

Contribution to the knowledge of the genus *Aconitum* (Ranunculaceae) in the Ćićarija mountains and surrounding Istria

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Summary: In the Ćićarija, the mountain range in northern Istria between Trieste in the west and Rijeka in the east, there occur 5 species of the genus *Aconitum*. *Aconitum anthora* is rare in the hills north of the mount Slavnik. *Aconitum variegatum* only grows in the northwestern part, southeastwards to the mountains Žabnik and Žbevnica. *Aconitum degenii* is known until now only from the mountains Planik and Vojak. Yellow flowering aconites of the subgenus *Lycactonum* can be found in the whole mountain range, but they have not been differentiated yet. Here, the characteristics distinguishing the two species *Aconitum lupicida* and *Aconitum lycactonum* are explained as well as shown. The main difference of the leaf shape is expressed by leaf indices (following WARNCKE 1964). The distribution of all species is shown in a dot map and a key for the determination is given.

Keywords: *Aconitum*, systematics, distribution, drawings, determination key, flora of Croatia, Slovenia, Istria, Ćićarija

The Ćićarija mountain range (the characterization follows POSPICHAL 1909) extends over almost 40 km from Val Rosandra in the northwest to the Poklon saddle in the southeast. The maximum breadth of 17 km can be observed between the villages Starod in the north and Dolenja vas in the south. The average height is about 900 m alt. The mountains in the northwest reach heights just little more than 1000 m alt. (e. g. Slavnik: 1029 m alt), the higher mountains can be found in the southeast (i. e. Planik: 1273 m alt.). From the Poklon saddle to the south ranges the Učka gora with its highest peak Vojak with 1396 m altitude. The hill region north of the Ćićarija mountains is called Brkini, with altitudes mainly between 500 and 700 m. The region northeast of the Ćićarija, Zaledje Rijeke, has montane character and reaches heights up to 1364 m alt. (i. e. Smrekovac).

Material and methods

Because of the big amount of wrongly determined *Aconitum* species in literature as well as the missing differentiation of *A. lupicida* from *A. lycactonum*, only the results of revised herbarium material are used for this study. 281 herbarium specimens of *Aconitum* species from the Ćićarija of the herbaria B, G, GJO, GZU, M, LJU, REG, SIB, TSB, W, WU and Z (abbreviations according to HOLMGREN & al. 1990) have been revised (STARMÜHLER 2000, 2003). Herbarium material of samplings made by myself in the Ćićarija has been distributed by the duplicates of „Herbarium Istriacum“ (STARMÜHLER 1998c, 1999, 2001), „Aconita rarissima selecta“ (STARMÜHLER 1998b, 2002, 2004b) and „Ranunculaceae subtrib. Delphiniinae exsiccatae“ (STARMÜHLER 1998a, 2003, 2004a) to the herbaria BKF, CL, CLF, GJO, GZU, IBE, JACA, KL, KRA, LE, LG, LI, LJU, M, MA, MEL, NY, OSC, PE, R, TBI, TK, TNS, UBC, US, W, WU, Z and Herb. Starmühler/Gössendorf bei Graz. Field studies have been made from 1991 to 2004. Several *Aconitum* plants from the Ćićarija are cultivated in the author's garden at Gössendorf (Styria, Austria) for observation and further investigations.

Key for the determination of all *Aconitum* taxa in the Čičarija mountains (Fig. 1)

- 1 Flowers yellow to yellowish white 2
- 1* Flowers blue to violet 4
- 2 Hood of the flower about as high as long; leaves with narrow segments (only 1–3 mm broad) ***A. anthora* subsp. *anthora***
- 2* Hood of the flower cylindrical, 2½ to 3 times higher than long; leaves with broader segments 3
- 3 Leaf lobes incised less than 4/5; shape of the tips of the leaf lobes short and obtused; leaf index z1 = 0.2–0.9; leaf index z2 = 0.6–1.8; tepals outside eglandular pubescent ***A. lycoctonum* subsp. *lycoctonum***
- 3* Leaf lobes incised more than 4/5; shape of the tips of the leaf lobes long and acuminate; leaf index z1 = 0.8–1.4(–1.6); leaf index z2 = 0.3–0.8; tepals outside glandular or eglandular pubescent or pilose ***A. lupicida***
- 4 Pedicels and tepals outside glandular pilose; hood about as high as long; bracteoles linear, situated about in the middle of the pedicel ... ***A. degenii* subsp. *paniculatum***
- a Filaments of stamens glabrous; nectaries glabrous **var. *laxiflorum***
- a* Filaments of stamens pilose; nectaries glabrous or pilose **var. *turrachense***
- 4* Pedicels and tepals outside glabrous; hood higher than long; bracteoles spatulate, mostly situated close to the blossom ***A. variegatum***
- a Carpels glabrous, always 3 **subsp. *nasutum***
- a* Carpels pilose on the ventral suture, 3–5 b
- b All the suture pilose **subsp. *variegatum* var. *variegatum***
- b* Only few hairs in the upper half of the suture **nsubsp. *podobnikianum***

Systematics of the genus *Aconitum* in the Čičarija mountains

Aconitum subgenus *Aconitum* sect. *Cammarum* DC. subsect. *Cammarum* (DC.) RAPAICS

ser. *Variegata* STEINB. ex STARMÜHL.: *A. variegatum* L.

ser. *Toxicum* (RCHB.) MUCHER: *A. degenii* GÁYER

Aconitum subgenus *Anthora* (DC.) PETERM.: *A. anthora* L.

