluous distinguishing of infraspecific taxa in the work by Hruby (1941-1944) represents the same case: in not a quite clear taxon *R. alterniflorus* P. J. Müller et Lefèvre (sensu Hruby) this author gives altogether 62 infraspecific taxa - from varieties to subformae. A certain retardative factor in batology was the period, when struggle to interpret individual species as hybrids developed, whether as simple ones (originating from two parents) or more often as complex hybrids originating from a whole series of parents, this determination normally given without any reasonable explanation. As it is usual in plant taxonomy - the edition of a monograph has resulted in some retardation of development of the knowledge due to the excessive acceptance of the monographer's opinions by further batologists. The work of Sudre and of his disciples and followers is clearly the case here. The present revision substantially changes the set of species being accepted in accordance with the mentioned work (Sudre l.c.). So, for example the treatments of *Rubus* in the second and third editions of Hegi's Ill. Flora von Mitteleuropa differ very essentially. Huber (2. ed. 1964-1966), to a certain extent following Sudre's approach, described 287 species, Weber (3. ed. Ms.) gives 262 species, but he accepted only 119 species from Huber's treatment. Hence the similarity of these two treatments is only 43 %, though only 25 years passed between the both compared elaborations. The relatively recent treatment of brambles of British Isles (Watson 1958) was also subjected to a biting criticism and after thirty years only c. 50 % of species were taken over from his monograph into the newest treatment of British brambles (Edees et Newton 1988). At the same time the number of new species described from this area in the last 30 years corresponds to almost 20 % of the known (accepted) brambles number of the British Isles. These numbers show great differences in classifications used in particular surveys and indicate the necessity of a general vigilance at their usage. The situation concerning this issue in CzR is treated in the chapter "Results and discussion".

Problems of determination

Herbarium material is certainly important for studying brambles, both from the viewpoint of taxonomy and chorology. However, batologists have to start primarily from their own study in the field. Features characteristic of particular species do not need to develop in every individual of a given species; hence it is impossible to determine with certainty many of the plants deposited in herbaria. Therefore it is necessary to collect sufficient, perfect and representative material of brambles in flowering period and avoid collecting ecomorphoses and individuals of singular biotypes. A plenty of useless material is therefore deposited in herbaria and moreover in the CzR the herbarium collections of brambles are in a very bad condition. In spite of this situation it is possible (according to my own experience) to discover interesting findings therein. An attempt to determine every specimen of brambles, as it is typical of regional botanists, is a rather bad idea and publications resulting from this approach are burdened with many mistakes devaluating such a literature, which in principle cannot be used by further authors anyhow. Especially at determination of critical specimens, it is necessary to expect amount of about 50 % of material being undetermined. A very distinguished specialist can also easily reach this level of "non-determination" with material from another region than his own. All these problems follow from the objective character of variation and the way of differentiation of taxa within subgen. *Rubus*.

This indicates, that it is not possible to start with investigation of brambles only from studying herbarium material, and stresses the basic importance and necessity of the field work and of own collections of the material gathered by the collector himself. The field study is the basis for distinguishing species, determination of the character of their distribution and ascertainment of repetition of their findings. During investigations of bramble flora in the CzR I have found - in addition to the species well-known to me after a certain time - many distinct but unknown plants, which I designated for my own use as "plantae speciales". Various cases may conceal under this designation adopted for interesting undetermined material: modifications, individual types, local types, species of other regions unknown to the collector (with an exclave occurrence, transgressive distribution area or with a strongly dispersed distribution), new undescribed species. In the course of twelve years more than 500 "plantae speciales" were found on field transects of the length of more than 5000 km; long-term study of these "plantae speciales" (supported by the help of Professor Weber) resulted in finding of 25 species new for the area studied and in describing 10 species new for science. Field studies also help with the revision of earlier literature data and contribute to the solution of the possibility of their appraisal and selective use for chorological purposes.

Nomenclatural problems

There is a problem associated with description of a new species, i.e. whether earlier names do not already exist for such taxa in the extensive (and sometimes practically endless) amount of literature containing more than 5000 species names in the genus. The possibility of correct names existing in earlier literature for some of the species described by the present author cannot be therefore excluded. A great help in this respect is represented by many typifications proposed by H. E. Weber and his extensive knowledge of types included in his phototheca of *Rubus* types, even though it includes especially taxa from NW part of Europe. A strong seceding of a great number of names occurs at such revisions, whether from the reason that these names refer to modifications of known species or belong to their variation range or to individual and local types, or because of them being synonyms. For example, at the revision of taxa of sect. *Corylifolii* from the N part of C. Europe only 46 names of brambles remained for use from 279 names revised (Weber 1981). Critical studies by Weber have led to a substantial lowering of the number of species of N and C Europe. Some 250-300 species occur in this area, from which about 30-80 are represented in smaller natural regions. In his studies, Weber excluded some names frequently used earlier on the basis of studying their authentic material, as they were based on local or singular biotypes and have been frequently falsely taken over into use for not identical brambles from other territories: following names belong here as examples: *R. argenteus* (local), *R. fuscoater*, *R. apiculatus*, *R. hirsutus*, *R. humifusus*, *R. pygmaeus* etc. For taxa from E part of C Europe such a nomenclatural taxonomic study of all relevant names is missing for the moment and therefore it is not quite certain whether some names in the following checklist will not have to be substituted after a due study by some earlier names. Looking for correct names in very rich literature and in disarranged herbaria is very difficult and sometimes even impossible. (See also notes on individual species directly in the checklist). Nomenclatural problems include also unclear taxonomic classification of infraspecific taxa and use of binomes for them, as well as unclear designation of taxonomic ranks in general. Problems of these types arise especially at further authors if they used such binomes (whether really in the rank of species?) with ascribed authorship.

Series

A certain similarity among species of sect. *Rubus* (and also sect. *Corylifolii*) makes it possible to divide them into further subordinate units, classified usually as series. It should be emphasized here, that series in this circumscription are substantially broadly delimited if compared to the unit usually understood under this name in botanical taxonomy (here especially by Soviet authors) and that the use of some higher classificatory rank would perhaps be more suitable. Likewise the taxonomic (phylogenetical) justification of (some) series is not quite certain. So for example ser. *Micantes* has an intermediate position and species which are included therein, mostly do not manifest close relationships to each other; it is rather a conglomerate of species originated by hybridization of various glandular and non-glandular ancestors. The nomenclature of series (in sect. *Rubus*) will perhaps also require further study, revision and modification. Not all names used till now (and included in the following checklist) seem to be the correct names of series. The use of these units and of their settled names should serve here especially to the possibility of a rough comparison and understanding. Differences in quantitative representation of various series in various

geographic areas can be shown. Series also indicate different evolutionary centres - e.g. *Discolores* and *Canescentes* show affinity to the Submediterranean region, *Glandulosi* to mountains of C Europe, many other series to Atlantic - Subatlantic areas of Europe etc. Some species indicate connections between certain series, e.g. *R. constrictus* (between "*Suberecti*" and *Discolores*), *R. apricus* (*Hystrices* - *Glandulosi*) etc. Series of sect. *Corylifolii* represent mostly parallel taxa to the series of sect. *Rubus*.

Tasks of future investigation

In spite of the currently prevailing, rather reducing approach to solution of taxonomic problems of brambles connected with lowering their number, anxiety persists among regional botanists and in wider botanical public regarding the study of this genus, even though knowledge of only a certain limited number of species (in our situation about 30) is necessary for botanical regional studies. The present state of investigation of *Rubus* in CzR demonstrates that for the moment not all species in this area have been recognized or described, though it seems that the greatest part of widespread species was already recorded from there. However, it is possible to expect discoveries of various ecotype and transgression elements and findings of new species with small distribution areas, or morphologically less distinct and thus less easily distinguishable species, respectively. A further phase of botanical investigation of the flora of CzR will also have to (1) include study and revision of a (large but quite disarranged and technically imperfectly prepared) herbarium material with c. 30.000-40.000 specimens, (2) appraise, on the basis of these studies, earlier literature data, (3) describe historical view on the development of knowledge of *Rubus* in this country, (4) typify responsibly the names based on material originating from CzR, (5) determine and map the distribution of individual bramble taxa, (6) give their phytogeographic character, (7) pay special attention to the neglected section *Corylifolii* and perhaps also to ser. *Glandulosi* etc. It will also be necessary to (8) win people interested in botanical investigation for obtaining further requisite material and other primary data.

Introduction to checklist

The checklist presented here gives a critical survey of taxonomically valid brambles of CzR containing names with full citations of their publication places, synonymy (in an abbreviated form), in some cases quotations of specialized literature referring to the species in question. The proper text on a species briefly gives data on the character of the distribution, description of the total distribution area and information on the occurrence in CzR. Notes are added to some species, including data on the character of the occurrence using the terms nemophilous vs. thamnophilous in the sense as defined by Weber (1979) - nemophilous: confined to the forest milieu and to its near surrounding with climate influenced by this environment; thamnophilous: for opposite cases. Only typical behaviour of the species is described by these terms. Further data refer to phytogeography, state of threat, nomenclature etc. With respect to great problems and insufficient investigation in the area studied, sociological characteristics have not been included in this checklist. All native and fully naturalized species are given runningly numbered in the checklist (1.-77.). Naturalized species are given under designation N (N.1.- N.6). Separately given are the species which could be found in the area (under designation A; A.1. - A.21.) and species only cultivated there (under designation C; C.1. - C.6.). Only abbreviated quotations of their names are given to the species of these two groups (author and the year of the publication of the name), without their publication place and synonymy, but always with data on their nearest occurrence (in the group A) or on regions of their native distribution (in the group C). For the comparative purposes, the species of both sect. *Rubus* and sect. *Corylifolii* are also numbered separately. The checklist is a preparatory work for the treatment of *Rubus* in flora work Květena ČR (Flora of Czech Republic), and for elaboration of a monograph of the genus for the area studied.

Dedication

This paper is dedicated in honour of Professor Heinrich Egon Weber, Vechta (Germany) at the occasion of his 60th birthday anniversary in this year. His books from 1973 and 1986 are milestones on the way to a critical revision of C European brambles, to which also his treatment of *Rubus* for the third edition of Hegi *Illustrierte Flora von Mitteleuropa* will join in a short time. An extensive series of papers with results of his critical studies of individual species completes his above mentioned books. It is especially necessary to emphasize his struggle for more precise diagnostification of quantitative determination characters in particular species as well as his endeavour in typification of bramble names. By his work he has substantially attracted interest of botanists in this genus and contributed to reviving botanical investigation in new directions. It is also necessary to stress his endeavour to help all persons interested in botany. And therefore: *Ad multos felicesque annos!*

Abbreviations

C = Central
CzR = Czech Republic
E = East, eastern
N = North, northern
S = South, southern

W = West, western
NE = Northeast, northeastern
NW = Northwest, northwestern
SE = Southeast, southeastern
SW = Southwest, southwestern

Checklist of *Rubus* species in the Czech Republic - stage 1991

Rubus L. *Spec. Plant.*, 492, 1753; *Gen. Plant.*, ed. 5, 218, 1754.

Subgen. I.: *Anoplobatus* (Focke) Focke *Spec. Ruborum* 2:123, 1911.

Bas.: *Rubus* sect. *Anoplobatus* Focke, *Abhandl. Naturwiss. Ver. Bremen* 24: 143, 146, 1874. - Syn.: *Rubacer* Rydb. 1903.

1. [N.1.] *Rubus odoratus* L. *Spec. Plant.*, 494, 1753.

Syn.: *Rubacer odoratum* (L.) Rydb. 1903.

Originating from E part of N America, cultivated and rarely escaped from cultivation and becoming naturalized; recently it was found naturalized near Bohdaneč (E Bohemia).

[C.1. *R. parviflorus* Nuttall *Gen. North Amer. Plants* 1:308, 1818; syn.: *R. nutkanus* Mocino ex Ser. in DC. 1825; originating from W parts of N America, only rarely cultivated in CzR.]

Subgen. II.: *Chamaerubus* O. Kuntze *Reform Deutsch. Brombeer.*, 45, 1867.

Syn.: *Rubus* subgen. *Chamaemorus* Focke 1877 [an (Hill) Focke?] - *Chamaemorus* Hill 1756.

2. *Rubus chamaemorus* L. *Spec. Plant.*, 494, 1753.

Syn.: *Chamaemorus norvegica* Greene 1906.

Widespread species in Arctic and Boreal zones of circumpolar regions of N Hemisphere reaching rarely to the mountains of C Europe. In CzR only in the Krkonoše Mts. in 3 localities.

Subgen. III.: *Idaebatus* (Focke) Focke *Syn. Ruborum German.*, 97, 1877.

Bas.: *Rubus* sect. *Idaebatus* Focke, *Abhandl. Naturwiss. Ver. Bremen* 24:143, 1874. - Syn.: *Baïdaea* (Dumort.) Greene 1906.

[Sect. 1: *Rosifolii* Focke *Spec. Ruborum* 2: 148, 1911.

C.2. *R. illecebrosus* Focke, Abhandl. Naturwiss. Ver. Bremen 16: 278, 1899; originating from E Asia (Japan). Rarely cultivated in CzR, once found as an ergasilipophyte.]

Sect. 2.: *Idaeanthi* Focke Spec. Ruborum 2:171, 1911.

3. *Rubus idaeus* L. Spec. Plant., 492, 1753.

Syn.: *Batidaea idaea* (L.) Greene 1906.

A widespread species with Euroasiatic distribution area exceeding from W Europe to E Siberia and C Asiatic mountain ranges. Very common in CzR from lowlands to subalpine belt, often cultivated.

Sect. 3.: *Nivei* Focke Spec. Ruborum 2:181, 1911.

