



ATTEMPT OF A MORPHOLOGICAL DIFFERENTIATION OF *HELLEBORUS* SPECIES IN THE NORTHWESTERN BALKANS

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Abstract. The genus *Helleborus* is represented in the Northwestern Balkans by 8 species. Some of them (*H. atrorubens*, *H. foetidus* (newcomer, introduced as well as escaped from culture), *H. niger*, and *H. orientalis* (newcomer, escaped from culture)) are rather easy for determination and discrimination. While other 4 species (*H. dumetorum*, *H. multifidus*, *H. odorus*, and *H. viridis*) are really difficult for determination because of their narrow morphological similarity, which also is realized a wide variety in leaf shape. The distribution areas of last 4 species overlap in the Northwestern Balkans, so that there are no really clear borders of their distribution. Dominating species in this region is *H. multifidus*, and especially common there is its subsp. *istriacus*. Other 3 species are rare and are therefore often overlooked and the herbarium specimens are frequently misidentified as *H. multifidus*. Moreover, all these 4 species produce number of hybrids, and as a result all kind of transistions between these taxa could be found. In particular, 11 hybridises could be confirmed for this region. The hybrid between *H. dumetorum* and *H. multifidus* is described here as *Helleborus* × *mucherii*.

Key words: *Helleborus*, Balkans, differentiation, distribution, hybrids, morphology, species, taxa

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Introduction

The Northwestern Balkans is a rather interesting region for *Helleborus* studies, because several species with overlapping areas are represented there (STARMÜHLER 2007). The number of morphological characters is high enough for a good separation of all *Helleborus* species in the Northwestern Balkans. However, the problem is that in several cases you should use the leaf features in combination with the flower characteristics for a definite result. Besides the cultivation of plants collected in the field to see both, leaves and flowers, we have no other possibilities for absolutely correct determinations. Sometimes it is also possible to visit a habitat in nature in two different periods to see the growth and developing of these plants. But for the revision of herbarium material there is often no other way than to determine the specimen with the suffix *cf.*

Not only high variability of the most *Helleborus* species leads to descriptions of local taxa (SCHIFFNER 1890). The problem is also increased by high number of hybrids, especially between the species in the section

Helleborastrum (BAVCON *et al.* 2012). The situation becomes even more complicated with the anthropogenic introduction of alien species and their consequent escape from gardens (POSPICHAL 1898).

The highest variability we find in the shape of the basal leaves (BECKER 2011), especially in *H. multifidus* subsp. *istriacus*, the most widespread and most frequent taxon in the Northwestern Balkans. For many years the closely related taxa (*H. dumetorum*, *H. multifidus*, *H. odorus*, and *H. viridis*) have not been separated or only partly separated in the literature dealing with this territory. In many cases all 4 species were lumped in a single taxon which was sometimes identified as *H. dumetorum* or *H. odorus*, and very often – as *H. viridis*. The first attempt to show the different areas of distribution of these species on maps was done 9 years ago (STARMÜHLER 2007), while the attempt to find the morphological differences between all accepted taxa in this region was realized just in 2014 (ROTTENSTEINER 2014) what also was reflected in the determination key.

Systematics

Helleborus Linnaeus 1753, Sp. Pl.: 557

sect. *Griphopus* Spach 1839, Hist. Nat. Veget. Phan. 7: 319

H. foetidus Linnaeus 1753, Sp. Pl.: 558
sect. *Helleborastrum* (Spach) K. Werner & F. Ebel 1994, Flora 189: 98

H. atrorubens Waldstein & Kitaibel 1812, Descr. et Icon. Pl. Rar. Hung. 2: 301, tab. 271

H. dumetorum Waldstein & Kitaibel ex Willdenow 1809, Enum. Pl. 1: 592
subsp. *illyricus* Starmühler 2007, Carinthia II 197/117: 413

H. multifidus Visiani 1829, Flora (Regensburg) 12, Ergänzungsbl. 1: 13
subsp. *multifidus*
subsp. *istriacus* (Schiffner) Merxmüller & Podlech 1961, Feddes Repert. Spec. Nov. Regni Veg. 64: 5

H. odorus Waldstein & Kitaibel ex Willdenow 1809, Enum. Pl. Hort. Berol.: 592

subsp. *odorus*
subsp. *laxus* (Host) Merxmüller & Podlech 1961, Feddes Repert. 64: 5

H. orientalis Lamarck 1789, Encycl. 3: 96

H. viridis Linnaeus 1753, Sp. Pl.: 558
subsp. *viridis*

sect. *Helleborus*

H. niger Linnaeus 1753, Sp. Pl.: 558
subsp. *niger*
subsp. *macranthus* (Freyn) Schiffner 1890, Bot. Jahrb. Syst. 11: 105

Descriptions

Helleborus atrorubens Waldstein & Kitaibel 1812, Descr. et Icon. Pl. Rar. Hung. 2: 301, tab. 271 (Fig. 1).

Plant 20-40 cm tall; stem without cauline leaves; leaves semi-coriaceous, not hardy, young ones \pm hairy along the veins, later nude, dark green, divided into 7-11 leaflets; leaflets 2-7 cm

broad, undivided, with nude veins; main veins not exserted, lateral veins not exserted; inflorescence with 1-9 flowers; bracts divided; flowers 4-5.5 cm broad, slightly drooping; tepals narrow-ovate to ovate, deep brown purple outside, pale purple inside; carpels 3-5, 15-18 mm long (without beak).

Ecology: Light woods and forest edges, meadows, vineyards, in dryer habitats than *H. dumetorum* and *H. odorus*.

Distribution: Southern Slovenia, Croatia, Bosnia, Serbia (see BAVCON *et al.* 2012).

Specimina selecta: Flora stiriaca exsiccata 168, Stiria inferior, in dumetis ad pagum Videm prope urbem Gurkfeld, solo calcareo, 180 m s.m.; 03.1905; leg. A.v. Hayek (GJO-59249).

Helleborus dumetorum Waldstein & Kitaibel ex Willdenow subsp. *illyricus* Starmühler 2007, Carinthia II 197/117: 413 (Figs. 2 & 3).

Plant 20-30 (-40) cm tall; stem without cauline leaves; leaves not hardy, divided into 7-11 (-13) leaflets, the central 3 ones always undivided, 1-3 cm broad, green to dark green, with hairy main veins; main veins little exserted, lateral veins not exserted; inflorescence with (2-) 3-5 (-6) flowers; bracts divided; flowers 3-4 (-5) cm broad, \pm drooping; tepals narrow-ovate, pale green, cup-shaped, 2.5-3.5 (-4) cm broad; carpels 3-5; ripe fruit 15-18 mm long (without beak).

Ecology: Karst heath, light woods, shibliak, mostly on moist soil.

Distribution: Southwestern Slovenia, Friuli Venezia-Giulia, Northwestern Istria (the area of subsp. *dumetorum* ranges over Southern Austria, Slovenia, Eastern Croatia, Western Hungary, as well as Southwestern, Southern and Eastern Romania).