Aconitum subgenus *Lycoctonum* (DC.) PETERM.: *A. lupicida* RCHB., *A. lycoctonum* L. emend.
KOELLE

Description and distribution of the *Aconitum* taxa

Aconitum anthora* LINNAEUS 1753, Spec. pl. 1, 532 subsp. *anthora

Description: Root tuberous, stem stiff erect, cauline leaves with linear lacinias, inflorescence compact, simple or with few branches, pedicels densely pubescent, bracteoles filamentous to

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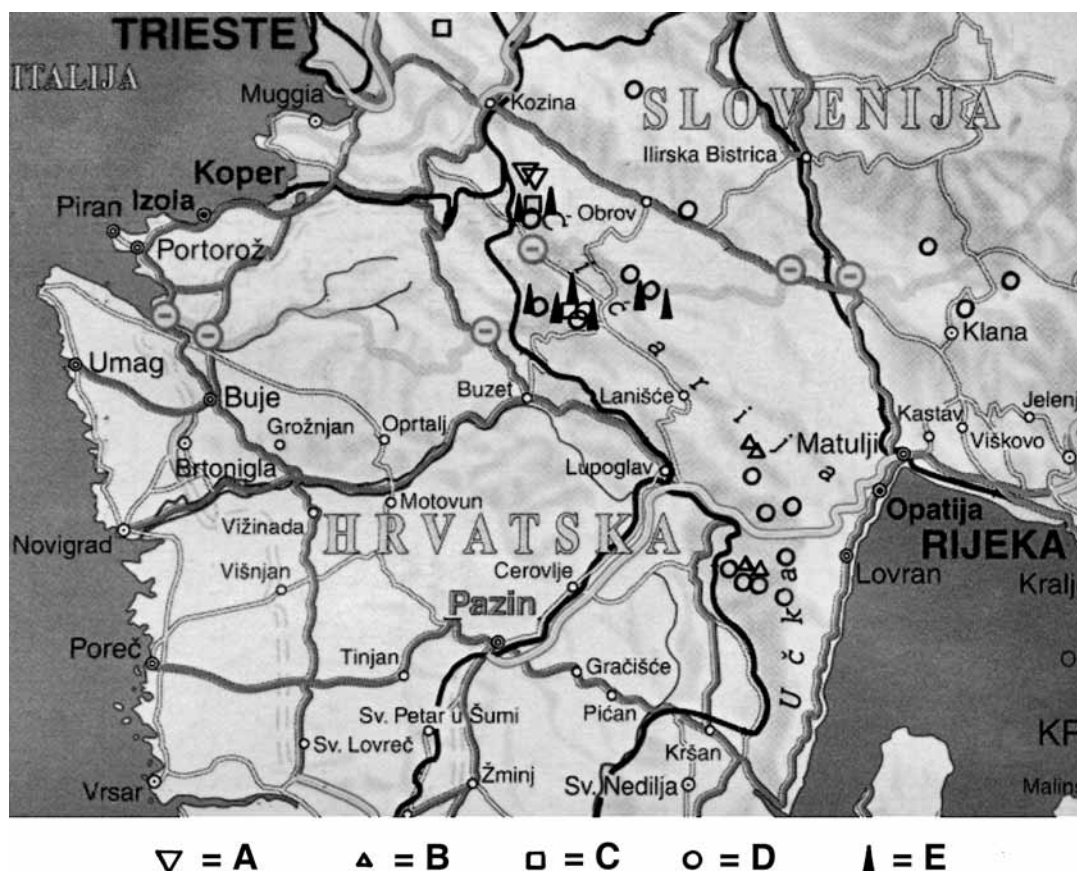


Figure 1: A = *Aconitum anthora*; B = *Aconitum deganii*; C = *Aconitum lupicida*; D = *Aconitum lycoctonum*; E = *Aconitum variegatum*.

linear, pubescent, tepals yellow, externally densely pubescent, hood about as high as long, nectaries glabrous, claw of the nectary curved, always reaching the top of the hood, filaments dentate or not, carpels 5 densely pubescent.

Habitat: Karst meadows or margins of shrubs and mixed woods.

Specimina visa¹: Ex herbario florae illyricae, in rupestribus Montis Slavnik; floret Septembri, omnium generis rarius; s. dat.; leg. M. Tommasini (REG-017312). — Littorale, rupi di S. Canziano pr. Trieste; 09.1872; leg. C. Marchesetti (M-0006012). — Flora illyrico littoralis, zwischen Felsen in den waldigen Abhängen ... in der Schlucht der Reka ..., auf dem Monte Santa ...; 15.09.[1]873; leg. M. Tommasini (WU-Kerner). — Primorsko-istraska flora, biva na travnikih med grmavjem na hriba Videž- blizu Slavniku, 0449/2; 21.08.1903; leg. R. Justin (LJU). — Jugoslavija, Slovenija, Matavun pri Divači, in fruticosis, solo calcareo, cca. 400 m s. m., 0349/2; 02.09.1971; leg. M. Lovka (LJU-31571). — Slovenija, in graminosis fruticosis prope vicum Matavun supra antrum Škocijanske jame, solo calc., 400 m s. m., 0349/2; 14.09.1971; leg. M. Lovka & T. Wraber (LJU-79212).