[C.3. *R. cockburnianus* Hemsley, Journ. Linn. Soc., Bot., London, 29: 305, 1892; originates from C China, rarely cultivated in CzR.]

4. [N.2.] *Rubus phoenicolasius* Maxim., Bull. Acad. Imper. Sci. Saint-Pétersbourg 17:160, 1872.

Originates from E Asia (Japan, N China, Korea), rarely cultivated and occasionally escaped from cultivation. Earlier reported from the surroundings of the town of Brno, recently it has been confirmed also from there.

Subg. IV.: *Cylactis* (Rafin.) Focke Syn. Ruborum German., 95, 1877.

Bas.: *Cylactis* Rafin., Amer. Journ. Sci. [Silliman] 1:377, 1819.

Lit.: Ejchvald K., Učen. Zap. Tartu. Gosud. Univ. 81, Trudy Bot. 2:1-285.

Ser. 1.: *Saxatiles* Focke Spec. Ruborum 1:23, 1910.

5. *Rubus saxatilis* L. Spec. Plant., 494, 1753.

A widespread species, distributed in temperate zone of Eurasia (with an exclave to E Greenland). Rarely scattered in CzR.

Ser. 2.: *Xanthocarpi* Focke Spec. Ruborum 1:24, 1910.

6. [N.3.] *Rubus xanthocarpus* Bureau et Franchet, Journ. Bot. [Morot], Paris, 5:46, 1891.

Lit.: Holub J. et Palek L., Preslia 53:9-32, 1981.

Originates from SW China, sometimes cultivated and rarely escaped from cultivation (Denmark, Germany), in CzR naturalized in C Bohemia near the village Zeměchy near Kralupy n. Vltavou.

Subgen. V.: *Rubus*.

Syn.: *Rubus* subgen. *Eubanus* Focke 1874.

Sect. 1.: *Rubus*.

Subsect. 1.: *Rubus*.

Syn.: *Rubus* sect. *Suberecti* Lindley 1835.

7. (I.) *Rubus nessensis* Hall, Transact. Royal Soc. Edinburgh 3:30, 1794.

Syn.: *R. suberectus* Anderson ex Sm. 1814. - *R. heptaphyllum* Opiz 1823. - *R. heterocaulon* Ortmann 1835. - *R. viridis* Presl ex Ortmann 1835.

A widespread species, occurring from S Norway, the British Isles and C France to W Russia and Ukraine (reported as far as from Sankt Petersburg, Moscow and Kiev) N Jugoslavia and N Italy. In CzR scattered to frequent, represented here only by the type subspecies - subsp. *nessensis*. The second subspecies - subsp. *scisoides* H. E. Weber 1973 - occurs not far from the territory of CzR (e.g. Strzelice Opolskie in Poland, Görlitz, Königshain, Fichtelgebirge and Bayerischer Wald in Germany). It can be probably found in CzR as well.

[A.1 *R. scissus* W. C. R. Watson 1937; syn.: *R. fissus* auct.; reported from N Bohemia, its nearest localities are as far as in N Brandenburg; literature data have never been confirmed and are improbable.]

8. (2.) [N.4.] *Rubus allegheniensis* Porter, Bull. Torrey Bot. Club 23:153, 1896.

Originates from E part of N America (USA, Canada), cultivated in Europe, escaped from cultivation and naturalized in W part of C Europe and in S Scandinavia. In CzR sometimes cultivated and rarely escaped (e.g. Bílý Kostel, Planiny, Kubova Huf, Oslov near Zvíkov, Třešť etc.).

[C.4. *R. canadensis* L. 1753; syn.: *R. pergratus* auct.; originates from E part of N America, cultivated in Europe, sometimes escaped from cultivation. In CzR only rarely cultivated. The nearest known escaped occurrence is in Upper Lusatia (e.g. Görlitz).]

9. (3.) *Rubus sulcatus* Vest, Steiermärk. Zeitschr. 3:162, 1821.

A widespread C European species occurring from S Norway, the British Isles and C France to Poland, W Ukraine, Roumania, N Jugoslavia and N Italy. In CzR scattered on greater part of the territory. Nemophilous ecoelement.

10. (4.) *Rubus barrandienicus* Holub et Palek, Folia Geobot. Phytotax. 26: 332, 1991.

A recently described widely distributed regional species (distribution area extent c. 330 x 150 km) known only from CzR. Continuously distributed in W part of interior Bohemia where the marginal localities of this distribution are as follows: Rakovník - Tuhovřice - Úněšov - Stod - Přeštice - Pačejov - Volyně - Helfenburk - Albrechtice - Ševětín - Heřmaničky - Netvořice - Dobřichovice - Mšec. Two isolated localities are in Moravia (Moravský Krumlov, Černá Hora). Nemophilous ecoelement. It was hitherto determined by our botanists as *R. sulcatus*, *R. plicatus*, or *R. nessensis*.

11. (5.) *Rubus bertramii* G. Braun Herb. Ruborum German., 21, 1877.

Syn.: *R. plicatus* [Form] *R. bertramii* G. Braun ex Focke 1877 - *R. plicatus* var. *macrandr* Focke in Ascherson et Graebner 1902.

Lit.: Weber H. E., Abhandl. Naturwiss. Ver. Bremen 39:155-159, 1979.

A widespread species with a Subatlantic tendency of distribution, occurring from Denmark, England and N France eastwards to E Germany, CzR, E Alps in Austria and to Switzerland. In CzR rarely scattered in C and E Bohemia and in C and NE Moravia. Insufficiently distinguished (and in this country also not easily distinguishable) from *R. plicatus* and especially from *R. sulcatus*. The majority of data from CzR depend on determination by Professor Weber.

12. (6.) *Rubus plicatus* Weihe et Nees Rubi German., 15, 1822.

Syn.: *R. fruticosus* L. 1753. - *R. affinis* Weihe et Nees 1822, nomen illegit.

A widespread species distributed from S Norway, the British Isles and France to Latvia, Poland, W Ukraine, Roumania and N Jugoslavia, perhaps also in the northernmost Italy. In CzR unevenly scattered, locally frequent, but in some areas rare

or absent. From lowlands to mountains (to 900 m a.s.l.), usually with pink petals. The correct name for this species needs further consideration.

[A.2. *R. opacus* Focke in Alpers 1875; even though the species was reported from Bohemia (e.g. from its NE part), the occurrence has not been confirmed. Similar plants were collected, but in autumn. Its nearest localities to CzR are in Upper Lusatia, Saxonia and in the Fichtelgebirge Mts., so that its occurrence in CzR cannot be excluded.]

13. (7.) *Rubus graecensis* W. Maurer, Oesterr. Bot. Zeitschr. 115:224, 1968.

Lit.: Maurer W., Mitteil. Abteil. Bot. Mus. Joanneum Graz 45/4:13-20, 1973.

A regional species known till now from SE part of E Alps, occurring in Austria in Stiria, Carinthia and S Burgenland, and further in N Slovenia. Surprisingly found by the present author in N Moravia and in Moravian Silesia in c. 7 sites (Žulová - Vidnava, Český Malín - Oskava, Dolany, Svatý Kopeček, Tršice, Ostrava, Poruba). A description of these plants as a new species was prepared. Professor Weber identified, however, the presumptively new species with *R. graecensis*. The newly found occurrence of that species is separated by a large gap (c. 350 km) from the main part of its distribution area. A typically nemophilous species.

14. (8.) *Rubus constrictus* P. J. Müller et Lefèvre, Jahresber. Pollichia 16-17:79, 1859.

Syn.: *R. vestii* Focke 1877. - *R. candicans* subsp. *constrictus* (P. J. Müller et Lefèvre) Janchen 1957, nomen inval.

A widespread species, occurring from W Germany, Belgium and France to S Poland, Slovakia, Roumania, Jugoslavia and N Italy. In CzR it occurs scattered in warmer regions at lower altitudes. Thamnophilous element. It is intermediate between subsect. *Rubus* and ser. *Discolores*.

[A.3. *R. divaricatus* P. J. Müller 1858; syn.: *R. nitidus* Weihe et Nees p.p., non Rafin.; reported from CzR for example from the surroundings of Mladá Boleslav (not revised). Plants similar to this species were found near Mělník, however, they require a further study. The nearest known reliable occurrence is in Upper Lusatia and in Saxonia (near Dresden). Occurrence in CzR is very probable.]

15. (9.) *Rubus senticosus* Köhler ex Weihe in Wimmer et Grab. Fl. Siles. 1:51, 1829.

A widespread species of a disjunctive distribution area reaching westwards to the E Netherlands and N Belgium, eastwards to W Silesia (N promontories of the Krkonoše Mts.) and to CzR. Here known from isolated localities near Holedeč and Černoc, Mělník, Kladruby near Vlašim, Velichovky, Dvůr Králové, Nové Město n. Metují and between Žďár and Nové Město na Moravě. An earlier possible literature record is from Bystřice pod Perštýnem. In CzR it reaches the E limit of its distribution area. Within subsect. *Rubus*, *R. senticosus* represents a rather different type.

[A.4. *R. sorbicus* H. E. Weber 1980; Lit.: H. E. Weber, Feddes Repert. 91:3-6, 1980; the nearest occurrence, being however also isolated, is in the surroundings of Dresden.]

Subsect. 2.: *Hiemales* E. H. L. Krause in Prah. Krit. Fl. Prov. Schleswig-Holstein 2:57, 1890.

Ser. 1.: *Discolores* (P. J. Müller) Focke Spec. Ruborum 3:376, 1914.

Bas.: *Rubus* sect. *Discolores* P. J. Müller, Flora 41:133, 1858.

[C.5. *R. ulmifolius* Schott 1818; a species with Atlantic-Submediterranean distribution area, erroneously given from CzR. Here only an introduced occurrence is possible. Sterile plants were collected in the park at Průhonice (ergasiolipophyte or ergasiophygyte).]

16. (10.) *Rubus bifrons* Vest, Steiermärk. Zeitschr. 3:163, 1821.

Syn.: *R. amoenus* sensu Čelak. 1875 non Portenschlag.

A widespread species, occurring from Belgium, S France and NE Spain (Catalonia) to S Poland, Czechoslovakia, Hungary, N Yugoslavia and C Italy; reported also from Roumania. Distribution area with a Submediterranean tendency of dispersion. In CzR scattered, with the main occurrence in warmer regions, predominantly in lower altitudes, in the Šumava Mts. it ascends, however, to the altitudes of 800 m. Thamnophilous eoelement.

17. (11.) *Rubus praecox* Bertol. Fl. Ital. 5:220, 1842.

Syn.: *R. procerus* P. J. Müller ex Boulay 1864. - *R. hedycarpus* Focke 1877, nomen illegit. - *R. macrostemon* (Focke) Caflisch 1878. - *R. hedycarpus* Focke subsp. *macrostemon* (Focke) Focke in Ascherson et Graebner 1902 et subsp. *praecox* (Bertol.) Focke l. c. - *R. discolor* sensu auct plur., non Weihe et Nees 1822 sensu orig.

A widespread species, occurring from W Germany, France and N Spain through C Italy to Macedonia, Crimea, W Ukraine (Transcarpathian region) and S Poland. In CzR rare to scattered in single localities in warmer regions. A distinct thamnophilous eoelement.

18. (12.) [N.5.] *Rubus armeniacus* Focke, Abhandl. Naturwiss. Ver. Bremen 4:183, 1874.

Syn.: *R. procerus* sensu auct. non P. J. Müller ex Boulay 1864. - *R. hedycarpus* Focke 1877 p.p., nomen illegit.

Originates from Caucasia, cultivated from 1850, in C Europe often escapes from cultivation, naturalized. It forms here also secondary synanthropic coenoses (belonging to the alliance of *Arction lappae*). It also escapes from cultivation in N America and Australia and perhaps in S Africa and New Zealand as well. In Europe its secondary occurrence is known from the British Isles to C Europe (Austria, Czechoslovakia, E Germany (here northwards to Rügen); the occurrence near Vinnica, W Ukraine, may perhaps also belong here. In CzR only scattered, chiefly in the surroundings of Prague, in Moravia at Olomouc etc. It is still being insufficiently distinguished from *R. praecox*. A thamnophilous eoelement.

19. (13.) *Rubus elatior* Focke ex Grelli Beitr. Fl. Schweiz, 50, 1870.

A widely dispersed regional C European species (possibly widespread), known chiefly from Bavaria, Tirolia, Upper Austria and CzR. Here it occurs only in Bohemia: in the southwestern part (Chudenice, Hnačov, Blatná, Dub), in the area of the Brdy Mts. (Mirošov, Zbiroh), in C Vltava basin (N of Orlik, Štěchovice), Sázava basin (Kranhice, Chrást, Zruč n. Sáz.) etc. Weber (Ms.) gives this species also from the Krušné hory Mts. and earlier determined this species from the Český ráj region. In CzR only almost exclusively pink-flowered. Plants from CzR require further taxonomic investigation to conclude, whether the material placed here is taxonomically not heterogeneous (two species ?) and whether it is really identical with Bavarian plants of this species.

20. (14.) *Rubus montanus* Libert ex Lejeune Fl. Spa 2:317, 1813.

Syn.: *R. candicans* auct. non Weihe ex Reichenb. 1832, nomen illegit. (= *R. silesiacus* Weihe). - *R. thyrsoides* subsp. *candicans* ("Weihe") Focke in Ascherson et Graebner 1902.

Lit.: Weber H. E., Osnabrücker Naturwiss. Mitt. 15:106 - 109, 1990.