Specimina selecta: Istr.; leg. C. Albori (GZU). – Ex herbario florum illyricae, bey Triest häufig; s.d.; leg. M. Tommasini (GJO-1986/3665). – Zwischen Gebüsch auf ... bey Triest; s.d.; leg. M. Tommasini (GJO-1856/3667). – Triest; s.d.; leg. Marchesetti (GJO-1915/876). – Triest; 03.; leg. Tommasini (GJO-1911/3878). – Flora exsiccata Austro-Hungarica 2541, Istria, in dumetis inter pagos Padric et Orleg; s.d.; leg. Solla (GZU). – Lippizer Wald; 03.1833; leg. ... (GJO-1851/35). – Küstenland, Opcina; 04.1875; leg. Mitterdorfer (GZU). – Triest, Boschetto; 21.3.1880; leg. Penecke (GZU). – Flora von Triest, Karstwiesen bei Cattinara; 24.03.1889; leg. V. Engelhardt (GJO-1918/13341). – Triest; 02.1893; leg. Raumhart (GJO-1908/4546). – Auf Karstwiesen



Fig. 1. Young inflorescence of *Helleborus atrorubens*.

bei Triest; 04.1901; leg. J. Müller (GZU). – Istrien, lichte Wälder bei Draga; 03.–06.1908; Herb. I. Dörfner (GZU). – J, Istrien, Ucka; im Laubwald, unter Gebüsch; 22.05.1969; leg. Schiefermair (GJO-25343). – Italien, Triestino/Territorium von Triest, E Trieste/Triest, etwa 0,2 km NW Trebiciano/Trebče/Trebich, N 45°40,57', E 13°49,16', 340 m alt.; *Pinus nigra*-Wald; 17.03.2001; leg. W. Starmühler (GJO, GZU, IBF, KL, LJU, TSB, W, WHB), Typen. – Italien, Triestino/Territorium von Triest, E Trieste/Triest, 0,15 km SE Padriciano/Padriče/Padrich, N 45°38,99', E 13°50,40', 365 m alt.; *Pinus nigra*-Wald; 17.03.2001; leg. W. Starmühler (GZU, KL, LI, WU, Herb. D. Koriakov/RU-Novosibirsk). – Italien, Triestino/Territorium von Triest, E Trieste/Triest, 0,5 km NE Basovizza/Bazovica/Basowitz, N 45°38,81', E 13°52,42', 380 m alt.; Trockenrasen; 17.03.2001; leg. W. Starmühler (KL). – Slowenien, Triestino/Territorium von Triest, E Trieste/Triest, an der Straße von Basovizza/Bazovica/Basowitz nach Lokev/Corgnale, an der Abzweigung der Straße nach Lipica/Lippizza/Lipizza, N 45°39,58', E 13°53,43', 410 m alt.; *Pinus-Quercus*-Wald; 17.03.2001; leg. W. Starmühler (KL). – Slowenien, Istrien, Čičarija/Cicceria, S Kozina/Cosina, am Weg von Podgorje/Piedimonte del Taiano auf den Berg Slavnik/M. Taiano/Slaunig, N 45°31,185', E 13°58,179', 749 m alt.; Karstheide; 14.05.2010; leg. V. Mikolaš, W. Mucher & W. Starmühler (KL).

Helleborus foetidus Linnaeus 1753, Sp. Pl.: 558 (Fig. 4).

Plant 20-80 cm tall; stem branched, with several cauline leaves; leaves divided into 3-9 leaflets; leaflets narrow lanceolate; inflorescence with usually more than 10 flowers; bracts undivided, ovate; flowers 1-2.5 (-3) cm broad, bell-shaped, ± drooping; tepals green with dark red margins; carpels 3 (-4).

Ecology: Light woods, forest edges and shibljak on little dry to moist soil.

Distribution: Western and Southern Europe from South England to Northern Africa (this species is a newcomer in the Northwestern Balkans. It has been anthropogenically introduced and escaped from culture as well (POSPICHAL 1898)).

Specimina selecta: Tüffer, Stmk; s.d.; s.n. (GJO). – Bei Tüffer Cill. Dr.; s.d.; leg. Profenc (GJO).

Helleborus multifidus Visiani 1829, Flora (Regensburg) 12, Ergänzungsbl. 1: 13 (Figs. 5-7).

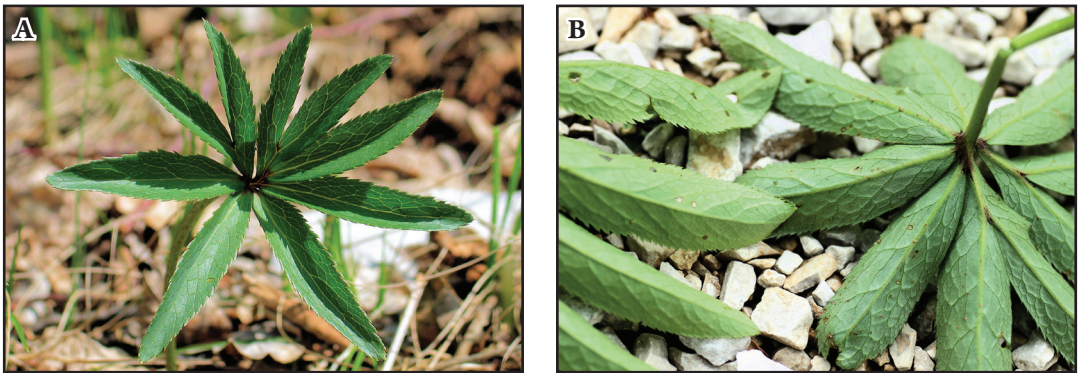


Fig. 2. *Helleborus dumetorum* subsp. *illyricus*: **A** – lamina of a basal leaf; **B** – underside of a basal leaf with a little exerting main vein and not exerting lateral veins.



Fig. 3. Flower of *Helleborus dumetorum* subsp. *illyricus* with narrow ovate tepals.

Plant 25-45 cm tall; stem mostly without cauline leaves; leaves not hardy, divided into 11-50 leaflets; inflorescence with 3-8 flowers, arranged vertically; bracts divided; flowers 3.5-5.5 cm broad, cup-shaped; tepals broad-lanceolate to narrow-ovate, yellowish or pale green; carpels 3-6; ripe fruit 18-20 mm long (without beak).

Ecology: Shrubbery edges, light woods, shibliak, often in dry habitats, more than all other species in this region.

Distribution: Southernmost Switzerland (Tessin), Northeastern Italy, Southwestern Slovenia, Croatia, Bosnia-Herzegovia, Montenegro.



Fig. 4. Habitus of *Helleborus foetidus*.

subsp. *istriacus* (Schiffner) Merxmüller & Podlech 1961, Feddes Repert. Spec. Nov. Regni Veg. 64: 5 (Figs. 5 & 6).