***Aconitum deganii* GÄYER 1906, Mag. bot. Lap. 5, 123**

Description: Root globose, stem high, cernous, flexuous, cauline leaves large with broad lacinias, inflorescence loose, diffuse, mostly multiflorous, ramose, pedicels ± densely glandular pilose, bracteoles 3–8 mm, filamentous to linear, lamina and margin glandular ciliated, tepals blue,

¹) All label texts are given in original and complete orthography.

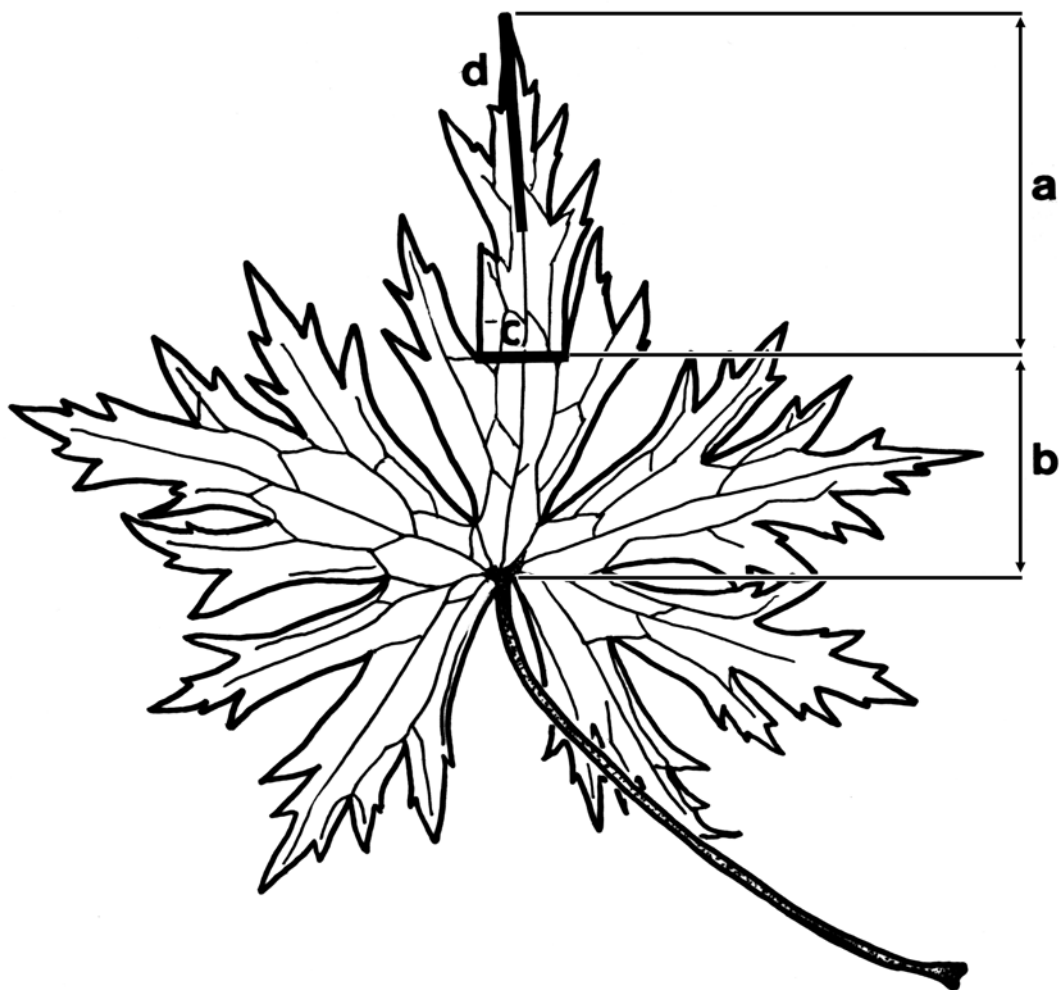


Figure 2: Cauline leaf of *Aconitum lupicida* (Čičarija, Slavník, 980 m alt., 04.09.1999), z1 = a:b, z2 = c:d.

externally glandular pilose, hood about as high as long, claw of the nectary curved, always reaching the top of the hood.

Habitat: Fresh and moist woods and woodmargins.

***Aconitum degenii* GÄYER subsp. *paniculatum* (ARCANGELI) MUCHER 1993a, Phytion (Horn, Austria) 33(1), 58**

Description: Pedicel above and below the bracteoles ± densely glandular pilose, bracteoles situated about in the middle of the pedicel, carpels 3, glabrous.

Specimina visa: Istrien, Gebiet des Monte Maggiore, Felsen und steinige Waldlichtung unter der Kuppe „Plas“ bei Vela Učka, 1309 m, nordwestlich von Plas; 01.09.1909; leg. A. Ginzberger (WU).

***Aconitum degenii* GÄYER subsp. *paniculatum* (ARCANGELI) MUCHER var. *laxiflorum* (RCHB.) MUCHER 1993a, Phytion (Horn, Austria) 33(1), 60**

Description: Nectary glabrous, filaments glabrous.

