

Electronic Appendix 1. - Complete list of taxa of root-hemiparasitic plants occurring in the Czech Republic (excluding hybrids). Taxonomy and nomenclature follow Danihelka et al. (2012). In addition, Red List status (Grulich 2012), life history and a brief habitat description as indicated in the Flora of the Czech Republic (Slavík 1997, 2000) are provided. A category of the Red List indicates extinct species and C1–C4 categories are threatened species from the most to the least threatened. See Grulich (2012) for the description of Red List status.

Taxon	Red list status	Life history	Habitat description in the Flora of the Czech Republic
<i>Bartsia alpina</i>	C2 (r)	Perennial	Spring areas, wet rocks, subalpine grasslands above the timberline; nutrient- and base-rich soils
<i>Euphrasia corcontica</i>	A1	Annual	
<i>Euphrasia frigida</i>	C1 (r)	Annual	Subalpine rocky slope grasslands
<i>Euphrasia micrantha</i>	C1 (r)	Annual	Subalpine grasslands on rocky sites; periodically wet acidic soils
<i>Euphrasia nemorosa</i>		Annual	Dry meadows, pastures and heathlands; oligotrophic to mesotrophic acidic soils
- subsp. <i>coerulea</i>	C2 (b)		
- subsp. <i>nemorosa</i>			
- var. <i>curta</i>	C4b		
- var. <i>nemorosa</i>	C2 (t)		
<i>Euphrasia officinalis</i>		Annual	Moderately dry to wet grasslands, low-productive meadows, pastures, heathlands, peaty meadows, subalpine meadows, dry steppic grasslands; sandy to loamy moderately acidic soils, oligotrophic to mesotrophic
- subsp. <i>picta</i>	C1 (t)		
- subsp. <i>rostkoviana</i>			
- var. <i>monticola</i>	C1 (t)		
- var. <i>rostkoviana</i>			
<i>Euphrasia salisburgensis</i>		Annual	Occurrence in the Czech Republic doubtful
<i>Euphrasia slovacica</i>	C1(t)	Annual	Mesic to moderately dry semi-natural meadows and pastures; mesotrophic to oligotrophic soils
<i>Euphrasia stricta</i>		Annual	Dry meadows, pastures and heathlands; oligotrophic to mesotrophic acidic soils
- subsp. <i>stricta</i>			
- subsp. <i>tatarica</i>	C2 (t)		
<i>Melampyrum arvense</i>	C3	Annual	Dry steppes, sunny slopes, open scrub vegetation; more common on basic soils; formerly occurred as cereal weed
<i>Melampyrum barbatum</i>		Annual	Weed in crop fields, abandoned fields, dry slopes; not native to the Czech Republic, currently extinct
<i>Melampyrum cristatum</i>		Annual	
- var. <i>cristatum</i>	C3		Thermophilous scrub and forests; loamy basic soils
- var. <i>solstitiale</i>	C2 (b)		Semi-dry to mesic grasslands; deep base-rich soils