A widespread species, occurring from France and the S Netherlands to Roumania and S Poland, southwards to C Italy. In CzR scattered to frequent, mainly in warmer

regions and at lower altitudes. Thamnophilous ecoelement. A rather varied species, in the present circumscription containing perhaps also further taxa. Forma *macromontanus* H. E. Weber 1990 described from Bohemia deserves, in my opinion, a higher taxonomic rank and is accepted here as a variety (see the Appendix). In some regions (C Labe basin, but also elsewhere) a type with narrow pink petals occurs representing a further taxon requiring more detailed study. A certain problem is the correct name, having been used earlier for a different taxon (allied to *R. macrophyllus*).

21. (15.) *Rubus grabowskii* Weihe ex Günther et al. Cent. Plant. Siles. Exsicc., 14, 1827.

Syn.: *R. thyrsoides* Wimmer 1832, nomen illegit. - *R. thyrsoides* subsp. *thyrsanthus* Focke 1877. - *R. thyrsanthus* (Focke) Foerster 1878. - *R. montanus* subsp. *thyrsanthus* (Focke) Halácsy 1891. - *R. candicans* subsp. *thyrsanthus* (Focke) Gáyer 1922.

Lit.: Weber H. E., Abhandl. Naturwiss. Ver. Bremen 39:164-168, 1979.

A widespread C European species occurring from S Norway, Belgium, Switzerland to E Poland (Lublin) and Roumania, southwards to C Italy. In CzR in warmer regions at lower altitudes rather frequent. Thamnophilous ecoelement.

22. (16.) *Rubus henrici-egonis* Holub, Folia Geobot. Phytotax. 26:334, 1991.

A recently described widely distributed regional species known (hitherto) only from CzR. It occurs in warmer regions of Bohemia and Moravia, in Bohemia chiefly in the Labe basin (E part), NE Bohemia and in the Železné hory Mts., isolated in S part (Sedlec - Červený Újezd, Lipí near České Budějovice), in Moravia it is scattered from Jihlava to vicinity of Olomouc, Ždánický les hilly country, the Chřiby Mts. and Hodonín, isolated also in Moravian Silesia (Háj). Probably it occurs also in neighbouring countries (Austria, Slovakia, Poland).

23. (17.) *Rubus austromoravicus* Holub, Folia Geobot. Phytotax. 26:335, 1991.

A recently distinguished regional species of a Pannonian distribution area, described from Moravia, mostly known from there from its S and C part, westwards to Budíkov near Moravské Budějovice, eastwards to Hodonín and Březolupy near Uherské Hradiště, northwards to the surroundings of Prostějov, isolated in Moravian Silesia (Stará Ves near Bílovec). A very isolated occurrence is in the vicinity of Štúrovo (Parkáň) in S Slovakia. This species will be certainly found in Lower Austria and perhaps also in Hungaria. A typically thamnophilous species. Existence of some earlier name for this species cannot be excluded.

24. (18.) *Rubus crispomarginatus* Holub, Folia Geobot. Phytotax. 26:336, 1991.

Syn.: *R. thyrsoides* subsp. *phyllostachys* var. *incisoserratus* Spribille ex Sudre 1910. - *R. thyrsoides* subsp. *incisoserratus* (Sudre) Spribille 1910.

A recently described widely distributed regional species originally known only from Czechoslovakia. Besides the occurrence in CzR it is known also from SW Slovakia (C part of the Malé Karpaty Mts.) and in S part of Polish Silesia. Its distribution area is probably broader. In CzR it occurs from NW Bohemia (Teplice, Nechanice, Černoc, Ortel hill near Sloup) to E Moravia (Krnov, Ondřejník Mt., Liptál, the Chřiby Mts., Hodonín).

25. (19.) *Rubus bohemicola* Holub et Palek ex Holub, Folia Geobot. Phytotax. 26:333, 1991.

Syn.: *R. lasiothyrsus* Sudre f. *bohemicola* Hruby 1944. - *R. lasiothyrsus* auct. fl. bohem., non Sudre 1900.

A recently described regional species, known only from Bohemia, reaching westwards to Klabava, Plzeň, Nepomuk and Sušice, northwards to Peruc and Bratronice, southwards to Velký Bor near Horažďovice, Mirovice and vicinity of Milevsko, eastwards to Dírná near Soběslav, Votice, Trhový Štěpánov and Mukařov near Praha. Further eastwards it occurs in W part of the Železné hory Mts. and at Ľubná near Polička. The extent of its distribution area is c. 250 x 160 km. Morphologically very distinct species, in our literature mistaken for *R. lasiothyrsus* Sudre from the Pyrenees. Important C European (Bohemian) endemic.

Ser. 2.: *Rhamnifolii* (Bab.) Focke Syn. Ruborum German., 125, 1887.

Bas.: *Rubus* [Group] *Rhamnifolii* Babington Brit. Rubi, 75, 1869.

26. (20.) *Rubus perrobustus* Holub, Preslia 64:128, 1992 [cf. Appendix.]

A widely distributed regional species confined (according to current knowledge) to CzR known both from Bohemia and Moravia. Only scattered through the area, usually only as single plants. In Bohemia found in C part (Roudnice n. L., Praha, Slapy, Mníšek, Příbram, Louňovice, Krhanice, Kácov, Domousnice) and NE part (Velichovky etc.), in Moravia at Čížov near Znojmo, in Oslava basin, at Koryčany, in the vicinity of Zlín and Olomouc, Lesní Albrechtice etc. Probably a species with a wider distribution. Its position is intermediate between subsect. *Rubus* and ser. *Rhamnifolii*.

27. (21.) *Rubus nemoralis* P. J. Müller, Flora 41:139, 1858.

Syn.: *R. selmeri* Lindenberg 1884. - *R. laciniatus* subsp. *selmeri* (Lindenberg) Beek 1974.

A widespread species, occurring from SW Norway and the British Isles to W Germany (Slesvig-Holstein, Lower Saxonia, Westphalia) and isolated in Polish Silesia and CzR. Here only two localities are known, in Bohemia between villages Petkovy and Řitonicé in NE part of C Bohemia, in Moravian Silesia near Bohuslavice. A typical exclave element.

28. (22.) [N.6.] *Rubus laciniatus* Willd. Hort. Berol. 2, tab. 82, 1806.

A taxon without its own native distribution area, closely related to *R. nemoralis*, probably of a mutation origin, taken into cultivation as soon as in the 17th century, cultivated both as ornamental plant and for fruits, escaping from cultivation and naturalized. It is known from the British Isles and various countries of C Europe, southwards to Italy. In CzR sometimes cultivated and naturalized in sporadic localities. In the last time it was collected in the sandstone area Labské pískovce (Mezní Louka) and in the surroundings of Orlík (both these localities are in Bohemia).

29. (23.) *Rubus gracilis* J. Presl et C. Presl Delic. Prag. 1:220, 1822.

Syn.: *R. villicaulis* Köhler ex Weihe et Nees 1825. - *R. insularis* sensu Vondráček 1978, non Areschoug.

Lit.: Weber H. E., Feddes Repert. 95:601-620, 1984.

A widespread European species with distribution area from N Germany to Baden-Württemberg, N Bavaria, CzR, Stiria (an isolated occurrence) and E Slovakia, reported also from W Ukraine. In CzR rather frequent in Bohemia and scattered in Moravia.

30. (24.) *Rubus angustipaniculatus* Holub, Folia Geobot. Phytotax. 26:339, 1991.

Syn.: *R. rhombifolius* sensu auct., non Weihe in Boenningh. 1824. - *R. questieri* sensu auct. fl. bohém., non P. J. Müller et Lefèvre 1859.

A widespread species described recently from CzR. Besides this it occurs in S part of Polish Silesia. In CzR scattered in Bohemia, chiefly in NE part, southwards to the Železné hory Mts., westwards to Zbiroh, Nové Strašecí, Milý, Sojovice and Vlkava. In W, NW, S and SE part of Bohemia it is absent. In Moravia it occurs in the vicinity of Brno and Olomouc, in Moravian Silesia near Krnov, Hlučín, Bohuslavice, Šilheřovice, Třinec etc. Determination of the correct name of this species requires a further study (Holub, in prep.).

Ser. 3.: *Silvatici* (P. J. Müller) Focke Spec. Ruborum 3:391, 1914.

Bas.: *Rubus* sect. *Silvatici* P. J. Müller, Flora 41:142, 1858.

31. (25.) *Rubus wimmerianus* (Spribille ex Sudre) Spribille, Jahresber. Schles. Vaterländ. Cultur 87:57, 1909.

Bas.: *R. rhombifolius* [microgen.] *wimmerianus* Spribille ex Sudre Batotheca Europ., 71, 1907. - Syn.: *R. wimmeri* Spribille 1900, non Weihe in Günther et al. 1826.

A widespread species known with certainty from Polish Silesia and from Czechoslovakia, here as in Bohemia and Moravia, as well as in Slovakia (in SW and C parts), the occurrence in N part of Lower Austria is possible. In CzR more frequent at in Moravia and Moravian Silesia, especially in NE part of the area, southwards reaches the vicinity of Znojmo (Šumná). In Bohemia as an E migrant it is limited to the NE part (promontory of the Orlické hory Mts., Železné hory Mts. and hilly country between the rivers Sázava and Labe - here westwards to Uhlířské Janovice). Similar plants occur near Štěchovice in C Bohemia. In Flora Europaea (2: 13, 1968) erroneously designated as an endemic plant of Czechoslovakia, though it was originally described from Polish Silesia.

[A.5. *R. circipanicus* E. H. L. Krause in Prah 1890; Lit.: Weber H. E., Abhandl. Naturwiss. Ver. Bremen 39:159-163, 1979; occurrence in CzR cannot be excluded, the nearest localities are given in Polish Silesia (Racibórz, Bystrzyca Klodzka).]

32. (26.) *Rubus macrophyllus* Weihe et Nees Rubi German., 35, tab. 12A, 1824.

A widespread species occurring from the Netherlands, S England and France to C Europe, southwards to Italian Alps, eastwards to W Poland. It is reported also from Roumania. Data from SW Slovakia and E Moravia (Weber, in litt.) can be reliable, further data from C Moravia require a critical revision. Recently the species was found in CzR with certainty only in NE part of C Bohemia between villages Petkovy and Řítonice and in W part of the Český Ráj region. Nemophilous ecoelement.

Ser. 4.: *Sprengeliani* Focke Syn. Ruborum German., 214, 1877.

33. (27.) *Rubus sprengelii* Weihe, Flora 2:118, 1819.

A widespread species with a Subatlantic tendency of occurrence, distributed from the British Isles to S Norway, S Sweden and C Europe, southwards to N France, Bavaria and Austria (e.g. Vorarlberg) - mostly in isolated areas at S limit of the distribution area, eastwards to Poland, CzR and Austria. In CzR only an isolated

occurrence in E part of Moravian Silesia (four localities near Frýdek, Datyně, Stonava and Trinec). Among brambles a distinct example of Atlantic-Subatlantic element.

Ser. 5.: *Canescentes* H. E. Weber, Ber. Bayer. Bot. Ges. 60:19, 1989.

34. (28.) *Rubus canescens* DC. Catal. Horti Monspel., 139, 1813.

Syn.: *R. tomentosus* Borkh. in Römer 1794 sensu auct., nomen illegit. - *R. hypoleucus* Vest 1824 (incl.). - *R. lloydianus* Genev. 1861 (incl.).

A widespread species. It is a Submediterranean element with distribution area situated in N part of Mediterranean from Portugal to Iran, northwards to C Europe reaching to Thuringia, CzR and extending to one locality (Glubczycze, Kösling) in Polish Silesia. In CzR both in Bohemia and Moravia, scattered in warm regions, locally absent (e.g. SE Bohemia), in Moravia northwards till to the vicinity of Bruntál. Very variable sexual species inclining to hybridization, whose variation requires further study. A thamnophilous ecoelement.

Ser. 6. *Vestiti* (Focke) Focke Syn. Ruborum German., 285, 1877.

Bas.: *Rubus* [Gruppe] *Vestiti* Focke, Abhandl. Naturwiss. Ver. Bremen 1:194, 1868.

35. (29.) *Rubus vestitus* Weihe in Bluff et Fingerh. Compend. Fl. German. 1:624, 1825.

A widespread species, occurring from France, the British Isles (Ireland, England) and S Sweden to W Hungary, CzR and Poland (here rare, only in SE part at Ležajsk) southwards to Austria (Carinthia and Vorarlberg), N Italy, Switzerland and France; reported also from Roumania (?). In CzR only in Bohemia, isolated in promontory of the Orlické hory Mts. in the vicinity of Rychnov nad Kněžnou (3-4 localities) and Skorkov near Stará Boleslav in C Bohemia. Plants of Bohemian localities have pink petals and belong to f. *vestitus*.

36. (30.) *Rubus pyramidalis* Kaltenbach Fl. Aachen. Beckens, 245, 1845.

A widespread species, occurring from C France, the British Isles and S Sweden to Rhineland, Saxonia, Silesia and Pomerania. Most recently the species was found in one locality in Sázava valley near Chabeřovice village between Zruč and Kácov (leg. J. Holub 1989, rev. H. E. Weber). The finding of the species in Bohemia could have been expected as the localities closest to CzR are as near as in Saxonia (Pirna, Dresden) and Lusatia (Cottbus). Some batologists classify this species into the series *Silvatici*.

Ser. 7.: *Micantes* Sudre Rubi Europ., 284, 1913.

37. (31.) *Rubus micans* Godron in Grenier et Godron Fl. France 1:546, 1848.

A widespread species of Atlantic distribution character, with disjunctive distribution area extending from the British Isles to W Germany and N France. Eastwards it reaches to Rhineland-Palatinate and to the Odenwald Mts. and Spessart Mts. Most recently a very isolated locality was found in N Moravia (Šternberk, leg. B. Trávníček et V. Pluhař, det. H. E. Weber). Among the brambles of CzR, this species represents a distinct exclave element.