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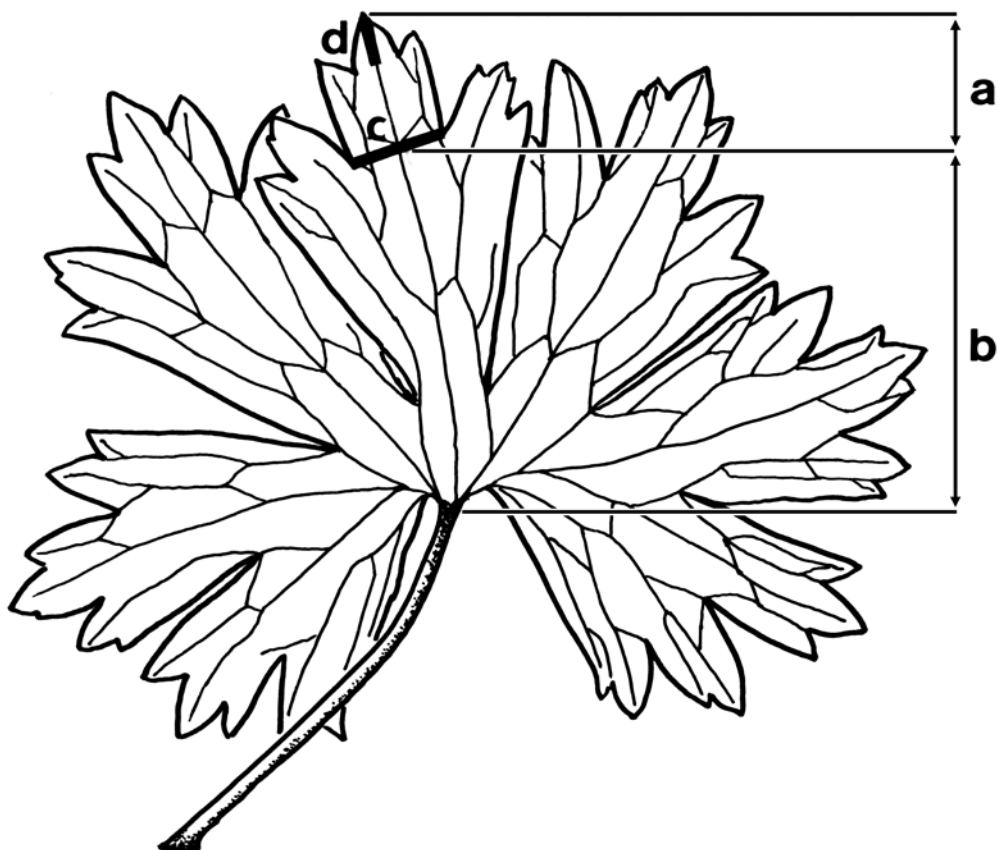


Figure 3: Cauline leaf of *Aconitum lycoctonum* (Čičarija, Lipnik → Kavčič, 780 m alt., 11.06.2004), $z_1 = a:b$, $z_2 = c:d$.

Specimina visa: In nemorib. subalpinis, Faltai, Fiume; s. dat.; leg. Jagger (G). — Nord-Istrien, Planik, Waldrand am Südhang der Kuppe, ca. 1200 m; 14.08.1909; leg. A. Ginzberger (WU), 2 specimens.

***Aconitum deganii* GÁYER subsp. *paniculatum* (ARCANGELI) MUCHER var. *turrachense* (MUCHER) MUCHER 1993a, Phytion (Horn, Austria) 33(1), 63**

Description: Claw of the nectary little pilose, lip of the nectary rarely pilose, at least some filaments in the upper half pilose.

Specimina visa: Nord-Istrien, Planik, Waldrand am Südhang der Kuppe, ca. 1200 m; 14.08.1909; leg. A. Ginzberger (WU), 2 specimens. — Istrien, Gebiet des Monte Maggiore, Felsen und steinige Waldlichtung dicht unterhalb der Kuppe „Plas“ bei Vela Učka, 1309 m, nordwestlich von Plas; 01.09.1909; leg. A. Ginzberger (WU, Z), 8 specimens. — N.-Istrien, Planik-Gipfel; 23.08.1928; leg. G. Cufodontis (W). — Kroatien, Istrien, Planik-Gipfel, Weiden-Buchen-Gebüsch, 1270 m; 14.08.1991; leg. W. Mucher (GZU, KRA, Herb. Starmühler/Graz), 7 specimens. — Kroatien, Istrien (Istria, Istra), Gebiet des Monte Maggiore (Territorio del Monte Maggiore, Učka gora), an der Straße vom Poklon-Sattel zum Gipfel des M. Maggiore (Vojak), N 45°17,42', E 14°12,47', 1320 m alt.; Waldrand; 25.07.1999; leg. W. Starmühler (KL). — Kroatien, Istrien, Učka gora (Gebiet des Monte Maggiore, Territorio del Monte Maggiore), WSW Opatija (Abbazia), an der Straße vom Poklon-Sattel auf den Gipfel des Vojak (M. Maggiore), N 45°17,42', E 14°12,47', 1320 m alt.; Waldrand; 25.07.1999; leg. W. Starmühler (BKF, CL, GZU, LE, LG, M, MA, NY, OSC, PE, TBI, TK, TNS, UBC, W, Z, Herb. Starmühler/Graz).

***Aconitum lupicida* H. G. L. REICHENBACH 1819, Uebers. Acon, 70**

Description: Root not bulbous but a root-stock with fibrous sideroots, stem stiff erect, cauline leaves divided into 7(–9) lacinias, which are connected at the base 1–2 cm, index $z1 = 0.8–1.3$, index $z2 = 0.3–0.8$ (Fig. 2) with 15–37 tips in the central leaf lobe, inflorescence very dense with ascending branches, pedicels shorter than the hood, pubescent, sometimes also with glandular hairs, bracteoles linear, tepals pale yellow, externally glandular or eglandular pubescent or pilose, nectaries glabrous, filaments only rarely dentate, mostly glabrous, carpels glandular or eglandular pubescent or pilose, rarely glabrous.

