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**Taxonomy and evolutionary history of
Alyssum montanum (Brassicaceae) and related
taxa in southwestern Europe and Morocco:
Diversification driven by polyploidy, geographic
and ecological isolation**

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Table S1. Classificatory discriminant analysis (DA 1) based on 20 morphological characters and 12 groups of *Alyssum montanum* s.l. and related taxa from southwestern Europe and Morocco as revealed by AFLP data (11 groups) and morphology (“*A. atlanticum*” from Sierra de Mijas). The number of individuals assigned to a particular group is given in the first row and is expressed as percent in the second row. If different, both the initial taxonomic assignment and the final taxonomic treatment (after slash and in bold) are given

	<i>A. montanum</i> subsp. <i>montanum</i> / <i>A. montanum</i> s.str.	<i>A. orophilum</i>	<i>A. cuneifolium</i> s.l. from Mt. Ventoux / <i>A. flexicaule</i>	<i>A. cuneifolium</i> s.l. from the Pyrenees / <i>A. cacuminum</i>	<i>A. loiseleurii</i> subsp. <i>loiseleurii</i> / <i>A. loiseleurii</i>	<i>A. loiseleurii</i> subsp. <i>gallaecicum</i> / <i>A. gallaecicum</i>	<i>A. montanum</i> s.l. from Spain, Cantabrian group / <i>A. fastigiatum</i> – Cantabrian group	<i>A. montanum</i> s.l. from Spain, NE Iberian group / <i>A. fastigiatum</i> – NE Iberian group	<i>A. montanum</i> s.l. from Spain, Baetic group / <i>A. fastigiatum</i> – Baetic group	<i>A. montanum</i> s.l. from Morocco / <i>A. atlanticum</i>	“ <i>A. atlanticum</i> ” from Sierra de Mijas / <i>A. fastigiatum</i>	<i>A. rhodanense</i>	Equal probability of classification into two taxa	Total
<i>A. montanum</i> subsp. <i>montanum</i> / <i>A. montanum</i> s.str.	292 89.02	0 0.00	0 0.00	0 0.00	5 1.52	23 7.01	4 1.22	0 0.00	0 0.00	0 0.00	0 0.00	4 1.22	0 0.00	328 100.00
<i>A. orophilum</i>	0 0.00	104 80.00	0 0.00	1 0.77	1 0.77	1 0.77	4 3.08	11 8.46	0 0.00	3 2.31	0 0.00	5 3.85	0 0.00	130 100.00
<i>A. cuneifolium</i> s.l. from Mt. Ventoux / <i>A. flexicaule</i>	0 0.00	0 0.00	27 96.43	1 3.57	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	28 100.00
<i>A. cuneifolium</i> s.l. from the Pyrenees / <i>A. cacuminum</i>	0 0.00	0 0.00	10 10.75	75 80.65	4 4.30	0 0.00	1 1.08	0 0.00	0 0.00	2 2.15	0 0.00	1 1.08	0 0.00	93 100.00
<i>A. loiseleurii</i> subsp. <i>loiseleurii</i> / <i>A. loiseleurii</i>	0 0.00	0 0.00	0 0.00	1 3.03	29 87.88	3 9.09	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	33 100.00