[A.6. *R. raduloides* (Rogers) Sudre 1905 could perhaps be found in CzR; its nearest occurrence is in the vicinity of Ratisbon in Bavaria.]

[A.7. *R. caflischii* Focke 1877 could be found in CzR; in E Bavaria its distribution area reaches the Böhmerwald Mts. and adjacent area of Upper Austria.]

38. (32.) *Rubus thelybatos* Focke ex Caflisch Exkursions-Fl. Südöstl. Deutschl., 92, 1878.

Syn.: *R. caflischii* subsp. *eu-caflischii* [Rasse] *thelybatos* (Focke) Focke in Ascherson et Graebner 1903. - *R. omalus* subsp. *thelybatos* (Focke) Sudre 1912.

Lit.: Vondráček M., Zprávy Mus. Západočes. Kraje, Pfir., Plzeň, 36-37:17-23, 1988.

A widely distributed regional species occurring in Bavaria and extending by an exclave to SW Bohemia, where c. 14 localities are known, mostly confined to the Plánický hřeben Hills. C European endemic, nemophilous eoelement.

39. (33.) *Rubus tabanimontanus* Figert, Allgem. Bot. Zeitschr. Syst. 11:178, 1905.

Syn.: *R. silesiacus* sensu auct. mult. non Weihe sensu orig.

A widespread species known from Polish Silesia, Czechoslovakia and Saxonia; in Slovakia it occurs in W and SW part. In CzR scattered to frequent, in Bohemia reaching up to its southern part. In the earlier botanical literature generally given as *R. silesiacus* Weihe.

40. (34.) *Rubus geminatus* H. E. Weber, Ber. Bayer. Bot. Ges. 62:152, 1991.

Syn.: *R. silesiacus* subsp. *abundiflorus* Barber 1909. - *R. silesiacus* var. *kinscheri* Sudre 1909.

A C European regional species occurring from N Bavaria to Upper Lusatia exceeding from there to the northernmost part of Bohemia. In CzR it is documented only from a single locality - Mikulášovice. In the last time the local population was strongly affected by timber felling. Weber (Ms.) mentioned the second locality being situated near the village Brtníky.

41. (35.) *Rubus silesiacus* Weihe in Wimmer et Grab. Fl. Siles. 2/2:53, 1829.

A widely distributed regional species known originally from West Poland (Poznań region and Silesia) with occurrence chiefly in the Sudeten promontory from Zgorzelec to Opole and Glubczyce. Assumption of the probability of occurrence of this species in N regions of CzR has been confirmed most recently by its finding in a number of localities in NE Bohemia between Náchod and Mělník, from where it reaches southwards to the Železné hory Mts. (Vlastějovice, Zdechovice) - leg. J. Holub, det. et rev. H. E. Weber - altogether 16 localities. Professor Weber determined this species also from one isolated locality in SW Bohemia (Dnešice near Přeštice). A nemophilous eoelement.

42. (36.) *Rubus chaerophyllus* Sagorski et W. Schultz, Deutsche Bot. Monatschr. 12:1, 1894.

A widely distributed regional (or widespread) species occurring from Bavaria, the Rhön Mts. and E Thuringia through Saxonia and Lusatia to W half of Polish Silesia and to Bohemia. In CzR it is with certainty known scattered in N and C Bohemia, westwards to V. Černoc, Petrohrad and Plzeň, southwards to Strakonice. The E limit of the distribution area has to be determined (Konecchlumí near Hořice), reported also from E Bohemia (Týniště, Sloupnice etc.). The data from the Beskydy Mts. are uncertain. Nemophilous eoelement.

43. (37.) *Rubus vratnensis* Holub, Preslia 64:129, 1992. [cf. Appendix.]

A narrowly distributed regional species in NW part of Bohemia. About 13 localities are known: broader vicinity of Kokořín, Dubá, Tuháň, Levín, E part of the Krušné hory Mts. - Chlumec and Teplice, isolated at Skryje. The extent of the distribution area is c. 70 x 70 km. Endemic C European (Bohemian) species.

44. (38.) *Rubus clusii* Borb., Erdész. Lapok 1885:104, 1885.

Syn.: *R. gremlii* subsp. *clusii* (Borb.) Hayek 1909. - *R. elongatissimus* subsp. *clusii* (Borb.) Dostál 1948, nomen illegit. - *R. gremlii f. austriaca* Focke 1886. - *R. gremlii* sensu auct., non Focke 1877 sensu orig.

A widespread species occurring from E Bavaria through Austria to Slovenia, W Hungary, W Slovakia and to CzR. Here it is scattered and locally abundant both in Bohemia and Moravia excepting N parts of these lands. C European endemic, reaching in CzR the N limit of its distribution area.

45. (39.) *Rubus centrobohemicus* Holub, Folia Geobot. Phytotax. 25:337, 1991.

A recently described regional species confined to interior Bohemia. It occurs from Plzeň and Rakovník (Lišany) scattered to Central Vltava basin and to Sázava basin, eastwards to Ledeč n. Sáz. and Zbýšov. The extent of the distribution area is c. 180 x 90 km. A significant C European (Bohemian) endemic with a narrow distribution area.

46. (40.) *Rubus acanthodes* H. Hoffm. Plant. Crit. Saxon. Exsicc. 1899, no 101, 1900.

Syn.: *R. apiculatus* subsp. *acanthodes* (H. Hoffm.) Focke in Ascherson et Graebner 1903. - *R. fuscus* subsp. *acanthodes* (H. Hoffm.) Sudre 1911.

A regional C European species distributed from the Fichtelgebirge Mts. through Saxonia to SW corner of Poland, transgressing to NW and N part of Bohemia. In CzR it occurs in E part of the Krušné hory Mts., and sandstone region of Labské pískovce, in the N in the area of Šluknov and especially of Frýdlant as well as in the adjacent Ještědské hory, Lužické hory and Jizerské hory Mts. Through single localities it reaches to N part of interior Bohemia (e.g. M. Černoc, Dubá, Hostín near Mělník, Vráteňská hora Hill, Brodce nad Jizerou near Benátky, Podhorní Újezd etc.). Professor Weber determined *R. acanthodes* also from Obora near Plzeň and Strašice. Perhaps a young taxon originating probably from the hybridization *R. gracilis* x *R. koehleri*.

Ser. 8.: *Mucronati* (Focke) H. E. Weber Rubi Westfalici, 290, 1986.

Bas.: *Rubus* subser. *Mucronati* Focke Spec. Ruborum 3:412, 1914.

47. (41.) *Rubus hypomalacus* Focke Syn. Ruborum German., 274, 1877.

A widespread species, occurring in W part of C Europe, from S Denmark and Belgium to W Germany and further in the E with isolated occurrence in N Bavaria, Saxonia and in adjacent Bohemia. In CzR the species was collected long ago in the last century near Jířkov (Weber, in litt.; the specimen in PRC is inaccessible at the moment). The localities situated very close to CzR are at Waldmünchen and in the Vogtland area. The present author has not collected this species at the territory of CzR. In E Germany it is considered a threatened species.

Ser. 9.: *Radulae* Focke Syn. Ruborum German., 317, 1877.

Bas.: *Rubus* [Gruppe] *Radulae* Focke, Abhandl. Naturwiss. Ver. Bremen 1:295, 1868.

48. (42.) *Rubus radula* Weihe in Boenningh. Prodr. Fl. Monaster., 152, 1824.

A widespread species, occurring from the British Isles and S Scandinavia eastwards to Roumania and Poland, southwards to N Jugoslavia, northernmost Italy, E France and N Spain. In CzR the species is scattered and locally absent, without showing any characteristic distribution pattern. It is scattered in Bohemia and less frequent in Moravia.

49. (43.) *Rubus epipsilos* Focke Syn. Ruborum German., 258, 1877.

A regional species with the distribution centre in Bavaria and transgressing from there to Austria (Tirolia, Upper Austria) and to CzR. Here found not long ago in S Bohemia near Netolice, Lhenice and in the Kluk Mt. near České Budějovice (leg. J. Holub 1990, det. H. E. Weber). An old literature record from a near locality Černá v Pošumaví (Halácsy 1891) might also refer to this species. It has very often been confused with other species. A nemophilous ecoelement.

50. (44.) *Rubus rudis* Weihe in Bluff et Fingerh. Compend. Fl. German. 1:687, 1825.

A widespread species with a distinct Subatlantic tendency of distribution, occurring from N France, England and Slesvig-Holstein to Switzerland, N Bavaria, Saxonia, Brandenburg and Mecklenburg. Isolated occurrence is in Poland, CzR and Austria (only Vorarlberg), reported also from NE Italy. In CzR it is known only from three regions in Bohemia (vicinity of Hořovice, Písek, the Železné hory Mts.). The species reaches in CzR the E limit of its distribution area. A nemophilous ecoelement.

51. (45.) *Rubus salisburgensis* Focke ex Caflisch Exkursions - Fl. Südöstl. Deutschl., 93, 1878.

Syn.: *R. salisburgensis* Focke 1877, nomen provis. - *R. caflischii* subsp. *salisburgensis* (Caflisch) Focke in Ascherson et Graebner 1903. - *R. hebecaudis* subsp. *salisburgensis* (Caflisch) Sudre 1911. - *R. morifolius* P. J. Müller subsp. *salisburgensis* (Caflisch) Soó 1966.

A widespread C European species occurring disjunctively from S Bavaria and Salisburgia through CzR to S Poland. Surprisingly, it is not known in CzR from the regions adjacent to Bavaria and Austria. It occurs there in the Labe basin, E surroundings of Prague, the Sázava basin, NE Bohemia, C Moravia and in W part of Moravian Silesia. Striking, easily distinguishable species reaching in CzR limits of its distribution area. A nemophilous ecoelement.

Ser. 10.: *Pallidi* W. C. R. Watson. Journ. Ecol. 33:344, 1946.

[A.8. *R. pallidus* Weihe in Bluff et Fingerh. 1825; ser. *Pallidi* is represented in CzR by individual morphotypes similar to *R. pallidus*, requiring further study to decide whether they could be classified together within any real taxon. The proper *R. pallidus* occurs geographically nearest to CzR in more remote areas in Saxonia.]

52. (46.) *Rubus scaber* Weihe in Bluff et Fingerh. Compend. Fl. Germ. 1:683, 1825.

A widespread species with a very disjunctive distribution area - the British Isles, Westphalia and Saxonia. From Saxonia it slightly transgresses to SW corner of Poland and to N Bohemia. In CzR only in Bohemia in area of Šluknov (near the village Dolní Poustevny); probable data from that area concern Mikulášovice and Jiříkov, too. Finding of further localities in N Bohemia is possible, some material was determined by Professor Weber as this species (Jičín, Heřmanův Městec). The species was

classified into various series, usually to ser. *Glandulosi*. A nemophilous ecoelement. In E Germany it was considered a threatened species, what corresponds also to the situation in CzR.

Ser. 11.: *Hystrices* Focke Syn. Ruborum German., 342, 1877.

53. (47.) *Rubus koehleri* Weihe in Bluff et Fingerh. Compend. Fl. German. 1:681, 1825.

Syn.: *R. glandulosus* subsp. *koehleri* (Weihe) Čelak. 1875.

A widespread C European species with the main distribution area extending from N Bavaria and Thuringia to Mecklenburg, Brandenburg, Silesia (also Upper Silesia) and Bohemia, further several isolated localities occur N and NW of the area described. Literary data exist even from Roumania (?). In CzR it occurs with certainty only in Bohemia. The distribution in Moravia requires revision as well as does the E limit of the total distribution area. In Bohemia the species occurs chiefly in N and C parts.

54. (48.) *Rubus brdensis* Holub, Folia Geobot. Phytotax. 25:338, 1991.

A narrowly distributed regional species confined to the area of the Brdy Mts. on the border of C and W Bohemia and to adjacent areas. The distribution area includes localities in the vicinity of Plzeň, Nepomuk, Rokycany, Rakovník, Beroun, Příbram, Rožmitál, Mirovice, Orlík; its extent is c. 90 x 50 km. Like plants of *R. koehleri*, also plants of this species are often eaten by deer. Nemophilous ecoelement. Our collectors named it as *R. furvus* Sudre.

55. (49.) *Rubus bavaricus* (Focke) Hruby in Domin et Podpěra Klíč Úplné Květ. Republ. Českoslov., 277, 1928.

Bas.: *R. koehleri* subsp. *bavaricus* Focke Syn. Ruborum German., 351, 1877. - Syn.: *R. hebecarpus* subsp. *bavaricus* (Focke) Sudre 1912.

A widely distributed C European regional species confined to Bavaria and Bohemia. In CzR it is frequent in SW Bohemia from Plzeň to the mountains of Šumava and Český les, scarcely in the promontory of the Šumava Mts. (Čeňkova Pila, Kběl hill near Strakonice, hill Stráže near Lhenice), isolated near Konstantinovy Lázně and Cheb. Further occurrence is in the E vicinity of Prague. It is not excluded that the material classified here to this species might be taxonomically heterogeneous. The identity of Bohemian plants with those from Bavaria requires revision, too. Nemophilous ecoelement.

56. (50.) *Rubus schleicheri* Weihe ex Tratinnick Rosaceae Monogr. 3:22, 1823.

Syn.: *R. glandulosus* subsp. *schleicheri* (Tratinnick) Čelak. 1875.

A widespread C European species occurring from the Netherlands and Holstein to N Bavaria, CzR and W Silesia. Data from the more remote E regions (Roumania) are dubious or uncertain. In CzR it is known with certainty only from Bohemia, data from Moravia (e. g. Dražanská vrchovina - hilly country) require revision. In Bohemia it occurs more frequently in N, NW and C parts of the area. A nemophilous ecoelement.