Habitat: Open high perennial herb associations.

Specimina visa: Monte Maggiore; s. dat.; leg. Noé (REG-037327). — Orto bot. [Triest]; 07., 08.; leg. anonymous (TSB). — Carso triestino, Sbeuniza, 800 m; 24.07.; leg. L. Poldini (TSB). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pinguente (Buzet), NE-Hang des M. Sbeunizza (Žbevnica), N 45°27,61', E 14°01,13', 915 m alt.; Hochstaudenflur; 03.06.1999; leg. W. Good, E. Pasche & W. Starmühler (KL). — Slowenien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), SSE Cosina d'Istria (Kozina), NE-Hang unter dem Gipfel des Slaunig (M. Taiano, Slavník), 980 m alt.; Hochstaudenflur; 04.09.1999; leg. V. Mikoláš & W. Starmühler (KL). — Flora Sloveniae, M. Kokoš, quota: 590 m slm., AB. 0349.3; 22.07.2000; leg. L. Poldini (TSB-2540).

Aconitum lycoctonum* LINNAEUS emend. KOELLE 1788, Spicil. Acon, 23 subsp. *lycoctonum

Description: Root not bulbous but a root-stock with fibrous sideroots, stem mostly stiff erect, rarely cernous, cauline leaves divided into 5(–7) lacinias, which are connected at the base more than 2 cm, index $z1 = 0.2–0.9$, index $z2 = 0.6–1.8$ (Fig. 3) with less than 27 tips in the central leaf lobe, inflorescence less dense to lax with almost horizontal branches, pedicels mostly longer than the hood, pubescent, bracteoles linear, tepals pale yellow, externally eglandular pubescent, nectaries glabrous, filaments only rarely dentate, mostly glabrous, carpels eglandular pubescent or glabrous.

Habitat: Open high perennial herb associations as well as beech forests.

Specimina visa: Flora illyrica-littoralis, vom Monte Maggiore, 4200'; s. dat.; leg. anonymous (W). — Monte Maggiore; s. dat.; leg. Noé (M). — Flora illyrico-littoralis, vom Slavníkberge; 24.07.; leg. Tommasini (W). — Flora illyrico-littoralis, auf dem Berge Sbevniza ober Pinguente; 11.08.; leg. Tommasini (W). — Flora illyrico-littoralis, ... am Slavník; 07.09.; leg. Tommasini (W). — Slavník Berg; 08.1838; leg. Tommasini (GJO). — Slavník Berg, 4500' Höhe; 08.1838; leg. Tommasini (GJO). — In pratis montis Maggiore; 07.1839; leg. Noé (M). — Istria, Monte Maggiore, ad margines silvar. lateris orientalis, in dumetis prope pagum Vela Učka; 16.07., 09.08.1898; leg. Evers (GZU), 2 specimens. — Kroatien, Istrien, Čičarija (Tschitschenboden, Cicceria), Veprinazer Wald W Rijeka (St. Veit am Pflaumb, Fiume), S-Hang des Planik, 1105 m alt.; *Fagus-Picea*-Wald; 06.06.1996; leg. W. Starmühler (GZU, LE, LG, M, MEL, NY, PE, TBI, TNS, W, Z, Herb. Starmühler/Graz). — Kroatien, Istrien (Istria, Istra), Gebiet des Monte Maggiore (Učka gora), SW Abbazia (Opatija), am Weg von Draga di Lovrana (Lovranska Draga) auf den Monte Maggiore (Vojak), 800 m alt.; *Fagus sylvatica*-Wald; 19.04.1997; leg. W. Starmühler (GZU, KL, Herb. Starmühler/Graz). — Kroatien, Istrien, Tschitschenboden (Čičarija), Veprinazer Wald W St. Veit am Pflaumb (Fiume, Rijeka), am Weg vom Poklon-Sattel zur Alpa Grande (Planik), 950 m alt.; Laubmischwald; 12.05.1997; leg. G. H. Leute (KL). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pinguente (Buzet), Doline E vom Gipfel des M. Sbeunizza (Žbevnica), N 45°27,41', E 14°01,34',

Aconitum in the Čićarija mountains and surrounding IstriaTable 1: Differentiation of *Aconitum lupicida* and *Aconitum lycoctonum*.

	<i>Aconitum lupicida</i>	<i>Aconitum lycoctonum</i>
leaf index z1	0.8–1.4(–1.6)	0.2–0.9
leaf index z2	0.3–0.8	0.6–1.8
number of leaf lobes	7(–9)	5(–7)
leaf lobes	rarely overlapping	overlapping
incision of leaf lobes	deep	not so deep
number of tips of the central leaf lobe	15–37	less than 27
shape of the tips of the leaf lobes	long, acuminate	short, obtused
carpels	glandular or eglandular pubescent or pilose, rarely glabrous	eglandular pubescent or glabrous
tepals outside	glandular or eglandular pubescent or pilose	eglandular pubescent
inflorescence	very dense	less dense to lax
branches of the inflorescence	ascending	almost horizontal
habitat	open high perennial associations	open high perennial associations as well as beech forests
distribution	western, central and southern Alps, Karst	central and eastern Europe