Leaflets more than 2 cm broad, some of them divided almost to the base, some only to the middle, at the margin more finely toothed.

Distribution: Southernmost Switzerland (Tessin), Northeastern Italy, Southwestern Slovenia, Croatia, Bosnia.

Specimina selecta: Flora von Istrien, Monte Maggiore; 05.1873; leg. Rossi (GZU). – Sehr gemein auf den Vorbergen des Monte Maggiore bei Abbazia; 20.05.1887; Herb. K. Fritsch (GZU). – Istrien, Cherso; 03.06.1896; leg. K. Wilhelm (WHB). – Abbazia, Istrien; 04.1897; leg. Kuchler (GJO-1918/13334). – Flora Istriaca, Abbazia; 04./05.[18]97; leg. A. Steffek (WHB). – Abbazia; 04.04.1897; leg. L. Richter (GZU). – Istrien, Monte Maggiore bei Fiume, 1396 m; 03.05.1897; leg. I. Ostermaier (GZU), 2 Belege. – Istria, in dumetis et in apricis collib. lapidosis totius littorio liburnici, Monte Maggiore; 30.04.1898; leg. Evers (GZU). – Istrien, auf Bergwiesen des Monte Maggiore, ca. 1000 m; 05.1900; leg. F. Vierhapper (WHB). – Istrien, an schattigen Stellen des Monte Maggiore bei Veprinaz, ca 800 m; 05.1900; leg. F. Vierhapper (WHB), 2 Belege. – Italien, Istrien, Carre bei Albona d'Istria; 03.1926; leg. R. Czagka jun.

(GZU). – Istrien, Kraj; Karstbusch; 13.03.1957; leg. A. Neumann (KL-131506). – Mitteleuropäisches Gebiet, Provinz der Alpenländer, Karst und Karniolisch-illyrisches Übergangsgebiet, Karstwiesen zwischen Divača und Senožeče; 05.06.1958; leg. E. Habeler (GJO-26481/732). – Karst und Karniolisch-illyrisches Übergangsgebiet, Karstwiesen zw. Divača und Senožeče; 05.06.1958; leg. F. Wolking (GJO-26825/472). – Borgo Grotta Gigante (TS); 04.04.1966; leg. L. Poldini (TSB-028285). – Opicina; 02.04.1967; leg. S. Pignatti (TSB-028310). – Banne (TS); 12.04.[19]67; leg. Mortin (TSB-028427, TSB-028428, TSB-028430). – Flora v. Jugoslawien, Kroatien, Istrien, Učka Gora bei Opatija, Fagetum b. Hotel Učka; 01.07.1967; leg. Leute & Tomšovic (KL-115421). – Monte Orsaro pr. Ferneti; 11.04.1968; leg. S. Pignatti (TSB-028417, TSB-028418, TSB-028419, TSB-028420, TSB-028421). – Fr. la chiesa di Truski (Capodistria); 17.04.1971; leg. S. Pignatti (TSB-028294, TSB-028295). – Učka, 950 [m], Yu.; 06. [19]71; leg. W. Holzner (WHB). – Jugoslawien, Istrien, SW von Plomin, ca. 54 km NE von Pula; 02.11.1973; leg. W. Möschl & H. Pittoni (GZU). – Croatia, Istria, in silvis - *Carpinetum orientalis* - supra sinum maris Limski kanal dictum, solo calcareo, 20 m s.m., 0848/3; 17.03.1974; leg. E. Mayer & T. Wraber (GJO-26.245/56, GZU, LJU). – Monte Cocusso, m. 500; 11.04.[19]75; leg. C. Longhi (TSB-028237). – Istrien, Učka = Mte. Maggiore im NE der HI Istrien, lichter *Fagus* s. + *Pinus nigra*-Wald, ca. 1120 m;



Fig. 5. Basal leaf of *Helleborus multifidus* subsp. *istriacus*.

03.05.1975; leg. W. Möschl & H. Pittoni (GZU). – Flora Italiae, prov. di Trieste, tra Opicina e M.te Orsario, 300 m s.m.; 03.05.1975; leg. E. Cristancig (TSB-028236). – Flora v. Jugoslawien, Kroatien, Istrien, am Aufstieg vom Poklon-Sattel zur Učka Gora SW Opatija, Laubmischwald, Kalk, 950 m; 28.05.1977; leg. G.H. Leute (KL-115420). – Flora von Kroatien, in einem sommergrünen Eichenwald auf der Insel Cres; 25.04.1980; leg. W. Forstner (WHB). – Istrien, Tinjan b. Pazin, Nr. 007558; 22.08.1982; leg. A. Kofler (IBF). – Flora von Jugoslawien, Slowenien, Istrien, Karstwiese Sw Črnotiče oberh. Črni Kal, Kalk; 18.05.1991; leg. G.H. Leute (KL-115419). – Slowenien, Istrien (Istria, Istra), Golf von Triest (Golfo di Trieste, Tržaški zaliv), SE Triest (Trieste), am Weg von Osp (Osp) nach Castelz (Kastelec), W-Hang des M. Carso (Kras), N 45°34,43', E 13°51,62', 165 m alt.; *Acer monspessulanum-Fraxinus ornus-Quercus pubescens*-Wald mit *Ostrya carpinifolia*; 05.07.1997; leg. W. Starmühler (KL). – Italien, Territorium von Triest (Triestino), E Triest (Trieste), 0,5 km ENE Basovizza, N 45°38,81', E 13°52,40', 360 m alt.; Gebüschsaum; 06.07.1997; leg. W. Starmühler (KL). – Slowenien, Territorium von Triest (Triestino), E Triest (Trieste), 1 km S Lipizza (Lipica), N 45°39,52', E 13°52,42', 385 m alt.; Gebüschsaum; leg. W. Starmühler (GJO, KL, LG). – Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), NE Pinguente (Buzet), S-Hang des M. Sbevnizza (Žbevnica), N 45°27,30', E 14°01,69', 845-