[A 9. *R. iseranus* Barber 1901 described from the Jizerské hory Mts. from the affinity of *R. schleicheri* with pink petals represents probably a local type known till now predominantly from the Jizerské hory Mts.; it requires further study.]

57. (51.) *Rubus apricus* Wimmer, Jahresber. Schles. Ges. Vaterländ. Cultur 33:87, 1856.

Syn.: *R. koehleri* subsp. *apricus* (Wimmer) Sudre 1908.

A widely distributed C European regional species, occurring from N Bavaria and the Harz Mts. to W Silesia in Poland and to CzR. In E Germany rarely. In Bohemia scattered, locally more frequently (SE vicinity of Prague, S half of Bohemia), in Moravia rarely, eastwards to the Chřibý Mts. (3 localities). A nemophilous ecoelement.

[A.10. *R. lignicensis* Figert 1906, a narrowly distributed regional species occurring in W Silesia and Upper Lusatia; its nearest localities to CzR are at Bischofswerda and Zgorzelec. It could be found in this country.]

Ser. 12.: *Glandulosi* (Wimmer et Grab.) Focke Syn. Ruborum German., 355, 1877.

Bas.: *Rubus* b. *Glandulosi* Wimmer et Grabowski Fl. Siles. 2/1:33, 1829.

[C.6. *R. moschus* Juz., Trudy Priklad. Bot. Selek. 14/3:163, 1925; syn.: *R. caucasicus* auct., non Focke 1875; originates from Caucasia, in CzR very rarely cultivated in parks; a sexual species.]

58. (52.) *Rubus pedemontanus* Pinkwart in Baenitz Herb. Europ., No. 9550, 1898.

Syn.: *R. bellardii* sensu Weihe in Bluff et Fingerh. 1825, nomen illegit. - *R. glandulosus* subsp. *bellardii* (Weihe et Nees) Čelak. 1897.

Lit.: Weber H. E., Willdenowia 13:141-146, 1983.

A widespread species, occurring from France, England, Denmark and SE Sweden to the area of Kaliningrad, W Poland, Bohemia, Bavaria, Vorarlberg in Austria, C Italy and Switzerland. Reported also from Roumania (?). In CzR continuously distributed and often very frequently in Bohemia (the E limit of the distribution area requires determination in more detail) and isolated perhaps in the E part of Moravian Silesia - Petrovice near Karviná where it could reach from Polish Silesia. Among European representatives of ser. *Glandulosi* it is the species with the most extensive distribution area. Nemophilous ecoelement.

[A.11. *R. lusaticus* Rostock 1884 is a narrowly distributed regional nemophilous taxon confined to Upper Lusatia between the towns Bischofswerda and Zittau; it was erroneously reported from the Jizerské hory Mts. However, its occurrence in the northernmost part of Bohemia is possible.]

59. (53.) *Rubus hercynicus* G. Braun Herb. Ruborum German., No. 19, 1877 (s. l.).

Syn.: *R. hirtus* subsp. *hercynicus* (G. Braun) Sudre 1906.

A widely distributed C European (regional) species occurring from Hannover through the Harz Mts. to NE Bavaria, Saxonia and Lusatia, transgressing to S part of Polish Silesia and N Bohemia. In its distribution area it divides into two subspecies, from which only the non-type subspecies is represented in this country - subsp. *pubescens* (Sudre) H. E. Weber, Abhandl. Ber. Naturkundemuseum Görlitz 61/8: 35, 1987; bas.: *R. hirtus* subsp. *hercynicus* var. *pubescens* Sudre Batotheca Europ., 61, 1906. This subspecies [race] was found in Bohemia in the hill Špičák near Varnsdorf and at Hejnice in the Jizerské hory Mts. Behind the country borderline it is known from the vicinity of Zittau. Subsp. *hercynicus* reaches up to S part of Polish Silesia where it occurs also near to the borderline with CzR (Bystrzyca Kłodzka, Głucholazy and Racibórz). It could be found also in this country. A nemophilous ecoelement.

60. (54.) *Rubus lividus* G. Braun Herb. Ruborum German., No 18, 1877.

Syn.: *R. albocalycinus* Barber 1909. - *R. serpens* subsp. *lividus* (G. Braun) Barber 1911. - *R. serpens* subsp. *leptadenes* var. *lividus* (G. Braun) Sudre 1913.

A C European regional species of insufficiently known distribution, occurring in C Germany from the Harz Mts. to the Fichtelgebirge Mts. and the Jizerské hory Mts. In CzR it was recently found at the village Boč near Karlovy Vary (leg. J. Lorber, det. J. Holub et H. E. Weber). With respect to the great number of similar singular morphotypes, the species is determined with difficulties and often confused with similar taxonomically not identical morphotypes. The Barber's record from the Jizerské hory Mts. was wrong. Regarding its near occurrence in the Fichtelgebirge Mts., Saxonian Erzgebirge Mts. and Upper Lusatia, its further occurrence in CzR may not be excluded. A nemophilous ecoelement.

61. (55.) *Rubus barberi* H. E. Weber, Abhandl. Ber. Naturkundesmus. Görlitz 61/8:35, 1987.

A narrowly distributed regional taxon confined to the area of Upper Lusatia from Bischofswerda to the Jizerské hory Mts., transgressing to the near adjacent Silesia in Poland and to N Bohemia. There known only in the area of the Jizerské hory Mts. near parishes Bílý Potok and Nové Město pod Smrkem. In E Germany it is considered with regard to its rare occurrence a threatened species what also corresponds to the situation in Bohemia. A nemophilous ecoelement.

[A.12. *Rubus oreades* P. J. Müller et Wirtgen in Wirtgen 1860 with a disjunctive distribution area from Belgium and the Netherlands to E Bavaria; the closest occurrence to the area of CzR is at Waldmünchen; the species could be found in Bohemia.]

62. (56.) *Rubus hirtus* Waldst. et Kit. Descript. Icon. Plant. Hungar. Rar. 2:150, 1804 (s. l.).

Syn.: *R. glandulosus* subsp. *hirtus* (Waldst. et Kit.) Čelak. 1875.

This taxon does not represent a natural unit but an assemblage of various, often morphologically substantially different (singular or local) morphotypes united on the ground of a common character of violet coloration of glandular indumentum of plants. It chiefly occurs in mountains and adjacent hilly countries from the Pyrenees to the Caucasus. In C Europe in the Alps, Carpathians and further mountains and higher hilly countries. In CzR rather frequently in medium and higher altitudes, more often in Moravia and there mainly in the Carpathian region. A nemophilous ecoelement.

63. (57.) *Rubus guentheri* Weihe in Bluff et Fingerh. Compend. Fl. German. 1:697, 1825.

Syn.: *R. hirtus* subsp. *guentheri* (Weihe et Nees) Sudre 1913.

A C European submontane taxon distributed from the Fichtelgebirge Mts. through the Sudeten Mts. to the Carpathians. An isolated occurrence is recorded from Tirolian Alps. In CzR it is known from the Krušné hory Mts., Sudeten mountain ranges (in Bohemia) and the Beskydy Mts., further also in hilly countries and at lower altitudes in N half of Bohemia (Kladno, Blíževedly, Sloup, Markvartice, Loučeň, Hořice etc.). It is reported also from SW Bohemia (vicinity of Domažlice); this record requires confirmation. Typically nemophilous species.

Sect. 2.: *Corylifolii* Lindley Syn. Brit. Fl., ed. 2, 93, 1835.

Subsect. 1.: *Sepincoli* (Weihe ex Focke) Hayek Fl. Steiermark, 835, 1909.

Bas.: *Rubus* [Untergruppe] *Sepincoli* Weihe ex Focke Syn. Ruborum German., 394, 1877.

Ser. 1.: *Suberectigeni* H. E. Weber Revis. Sekt. *Corylifolii*, 88, 1981.

64. (1.) *Rubus orthostachys* G. Braun Herb. Ruborum German., Fasc. 10, Übersicht, 1881.

Lit.: Weber H. E., Abhandl. Naturwiss. Ver. Bremen 39:170-176, 1979.

A widespread species, occurring from Switzerland, N France (Lotharingia), Belgium and the Netherlands up to Austria, Czechoslovakia and Poland (here up to E Silesia), absent from N regions of Germany. In CzR sparsely dispersed, mainly in N and NW Bohemia, more often in C, N, NE and E parts of Moravia. Distribution in this country is not sufficiently known.

[A.13. *R. lamprocaulos* G. Braun 1877; syn.: *R. aequiserrulatus* H. E. Weber 1972; a widespread C European species occurring from SW Sweden, Denmark and W Germany to Poland; its occurrence in this country is probable, the nearest localities are known from the promontory of Saxonian Erzgebirge Mts. and Sudeten Mts. Weber (1987a) gives this species also from N Czechoslovakia, however, most recently this report was omitted by himself (Weber, Ms.). Vondráček (1978) gives this species from the vicinity of Plzeň.]

[A.14. *R. lobatidens* H. E. Weber et Stohr 1981; Lit.: Feddes Repert. 92: 27-32, 1981; the main distribution is in N Germany lowlands, the nearest occurrence to CzR is an isolated locality in Bavaria (Oberpfalz, Zangerstein); occurrence in this country cannot be excluded.]

Ser. 2.: *Sepincoli* (Weihe ex Focke) E. H. L. Krause, Verh. Bot. Ver. Prov. Brandenburg 16:17, 1885.

Bas.: *Rubus* [Untergruppe] *Sepincoli* Weihe ex Focke Syn. Ruborum German., 394, 1877.

65. (2.) *Rubus dethardingii* E. H. L. Krause, Arch. Ver., Freunde Naturgesch. Mecklenburg 34: 203, 1880.

A widespread species, occurring from Denmark and NW Germany to W Poland and extending (somewhat isolated) to C Bohemia, southwards to Hessen, Thuringia and N Bavaria. In CzR it is known (at present time) from one locality only - Krymlov in C Bohemia (leg. J. Holub, det. H. E. Weber). Probably more distributed here, its nearest localities are in Saxonia (Dresden) and Lusatia (Görlitz).

66. (3.) *Rubus hadroacanthus* G. Braun Herb. Ruborum German., Übersicht, 1881.

A widespread species, occurring from Denmark southwards to Rhineland and eastwards to W Mecklenburg and Brandenburg; very isolated occurrences are in Luxembourg, Baden-Württemberg and CzR. Here it is known only from C Bohemia (Hořovice), however, it probably occurs at further localities (? Příbram).

67. (4.) *Rubus franconicus* H. E. Weber, Ber. Bayer. Bot. Ges. 50:6, 1979.

Recently described C European regional (or rather widespread?) species whose distribution area extends from S Hessen and C Bavaria to Brandenburg, Bohemia and Upper Austria. In CzR only in Bohemia, but relatively frequent, precise E limit of its distribution area requires further study; now it is known as far as at Hořice, Nechanice and Humpolec. A thamnophilous eoelement.

[A.15. *R. walsemanii* H. E. Weber 1982 occurs isolated at Dresden in Saxonia and could perhaps be found also in CzR.]

Ser. 3.: *Subthyrsoidei* (Focke) Focke Spec. Ruborum 3:486, 1914.

Bas.: *Rubus* [Formenkreis] *Sub-Thyrsoidei* Focke in Ascherson et Graebner Syn. Mitteleurop. Fl. 6/1:625, 642, 1903.

[A.16. *R. wahlbergii* Arrh. 1839, distributed chiefly in S Scandinavia and more N regions of C Europe, having its nearest localities to the area of CzR in Saxonia at Meissen.]

[A.17. *R. hevellicus* (E. H. L. Krause) E. H. L. Krause in Prah 1890 has its nearest localities to the territory of CzR in Saxonia (N vicinity of Dresden) and in Silesia (Oberniki, Sobótka).]

68. (5.) *Rubus grossus* H. E. Weber, Ber. Bayer. Bot. Ges. 60:9, 1989.

Recently described species, at present known from C Europe from Hessen and the Harz Mts. up to Bavaria and Moravia (and perhaps also Slovakia). In CzR it is rather frequently dispersed both in Bohemia and Moravia. A thamnophilous ecoelement.

69. (6.) *Rubus gothicus* K. Friderichsen et Gelert ex E. H. L. Krause, Ber. Deutsch. Bot. Ges. 6:108, 1888.

Syn.: *R. laschii* subsp. *gothicus* (K. Friderichsen et Gelert) Focke in Ascherson et Graebner 1903.

Lit.: Martensen H. O. et Pedersen A., Svensk Bot. Tidskr. 81:257-271, 1987.

A widespread C European species, occurring from S Scandinavia up to N Bavaria and S Moravia, from W Germany to Kaliningrad area, W Poland and W Slovakia. Isolated in Vorarlberg and similar plants in Switzerland. In CzR the species is known from N Bohemia (area of Frýdlant), in Moravia at Zbraslav (vicinity of Brno) and in the vicinity of Znojmo. Distribution certainly insufficiently known.

[A.18. *R. decurrentispinosus* H. E. Weber 1981; its nearest localities to the area of CzR are in Saxonia in vicinity of Dresden.]

Ser. 4.: *Subsilvatici* (Focke) Focke Spec. Ruborum 3:483, 1914.

Bas.: *Rubus* [Formenkreis] *Sub-Silvatici* Focke in Ascherson et Graebner Syn. Mitteleurop. Fl. 6/1:625, 638, 1903.

70. (7.) *Rubus nemorosus* Hayne et Willd. in Willd. Berlin. Baumzucht, ed. 2, 411, 1811.

Syn.: *R. balfourianus* Bloxam ex Bab. 1847.