950 m alt.; Hochstaudenflur; 26.07.1997; leg. W. Starmühler (GJO, IBF, KL, KRA, LI, WU, Herb. Starmühler/Graz). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čićarija), NE Pinguente (Buzet), Doline am E-Abhang des Gipfel des M. Sbeunizza (Žbevnica), N 45°27,68', E 14°01,30', 920 m alt.; Hochstaudenflur; 26.07.1997; leg. W. Starmühler (GZU, KL, TK). — Kroatien, Istrien, Gebiet des Monte Maggiore (Territorio del Monte Maggiore, Učka gora), am Weg vom Poklon-Sattel zum M. Maggiore (Vojak), 1325 m alt.; *Fagus sylvatica*-Waldrand; 12.06.1999; leg. W. Starmühler (KL). — Kroatien, Istrien, Gebiet des Monte Maggiore (Territorio del Monte Maggiore, Učka gora), an der Straße vom Poklon-Sattel zum Gipfel des M. Maggiore (Vojak), N 45°18,01', E 14°12,51', 1145 m alt.; *Fagus sylvatica*-Waldrand; 25.07.1999; leg. W. Starmühler (KL). — Kroatien, Istrien, Učka gora (Gebiet des Monte Maggiore, Territorio del Monte Maggiore), an der Straße vom Poklon-Sattel auf den Vojak (M. Maggiore), N 45°18,01', E 14°12,51', 1145 m alt.; Waldrand; 25.07.1999; leg. W. Starmühler (GZU, LJU, MA, US). — Slowenien, Istrien, Tschitschenboden (Cicceria, Čićarija), SSE Cosina d'Istria (Kozina), am Weg von der Grmada zum Slaunig (M. Taiano, Slavnik), 980 m alt.; *Fagus sylvatica*-Waldrand; 04.09.1999; leg. V. Mikoláš & W. Starmühler (GZU, LJU). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čićarija), Veprinazer Wald W St. Veit am Pflaumb (Fiume, Rijeka), am Weg vom Poklon-Sattel zum M. Berlosnig (Brložnik), N 45°18,85', E 14°12,77', 980 m alt.; Waldrand; 02.06.2000; leg. P. Hofman, B. Mestel & W. Starmühler (1 Dublette an GZU). — Slowenien, Istrien, Brkini (Berkin), E Kozina (Cosina d'Istria), Padež- (Pades-) Tal N Kozjane, rechtes Ufer des Padež (Pades), N 45°38,02', E 14°04,65', 285 m alt.; Waldrand; 21.10.2000; leg. W. Starmühler (GJO, GZU, KL, LE, LG, LJU, M, MEL, NY, PE, TBI, TNS, W, Z, Herb. Starmühler/Graz). — Kroatien, Istrien, Zaledje Rijeke (Hinterland von St. Veit, Entroterra di Fiume), N Rijeka (St. Veit am Pflaumb, Fiume), NE Klana (Klan, Clana), SW-Hang der Volarija (M. Volleria), Strani, N 45°29,37', E 14°25,02', 905 m alt.; Waldrand; 02.05.2001; leg. W. Starmühler (GZU, KL, LE, LG, M, NY, OSC, PE, TBI, TNS, W, Z, Herb. Starmühler/Graz). — Kroatien, Istrien, Zaledje Rijeke/Entroterra di Fiume/Hinterland von St. Veit, etwa 3 km NE Klana/Clana/Klan, N-Hang des M. Suho, N 45°28,13',

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E 14°24,53', 660 m alt.; Waldrand; 02.05.2001; leg. W. Starmühler (KL). — Slowenien, Istrien, Brkini (Berkin, Berchinia), etwa 2 km WNW Podgrad (Neuhaus, Castelnovo d'Istria), N 45°31,88', E 14°07,51', 550 m alt.; Gebüschsaum; 29.05.2002; leg. U. & W. Starmühler (GJO, GZU, LJU). — Slowenien, Istrien, Zaledje Reke (Hinterland von St. Veit, Entroterra di Fiume), SE Ilirska Bistrica (Illyrisch Feistritz), an der Straße von Zabiče (Guttenegg, Castelveccchio) nach Gomance (Jagdhause Hermsburg), SW-Hang des Goljak, N 45°30,47', E 14°23,52', 930 m alt.; Waldrand; 12.08.2002; leg. U. & W. Starmühler (GJO, KRA, LI, LJU, M). — Slowenien, Istrien, Čičarija (Tschitschenboden, Cicceria), SSW Obrov (Obrovo Santa Maria), am Weg von Zagrad (Sagrado) auf die Glavičorka (M. Rasusizza), N 45°30,12', E 14°04,00', 810 m alt.; Waldrand; 13.08.2002; leg. U. & W. Starmühler (GJO, GZU, IBF, LJU, W, WU, Herb. Starmühler/Graz). — Slowenien, Istrien, Čičarija (Tschitschenboden, Cicceria), SSW Obrov (Obrovo Santa Maria), NE-Hang der Glavičorka (M. Rasusizza), N 45°29,25', E 14°05,20', 970 m alt.; *Fagus sylvatica*-Waldrand; 13.08.2002; leg. U. & W. Starmühler (GZU, LJU). — Slowenien, Istrien, Čičarija (Tschitschenboden), S Kozina (Cosina), NE Rakitovec (Aquaviva dei Vena), am Weg vom Berg Lipnik (M. dei Tigli) zum Berg Kavčič (M. Caucizze), N 45°28,59', E 13°58,42', 780 m alt.; Hochstaudenflur am Grund einer Doline; 11.06.2004; leg. H.P. Meister, O. Rainer, U. & W. Starmühler (GZU, LE, LG, M, NY, OSC, PE, TBI, TNS, W, Z, Herb. Starmühler/Graz).