<i>A. loiseleurii</i> subsp. <i>gallaecicum</i> / <i>A. gallaecicum</i>	1 1.43	0 0.00	0 0.00	0 0.00	1 1.43	67 95.71	0 0.00	0 0.00	0 0.00	0 0.00	1 1.43	0 0.00	0 0.00	70 100.00
<i>A. montanum</i> s.l. from Spain, Cantabrian group / <i>A. fastigiatum</i> – Cantabrian group	2 0.83	13 5.37	0 0.00	6 2.48	4 1.65	7 2.89	107 44.21	44 18.18	24 9.92	13 5.37	1 0.41	21 8.68	0 0.00	242 100.00
<i>A. montanum</i> s.l. from Spain, NE Iberian group / <i>A. fastigiatum</i> – NE Iberian group	0 0.00	0 0.00	0 0.00	1 0.67	2 1.33	0 0.00	5 3.33	118 78.67	11 7.33	3 2.00	0 0.00	10 6.67	0 0.00	150 100.00
<i>A. montanum</i> s.l. from Spain, Baetic group / <i>A. fastigiatum</i> – Baetic group	0 0.00	0 0.00	0 0.00	2 0.97	4 1.94	2 0.97	10 4.85	36 17.48	134 65.05	9 4.37	3 1.46	4 1.94	2 0.97	206 100.00
<i>A. montanum</i> s.l. from Morocco / <i>A. atlanticum</i>	2 0.98	1 0.49	1 0.49	4 1.95	25 12.20	8 3.90	4 1.95	3 1.46	15 7.32	133 64.88	2 0.98	7 3.41	0 0.00	205 100.00
“ <i>A. atlanticum</i> ” from Sierra de Mijas / <i>A. fastigiatum</i>	0 0.00	0 0.00	1 2.78	0 0.00	0 0.00	2 5.56	0 0.00	0 0.00	0 0.00	0 0.00	33 91.67	0 0.00	0 0.00	36 100.00
<i>A. rhodanense</i>	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 4.76	0 0.00	0 0.00	0 0.00	0 0.00	20 95.24	0 0.00	21 100.00
Total	297 19.26	118 7.65	39 2.53	91 5.90	75 4.86	113 7.33	136 8.82	212 13.75	184 11.93	163 10.57	40 2.59	72 4.67	2 0.13	1542 100.00

Table S2. Descriptive statistics of the measured morphological characters of the western European and Moroccan populations of *Alyssum montanum* s.l. and related taxa. If different, both the initial taxonomic assignment and the final taxonomic treatment (after slash and in bold) are given.

	<i>A. montanum</i> subsp. <i>montanum</i> / <i>A. montanum</i> s.str.	<i>A. orophilum</i>	<i>A. cuneifolium</i> s.l. from Mt. Ventoux / <i>A. flexicaule</i>	<i>A. cuneifolium</i> s.l. from the Pyrenees / <i>A. cucuminum</i>	<i>A. loiseleurii</i> subsp. <i>loiseleurii</i> / <i>A. loiseleurii</i>	<i>A. loiseleurii</i> subsp. <i>gallaecicum</i> / <i>A. gallaecicum</i>	<i>A. montanum</i> s.l. from Spain / <i>A. fastigiatum</i>	“ <i>A. atlanticum</i> ” from Sierra de Mijas / <i>A. fastigiatum</i>	<i>A. montanum</i> s.l. from Morocco / <i>A. atlanticum</i>	<i>A. rhodanense</i>
	<i>n</i> = 328	<i>n</i> = 130	<i>n</i> = 28	<i>n</i> = 93	<i>n</i> = 33	<i>n</i> = 70	<i>n</i> = 618	<i>n</i> = 36	<i>n</i> = 205	<i>n</i> = 21