950 m alt.; Pinus-Wald mit *Fraxinus ornus*, *Ostrya carpinifolia* und *Sorbus aria*; 26.07.1997; leg. W. Starmühler (KL). – Kroatien, Istrien (Istria, Istra), Gebiet des Monte Maggiore (Učka gora), N Fianona (Plomin), am Weg von der Kirche des Hl. Georg (S. Giorgio, Sv. Juraj), zur Ruine Wachsenstein (Kozljak), W Catun (Katun), N 45°10,93', E 14°11,04', 135 m alt.; Gebüschsaum; 21.05.1998; leg. H., U. & W. Starmühler (KL). – Kroatien, Istrien (Istria, Istra), Hinterland von St. Veit (Entroterra di Fiume), SW Clana (Klana), 2 km ESE Škalnica, N 45°26,41', E 14°21,09', 570 m alt.; Gebüschsaum; 03.06.1998; leg. W. Starmühler (KL). – Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), S Neuhaus (Castelnuovo, Podgrad), 1 km SW Klein-Mune (Mune Piccolo, Male Mune), N 45°27,18', E 14°08,78', 650 m alt.; Gebüschsaum; 24.04.1999; leg. U. & W. Starmühler (KL). – Kroatien, Istrien (Istria, Istra), West-Küste (Costa occidentale, Zapadna obala), am Weg vom Leme-Kanal (Canale di Leme, Limski zaljev) nach Due Castelli (Dvigrad), N 45°07,29', E 13°45,92', 25 m alt.; Gebüschsaum; 06.05.2000; leg. U. & W. Starmühler (GZU, KL). – Italien, Triestino/Territorium von Triest, E Trieste/Triest, 0,5 km NE Basovizza/Bazovica/Basowitz, N 45°38,81', E 13°52,42', 380 m alt.; Trockenrasen; 17.03.2001; leg. W. Starmühler (GZU, KL). – Slowenien, Tržaško/Triestino/Territorium von Triest, E Trieste/Triest, Lipica/Lippizza/Lipizza, N 45°40,82', E 13°53,32', 410 m alt.; Gebüschsaum; 17.03.2001; leg. W. Starmühler



Fig. 6. Flower of *Helleborus multifidus* subsp. *istriacus* with ovate yellowish green tepals.

(GZU, KL, LJU). – Slowenien, Istrien, Brkini/Berchinja/Berkin, ESE Kozina/Cosina, 0,3 km NNE Tublje/Tubliano, N 45°35,90', E 13°58,43', 535 m alt.; Gebüschaum; 17.03.2001; leg. W. Starmühler (GJO, GZU, KL, LJU und WHB). – Flora Croatiae, Krk (Veglia), lungo il sentiero che da Treskovac porta a Vrbnik; 13.04. [2]001; leg. L. Poldini (TSB-028399). – Flora von Kroatien, Istrien, lichter Wald bei Žejane; 06.07.2001; leg. K.-G. Bernhardt (WHB). – Kroatien, Istrien, Zaledje Rijeke/Entrotterra di Fiume/Hinterland von St. Veit, etwa 3 km SSW Klana/Clana/Klan, an der Straße nach Studena, N 45°24,89', E 14°23,42', 520 m alt.; Gebüschaum; 01.05.2001; leg. W. Starmühler (GJO, KL). – Slowenien, Istrien, Brkini/Berchinja/Berkin, ESE Podgrad/Castelnuovo d'Istria/Neuhaus, etwa 1 km NNE Starod/Starada, N 45°31,00', E 14°11,89', 755 m alt.; Waldrand; 03.05.2001; leg. W. Starmühler (KL). – Slowenien, Istrien, Notranja Istra/Istria interna/Inner-Istrien, E Koper/Capodistria/Gavers, zwischen Kortine/Sali und Kubed/Covedo, E-Hang der Krasca, N 45°31,75', E 13°52,80', 180 m alt.; Waldrand; 19.02.2002; leg. U. & W. Starmühler (KL). – Kroatien, Istrien, Zapadna obala/Costa occidentale/West-Küste, NE Rovinj/Rovigno/Rofein, N-Hang zum Limski kanal/Canale di Leme/Leme-Kanal S Lim/Leme, N 45°07,74', E 13°44,38', 5-10 m alt.; *Ostrya carpinifolia-Quercus pubescens*-Wald; 23.02.2002; leg. F., U., W. & W.A. Starmühler (GZU, KL). – Slowenien, Istrien, Brkini/Berchinja/Berkin, etwa 2 km

WNW Podgrad/Castelnuovo d'Istria/Neuhaus, N 45°31,88', E 14°07,51', 550 m alt.; Karstheide; 29.05.2002; leg. U. & W. Starmühler (KL). – Flora von Kroatien, bei Zeijane; 22.04. [20]03; leg. K.-G. Bernhardt (WHB-44569, WHB-44570). – Flora von Kroatien, zw. Divici u. Sarici, N 44°57,668', E 14°00,425'; 24.04. [20]03; leg. K.-G. Bernhardt (WHB-44567). – Flora von Kroatien, bei Novigrad; 24.04. [20]03; leg. K.-G. Bernhardt (WHB-44568). – Kroatien, Istrien, Insel Cres/Cherso, NNW Cres/Cherso, Bucht Sv. Blaž/S. Biaggio W von den Ruinen des Klosters Sv. Blaž/Hl. Blasius, N 45°00,40', E 14°21,04', 5 m alt.; *Olea europaea*-Gebüscho; 01.05.2003; leg. U. & W. Starmühler (GZU, KL, ZA). – Italien, Triestino/Territorium von Triest, NE Trieste/Triest, NNE Villa Opicina/Opčine/Optschina, bei der Foiba Opicina, N 45°41,87', E 13°48,17', 305 m alt.; lichter *Fraxinus ornus*-Wald; 17.05.2004; leg. W. Starmühler (GJO, GZU, KL). – Kroatien, Istrien, Čičarija/Cicceria/Tschitschenboden, Kastavska šuma/Bosco di Castua/Khöstauer Wald NW Rijeka/Fiume/St. Veit am Pflaumb, Mali Brgud/Bergut piccolo/Klein-Bergud, 340 m alt.; Trockenrasen, Kalk; 28.05.2005; leg. W. Neuner & P. Vergörer (KL). – Kroatien, Istrien, Riječki zaljev/Golfo di Fiume/Golf von St. Veit: SE Labin/Albona, am Weg von Rabac/Porto Albona zur Siedlung Vlachi, E-Hang des M. Gherzi, N 45°03,915', E 14°08,465', 165 m alt.; *Quercus ilex*-Waldrand; 14.04.2006; leg. W. Mucher sen. & W. Starmühler (GZU, KL, ZA, Herb. D.Koriakov/RU-Novosibirsk). – Kroatien,