***Aconitum variegatum* LINNAEUS 1753, Spec. pl. 1, 532**

Description: Root globose, stem erect or cernous, flexuous, caulinar leaves mostly large with broad lacinas, inflorescence branched, rarely simple, pedicels glabrous, bracteoles 4–8 mm, spatulate, situated below the blossom, lamina above pubescent, tepals blue to violet, rarely white mixed or lilac, outside glabrous, hood higher than long, claw of the nectary upright, rarely hardly curved, spur of the nectary curved backwards, not reaching the top of the hood, filaments of stamens mostly ± dentate, glabrous or in the upper half pilose, carpels 3–5.

Habitat: High perennial herb associations, moist woodmargins.

Specimina visa: Carso Triestino, M. Slavnik versante verso Podgorje, subocc., 900 m s.m.; 01.05.1969; leg. Poldini (TSB).

***Aconitum variegatum* LINNAEUS subsp. *nasutum* (FISCHER ex H. G. L. REICHENBACH emend. F. J. RUPRECHT) GÖTZ 1967, Feddes Repert. 76(1–2), 36**

Description: Carpels 3, glabrous.

Specimina visa: Škocjan, 0349/2; 12.09.1951; leg. S. Grom (LJU-42657). — M. Taiano; 10.09.1969; leg. B. Zomisch (TSB). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pinguente (Buzet), E-Hang vom Gipfel des M. Sbeunizza (Žbevnica), N 45°27,55', E 14°01,05', 995 m alt.; Hochstaudenflur; 26.07.1997; leg. W. Starmühler (GZU, KL). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pinguente (Buzet), Doline ENE vom Gipfel des M. Sbeunizza (Žbevnica), N 45°27,41', E 14°01,34', 950 m alt.; Hochstaudenflur; 26.07.1997; leg. W. Starmühler (KL). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pinguente (Buzet), Mulde unter dem E-Hang des M. Spitzen (Špičasti vrh), N 45°27,68', E 14°01,21', 920 m alt.; Hochstaudenflur; 26.07.1997; leg. W. Starmühler (KL). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pinguente (Buzet), E-Hang des M. Spitzen (Špičasti vrh), N 45°27,68', E 14°01,21', 920 m alt.; Hochstaudenflur; 26.07.1997; leg. W. Starmühler (GJO, GZU, IBF, KRA, LI, LJU, WU, Herb. Starmühler/Graz). — Slowenien, Istrien, Čičarija (Tschitschenboden, Cicceria), N Buzet (Pinguente), NE Rakitovec (Aquaviva dei Vena), am Weg vom Lipnik zum Kavčič, N 45°28,78', E 13°58,26', 695 m alt.; Gebüschsaum am Rand einer Doline; 19.08.1999; leg. W. Starmühler (GZU, IBF, UBC, WU). — Slowenien, Istrien, Tschitschenboden (Cicceria, Čičarija), SSE Cosina d'Istria (Kozina), am Weg von der Grmada zum Slaunig (M. Taiano, Slavnik), 980 m alt.; *Fagus sylvatica*-Waldrand; 04.09.1999; leg. V. Mikoláš & W.

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Starmühler (KL). — Slowenien, Istrien, Čičarija (Tschitschenboden, Cicceria), SSE Kozina (Cosina d'Istria), SE-Hang unter dem Gipfel des Slavnig (Slaunig, M. Taiano), 995 m alt.; Hochstaudenflur; 04.09.1999; leg. V. Mikoláš & W. Starmühler (KL, TK).

***Aconitum variegatum* LINNAEUS nsubsp. *podobnikianum* MUCHER 1993b, Carinthia II 183./103., 522 (*A. variegatum* subsp. *nasutum* × subsp. *variegatum*)**

Description: Carpels 3, with single hairs only at the top of the ventral suture.

Specimina visa: Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pingente (Buzet), E-Hang vom Gipfel des M. Sbeunizza (Žbevnica), N 45°27,55', E 14°01,05', 995 m alt.; Hochstaudenflur; 26.07.1997; leg. W. Starmühler (KL). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pingente (Buzet), Doline ENE vom Gipfel des M. Sbeunizza (Žbevnica), N 45°27,41', E 14°01,34', 950 m alt.; Hochstaudenflur; 26.07.1997; leg. W. Starmühler (KL). — Slowenien, Istrien, Čičarija (Tschitschenboden, Cicceria), SSE Kozina (Cosina d'Istria), SE-Hang unter dem Gipfel des Slavnig (Slaunig, M. Taiano), 995 m alt.; Hochstaudenflur; 04.09.1999; leg. V. Mikoláš & W. Starmühler (CL, GJO, GZU, KL, KRA, MA, R, TK, UBC, US). — Slowenien, Istrien, Tschitschenboden (Cicceria, Čičarija), SSE Cosina d'Istria (Kozina), am Weg von der Grmada zum Slaunig (M. Taiano, Slavnig), 980 m alt.; *Fagus sylvatica*-Waldrand; 04.09.1999; leg. V. Mikoláš & W. Starmühler (KL).

Aconitum variegatum* LINNAEUS 1753, Spec. pl. 1, 532 subsp. *variegatum* var. *variegatum

Description: Carpels 3–5, densely pilose at the ventral suture.