PetalLength (Mean ± SD)	4.62 ± 0.57	5.68 ± 0.65	5.85 ± 0.60	5.82 ± 0.60	5.34 ± 0.43	5.03 ± 0.74	5.02 ± 0.74	6.32 ± 0.86	5.70 ± 0.93	5.89 ± 0.44
5%–95%	3.77–5.61	4.73–6.85	4.95–6.80	4.67–6.77	4.70–6.09	3.48–6.02	3.95–6.39	5.06–7.89	4.49–7.42	5.20–6.51
PetalSinus (Mean ± SD)	0.32 ± 0.14	0.31 ± 0.19	0.25 ± 0.12	0.27 ± 0.17	0.22 ± 0.07	0.29 ± 0.12	0.32 ± 0.15	0.24 ± 0.11	0.24 ± 0.13	0.33 ± 0.09
5%–95%	0.13–0.59	0.08–0.63	0.12–0.46	0.08–0.54	0.11–0.33	0.10–0.53	0.13–0.61	0.10–0.43	0.10–0.53	0.18–0.48
PetalWidth (Mean ± SD)	2.50 ± 0.64	3.28 ± 0.72	3.24 ± 0.36	2.86 ± 0.55	2.55 ± 0.34	1.99 ± 0.34	2.02 ± 0.60	2.59 ± 0.59	2.22 ± 0.41	2.80 ± 0.46
5%–95%	1.62–3.59	2.20–4.47	2.84–3.92	1.93–3.78	2.15–3.23	1.35–2.57	1.21–3.18	1.83–3.60	1.66–2.98	2.17–3.53
SepalLength (Mean ± SD)	2.63 ± 0.31	3.18 ± 0.35	3.50 ± 0.28	3.33 ± 0.29	3.19 ± 0.31	3.19 ± 0.35	2.97 ± 0.34	3.77 ± 0.39	3.31 ± 0.41	3.43 ± 0.23
5%–95%	2.13–3.13	2.62–3.80	3.11–3.98	2.91–3.87	2.64–3.79	2.53–3.69	2.46–3.60	3.21–4.60	2.75–3.98	3.09–3.80
FilamentLength (Mean ± SD)	3.38 ± 0.53	4.28 ± 0.58	4.62 ± 0.55	4.32 ± 0.51	3.71 ± 0.36	3.62 ± 0.76	3.81 ± 0.59	4.65 ± 0.66	3.87 ± 0.62	4.52 ± 0.37
5%–95%	2.56–4.38	3.33–5.11	3.91–5.42	3.64–5.15	2.94–4.51	1.74–4.51	2.97–4.86	3.69–6.11	3.00–4.95	3.96–4.97
StyleLength (Mean ± SD)	1.94 ± 0.42	2.92 ± 0.79	2.83 ± 0.66	2.95 ± 0.55	2.11 ± 0.33	2.61 ± 0.48	2.68 ± 0.60	3.38 ± 0.66	2.53 ± 0.59	3.28 ± 0.35
5%–95%	1.29–2.65	1.52–4.12	1.61–3.89	2.04–3.84	1.53–2.71	1.90–3.60	1.83–3.81	2.29–4.90	1.76–3.69	2.79–3.69
StemLength (Mean ± SD)	149 ± 58	159 ± 52	86 ± 28	63 ± 25	101 ± 54	167 ± 52	124 ± 65	122 ± 43	102 ± 60	166 ± 49
5%–95%	75–245	99–247	41–138	30–110	41–215	98–265	43–253	48–171	30–208	120–240
Length15Leaf (Mean ± SD)	9.3 ± 3.4	10.7 ± 5.1	7.9 ± 2.3	7.4 ± 1.5	7.1 ± 1.6	7.8 ± 1.3	9.4 ± 3.6	11.8 ± 3.0	8.6 ± 3.0	14.2 ± 6.9
5%–95%	5.1–15.7	5.9–23.4	5.2–11.5	5.2–9.8	5.1–11.0	6.0–10.0	5.0–17.0	7.3–18.1	4.7–14.0	7.7–25.7
Width15Leaf (Mean ± SD)	2.2 ± 0.7	3.2 ± 0.8	2.6 ± 0.6	3.0 ± 0.6	2.9 ± 0.7	2.4 ± 0.5	2.2 ± 0.7	2.8 ± 0.5	2.6 ± 1.0	3.7 ± 1.4
5%–95%	1.4–3.4	2.1–4.6	2.0–3.7	2.1–4.2	1.9–4.5	1.7–3.4	1.3–3.4	1.9–3.7	1.6–4.7	2.4–5.1
Length8Leaf (Mean ± SD)	11.0 ± 4.0	12.3 ± 4.1	9.1 ± 1.5	8.2 ± 1.7	8.0 ± 1.7	7.8 ± 1.4	10.9 ± 3.5	12.7 ± 2.9	9.8 ± 3.1	14.5 ± 4.6
5%–95%	6.2–18.7	7.1–20.0	6.3–11.3	5.5–11.1	6.4–12.5	5.7–10.3	6.3–17.7	8.7–18.0	6.0–15.6	9.5–22.3

Table S2. Continued.