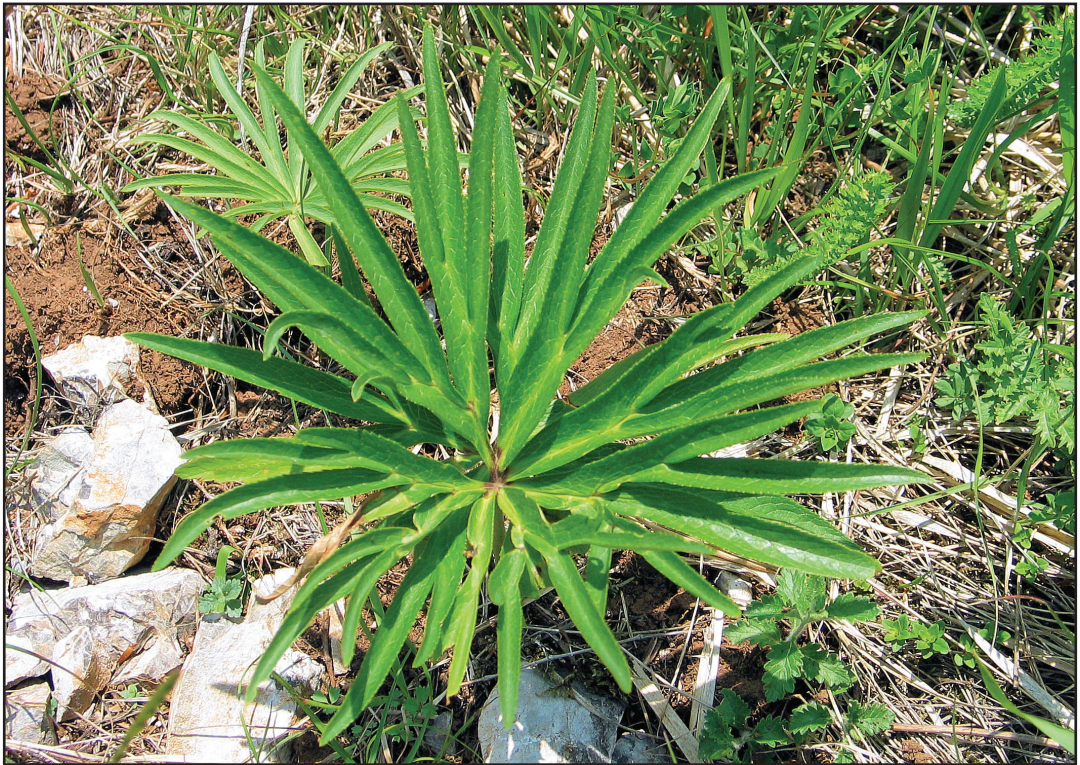


Fig. 7. Basal leaf of *Helleborus multifidus* subsp. *multifidus*.

Istrien, Zaledje Rijeke/Entroterra di Fiume/Hinterland von St. Veit, 0,2 km S Rupa/Ruppa, N 45°28,153', E 14°17,225', 450 m alt.; Karstheide; 18.02.2007; leg. U. & W. Starmühler (GZU, KL, ZA). – Kroatien, Istrien, Učka gora/Territorio del Monte Maggiore/Gebiet des Monte Maggiore, NNE Labin/Albona, am Weg von Plomin/Fianona auf den Berg Kalić, N 45°08,673', E 14°10,660', 255 m alt.; Schibliaksaum; 19.02.2007; leg. U. & W. Starmühler (KL). – Kroatien, Istrien, Čičarija/Cicceria/Tschitschenboden, SW Opatija/Abbazia, an der Straße von Veprinac/Apriano/Waprinutz auf den Poklon-Sattel, W-Hang des Berges Crkveni vrh/M. Chiesa, N 45°19,201', E 14°14,148', 744 m alt.; Gebüschaum; 21.02.2007; leg. W. Starmühler (GJO, GZU, IBF, JACA, KL, W, WHB, ZA). – Flora von Kroatien, Istrien, Kvarner Inseln, Krk, Glavotok, Straße zum Campingplatz, „Urwald“, N 45°05'29", E 14°26'16", 28 m NN; 09.05.2008; leg. K.-G. Bernhardt (WHB-47824). – Kroatien, Istrien, Insel Cres, Straße von Porozina nach Cres N der Abzweigung nach Beli, N vom Krzic-Sattel, großflächige Salbei-Bestände, 450 msm, 45°03'48" N, 14°21'37" E ± 10"; 21.05.2009; leg. P. Pils (Herb. P. Pilsl-20288/A-Salzburg). – Slowenien, Istrien, Čičarija/Cicceria, S Kozina/Cosina, am Weg von Podgorje/Piedimonte del Taiano auf den Berg Slavnik/M. Taiano/Slaunig, N 45°31,185', E 13°58,179', 749 m alt.; Karstheide; 14.05.2010; leg. V. Mikoláš, W. Mucher & W. Starmühler

(KL). – Slowenien, Istrien, SE Koper, Kraški rob, SE Zazid, am Beginn der großen Wiesenfläche, Saum, Alt: 631 m, E 13°57'15", N 45°29'14"; 04.06.2010; leg. M.M. & K. Wernisch (WHB-051214). – Kroatien, Istrien, Zapadna obala/Costa occidentale/West-Küste, ENE Poreč/Parenzo, bei Antonci/Pribetici/Antonzi, 80 m alt.; Schibliaksaum, Terra rossa; 18.05.2011; leg. P. Vergörer (KL). – Kroatien, Istrien, Quarner Bucht, otok Krk/isola Veglia/Insel Vögl, Ostküste, NNW Vrbnik/Verbenico, am Weg von der Uvala Melska nach Risika, N 45°05,925', E 14°39,587', 53 m alt.; Macchiensaum; 24.03.2012; leg. W. Mucher sen. & W. Starmühler (GJO, GZU, KL, M, MBM, WU, ZA). – Slowenien, Istrien, von Zazid nach Brezec, Wanderweg oberhalb der Bahnlinie, Hopfenbuchen-Mischwald; 25.03.2012; leg. M.-L. Oschatz (WHB-056960). – Kroatien, Istrien, an Autobahnabfahrt Zimy, an Parkplatz, Niederwald, Alt: 394 m, E 13°53'17,6", N 45°08'12,5"; 12.04.2012; leg. K.-G. Bernhardt & E. Naumer-Bernhardt (WHB-056541, WHB-056542). – Kroatien, Istrien, NW Kloster, Weg zum Palud-Puc-See, Niederwald, Alt: 88 m, E 13°41'13,0", N 45°08'51,8"; 13.04.2012; leg. K.-G. Bernhardt & E. Naumer-Bernhardt (WHB-056543).

subsp. *multifidus* (Fig. 7).

Leaflets less than 2 cm broad, mostly divided



Fig. 8. *Helleborus niger* subsp. *niger*.

almost to the base, at the margin only distant and coarsely toothed.

Distribution: Croatia, Bosnia and Herzegovina, Montenegro (this subspecies occurs mainly in the southern part of this area, in the Northwestern Balkans there are no more larger populations, often only some few plants and often transitions to the subsp. *istriacus*).

Specimina selecta: Istrien, Slavnik b. Triest, buschige Orte; 05.1911; leg. Arbesser (GZU). – Jugoslawien, Bosnien, Dinarisches Gebirge, Osječenica, Umgebung von Kolonic SSW Bosanski Petrovac; Schafweide am Rande eines Buchen-Fichten-Tannenwaldes; 10.09.1988; leg. D. Ernet (GJO-25.844/47). – Kroatien, Istrien (Istria, Istra), Tschitschenboden (Cicceria, Čičarija), Veprinazer Wald W St. Veit am Pflaumb (Fiume, Rijeka), S-Hang des M. Makljen, N 45°19,56', E 14°12,77', 1085 m alt.; Gebüschsaum; 02.06.2000; leg. P. Hofman, B. Mestel & W. Starmühler (GZU, KL).

Helleborus niger Linnaeus 1753, Sp. Pl.: 558 (Fig. 8).