Specimina visa: Ex herbario florum illyricarum, in fruticosis rupestribus Montis Slavnig; s. dat.; leg. M. Tommasini (REG-017304). — Ex herbario florum illyricarum, ad margines sylvarum in Monte Slavnig; s. dat.; leg. M. Tommasini (REG-017392). — Flora Illyrica, in monte Slavnig, alt. 3000'; s. dat.; leg. M. Tommasini (G). — Flora illyrico-littoralis, vom Slavnigberge; s. dat.; leg. Tommasini (W). — Flora Illyrico-Littoralis, in herbis montanis, hoc ex Mte. Sbeunizza, a 2800' ad 3500'; s. dat.; leg. M. Tommasini (G). — Flora illyrico-littoralis, bey Materia an der ... auf Zinne; 19.08.; leg. Tommasini (W). — Flora illyrico-littoralis, auf dem Mali Schabnik ober Golaz in der ...; 22.08.; leg. Tommasini (B). — Flora illyrico-littoralis, auf dem Velki Schabnik ... ober Golaz in der ...; 3200'; 22.08.; leg. Tommasini (W). — Flora von Istrien, Monte Slavnig; 25.08.1895; leg. K. Untchj (GZU, SIB-Untchj). — Slovenija, Slavnig, ob zgornjem gozdnem robu in na pašniku v jamah, Seslerio-Fagetum, Seslerietum tenuifoliae, 0449/4; 28.08.1959; leg. M. Wraber (GZU, LJU-65971), 3 specimens. — Detto (GZU, LJU-65977). — M. Taiano; 10.09.1969; leg. B. Zomisch (TSB). — Kroatien, Istrien, Čičarija (Tschitschenboden, Cicceria), NE Buzet (Pingente), NE-Hang unter dem Gipfel der Žbevnica (Monte Sbeunizza), N 45°27,64', E 14°01,44', 950 m alt.; Hochstaudenflur; 26.07.1997; leg. W. Starmühler (GZU, LE, LG, M, MEL, NY, PE, TBI, TNS, W, Z, Herb. Starmühler/Graz). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pingente (Buzet), SE-Hang des M. Spitzen (Špičasti vrh), N 45°27,63', E 14°01,34', 890 m alt.; *Rhamnus*-Gebüsch; 26.07.1997; leg. W. Starmühler (KL). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pingente (Buzet), Gipfel S vom M. Spitzen (Špičasti vrh) und ENE vom M. Sbeunizza (Žbevnica), N 45°27,53', E 14°01,27', 940 m alt.; Hochstaudenflur; 26.07.1997; leg. W. Starmühler (KL, LJU). — Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pingente (Buzet), Doline E vom Gipfel des M. Sbeunizza (Žbevnica), N 45°27,68', E 14°01,30', 920 m alt.; Hochstaudenflur; 26.07.1997; leg. W. Starmühler (GJO, KL). — Slowenien, Istrien, Čičarija (Tschitschenboden, Cicceria), N Buzet (Pingente), NE Rakitovec (Aquaviva dei Vena), am Weg vom Lipnik zum Kavčič, N 45°28,78', E 13°58,26', 695 m alt.; Gebüschsaum am Rand einer Doline; 19.08.1999; leg. W. Starmühler (KL). — Slowenien, Istrien, Čičarija (Tschitschenboden, Cicceria), SSE Kozina (Cosina d'Istria), SE-Hang unter dem Gipfel des Slavnig (Slaunig, M. Taiano), 995 m alt.; Hochstaudenflur; 04.09.1999; leg. V. Mikoláš & W. Starmühler (BKF, CL, CLF, GJO, GZU,

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IBF, JACA, KL, KRA, LE, LG, LI, LJU, M, MA, NY, OSC, PE, R, TBI, TK, TNS, UBC, US, W, WU, Z, Herb. Starmühler/Graz). — Slowenien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), SSE Cosina d'Istria (Kozina), SE-Hang unter dem Gipfel des Slaunig (M. Taiano, Slavník), 995 m alt.; Hochstaudenflur; 04.09.1999; leg. V. Mikoláš & W. Starmühler (KL). — Slowenien, Istrien, Čičarija (Tschitschenboden, Cicceria), SSE Kozina (Cosina d'Istria), NE-Hang unter dem Gipfel des Slavník (Slaunig, M. Taiano), 980 m alt.; Hochstaudenflur; 04.09.1999; leg. V. Mikoláš & W. Starmühler (GJO, GZU, KL, LJU, WU). — Slowenien, Istrien, Tschitschenboden (Cicceria, Čičarija), SSE Cosina d'Istria (Kozina), am Weg von der Grmada zum Slaunig (M. Taiano, Slavník), 980 m alt.; *Fagus sylvatica*-Waldrand; 04.09.1999; leg. V. Mikoláš & W. Starmühler (KL). — Slowenien, Istrien, Čičarija (Tschitschenboden, Cicceria), SSW Obrov (Obrovo Santa Maria), NE-Hang des Glavičorka (M. Rasusizza), N 45°29,25', E 14°05,20', 970 m alt.; *Rubus idaeus*-Gebüsch; 18.08.2002; leg. U. & W. Starmühler (GJO, GZU, IBF, JACA, KL, KRA, LE, LG, LI, LJU, M, NY, OSC, PE, TBI, TNS, UBC, W, WU, Z, Herb. Starmühler/Graz).

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Wulfenia](#)

Jahr/Year: 2008

Band/Volume: [15](#)

Autor(en)/Author(s): Starmühler Walter

Artikel/Article: [Contribution to the knowledge of the genus Aconitum \(Ranunculaceae\) in the Cicaria mountains and surrounding Istria. 1-11](#)