	<i>A. montanum</i> subsp. <i>montanum</i> / <i>A. montanum</i> s.str.	<i>A. orophilum</i>	<i>A. cuneifolium</i> s.l. from Mt. Ventoux / <i>A. flexicaule</i>	<i>A. cuneifolium</i> s.l. from the Pyrenees / <i>A. cacuminum</i>	<i>A. loiseleurii</i> subsp. <i>loiseleurii</i> / <i>A. loiseleurii</i>	<i>A. loiseleurii</i> subsp. <i>gallaecicum</i> / <i>A. gallaecicum</i>	<i>A. montanum</i> s.l. from Spain / <i>A. fastigiatum</i>	“ <i>A. atlanticum</i> ” from Sierra de Mijas / <i>A. fastigiatum</i>	<i>A. montanum</i> s.l. from Morocco / <i>A. atlanticum</i>	<i>A. rhodanense</i>
Width8Leaf (Mean ± SD)	2.0 ± 0.7	2.8 ± 0.7	2.5 ± 0.5	2.7 ± 0.6	2.8 ± 0.7	2.3 ± 0.6	2.1 ± 0.7	2.6 ± 0.5	2.5 ± 0.8	3.1 ± 0.9
5%–95%	1.2–3.5	1.8–4.1	1.8–3.3	1.9–3.8	1.8–4.3	1.4–3.5	1.3–3.3	2.0–3.6	1.5–4.0	2.0–4.6
Dist8-15Leaf (Mean ± SD)	30 ± 13	34 ± 20	12 ± 4	11 ± 4	21 ± 9	17 ± 6	27 ± 14	19 ± 7	26 ± 15	53 ± 20
5%–95%	10–53	9–75	7–20	5–20	10–46	8–27	10–54	7–32	7–51	25–83
LengthTrichRay (Mean ± SD)	0.24 ± 0.04	0.32 ± 0.05	0.29 ± 0.02	0.34 ± 0.07	0.41 ± 0.05	0.32 ± 0.05	0.38 ± 0.06	0.35 ± 0.04	0.38 ± 0.05	0.38 ± 0.05
5%–95%	0.18–0.3	0.25–0.41	0.26–0.32	0.25–0.45	0.33–0.50	0.25–0.40	0.29–0.48	0.30–0.41	0.31–0.47	0.30–0.45
NrRaysTrichLower (Mean ± SD)	22 ± 4	9 ± 2	24 ± 3	17 ± 3	16 ± 2	21 ± 3	12 ± 4	22 ± 3	13 ± 5	13 ± 2
5%–95%	16–27	7–12	19–29	12–21	11–18	17–26	8–18	17–27	8–21	9–16
TrichDensityLower (Mean ± SD)	19 ± 4	5 ± 2	10 ± 2	7 ± 3	11 ± 3	15 ± 2	8 ± 4	12 ± 2	9 ± 3	8 ± 3
5%–95%	14–27	2–8	7–14	3–11	6–16	11–19	3–15	10–16	5–13	4–11
TrichCoverageLower (Mean ± SD)	2.3 ± 0.8	0.1 ± 0.3	1.7 ± 0.6	0.8 ± 0.5	1.5 ± 0.7	2.6 ± 0.5	0.7 ± 0.7	2.6 ± 0.5	1.1 ± 0.6	0.8 ± 0.4
5%–95%	1–3	0–1	1–3	0–1	1–3	2–3	0–2	2–3	0–2	0–1
NrRaysTrichUpper (Mean ± SD)	14 ± 3	8 ± 1	20 ± 3	14 ± 3	11 ± 2	16 ± 3	10 ± 3	19 ± 3	10 ± 4	8 ± 1
5%–95%	9–20	6–9	14–24	9–17	8–14	12–21	6–16	15–24	6–19	6–9
TrichDensityUpper (Mean ± SD)	9 ± 3	4 ± 2	8 ± 2	6 ± 2	8 ± 4	12 ± 3	6 ± 3	11 ± 3	6 ± 2	4 ± 1
5%–95%	4–15	2–7	5–13	3–10	3–16	7–16	2–10	6–15	3–10	2–5
TrichCoverageUpper (Mean ± SD)	0.5 ± 0.5	0 ± 0	1 ± 0.5	0.5 ± 0.5	0.6 ± 0.6	1.3 ± 0.6	0.3 ± 0.5	1.9 ± 0.7	0.4 ± 0.5	0 ± 0
5%–95%	0–1	0–0	0–2	0–1	0–2	1–2	0–1	1–3	0–1	0–0
NrLatBranches (Mean ± SD)	0.1 ± 0.3	0 ± 0.2	0 ± 0	0 ± 0.2	0 ± 0	0.1 ± 0.4	0.0 ± 0.1	0.1 ± 0.5	0 ± 0	0 ± 0
5%–95%	0–0	0–0	0–0	0–0	0–0	0–1	0–0	0–0	0–0	0–0

Notes: *n*, the number of measured/scored individuals. The mean values of the measured characters ± standard deviation (Mean ± SD) are given in the upper rows; the 5th and 95th percentiles are in the lower rows. The values of the quantitative characters are in mm. The character acronyms are explained in Table 2.