Lit.: Weber H. E., Willdenowia 10:137-143, 1980.

A widespread species with an Atlantic-Subatlantic tendency of distribution, occurring from N France, the British Isles and Denmark to NW part of C Europe, with isolated occurrences in the Spessart Mts., Brandenburg, Rügen, SW Poland and in Bohemia. In CzR only in the more E part of interior Bohemia in the Labe basin (districts Nymburk, Kolín and Pardubice). A thamnophilous ecoelement.

[A.19. *R. placidus* H. E. Weber 1979; Lit.: Weber H. E., Osnabrücker Naturwiss. Mitteil. 6: 101-122, 1979; the localities nearest to the territory of CzR are in Saxonia, e.g. Hohenstein near Chemnitz, and in N Bavaria (W of Hof).]

71. (8.) *Rubus camptostachys* G. Braun Herb. Ruborum German., Übersicht, 1881:

A widespread species occurring from S Sweden, Denmark, Belgium, and the Saar through Germany up to W Poland and Saxonia. In CzR only one locality is known at present (Zdechovice, district of Pardubice); a near locality to the area of CzR is in Saxonia (Colditz).

Ser. 5.: *Subcanescentes* H. E. Weber Revis. Sect. *Corylifolii*, 166, 1981.

72. (9.) *Rubus mollis* J. Presl et C. Presl Delic. Prag. 1:218, 1882.

Syn.: *R. agrestis* auct., an etiam Waldst. et Kit. 1812 ? - *R. nemorosus* subsp. *tomentosus* sensu Čelak. 1887.

A widespread C European species; its distribution area with a Submeridional tendency of occurrence extends from Baden-Württemberg to Stiria, (Hungary ?) and W Slovakia, northwards to S part of E Germany and to SW Poland, southwards to Tirolia. In CzR scattered to frequent, nearly common in warm regions. A thamnophilous ecoelement.

[A.20. *R. fasciculatiformis* H. E. Weber 1979 occurs in the surroundings of Hof and in the Fichtelgebirge Mts. in N Bavaria; it could perhaps be found also in CzR, most likely in W Bohemia.]

73. (10.) *Rubus fasciculatus* P. J. Müller, Flora 41:182, 1858.

Syn.: *R. ambifarius* P. J. Müller in Wirtgen 1860.

A widespread species; its distribution area with moderate Subatlantic tendency of dispersion extends from S Sweden, Denmark, NE France (Alsace) and Switzerland up to W Poland, W Slovakia, CzR, E Bavaria and N Italy; its occurrence in Austria is probable. In CzR scattered in Bohemia in warmer regions (C, N and NW parts), in Moravia rarely (Znojmo, Lipník n. Bečvou, Vidnava etc.). Distribution insufficiently known, the species is certainly more frequent. A thamnophilous ecoelement.

Ser. 6.: *Subradulae* W. C. R. Watson, Journ. Ecol. 33:344, 1946.

74. (11.) *Rubus fabrimontanus* Spribille, Jahresber. Schles. Ges. Vaterländ. Cultur 83:108, 1905.

Syn.: *R. tuberculatiformis* H. E. Weber 1980 (incl.). - *R. oreogeton* sensu auct. plur., non Focke 1877 sensu orig.

Lit.: Wittzell H., Svensk Bot. Tidskr. 83:296-298, 1989.

A widespread species, occurring from S Sweden (1 locality), Denmark, NE Westphalia, Lower Saxonia and N Bavaria to W Poland and CzR. Here it occurs more frequently in Bohemia, especially in N, NW and C parts, eastwards its abundance is declining, in Moravia only very rare (Olbramkostel, Prostějov). The species reaches in CzR the E limit of its occurrence. A nemophilous ecoelement.

[A.21. *R. tuberculatus* Bab. 1860; Lit.: Weber H. E., Drosera, Oldenburg, 79:1-8, 1979; its main distribution is in the British Isles; distribution area with a Subatlantic tendency reaches its E limit by an isolated occurrence in Saxonia (Chemnitz; vicinity of Dresden), originating perhaps from ornithochorous dispersion. Whether also in CzR ?]

Ser. 7.: *Hystriropeses* H. E. Weber Revis. Sect. *Corylifolii*, 187, 1981.

75. (12.) *Rubus dollnensis* Spribille, Verh. Bot. Ver. Provinz Brandenburg 42: 170, 1900.

Lit.: Weber H. E., Feddes Repert. 99:81-86, 1988.

A widespread species occurring from N Bavaria up to Polish Silesia and Moravia. Recently revived taxon and therefore its distribution is not sufficiently known. In CzR one of the most frequent species known nearly from the whole area of the country; eastwards it occurs in a more frequent abundance. In Bohemia chiefly in C, N, NE and NW parts, in Moravia almost common. Plants from shady sites are morphologically very different.

Sect. 3.: *Caesii* Lejeune et Courtois Compend. Fl. Belg. 2:161, 1831.

Syn.: *Rubus* sect. *Glaucobatus* Dumort. 1863. - *Rubus* subgen. *Glaucobatus* (Dumort.) W. C. R. Watson 1958.

76. *Rubus caesius* L. Spec. Plant., 706, 1753.

A widespread species with an Euro-Westasiatic distribution area, occurring in the almost all Europe except for its marginal regions in N and S; to E it reaches the Altai Mts. and C Asiatic mountain ranges. In CzR frequent to common, in alluvial lowlands often the only representative of the genus. A rather variable species.

Nothosubgenus I.: X *Idaeorubus* Holub, Preslia 64:130, 1992 [cf. Appendix] = subgen. *Idaeobatus* (Focke) Focke x subgen. *Rubus*.

77. *Rubus* x *pseudoidaeus* (Weihe) Lejeune Rev. Fl. Spa, 102, 1825 = *R. caesius* L. x *R. idaeus* L.

Bas.: *R. caesius* var. *pseudoidaeus* Weihe in Boenninghausen Prodr. Fl. Monaster., 151, 1824.

Syn.: *R. x idaeoides* Ruthe 1834.

It probably occurs in the whole common distribution area of the two parents in various degrees of abundance. In CzR this hybrid is sparsely scattered, but each year it was several times collected by the present author. Sometimes it forms also more extensive colonies. It occurs in two types, each of them morphologically closer to one of the parents; they are classified here as nothovarieties: nothovar. *pseudoidaeus* and nothovar. *pseudocaesius* (Weihe) Holub, Preslia 64:129, 1992 [cf. Appendix.]

Results and discussion

The above checklist includes altogether 77 species (incl. 1 nothospecies) belonging to 5 subgenera and 1 nothosubgenus. The most extensive (and taxonomically most interesting) subgenus *Rubus* divides into three sections from which sect. *Rubus* includes 12 series, and sect. *Corylifolii* 7 series. Sect. *Caesii* is monotypic. From all series known in C Europe (13 + 8 = 21) only ser. *Anisacanthi* (5 species) from sect. *Rubus* and ser. *Vestitiusculi* (only 3 species) from sect. *Corylifolii* do not occur in CzR. The two missing series are generally poor in species. Regarding its supraspecific differentiation, the taxonomic abundance of brambles in CzR seems to be very expanded and rich represented. Among 77 brambles from the area studied 71 species can be considered native, the remaining 6 species are naturalized (well-established); three of them belong to sect. *Rubus*: *R. odoratus*, *R. phoenicolasius*, *R. xanthocarpus*; [sect. *Rubus*:] *R. allegheniensis*, *R. armeniacus*, *R. laciniatus*. In addition to these species, six cultivated species are also inserted in the checklist (again three of them belong to the sect. *Rubus*): *R. parviflorus*, *R. illecebrosus*, *R. cockburnianus*; [sect. *Rubus*:] *R. canadensis*, *R. ulmifolius*, *R. moschus*. In additional notes further 21 species are mentioned which could be possibly found in the territory of CzR, among them at least 5 species the occurrence of which seems to be very probable.

Three subgenera (and one nothosubgenus) are represented in the native flora of CzR by one species only. Seventy species (native and naturalized) belong to subgen. *Rubus* dividing into three sections: sect. *Rubus* with 57 species (three of them are naturalized), sect. *Corylifolii* with 12 species and sect. *Caesii* with 1 species. At mutual comparison of species numbers in sections *Rubus* and *Corylifolii*, the sect. *Rubus* includes 4.85 times more species in the area than the sect. *Corylifolii*; sect. *Rubus* constitutes 82 % and sect. *Corylifolii* 18 % of the proper (critical) bramble flora of CzR. The representation of sect. *Corylifolii* in comparison with that of sect. *Rubus*

declines in Europe in the N-S direction which is well indicated by the presence of *Corylifolii* in *Rubus* floras of various areas: Sweden 49 %, Denmark 39 %, Slesvig-Holstein 22 %, Westphalia 16,5 %. Presence of *Corylifolii* in CzR corresponds to the level of Westphalia. It has, however, to be stressed that inadequate attention has been paid to this group in CzR till now and that Westphalia has generally distinctly higher numbers of species both in sect. *Rubus* (102 species) and in sect. *Corylifolii* (20 species) in comparison with CzR. Concerning numerical representation of individual series in CzR, series of sect. *Corylifolii* - with a generally low number of species of this section in the area studied - are all represented by a low number of species (1-2, only ser. *Sepincoli* has three members in CzR). Among series of sect. *Rubus*, several are represented by one species only (ser. *Canescentes*, *Mucronati*, *Pallidi*), but several series include an essentially higher number of species. The series richest in species are ser. *Discolores* (10 species, four of them having been described as new species), "*Suberecti*" (= subsect. *Rubus*; 9) and surprisingly (perhaps taxonomically heterogeneous) ser. *Micantes* (10). Also ser. *Rhamnifolii* (5), ser. *Glandulosi* (5) and ser. *Radulae* (4) are more distinctly represented; the last series mentioned includes in CzR all its main four C European members.

From the viewpoint of the size of distribution areas, subgen. *Rubus* (excl. naturalized species) includes 27 widespread and 26 regional species in sect. *Rubus*, 10 widespread and 2 regional species in sect. *Corylifolii*; *R. caesius* belongs to widespread species.

Relation of the species distribution area to the territory studied makes it possible to determine territorial elements (cf. Holub et Jirásek 1967, "Gebietselemente"). The group of overlapping (transgressive) elements (distribution area transgresses the boundary of the territory studied in all directions) includes 21 species. Limit elements reach in the territory the limits of their distribution areas. The E limit is reached in CzR most frequently (14 species), what is in connection with the evolutionary and dispersion centre of brambles in NW part of Europe and with decline of their representation in the eastward direction. The N limit of occurrence is reached by 10 species, the S limit by 7 species and the W limit by 4 species; the last group includes C European species with their distribution centre in E part of C Europe. According to the present knowledge, the distribution areas of 7 species are entirely included in the area studied. These are: *R. barrandienicus*, *R. bohemicola*, *R. brdenis*, *R. centrobohemicus*, *R. henrici-egonis*, *R. perrobustus*, and *R. vratnensis*. All these species were described recently by the present author. Some species occur in CzR after a spatial gap. The species may be designated as distinct exclave elements; the following species from sect. *Rubus* belong here: *R. hypomalacus*, *R. micans*, *R. nemoralis*, *R. rudis*, *R. scaber*, and *R. thelybatos* (6), and sect. *Corylifolii* is represented by *R. camptostachys*, *R. dethardingii*, *R. hadroacanthus*, and *R. nemorosus* (4).

Species richness in Europe is distinctly reduced in the W-E direction. For example the number of species in neighbouring countries in N Germany are: Slesvig-Holstein 101, Mecklenburg 60, E Brandenburg 38. In lowlands the decline of species number seems to take place more distinctly than in middle-mountains of C Europe, here perhaps heterogeneous relief forms various possibilities for origin, evolution and dispersion of taxa and also influence of other phytogeographical regions (e.g. of Submediterranean or Pannonian region) may more likely extend to that area. CzR is situated already outside the main Atlantic distribution centre of European critical

bramble flora: British Isles - c. 300 species, Lower Saxonia - 142, Westphalia - 124, Slesvig-Holstein - 101, Saxonia - 59, CzR - 66. The position of CzR in this series is determined both by its larger territorial extent and by inducement of its area by elements of S origin.

A more profound investigation of brambles in CzR in Weberian style has brought substantial changes in knowledge on this genus in the area studied. Relatively high number of species new for science and new for the area were found. The study resulted in description of ten new species (eight species in Holub 1991, and two more species in this paper): *R. angustipaniculatus*, *R. austromoravicus*, *R. barrandienicus*, *R. bohemicola*, *R. brdensis*, *R. centrobohemicus*, *R. crispomarginatus*, *R. henrici-egonis*, *R. perrobustus*, and *R. vratnensis*. These taxa were studied in the field by the present author for 5-12 years before their formal description. Furthermore, a number of species new for the area studied from sect. *Rubus* were found (even if they were given from the area already before, these data were mostly erroneous); the following species belong here: *R. bertramii*, *R. elatior*, *R. epipsilos*, *R. graecensis*, *R. hercynicus*, *R. hypomalacus* [sec. Weber], *R. lividus*, *R. macrophyllus*, *R. micans*, *R. nemoralis*, *R. pyramidalis*, *R. scaber* and *R. senticosus* (13), from naturalized species *R. allegheniensis* and *R. armeniicus* (2). Also taxonomic problems of *R. silesiacus* agg. were solved and the occurrence of all three members of that aggregate was stated for CzR (*R. silesiacus*, *R. tabanimontanus*, *R. geminatus*). An entirely new conception of taxa in sect. *Corylifolii* with presentation of occurrence of 12 species in CzR is a further principle change in the knowledge of brambles in this country. Of these twelve species ten are new for the area studied (*R. camptostachys*, *R. dethardingii*, *R. dollnensis*, *R. fabrimontanus*, *R. franconicus*, *R. gothicus*, *R. grossus*, *R. hadroacanthus*, *R. nemorosus* and *R. orthostachys*). Finally, occurrence of a set of species which were given from the area earlier, but the data were rather uncertain, was proved or confirmed: *R. acanthodes*, *R. barberi*, *R. bavaricus*, *R. chaerophyllus*, *R. rudis*, *R. salisburgensis*, *R. sprengelii*, *R. thelybatos*, and *R. vestitus* (9).