<i>Melampyrum herbichii</i>		Annual	Species rejected from taxonomic perspective (Těšitel et al. 2009)
<i>Melampyrum nemorosum</i>		Annual	
- var. <i>nemosum</i>			Broad-leaved and mixed forests, shrubs, forest edges; loamy soils
- var. <i>praecox</i>	C1 (t)		Mesic and semi-dry meadows; deep, base-rich soils
<i>Melampyrum pratense</i>		Annual	Broad-leaved, mixed and coniferous forests, clearings, mountain and subalpine meadows, heathlands and bogs; prefers various acidic soils
<i>Melampyrum subalpinum</i>	C3	Annual	Oak and pine forests; sandy soils
<i>Melampyrum sylvaticum</i>		Annual	Mountain mixed and spruce forests, clearings, subalpine meadows and heathlands; humid acidic soils
<i>Odontites luteus</i>	C2 (b)	Annual	Dry, sunny grassy and rocky slopes and pastures, open scrub vegetation, moderately shaded rocky places; basic calcareous soils
<i>Odontites vernus</i>		Annual	
- subsp. <i>serotinus</i>			Cereal weed, abandoned fields; moderately acidic to basic clayish and loamy soils
- subsp. <i>vernus</i>	C2 (t)		Pastures, disturbed grasslands, grassy forest edges, road edges and similar open disturbed habitats, salt marshes; mostly nutrient- and base-rich clayey soils, including saline sites
- late tetraploids (Koutecký et al. 2012)			Disturbed sites in steppic and dry grasslands
<i>Parentucellia viscosa</i>		Annual	Sporadic occurrence; not native to the Czech Republic
<i>Pedicularis exaltata</i>	C1 (r)	Perennial	Wet meadows; nutrient-rich soils
<i>Pedicularis palustris</i>		Biennial (or monocarpic perennial)	Edges of transitional mires, banks of oligotrophic ponds, fen meadows; wet, nutrient-rich soils
- subsp. <i>opsiantha</i>	C1 (r)		
- subsp. <i>palustris</i>	C1 (t)		
<i>Pedicularis sceptrum-carolinum</i>	A1	Perennial	Fen meadows; nutrient rich, mostly calcareous soils
<i>Pedicularis sudetica</i>	C1 (r)	Perennial	Moss springs, bogs and fens above the timberline; exclusively on acidic soils
<i>Pedicularis sylvatica</i>	C2 (t)	Monocarpic perennial, biennial (rarely polycarpic)	Moist to wet, often peaty meadows, low productive pastures, heathlands; acidic, nutrient-poor soils
<i>Rhinanthus alectorolophus</i>	C3	Annual	Abandoned fields, meadows, open scrub; neutral to moderately acidic nutrient-rich soils; formerly occurred as cereal weed
<i>Rhinanthus major</i>		Annual	Meadows, pastures, open scrub vegetation; loamy or sandy soils with variable nutrient availability
<i>Rhinanthus minor</i>		Annual	Meadows, pastures, forest edges; various nutrient-poor soil types
<i>Rhinanthus riphaeus</i>	C2 (t)	Annual	Mountain meadows and pastures,

			secondary occurrence along mountain road edges
<i>Thesium alpinum</i>	C3	perennial	Low-productive meadows and pastures, grassy and rocky slopes, open oak forests; various soil types
<i>Thesium bavarum</i>	C2 (b)	perennial	Open scrub, forest edges, grassy slopes; base-rich soil types
<i>Thesium dollineri</i>	C1 (t)	annual or perennial	Field edges, abandoned fields, grassy slopes, moderately disturbed grasslands; calcareous substrates
<i>Thesium ebracteatum</i>	C1 (r)	perennial	Moist fen or peat meadows and pastures
<i>Thesium linophyllum</i>	C3	perennial	Dry grassy or rocky slopes, steppes, steppic vegetation in vineyards and orchards; basic soils
<i>Thesium pyrenaicum</i>	C2 (t)	perennial	Low-productive dry to moderately moist meadows, pastures, heathlands; soils on acidic substrates
<i>Thesium ramosum</i>	C1 (t)	mostly perennial	Meadows, road edges, abandoned fields; prefers sandy or loess substrates
<i>Thesium rostratum</i>	C1 (b)	perennial	Open oak forests, moist fen meadows; no distinct soil type preference

Electronic Appendix 2. - Numbers of occupied and suitable sites (in parentheses) of each of the root-hemiparasitic species under study across all vegetation units. Numbers of plots of species marked by asterisk are considered insufficient to provide robust information on habitat preferences. Species displayed in grey are considered rare and their number of occurrences is insufficient for construction of a habitat suitability model. Plots of vegetation classes *Salicetea purpureae*, *Cymbalaria muralis-Parietarietea judaicae*, *Thlaspietea rotundifolii*, *Crypsieteae aculeatae*, *Thero-Salicornietea strictae*, *Festucetea vaginatae*, *Lemnetea*, *Potametea* and *Charetea* did not contain any record of a hemiparasitic species.