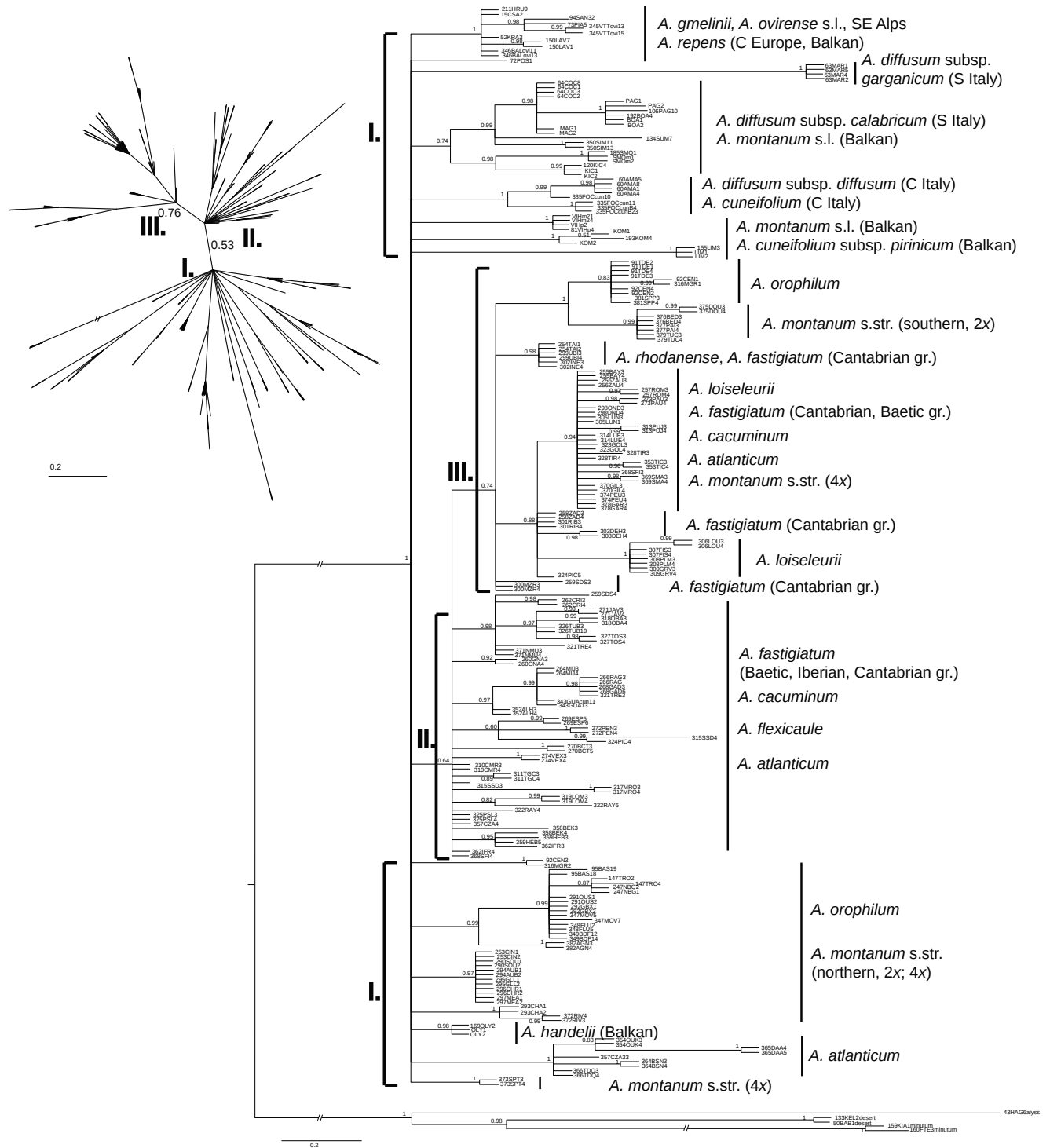


Fig. S1. Bayesian majority-rule consensus tree with mean branch lengths based on the concatenated *rpoB-trnC* and *rpl32-trnL*(UAG) alignment of 236 ingroup and 5 outgroup sequences. Posterior probability values are indicated above branches. Interrupted branches were shortened by one half. Population codes follow Appendix S1 and Table 1. The inset shows an unrooted tree based on ingroup sequences only. The three main groupings/clades denoted as I, II and III are referred to in the text.