Altogether 12 species from those now being accepted were described under their correct names from the area of CzR; these species have their type-localities here. In addition to the above 10 species described by the present author, there are two more species described by Presls: *R. gracilis* and *R. mollis*. Nearly all these species (excl. *R. mollis*) belong to sect. *Rubus*; 9 species were described from Bohemia and 3 species from Moravia.

In the checklist no special data on ecology and sociology are given for the species with the only exception of their general relation to forest or non-forest milieu (nemo- and thamnophily). Thirteen species belong to markedly thamnophilous (non-forest) species, recruiting mostly from sect. *Corylifolii* and ser. *Discolores*, 21 species belong to distinctly nemophilous ecoelement (mostly from ser. *Glandulosi* and ser. *Hystrices*).

Interesting data follow from distribution patterns of brambles in particular areas of CzR. For this purpose the division of the area studied into Bohemia and Moravia was accepted and each of these two historical lands was further divided into five parts: N, W, S, E and C. With regard to the smaller territory of Moravia in comparison with Bohemia, the corresponding parts are distinctly smaller than those in Bohemia. The highest number of species - 50 - was found in C Bohemia (41 species of sect. *Rubus*, 9 of sect. *Corylifolii*), what may be in a certain connection with the most intensively pursued field investigation in that region by the present author (a yield of a day field trip with transect line c. 20 km long is 20-25 species). Corresponding data for other regions are: W Bohemia (34, 28 + 6), N Bohemia (34, 26 + 8), E Bohemia (33, 26 + 7), N Moravia (30, 25 + 5), S Bohemia (28, 24 + 4), C Moravia (26, 23 + 3), S Moravia (23, 19 + 4), E Moravia (21, 17 + 4) and W Moravia (18, 15 + 3). A batologically poorest area in Bohemia is its S part, in Moravia its W and to a certain extent also its E part.

New investigation and new approach to the solution of batological problems has strongly changed the hitherto collected data on the occurrence of *Rubus* species. If we take into account the (compilatory) treatment of *Rubus* in Flora Europaea (Heslop-Harrison 1968), it includes about 180 species from (the whole area of)

Czechoslovakia; with respect to the character of representation of *Rubus* species in CzR and in Slovakia, these data refer at least from 85 % to the area of CzR. However, from those 180 species 147 brambles reported from Czechoslovakia (excl. *Coryfolii*, which group is fully missing from Flora Europaea) do not occur in the area studied or do not represent real species. From this total number of 180 species about 56 species belong to the taxonomically problematic group *Glandulosi*. Data in Flora Europaea correspond to the occurrence of brambles in CzR at most in the case of 32 species only, i.e. to 17.5 %. There is also a substantial difference between this checklist and the newest work on the flora of Czechoslovakia (Dostál 1988). Dostál enumerates 119 species directly from CzR but 32 of them demonstrably occur there, what represents 27 %. Comparisons with earlier works (Dostál 1948, 1982, Hruby 1928, 1941-44, Domin 1935) show analogical or even lower values of numerical similarity. These treatments include many species which either were erroneously determined or the data were based on taxonomically worthless morphotypes unjustifiably classified as species. The present author will return to these problems in a special paper elsewhere, where also attention to the species described by Hruby and earlier authors from the area of CzR should be discussed. Situation analogical to that mentioned for Czechoslovakia in connection with Flora Europaea is also in other (adjacent) countries. So for example Janchen (1957) gave about 450 taxa of brambles (species, subspecies and hybrids) from Austria, whereas a new contemporary revision (Weber et Maurer 1991) confirmed occurrence of only 44 species in that country, what represents less than 10 % of the figures given by Janchen. A higher correctness of data may be found in the study conducted by an amateur botanist Vondráček (1978) who referred to 49 species occurring in surroundings of Plzeň (W Bohemia), of which about 50 % were correctly determined.

Interesting data follow from comparison of representation of brambles in various mostly neighbouring regions. Directly adjacent regions of Bavaria, Saxonia and Polish Silesia can be compared after the treatment by Weber (Ms.), Austria after Weber et Maurer (1991), Upper Lusatia after Weber (1987a) and the district of Bischofswerda in Saxonia after Otto et Ranft (1991). For comparison with remote areas it is possible to use publications on brambles of E Brandenburg by Stohr (1982, 1984), Switzerland by Weber (1987b), Westphalia (by Weber 1986), Slesvig-Holstein by Martensen et al. (1983), Denmark by Pedersen et Schou (1989), Nordic regions of W Europe by Pedersen et Schou (1989) and of the British Isles by Edees et Newton (1988). The greatest similarity of critical botanical flora (the number of 66 species from sect. *Rubus* and *Corylifolii* is used for CzR at this comparison) among the adjacent regions is with Polish Silesia - 70 % (from the number of 57 species occurring there 43 species are common with CzR = 57/43), Saxonia - 69 % (59/43), Bavaria - 67 % (67/41), Upper Lusatia - 61 % (43/34), district of Bischofswerda in Saxonia - 62 % (40/32), and finally with Austria - 52 % (44/28). In other, more remote territories similarity of critical bramble floras descends already under 50 %; it is the highest for E Brandenburg - 46 % (38/23), even lower for Switzerland - 38 % (29/17), Slesvig-Holstein - 36 % (100/29), Westphalia - 33 % (122/30), Denmark - 29 % (78/21), Nordic regions of W Europe - 27 % (92/20), and it is the lowest for the British Isles - 9,5 % (294/17).

For adjacent Slovakia a treatment of *Rubus* based on contemporary criteria is missing. According to the (critically reviewed) results of Gáyer's study (Gáyer 1922) and with consideration of my own experience with brambles of that territory, it is possible to estimate the number of *Rubus* species in Slovakia to 27, from which

22 species are certainly common with CzR; this represents similarity of c. 47,5 %, thus relatively low in comparison with all other regions directly adjacent to CzR. However, this follows mainly from insufficient knowledge on *Rubus* in that area and from almost utter ignorance of the group *Corylifolii* in Slovakia at present.

C Europe, as delimited in Hegi's flora, contains about 250-260 species of *Rubus*; brambles occurring in CzR represent c. 26-27 % (i.e. 1/4). As the investigation also from the last years indicates, some increase in the number of bramble species in CzR cannot be excluded; only in the last three years another 4 species new for the territory under study were found. Also the clarifying of taxonomic problems, especially in the group *Glandulosi*, could contribute to a certain increase in the number of *Rubus* species in CzR.

Hybrids among brambles undoubtedly occur frequently, but with regard to the difficulties linked with correct determination of corresponding parent combination it is hardly possible to give them with any certainty. Only nothospecies *R. x pseudoideaens* connecting members of two subgenera may be easily distinguished. At his field work the present author has met only very rarely with cases, which could surely be designated as (primary) hybrids, e.g. *R. canescens* x *R. tabanimonianus*, *R. canescens* x *R. hirtus*, perhaps also *R. bifrons* x *R. caesius* etc. Long lists of hybrids as they can be found in Sudre (1908-1913) and for our territory in Domin (1935) and Dostál (1948) are without any scientific justification.

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Souhrn

Stav znalostí o ostružinících území České republiky vyžaduje důkladnou revizi rodu s užitím nových taxonomických principů. Dřívější stále popisování nových druhů a četných vnitrodruhových taxonů hlavně na základě malých morfologických odchylek vedlo k uznávání čítených jednotek, jež v praktické taxonomii nemají význam. Opakem tohoto postupu bylo uznání jediného širokého druhu - *R. fruticosus* L., nerespektující zřetelnou diferenciaci uvnitř podrodu subgen. *Rubus*. Nové ideové směry v batologii prorazily v posledních 20 letech a ČR se k nim připojuje tímto seznamem, vytvořeným zhruba po 12 letech intenzivnějšího terénního studia. Základním úkolem nové batologie je stanovit opakující se stabilizované taxony rozšířené na dostatečně rozsáhlém území, zároveň se přitom zbavit nedostatků jako jsou neúplné popisy, taxonomické přečíslování odchylek a chybné užívání jmen. Taxonomie musí respektovat speciální charakter vzniku a vývoje nových taxonů; kritičnost skupiny je dána neúplnou apomixí, vysokým stupněm hybridizace a rozsáhlým štěpením hybridního potomstva, jeho případnou resexualizací a účastí na další hybridizaci. Na druhé straně pomocí apomixe (typu pseudogamie) dochází ke stabilizaci morfotypů, k vytváření populací i určitého areálu, ukazujícího životnost nově vzniklého typu, jež odpovídá druhu u jiných taxonomických skupin. Při revizi taxonomické oprávněnosti se klade důraz na opakovanost výskytu a vytvoření dostatečně velkého areálu (obvykle s průměrem větším než 20 km); velikost areálu je u většiny ostružiníků funkcí jejich stáří. Podklady pro revizi je nutno získávat terénním studiem; specifickým problémem naší batologie je nedostatečné uspořádání herbářových sbírek. Jejich bohatý materiál (více než 30000 položek) je dosti podstatně znehodnocen velkým zastoupením taxonomicky nejistých materiálů (ekomorfózy, singulární a lokální typy). Snaha určit každou položku není oprávněná vzhledem k charakteru vývoje ve skupině; i dobrý znalec určí často pouze 50 % nasbíraného materiálu. Nutná je i nomenklatorická revize - v rodu existuje více než 5 tisíc druhových jmen. Revize taxonomické klasifikace ostružiníků probíhající pod vlivem nových ideí podstatně snižuje počet uznávaných druhů, i když na druhé straně se objevují i další dosud nepopsané druhy. V jednotlivých přirozených nebo studijních oblastech lze u nás obvykle vystačit se znalostí asi 30 druhů ostružiníků.

Předložený předběžný seznam ostružiníků ČR podává nejstručnější údaje o jednotlivých druzích: úplná citace správného jména, zkrácená synonymika, celkové rozšíření, výskyt v ČR, v některých případech odkaz na speciální literaturu nebo údaj o ekoelementu (nemofilie vs. thamnofilie).

Seznam zahrnuje 77 původních a zcela zdomácnělých druhů v 6 podrodech. Většina podrodů je monotypických nebo druhově velmi chudých. Dále je připojeno 6 druhů pěstovaných (se signaturou C.) a 21

druhů, které by snad mohly být u nás ještě nalezeny (se signaturou A.). Většina druhů připadá na sekce *Rubus* (57) a *Corylifolii* (12). Z 13 střevoevropských serií sekce *Rubus* je v ČR zastoupeno 12, z 8 serií sekce *Corylifolii* pak 7 serií. Druhově nejbohatší jsou serie *Suberecti*, *Discolores* a *Micantes*. Z územních prvků patří 21 druhů k přesahujícím; hranic areálu je dosaženo v 34 případech (u některých druhů je dosaženo více hranic než jedné). Nejčastěji se jedná o východní hranici (14 případů). K význačným exklávním prvkům patří 10 druhů, areály zcela uzavřené uvnitř území ČR má 7 druhů.

Celkový přínos studia ostružiníků v ČR představuje popsání 10 nových (zcela přehlížených) druhů, zjištění 25 nových druhů pro území, potvrzení nejistého výskytu v případě 9 druhů a zároveň zrušení údajů o výskytu velkého počtu druhů, resp. zjištění jejich taxonomické neoprávněnosti.

Při srovnání údajů o zastoupení ostružiníků v Československu s údaji o druzích udávaných odtud v díle Flora Europaea se ukazují údaje ve FE jako správné jen ze 17,5 %; v případě porovnání se zpracováním v Dostálově Nové květeně ČSSR údaje tohoto autora odpovídají jen z 27 %. Největší podobnost vykazuje ostružiníková flóra ČR s polským Slezskem - 70 %, Saskem - 69 % a s Bavorskem - 67 % a naproti tomu s Vestfálskem již jen 33 % a s Britskými ostrovy dokonce již jen pouhých 9,5 %.

Seznam je prvním přiblížením k poznání ostružiníkové květeny v ČR. I v poslední době výzkum přinášel nová zjištění a je jisté, že další prací nejen v terénu (z níž tento seznam pouze vychází), ale i v herbářích a literatuře budou moci být získány další důležité výsledky. Práce je věnována k šedesátým narozeninám profesora H. E. Webera (Universita Osnabrück, oddělení Vechta), jenž se podstatně zasloužil o stanovení nových cest botanického výzkumu a o jeho vybědnutí z dřívější dlouhodobé stagnace, spolu s díky autora za pomoc poskytnou mu v období jeho výzkumu ostružiníků ČR.

Appendix

I. Descriptiones specierum novarum:

I. *Rubus perrobustus* Holub, spec. nova

[*Rubus* L. sectio *Rubus* subsectio *Hemales* E. H. L. Krause ser. *Rhamnifolii* (Bab.) Focke (vel subsectio *Rubus*?)]