	Total number of vegetation plots	Number of plots with hemiparasites	Number of root-hemiparasitic species	<i>Bartsia alpina</i> *	<i>Euphrasia nemorosa</i>	<i>Euphrasia officinalis</i>	<i>Euphrasia stricta</i>	<i>Euphrasia stricta</i> subsp. <i>tatarica</i>	<i>Melampyrum arvense</i>	<i>Melampyrum cristatum</i>	<i>Melampyrum nemorosum</i>	<i>Melampyrum pratense</i>	<i>Melampyrum subalpinum</i>	<i>Melampyrum sylvaticum</i>	<i>Odontites vernus</i> group	<i>Odontites luteus</i>	<i>Pedicularis palustris</i>	<i>Pedicularis sudetica</i>	<i>Pedicularis sylvatica</i>	<i>Rhinanthus alectorolophus</i> *	<i>Rhinanthus major</i>	<i>Rhinanthus minor</i>	<i>Rhinanthus riphaeus</i> *	<i>Thesium alpinum</i> *	<i>Thesium bavarum</i>	<i>Thesium ebracteatum</i>	<i>Thesium limophyllum</i>	<i>Thesium pyrenaicum</i>	<i>Thesium ramosum</i>
Number of occupied sites	31512	2631		26	5	169	71	4	86	68	377	990	4	80	194	48	92	2	62	23	40	435	16	16	6	1	106	3	3
Number of suitable sites	8379			35	NA	1365	278	NA	682	241	1328	2774	NA	670	1366	312	606	NA	418	142	797	1963	13	19	NA	NA	400	.	.
Occupied/suitable ratio				0.74	NA	0.12	0.25	NA	0.12	0.27	0.28	0.35	NA	0.12	0.14	0.15	0.15	NA	0.15	0.16	0.05	0.22	1.00	0.76	NA	NA	0.27	.	.
<i>Carpino-Fagetea</i> Mesic deciduous broad-leaved forests	5772	538	7	.	.	.	.	.	1 (0)	4 (0)	221 (965)	345 (1332)	.	10 (213)	.	1 (0)	.	.	.	.	.	.	.	.	3	.	.	.	.
<i>Molinio-Arrhenatheretea</i> Meadows and mesic pastures	3686	505	20	.	3	93 (963)	8 (36)	.	6 (20)	2 (0)	8 (33)	5 (33)	.	3 (0)	41 (582)	.	20 (220)	.	22 (185)	3 (26)	15 (389)	320 (1519)	3 (3)	1 (0)	1	1	7 (15)	2	.
<i>Festuco-Brometea</i> Dry grasslands	1434	378	18	.	1	15 (216)	43 (214)	4	65 (484)	23 (112)	75 (123)	14 (44)	.	.	11 (154)	46 (312)	.	.	.	3 (3)	14 (296)	55 (226)	.	1 (0)	1	.	91 (322)	1	3
<i>Quercetea robori-petraeae</i> Acidophilous oak forests	462	225	4	.	.	.	.	.	.	2 (0)	6 (6)	220 (317)	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Quercetea pubescentis</i> Thermophilous oak forests	618	213	8	.	.	1 (0)	1 (0)	.	1 (0)	36 (129)	51 (180)	147 (270)	.	1 (0)	.	.	.	.	.	.	.	.	.	.	.	.	6 (61)	.	.
<i>Calluno-Ulicetea</i> Nardus grasslands and heathlands	540	163	13	.	.	44 (89)	4 (0)	.	2 (0)	.	.	44 (213)	1	29 (168)	.	.	3 (0)	.	16 (68)	2 (2)	3 (3)	30 (103)	5 (5)	4 (4)	.	.	.	.	.

Electronic Appendix 3. – Box plot displaying ranges of altitude of occupied and suitable sites for each root-hemiparasitic species. Median, quartiles and full range are displayed. Up- and down-pointing triangles display the range of values of occupied sites.