Plant 13-20 (-30) cm tall; stem without or rarely with 1 or 2 cauline leaves, mostly not

branched; leaves coriaceous, dark green on the upper side, green below, hardy, divided into 7-9 leaflets; inflorescence with 1-2 flowers; bracts undivided, not serrate; flowers 1-2 (-3), 5-9 (-11) cm broad; tepals broad-ovate, white; carpels mostly 7; ripe fruit about 3 cm long.

Ecology: Light woods, forest edges, on humous soil.

Distribution: Central and Eastern Alps, in the south to the Apennines, in the east to the Carpathians.

subsp. *macranthus* (Freyn) Schiffner 1890, Bot. Jahrb. Syst. 11: 105.

Leaflets lanceolate, broadest in the central part; the margin toothed or spiky toothed; flowers 7-9 (-11) cm broad; tepals after anthesis mostly violet.

Distribution: From South-Tyrol to the Swiss Kanton Tessin. Not native in the Northwestern Balkans, but on some places anthropogenically introduced (LAUSI 1964).



Fig. 9. Basal leaf of *Helleborus odorus* subsp. *odorus*.

subsp. *niger* (Fig. 8).

Leaflets broad lanceolate to obovate, rhombic, broadest in the terminal part, the margin toothed at the apex; flowers 5-8 cm broad; tepals after anthesis greenish.

Distribution: Central and Eastern Alps, in the south to the Apennines, in the east to the Carpathians (in the Northwestern Balkans only in the northernmost part in Slovenia).

Specimina selecta: Wälder bei Lichtenwald, Tüfer, mit *H. atrorubens* u. *H. viridis*; s.d.; leg. Maly (GJO-59572). – Römerbad Tüfer, steir. Wälder; 06.; Herb. J.B. de Fürstenwäther (GJO-59571). – Jugoslawien, Savetal bei Zagorje; Kalk; 04.1977; Herb. W. Rössler (GJO-26236/73).

Helleborus odorus Waldstein & Kitaibel ex Willdenow 1809, Enum. Pl. Hort. Berol.: 592 (Fig. 9).

Plant 30-50 (-60) cm hoch; stem without cauline leaves; leaves hardy, divided into 5-11 leaflets; leaflets not divided, lanceolate to broad-lanceolate, 1.5-6 cm broad, with serrate margin,

veins thick, glandular pilose; inflorescence with 2-4 flowers; flowers 5-7 cm broad; tepals almost circular, yellowish to yellowish green; carpels (4-) 5; ripe fruit 15-20 mm long (without beak).

Ecology: Schrubbery edges, shibliak, light woods.

Distribution: Northern Italy, Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Southern Hungary, Southern Romania, Northern Bulgaria.

subsp. *laxus* (Host) Merxmüller & Podlech 1961, Feddes Repert. 64: 5.

Leaves divided into 5-7 leaflets; leaflets mostly incised to 2-5 segments.

Distribution: Only in the Northwestern Balkans in Slovenia and Northern Croatia.

Specimina selecta: Divacca a. Karst, in Massen; 05.1906; leg. A.V. Hayek (GJO). – Slowenien, Tržaško/Triestino/Territorium von Triest, E Trieste/Triest, Lipica/Lippizza/Lipizza, N 45°40,82', E 13°53,32'; 410 m alt.; Gebüschsaum; 17.03.2001; leg. W. Starmühler (GZU, KL).

subsp. *odorus* (Fig. 9).

Leaves divided into 7-11 leaflets; leaflets not incised.

Distribution: Northern Italy, Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Southern Hungary, Southern Romania, Northern Bulgaria.

Specimina selecta: Istria, Mattuglie; 11.02.1899; leg. Evers (GZU), 2 Belege. – Istria, in dumetis et in apricis collib. lapidosis totius littorio liburnici, Mattuglie; 11.02.1899; leg. Evers (GZU). – Truski a S di Capodistria, m. 350; 17.04.1971; leg. S. Pignatti (TSB-028289). – Fr. la chiesa di Truski (Capodistria); 17.04.1971; leg. S. Pignatti (TSB-028290, TSB-028291, TSB-028292, TSB-028293). – Italien, Territorium von Triest (Triestino), E Triest (Trieste), 0,5 km ENE Basovizza, N 45°38,81', E 13°52,40', 360 m alt.; Gebüschsaum; 06.07.1997; leg. W. Starmühler (KL). – Italien, Triestino/Territorium von Triest, E Trieste/Triest, etwa 0,2 km NW Trebiciano/Trebče/Trebich, N 45°40,57', E 13°49,16', 340 m alt.; *Pinus nigra*-Wald; 17.03.2001; leg. W. Starmühler (GJO, GZU, KL, WHB). – Italien, Triestino/Territorium von Triest, E Trieste/Triest, 0,15 km SE Padriciano/Padriče/Padrich, N 45°38,99', E 13°50,40', 365 m alt.; *Pinus nigra*-Wald; 17.03.2001; leg. W. Starmühler (GZU, IBF, KL, WU, Herb. D. Koriakov/RU-Novosibirsk). – Slowenien, Istrien, Notranja Istra/Istria interna/Inner-Istrien, S Koper/Capodistria/Gavers, Ivankovec N Raven/S. Pietro dell'Amata, N 45°28,23', E 13°40,28', 40 m alt.; Waldrand; 18.03.2001; leg. H. Mucher & W. Starmühler (GZU, KL). – Slowenien, Istrien, Čičarija/Cicceria/Tschitschenboden, S Kozina/Cosina, am Weg von Podgorje/Piedimonte del Taiano auf der Forststraße auf den Berg Slavnik/M. Taiano/Slaunig, N 45°31,192', E 13°57,952', 801 m alt.; Waldrand; 26.09.2010; leg. V. Mikoláš & W. Starmühler (GZU, KL, LJU).

Helleborus orientalis Lamarck 1789, Encycl. 3: 96.

Plant 20-60 cm tall; stem without leaves, branched; leaves coriaceous, dark green, hardy, divided into 7-11 leaflets; bracts 3- to 5-partite, serrate; flowers (1-) 3-7, 6-9 cm broad; tepals purple.

Ecology: Shibliak and light woods.

Distribution: From Turkey to the Caucasus (In the Northwestern Balkans this species is a newcomer escaped from culture.)

Specimina selecta: Flora Italiae, prov. TS, Opicina-dolina; 08.04.1964; leg. L. Poldini (TSB-028439, TSB-028440).

Helleborus viridis Linnaeus 1753, Sp. Pl.: 558 subsp. *viridis* (Fig. 10).

Plant 20-40 (-50) cm tall; stem without or with 1-2 cauline leaves with 3 (-5) leaflets; leaves not hardy, with 7-17 leaflets; leaflets narrow-lanceolate, 1-2 cm broad, with serrate margin, veins narrow, glandular pilose, dark green on the upper side, not so dark green on the underside; inflorescence with 1-3 (-4) flowers; flowers 4-5 cm broad; tepals broad-ovate, green; carpels 3-5; fruit 25-28 mm long (without beak).