Appendix S1. Detailed list of the studied *Alyssum* specimens, their localities and collection data. Population codes are identical with collection numbers.

Asterisks indicate taxa from Central Europe, the Apennines and the Balkans that were included only in the molecular analyses. The taxa are listed alphabetically, according to the final taxonomic treatment as adopted here (see Table 1). Balkan populations with unresolved taxonomy (Španiel & al., study under progress) are tentatively referred to as *A. montanum* s.l. Type localities or those given in the protologues (loci classici) are in bold. GenBank accession numbers of the *rpoB-trnC* and *rpl32-trnL* (UAG) intergenic spacers are listed (*rpoB-trnC* followed by *rpl32-trnL* (UAG), separated by a semicolon); those starting with JF are from previous studies (Španiel & al., 2011b, 2012a), while those with KF were generated here. Collectors: *BF*, B. Frajman; *BŠ*, B. Šingliarová; *DRL*, D.R. Letz; *EZ*, E. Závěská; *FC*, F. Conti; *FM*, F. Maggi; *JP*, J. Paule; *JŠ*, J. Šibík; *JZL*, J. Zozomová-Lihová; *KM*, K. Marhold; *EM*, E. Majesky; *MdLH*, M. de La Harpe; *MM*, M. Magauer; *MP*, M. Perný; *MT*, M. Thiv; *NGP*, N.G. Passalacqua; *NR*, N. Riezing; *PK*, P. Küpfer; *PM*, P. Meredá; *PS*, P. Schönschwetter; *RL*, R. Lakoščík; *SŠ*, S. Španiel; *TB*, T. Brodtbeck; and *VK*, V. Kolarčík. Herbarium vouchers have been deposited in the herbarium of the Institute of Botany, SAS, Bratislava, Slovakia (SAV), unless otherwise stated.

A. atlanticum Desf.: **353TIC**, Morocco, Marrakech-Tensift-Al Haouz, Haut Atlas, Tizi-n-Tichka pass, slopes along the road leading from the pass towards Taddert, 31°18.31'N, 7°22.33'W, 2100 m, 16 Apr 2012, *SŠ, PM, DRL*, KF750810, KF750811; KF751009, KF751010 / **354OUK**, Morocco, Marrakech-Tensift-Al Haouz, Haut Atlas, Oukaïmeden, sandstones near a barrage and granitic slopes close to a stream, 31°12.61'N, 7°50.97'W, 2620 m, 17 Apr 2012, *SŠ, PM, DRL*, KF750812, KF750813; KF751011, KF751012 / **357CZA**, Morocco, Meknès-Tafilalet, Moya Atlas, near Col du Zad, rocky slopes with remains of a cedar forest (*Cedrus atlantica*), 33°00.50'N, 5°04.29'W, 2210 m, 19 Apr 2012, *SŠ, PM, DRL*, KF750814, KF750815; KF751013, KF751014 / **358BEK**, Morocco, Meknès-Tafilalet, Moya Atlas, between Col du Zad and Bekrite, pastures, a slope above the road, 32°58.57'N, 5°09.36'W, 2075 m, 19 Apr 2012, *SŠ, PM, DRL*, KF750816, KF750817; KF751015, KF751016 / **359HEB**, Morocco, Meknès-Tafilalet, Moya Atlas, S of Azrou, pastures N of Jbel Hebri beside the road towards Mischliffen nearby a cedar forest (*Cedrus atlantica*), 33°22.46'N, 5°07.79'W, 1935 m, 19 Apr 2012, *SŠ, PM, DRL*, KF750818, KF750819; KF751017, KF751018 / **362IFR**, Morocco, Meknès-Tafilalet, Moya Atlas, 10 km SE of Ifrane, calcareous rocks along the road, 33°37.14'N, 5°04.90'W, 1517 m, 20 Apr 