Frutex altior, robustus. Turio primo semisuberecto deinde arcuatus, in fruticetis saepe adscendens (usque ad altitudinem 5 m attingens), in parte superiori interdum decumbens (usque procumbens), autumnio apice radicans, crassus (c. 10-12 mm in diametro), angulosus, cum faciebus subsulcatis, fuscescens, glaber, mediocriter aculeatus, cum 5-7 aculeis pro 5 cm longitudinis; aculei conformes, aequilongi, ad angulos dispositi, erecto-patentes, basi valde dilatati compressique, 7 mm lati, 6-8 mm longi, recti vel plerumque leviter curvati; glandulae stipitatae nullae. Folia turionis digitato-quinata, ampla (usque 26 x 23 cm), herbacea, plana, supra subtusque viridia, supra glabra, subtus breviter pilosa. Petiolus longitudinis foliorum infimorum cum 8-10 aculeis leviter curvatis munitus. Stipulae lineares. Foliolum terminale mediocriter petiolulatum (longitudo petioluli c. 35 % longitudinis laminulae), late ovatum, basi leviter emarginatum vel saepius subtruncatum, breviter cuspidatum, subabrupte in apicem 10-15 mm longum attenuatum, margine periodice serratum, serratura duplicata, incisurae c. 3 mm profundae. Foliola infima cum petiolulis 5-9 mm longis instructa. Inflorescentia paniculata, cylindrica vel subpyramidalis, pluriflora, plerumque tantum 4-6 cm infra apicem efoliosa, in parte inferiori cum foliis ternatis praedita; folia superiora subtus canescenti-tomentosa. Rhachis inflorescentiae subrecta vel levissime flexuosa, patenter laxe pilosa, in parte superiori parum tomentosa, cum 0-3 aculeis reclinatis subcurvatis pro 5 cm longitudinis instructa; aculei exigui, c. 3 mm longi, basi dilatati rubescentesque; glandulae stipitatae nullae. Rami inflorescentiae erecti vel usque subpatuli. Pedicelli sub anthesi 6-15 mm longi, breviter subappresse hirsuti, cum 2-4 aculeis parvis muniti; aculei leviter curvati, 0,5 mm longi, flavescens. Flores mediocres vel majores, 25-30 mm in diametro. Sepala externe subcinereo-vidria, tomentosa, inermia, reflexa. Petala 10-13 mm longa, ovata usque obovata, rosea. Stamina stylos superantia; filamenta alba; antherae glabrae. Receptaculum pilosum. Ovaria glabra, styli albovidres. Fructus mediocris, niger. Floret ab Junio usque ad Augustum. Crescit in Bohemia, Moravia et Silesia (pars moravica).

Typus: RH 1990/7/3-12; *Rubus perrobustus* Holub spec. nova. Flora Moravica: Moravia australis; distr. Třebíč; ad molam Skřipínský mlýn dictam ad fluvium Oslava, merid.-occid. a pago Kuroslepy; altitudine cca 285 m s.m.; 3.7.1990; leg. J. Holub. Holotypus in PR sub no 377841 asservatur. Isotypi in herbario auctoris et in herbario Professoris Weber praesentes.

Nominatus secundum habitum plantae magnopere robustum.

Characteres diagnostici speciei novae principales: Planta robusta; turio glaber, crassus; folia turionis ampla, viridia; folia inflorescentiae superiora subtus canescentia; inflorescentia paniculata, multiflora, pauciaculeata; sepala virescentia; petala semper rosea.

Planta in Bohemia disperse distributa (Roudnice, Praha, Slapy, Mníšek, Přebram, Louňovice, Krhanice, Kácov, Domousnice, Velichovky etc.), in Moravia frequentius occurrans: in parte australi - Kuroslepy, Ketkovice, Zastávka, Koryžany etc., centrali - vicinitas latior urbis Olomouc orientaliq - Zlín; singulatim in Silesia (pars moravica) - Lesní Albrechtice.

2. *Rubus vratnensis* Holub, spec. nova

[*Rubus* L. sectio *Rubus* subsectio *Hiemales* E. H. L. Krause ser. *Micantes* Sudre (vel ser. *Silvatici* (P. J. Müller) Focke?)]

Frutex mediocrius. Turio arcuatus vel arcuato-decumbens, in parte superiori interdum procumbens, autumnio apice radicans, angulosus, cum faciebus planis vel leviter subsulcatis, in sicco conspicue longitudinaliter striatis, mediocriter crassus (vulgo 5-9 mm in diametro), viridi-fuscescens, a pilis simplicibus disperse patenter pilosus (cum c. 35-50 pilis in una facie pro 1 cm longitudinis, plerumque ad angulos dispositis), cum glandulis stipitatis inaequaliter dispersis obsitus (5-12 pro 5 cm longitudinis), etiam cum glandulis subsessilibus commixtis; glandulae stipite albo capituloque atro; aculeatus, cum 12-16 aculeis pro 5 cm longitudinis; aculei conformes, ad angulos dispositi, 4,5-6 mm longi, basi compressi, erectiusculi, recti vel leviter curvati; interdum etiam cum aculeis minoribus in faciebus turionis dispositis. Folia turionis digitate vel plerumque subpedate (1 mm) quinata, herbacea, supra subglabrescentia (cum c. 5 pilis pro 1 cm²), viridia usque atroviridia, subtus parce pilosa et indistincte subtomentosa; foliola contingentia vel saepius subimbricata. Petiolum folioli infimis distincte brevior, cum 10-15 aculeis munitis, aculei curvati, basi rubescentes. Stipulae lineares. Foliolum terminale breviter petiolulatum (longitudo petioli = 25 % longitudinis laminulae), rotundatum, basi leviter emarginatum, in apicem c. 15 mm longum, subabrupte attenuatum, in margine periodice grosse dupliciter serratum; incisurae 4,5-5 mm profundae. Inflorescentia paniculata, ampla, late cylindrica vel subpyramidalis, 8-10 cm infra apicem efoliosa, folia inflorescentiae inferiora plerumque ternata, superiora subtus interdum subcanescentia-tomentosa. Rhachis inflorescentiae hirsuta, cum 4-6 aculeis pro 5 cm longitudinis munita; aculei graciles reclinati, recti usque curvati; glandulae stipitatae in indumento occultantes. Rami inflorescentiae patuli vel suberecti. Pedicelli sub anthesi c. 10 mm longi, breviter hirsuti, cum 8-12 aculeis instructi; glandulae stipitatae 10-20, 0,2-0,3 mm longae. Flores mediocres, c. 2,5 cm in diametro. Sepala externe canescentia, tomentosa pilosaque, cum apicibus in appendices breviter prolongatis, post anthesin reflexa. Petala late obovata, alba. Stamina stylos superantia, filamenta alba, antherae glabrae. Receptaculum glabrum. Ovaria in apice interdum sparse pilosa; styli viridescentes. Fructus mediocrius, globosus, niger.

Floret in Junio Julioque. Crescit in Bohemia (in parte septentrio-occidentali).

Typus: RH 1989/777-5; *Rubus vratnensis* Holub spec. nova. Flora Bohemica; Bohemia centralis; distr. Mladá Boleslav; ad marginem silvae ad viam publicam sept.-occid. a pago Nosálov, ad pedem collis Vrátneská hora; cca 400 m s.m.; 7.7.1989; leg. J. Holub. Holotypus in PR sub no. 377842 asservatur. Isotypi in herbario auctoris et in herbario Professoris Weber praesentes.

Nominatur secundum localitatem primam speciei huius inventam - Vrátneská hora (nomen collis a nomine pagi Vrátno oriundum).

Characteres diagnostici speciei novae principales: planta disperse stipitate glandulosa; turio hirsutus; folia breviter petiolata; foliola subimbricata; foliolum terminale rotundum, grosse dupliciter serratum; aculei inflorescentiae graciles usque exigui; sepala in appendices prolongata; petala alba.

Planta tantum e Bohemia septentrio-occidentali nota (c. 15 localitates: prope Nosálov, Jestřebice, Vidim, Chudolazy, Dražejov prope Dubá, Tuhán, Levín, Chlumeč, Teplice, localitas isolata nova - Skryje).

II. Combinationes novae:

1. *Rubus montanus* Libert ex Lejeune var. *macromontanus* (H. E. Weber) Holub, status novus.- Bas.: *Rubus montanus* Libert ex Lejeune f. *macromontanus* H. E. Weber, Osnabrücker Naturwiss. Mitteil. 15: 106, 1989.

2. *Rubus x pseudoidaeus* (Weihe in Boenningh.) Lejeune nothovar. *pseudocaesius* (Weihe in Boenningh.) Holub, comb. nova.- Bas.: *Rubus caesius* L. var. *pseudocaesius* Weihe in Boenninghausen Prödr. Fl. Monaster., 151, Münster 1824.

III. Nomina nova nothosubgenerum:

1. *Rubus* L. nothosubgenus x *Anopliidaeus* Holub, nomen nothosubgeneris novum = *Rubus* L. subgenus *Anoplobatus* (Focke) Focke x subgenus *Idaeobatus* (Focke) Focke

2. *Rubus* L. nothosubgenus x *Chamaeidaeus* Holub, nomen nothosubgeneris novum = *Rubus* L. subgen. *Chamaerubus* O. Kuntze x subgenus *Idaeobatus* (Focke) Focke

3. *Rubus* L. nothosubgenus x *Chamaelactis* Holub, nomen nothosubgeneris novum = *Rubus* L. subgenus *Chamaerubus* O. Kuntze x subgenus *Cylactis* (Rafin.) Focke

4. *Rubus* L. nothosubgenus x *Cylobatus* Holub, nomen nothosubgeneris novum = *Rubus* L. subgenus *Cylactis* (Rafin.) Focke x subgenus *Idaeobatus* (Focke) Focke

5. *Rubus* L. nothosubgenus x *Cylarubus* Holub, nomen subgeneris novum = *Rubus* L. subgenus *Cylactis* (Rafin.) Focke x subgenus *Rubus*

6. *Rubus* L. nothosubgenus x *Idaeorubus* Holub, nomen nothosubgeneris novum = *Rubus* L. subgenus *Idaeobatus* (Focke) Focke x subgenus *Rubus*

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Index of *Rubus* species names

Numerals refer to serial numbers of basic species. The numbers in brackets represent synonyms. The names of species printed in italics represent the unnumbered species, or their synonyms, added after the species numbered runningly.

- acanthodes 46
aequiserrulatus (64)
affinis (12)
agrestis (72)
albocalycinus (60)
alleghehiensis 8
ambifarius (73)
amoenus (16)
angustipaniculatus 30
apiculatus (46)
apricus 57
armeniacus 18
austromoravicus 23
balfourianus (70)
barberi 61
barrandienicus 10
bavaricus 55
bellardii (58)
bertramii 11
bifrons 16
bohemiicola 25
brdensis 54
caesius 76
caesius (77)
caflischii 37
caflischii (38)
caflischii (51)
camptostachys 71
canadensis 8
candicans (14)
candicans (20)
candicans (21)
canescens 34
caucasicus (57)
centrobohemicus 45
circipanicus 31
chaerophyllus 42
chamaemorus 2
clusii 44
cockburnianus 3
constrictus 14
crispomarginatus 24
decurrentispinosus 69
dethardingii 65
discolor (17)
divaricatus 14
dollnensis 75
elatio 19
elongatispinus (44)
epipsilos 49
fabrimontanus 74
fasciculatiformis 72
fasciculatus 73
fissus (7)
franconicus 67
fruticosus (12)
fuscus (46)
geminatus 40
glandulosus (53)
glandulosus (56)
glandulosus (58)
glandulosus (62)
gothicus 69
grabowskii 21
gracilis 29
graecensis 13
gremlii (44)
grossus 68
guentheri 63
hadroacanthus 66
hebecarpus (55)
hebecaulis (51)
hedycarpus (17)
hedycarpus (18)
hevellicus 67
henrici-egonis 22
heptaphyllon (7)
hercynicus 59
heterocaulon (7)
hirtus 62
hirtus (59)
hirtus (63)
hypoleucus (34)
hypomalacus 47
idaeoides (77)
idaeus 3

illecebrosus 2
 insularis (29)
iseranus 56
 koehleri 53
 koehleri (55)
 koehleri (57)
 laciniatus 28
 laciniatus (27)
lamprocaulos 64
 laschii (69)
 lasiothyrsus (25)
lignicensis 57
 lividus 60
 lloydianus (34)
lobatidens 64
lusaticus 58
 macrophyllus 32
 macrostemon (17)
 micans 37
 mollis 72
 montanus 20
 montanus (21)
 morifolius (51)
moschus 57
 nemoralis 27
 nemorosus 70
 nemorosus (72)
 nessensis 7
nitidus (14)
nutkanus (1)
 odoratus 1
 omalus (38)
opacus 12
oreades 61
 oreogeton (74)
 orthostachys 64
pallidus 51
parviflorus 1
 pedemontanus 58
pergranus (8)
 perrobustus 26
 phoenicolasius 4
placidus 70
 plicatus 12
 plicatus (11)
 praecox 17
 procerus (17)
 procerus (18)
 pseudoidaeus 77
 pyramidalis 36
 questieri (30)
 radula 48
raduloides 37
 rhombifolius (30)
 rhombifolius (31)
 rudis 50
 salisburgensis 51
 saxatilis 5
 scaber 52
 schleicheri 56
scissus 7
 selmeri (27)
 senticosus 15
 serpens (60)
 silesiacus 41
 silesiacus (20)
 silesiacus (39)
 silesiacus (40)
sorbicus 15
 sprengelii 33
 suberectus (7)
 sulcatus 9
 tabanimontanus 39
 thelybatus 38
 thyrsanthus (21)
 thyrsoides (20)
 thyrsoides (21)
 thyrsoides (24)
 tomentosus (34)
 tuberculiformis (74)
tuberculanus 74
ulmifolius 15
 vestii (14)
 vestitus 35
 villicaulis (29)
 viridis (7)
 vratnensis 43
wahlbergii 67
walsemannii 67
 wimmeri (31)
 wimmerianus 31
 xanthocarpus 6