Ecology: Shrubbery edges, shibliak, light woods, meadows.

Distribution: Western and Central Europe southeastwards to Northern Italy and Northern Istria.

Specimina selecta: Pflanzen aus dem Karst bei Triest; s.d.; leg. V. Stephanides (GZU). – Triest; s.d.; leg. Hillenbrand (GJO-1851/40). – Triest; 03.1877; leg. Mittendorfer (GZU). – Flora von Istrien, Triften bei Canfanaro; 20.02.1892; leg. K. Untchj (GZU). – Istria, Volosca, ad viam Flumens; 23.02.1894; leg. Evers (GZU), 2 Belege. – Istria, Abbazia; 02.-03.1898; leg. Evers (GZU). – Istria, in dumetis et in apricis collib. lapidosis totius littorio liburnici, Volosco; 23.02.1899; leg. Evers (GZU). – Nördlich Triest, Karstwiese; 02.04.1961; s.n. (GZU), 2 Belege. – Ucka, Wiese; 30.04.1973; leg. I. Thaler (GZU). – Kroatien, Rupa SSE Ilirska Bistrica, ca. 460 m; Gebüschränder, Karstrasen; 19.04.1989; leg. E. Bregant (GJO-25.880/51, GJO-25.880/52). – Jugoslawien, Kroatien, Istrien, zwischen Buzet und Dolenja Vas, Umgebung von Roč; Kalk, Karstwiesen; 12.04.1990; leg. R. Karl (Herb. R. Karl/Köflach).

Hybrids

Helleborus atrorubens* × *H. odorus

This hybrid differs from *H. atrorubens* by leaves with exerted veins, by larger, greenish purple flowers, by ovate tepals. From *H. odorus* it differs by smaller flowers with light purple tepals, which remain slightly drooping.

Helleborus atrorubens* × *H. viridis* = *Helleborus* × *viridescens Schiffner 1896, Denkschr. Akad. Naturforsch. Ivi.: 176.

This hybrid can be distinguished from *H. atrorubens* by leaves with exerted veins, larger and greenish purple flowers, and broad ovate tepals. From *H. viridis* it differs by flowers with light purple tepals, which remain slightly drooping.



Fig. 10. *Helleborus viridis* with broad ovate green tepals.

Helleborus dumetorum × *H. multifidus* = *Helleborus* × *mucheri* Rottensteiner *nothospec.* (*hybr.*) *nov.* (Figs. 11-13).

Diagnosis: Notae hybridae inter parentes erunt, imprimis nerva, pubescentia, forma sectioque foliorum, forma et magnitudo tepalorum.

From *H. dumetorum* it differs by hairy leaves with more leaflets and with exserted veins, and from *H. multifidus* by smaller flowers, which remain slightly drooping.

Holotype: Slovenien, Istrien, Čičarija/Cicceria/Tschitschenboden, S Kozina/Cosina, am Weg von Podgorje/Piedimonte del Taiano auf den Berg Slavnik/M. Taiano/Slaunig, N 45°31,753', E 13°58,483', 885 m alt.; Waldrand; 14.05.2010; leg. V. Mikoláš, W. Mucher sen. & W. Starmühler (KL-Herbarium Istriacum).

Isotypes: GZU, LJU, M, W.

Syntype: Slovenien, Istrien, Čičarija/Cicceria/Tschitschenboden, S Kozina/Cosina, am Weg von Podgorje/Piedimonte del Taiano auf den Berg Slavnik/M. Taiano/Slaunig, N 45°31,185', E 13°58,179', 749 m alt.; Karstheide; 14.05.2010; leg. V. Mikoláš, W. Mucher sen. & W. Starmühler (KL-Herbarium Istriacum).

Eponymy: This new hybrid is dedicated to my father Walter Mucher sen. (nat. 26.03.1942) for his permanent support of my botanical work.

Helleborus dumetorum × *H. odorus* = *Helleborus* × *tergestinus* Starmühler 2007, Carinthia II 197./117.: 413.

This hybrid can be distinguished from *H. dumetorum* by hairy leaves with exserted veins and larger flowers with broad ovate tepals, and from *H. odorus* by leaves with more leaflets and by flowers with only broad ovate tepals.



Fig. 11. Holotype specimen of *Helleborus* × *mucheri* in the herbarium KL-Herbarium Istriacum.



Fig. 12. Lamina of a basal leaf of the holotype specimen of *Helleborus x mucheri* in the herbarium KL -Herbarium Istriacum.

Specimina selecta: Italien, Triestino/Territorium von Triest, E Trieste/Triest, 0,15 km SE Padriciano/Padriče/Padrich, N 45°38,99', E 13°50,40', 365 m alt.; *Pinus nigra*-Wald; 17.03.2001; leg. W. Starmühler (GJO, GZU, IBF, KL, LJU, TSB, W, WHB, WU), Typen. – Italien, Triestino/Territorium von Triest, E Trieste/Triest, etwa 0,2 km NW Trebiciano/Trebče/Trebich, N 45°40,57', E 13°49,16', 340 m alt.; *Pinus nigra*-Wald; 17.03.2001; leg. W. Starmühler (GZU, KL, LG, LI, Herb. D.Koriakov/RU-Novosibirsk). – Italien, Triestino/Territorium von Triest, E Trieste/Triest, 0,5 km NE Basovizza/Bazovica/Basowitz, N 45°38,81', E 13°52,42', 380 m alt.; Trockenrasen; 17.03.2001; leg. W. Starmühler (KL).

Helleborus dumetorum* × *H. viridis

It differs from *H. dumetorum* by ± dispersed hairy leaves with exserted veins, and from *H. viridis* by yellowish green flowers, which remain slightly drooping.

Specimina selecta: Istrien, Abbazia; 02.04.1893; leg. J. Nevole (GZU).

Helleborus foetidus* × *H. niger* = *Helleborus x sahinii Grimshaw 2000, *Plantsman* 9 (4): 231.

This hybrid can be distinguished from *H. foetidus* by its larger flowers, as well as by other intermediate characters, while from *H. niger* by its tooth-edged leaves and smaller flowers.

Helleborus foetidus* × *H. viridis* = *Helleborus x jordanii Pages 1914, *Bull. Acad. Int. Géogr. Bot.* 24: 167.

This hybrid differs from *H. foetidus* by a few-leaved stem, larger leaves, slightly incised bracts, and inflorescence with fewer flowers. From *H. viridis* it differs by a leafy stem, smaller leaves, only slightly incised bracts, and inflorescence with more flowers.



Fig. 13. Inflorescence with young fruit of the holotype specimen of *Helleborus x mucheri* in the herbarium KL-Herbarium Istriacum.

Helleborus niger* × *H. orientalis* = *Helleborus x lemonnierae Demoly 2000, Bull. Assoc. Parcs Bot. France 30: 48.

The 2 main characteristics of this hybrid are the only slightly incised bracts (undivided in *H. niger*, but deeply incised in *H. orientalis*), and the mixture of the colour of the tepals.

Helleborus multifidus* × *H. odorus

This hybrid can be distinguished from *H. multifidus* by larger flowers with broad ovate tepals, and from *H. odorus* by leaves with more leaflets and by smaller flowers with broad ovate tepals.

Specimina selecta: Flora Italiae, TS, M.te die Pini (Padriciano), 300 m s.l.m.; 26.03.[20]02; leg. L. Poldini (TSB-028327, TSB-028328, TSB-028329, TSB-028330).

Helleborus multifidus* × *H. viridis

This hybrid can be distinguished from *H. multifidus* by leaves with fewer leaflets, and

from *H. viridis* by smaller flowers with ovate to narrow ovate tepals.

Specimina selecta: Fiume; 02., 03.; leg. Noè (GJO-26981/4506).

Helleborus odorus* × *H. viridis

It differs from *H. odorus* by leaves with narrower leaflets and smaller flowers with more greenish tepals and larger fruits. From *H. viridis* it differs by leaves with broader leaflets and larger flowers with yellowish green tepals and smaller fruits.

Specimina selecta: Fiume, alte ... Straße gegen Castua; 02.-03.1906; leg. Vončina (GZU).

Key for determination of species

- 1. Leaves are coriaceous or semi-coriaceous; tepals are white or purple 2
- Leaves are not coriaceous; tepals are green or yellowish 4

2. Bracts are undivided, their margins are entire; tepals white. – Stem is not branched, usually without cauline leaves; leaves divided into 7-9 leaflets, hardy, dark green; flowers 5-8 (-9) cm broad. – Herbaceous perennials, 15-20 (-30) cm tall. – Light woods, forest edges, on humous soil. – (XII-) I-III ***Helleborus niger*** – Black Hellebore, Christmas rose

a. Leaflets are from broad lanceolate to obovate, rhombic, broadest in the terminal part, with the margin toothed at the apex; flowers 5-8 cm broad; tepals after anthesis greenish subsp. ***niger*** – Black Hellebore n.s.

– Leaflets are lanceolate, broadest in the central part; the margin toothed or spiky toothed; flowers 7-9 (-11) cm broad; tepals after anthesis mostly violet subsp. ***macranthus*** – Bigflowered Hellebore

– Bracts divided into 3-5 segments, its margins serrate; tepals purple 3

3. Leaves are semi-coriaceous, not hardy, divided into 7-11 leaflets; main and lateral veins are not exerted; flowers 4-5.5 cm broad. – Herbaceous perennials, 20-40 cm tall. – Light woods and forest edges, meadows, vineyards. – III-V ***Helleborus atrorubens*** – Dark Hellebore

– Leaves are coriaceous, hardy, divided into 7-11 leaflets; main veins and lateral veins are exerted; flowers 6-9 cm broad. – Herbaceous perennials, 20-60 cm tall. – Shibliak and light woods. – II-IV ***Helleborus orientalis*** – Oriental Hellebore

4 (1). Stem with many cauline leaves; bracts are not divided, ovate. – Leaves divided into 3-9 leaflets; leaflets narrow lanceolate; inflorescence with usually more than 10 flowers; flowers 1-2.5 (-3) cm broad, bell-shaped, ± drooping; tepals green with dark red margins; carpels 3 (-4). – Herbaceous perennials, 20-80 cm tall. – Light woods, forest edges and shibliak, on little dry to moist soil. – I-IV ***Helleborus foetidus*** – Stinking Hellebore

– Stem is without cauline leaves, rarely with 1 or 2; bracts divided into lanceolate segments 5

5. Leaves are with hairy main veins; main veins are little exerted, lateral veins are not exerted. – Leaves are not hardy, divided into 7-11 (-13) leaflets, the central 3 leaflets always undivided, 1-3 cm broad, green to dark green; inflorescence with (2-) 3-5 (-6) flowers; bracts are divided; flowers 3-4 (-5) cm broad, ± drooping; tepals narrow-ovate, pale green, cup-shaped, 2.5-3.5 (-4) cm broad; carpels 3-5; ripe fruit 15-18 mm long (without beak). – Herbaceous perennials, 20-30 (-40) cm tall. – Karst heath, light woods, shibliak, mostly on moist soil. – III-IV ***Helleborus dumetorum*** subsp. ***illyricus*** – Illyrian Hellebore

– Leaves on the underside are hairy along the veins or on the whole lamina; all veins are distinctly exerted 6

6. Leaves are divided into 11-50 leaflets; inflorescence with 3-8 flowers, arranged vertically; flowers 3.5-5.5 cm broad; tepals are from broad-lanceolate to narrow-ovate. – Leaves are not hardy; carpels 3-6; flowers cup-shaped; tepals yellowish or pale green; ripe fruit 18-20 mm long (without beak). – Herbaceous perennials, 25-45 cm tall. – Shrubbery edges, light woods, shibliak, often in dry habitats, more often than all other species in this region. – II-IV ***Helleborus multifidus*** – Cleavedfoliated Hellebore

a. Leaflets are less than 2 cm broad, mostly divided almost to the base, at the margin only distant and coarsely toothed subsp. ***multifidus*** – Cleavedfoliated Hellebore n.s.

– Leaflets are more than 2 cm broad, some of them divided almost to the base, some only to the middle, at the margin more finely toothed subsp. ***istriacus*** – Istrian Hellebore

– Leaves are divided into 7-17 leaflets; inflorescence with 1-4 flowers, arranged almost horizontally; flowers 4-7 cm broad; tepals are from broad lanceolate to almost circular 7

7. Leaves are hardy, divided into 5-11 leaflets; leaflets from lanceolate to broad-lanceolate, 1.5-6 cm broad, veins thick, inflorescence with 2-4 flowers; flowers 5-7 cm broad; tepals almost circular, from yellowish to yellowish green; carpels (4-) 5; ripe fruit

15-20 mm long (without beak). – Herbaceous perennials, 30-50 (-60) cm tall. – Shrubbery edges, shibliak, light woods. – I-III.....

Helleborus odorus – Fragrant Hellebore

a. Leaves are divided into 7-11 leaflets; leaflets are not incised subsp. ***odorus*** – Fragrant Hellebore n.s.

– Leaves are divided into 5-7 leaflets; leaflets are mostly incised to 2-5 segments subsp. ***laxus*** – Loose Hellebore

– Leaves are not hardy, divided into 7-17 leaflets; leaflets narrow-lanceolate, 1-2 cm broad, veins narrow; inflorescence with 1-3 (-4) flowers; flowers 4-5 cm broad; tepals broad-ovate, green; carpels 3-5; fruit 25-28 mm long (without beak). – Herbaceous perennials, 20-40 (-50) cm tall. – Shrubbery edges, shibliak, light woods, meadows. – II-IV ***Helleborus viridis*** subsp. ***viridis*** – Green Hellebore n.s.

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