2012, *SŠ, PM, DRL*, KF750820, KF750821; KF751019, KF751020 / **363BBI**, Morocco, Taza-Al Hoceima-Taounate, Moya Atlas, Taza, Tazekka National Park, Bab Bou Idir, NW/N exposed calcareous cliffs, 34°03.85'N, 4°07.10'W, 1825 m, 21 Apr 2012, *SŠ, PM, DRL* / **364BSN**, Morocco, Oriental, Beni-Snassen Mts., between Berkane and Oujda, SE of Ain-Almou, Jbel Ras Foughal (1534 m), summit rocky plateau, on rocks around shrubs of *Juniperus* sp., 34°49.83'N, 2°11.67'W, 1504 m, 22 Apr 2012, *SŠ, PM, DRL*, KF750822, KF750823; KF751021, KF751022 / **365DAA**, Morocco, Taza-Al Hoceima-Taounate, Rif Mts., S of Al Hoceima, SW of Kassita, NW of Tizi-Ouzli, Jbel Azrou Akchar, screes, around shrubs, 34°47.32'N, 3°50.55'W, 1820 m, 23 Apr 2012, *SŠ, PM, DRL*, KF750824, KF750825; KF751023, KF751024 / **366TDQ**, Morocco, Taza-Al Hoceima-Taounate, Rif Mts., S exposed slopes of Jbel Tidighine (2456 m), screes, under cedar trees (*Cedrus atlantica*), 34°50.37'N, 4°31.33'W, 2280 m, 24 Apr 2012, *SŠ, PM, DRL*, KF750826, KF750827; KF751025, KF751026; **A. cacuminum** Španiel & al.: **317MRO**, Spain, Catalunya, Lleida, Pyrenees, N of Cabdella, SW of Montorrio (2861 m), rocks and screes, 42°29.79'N, 1°01.36'E, 2730 m, 24 Jun 2011, *SŠ, JZL, DRL*, KF750768, KF750769; KF750967, KF750968, **locality of the holotype of A. cacuminum** Španiel & al. / **325PSL**, Spain, Aragón, Huesca, E of Ampriu, under Tuca de Possolobino (2783 m), rocks and screes, 42°33.50'N, 0°35.39'E, 2362 m up to 42°33.93'N, 0°35.65'E, 2603 m, 5 Jul 2011, *SŠ, JZL, DRL*, KF750782, KF750783; KF750981, KF750982 / **327TOS**, Spain, Catalunya, Barcelona, Pyrenees, La Tosa d'Alp, near the chalet Refugi Niu de l'Àliga, rocks and screes, 42°19.12'N, 1°53.55'E, 2511 m, 7 Jul 2011, *SŠ, JZL, DRL*, KF750786, KF750787; KF750985, KF750986 / **328TIR**, Spain, Catalunya, Girona, Pyrenees, along the path to Coll de Tirapits (2791 m) from Ulldeter, ski resort Vallter, rocky meadows, 42°25.12'N, 2°12.88'E, 2613 m, 8 Jul 2011, *SŠ, JZL, DRL*, KF750788, KF750789; KF750987, KF750988; **A. cuneifolium** Ten. (s.l.) **from Greece: 185SMO**, Greece, Ipiros, Ioannina, Smolikas Mts., rocky slopes, 40°05.295'N, 20°57.325'E, 2250–2300 m, 10 Jun 2008, *SŠ, JZL, KM*, KF750662–KF750664; **A. cuneifolium** Ten. (s.str.) **from Abruzzo: 335FOC**, Italy, Abruzzo, Pescara, Maiella, Mt. Focalone, rocks and screes, 42°07.57'N, 14°06.57'E, 2100 m, 28 Jun 2011, *FC, PK, MdLH*, 42°06.52'N, 14°06.88'E, 2663 m, 5 Jul 2012, *BŠ, RL*, KF750790–KF750793; KF750989–KF750992, **locality of the original material of A. cuneifolium** Ten.: **A. cuneifolium** subsp. **pirinicum** Stoj. & Acht.: **81VIHP**, Bulgaria, Blagoevgrad, Pirin Mts., Mt. Vichren, 41°46.32'N, 23°24.19'E, rocks and screes between the altitudes of 2543 m and 2914 m (summit), 17 Jul 2007, *SŠ, VK, LM*, KF750699, KF750700; KF750898, KF750899, **locus classicus of A. cuneifolium** subsp. **pirinicum** Stoj. & Acht.: **A. densistellatum** T.R.Dudley: **155LIM**, Greece, Sterea Ellada, Evvoia, S of the village of Limni, serpentine rocks near a sea coast, 38°45.15'N, 23°19.73'E, 2 m, 30 May 2008, *SŠ, JZL, KM*, KF750676–KF750678; KF750875–KF750877, **locality of the holotype of A. densistellatum** T.R.Dudley: **A. diffusum** Ten.: **60AMA**, Italy, Abruzzo, L'Aquila, Maiella, Mt. Amaro, western rocky slopes (towards Passo S. Leonardo), 42°04.82'N, 14°04.10'E, 1888 m, 31 May 2007, *SŠ, MP, VK*, JF703981–JF703984; JF703854–JF703857, **locality of the lectotype of A. diffusum** Ten. / **63MAR**, Italy, Apulia, Foggia, Gargano, Promontorio del Gargano, quarries near San Marco in Lámis towards San Nicandro Garganico, 41°43.25'N, 15°37.22'E, 630 m, 3 Jun 2007, *SŠ, MP, VK*, JF703958–JF703961; JF703831–JF703834, **locality of the holotype of A. diffusum** subsp. **garganicum** Španiel & al. / **64COC**, Italy, Calabria, Cosenza, Monte Cocuzzo, SW of Cosenza near the road towards Fiumefreddo Bruzio, rocky slopes, 39°13.64'N, 16°08.22'E, 1367 m, 4 Jun 2007, *SŠ, NGP, MP, VK*, JF703922–JF703925; JF703795–JF703798, **locality of the holotype of A. diffusum** subsp. **calabricum** Španiel & al.; **A. fastigiatum** Heywood – **Cantabrian group: 257ROM**, Spain, Euskadi, Álava, San Román de Campezo, Mt. La Muela, calcareous rocks on the top, 42°40.32'N, 2°25.91'W, 1033 m, 25 May 2010, *SŠ, JZL, KM*, KF750708, KF750709; KF750907, KF750908 / **258ZAD**, Spain, Castilla y León, Burgos, Jurisdicción de San Zadornil, calcareous rocks near a road, 42°50.62'N, 3°09.46'W, 630 m, 25 May 2010, *SŠ, JZL, KM*, KF750710, KF750711; KF750909, KF750910 / **259SDS**, Spain, Castilla y León, Burgos, Santo Domingo de Silos, calcareous rocks along a road, 41°57.88'N, 3°22.40'W, 1100 m, 26 May 2010, *SŠ, JZL, KM*, KF750712, KF750713; KF750911, KF750912 / **273PAU**, Spain, Catalunya, Tarragona, above the village of Pauils, Lo Tormassal, along the hiking path n. GR-171, calcareous rocks, 40°55.96'N, 0°22.92'E, 531 m, 5 Jun 2010, *SŠ, JZL, KM*, KF750732, KF750733; KF750931, KF750932 / **299UBI**, Spain, Castilla y León, Burgos, Cañón del río Ubierna, N of the village of Quintanilla-Sobresierra, calcareous rocks, 42°30.67'N, 3°41.63'W, 905 m, 2 May 2011, *SŠ, JZL, PM*, KF750738, KF750739; KF750937, KF750938 / **300MZR**, Spain, Castilla y León, Burgos, Puerto de la Mazorra, along a road, meadow with shrubs of *Juniperus* sp., 42°48.73'N, 3°37.05'W, 990 m, 2 May 2011, *SŠ, JZL, PM*, KF750740, KF750741; KF750939, KF750940 / **301RIB**, Spain, Castilla y León, Burgos, between the villages of El Ribero and Colina (4 km of Lastras de las Eras), slopes along the road, 43°01.59'N, 3°27.82'W, 765 m, 2 May 2011, *SŠ, JZL, PM*, KF750742, KF750743; KF750941, KF750942 / **302INE**, Spain, Castilla y León, Palencia, Renedo de la Inera, S of Aguilar de Campoo, rocks, 42°45.54'N, 4°13.23'W, 929 m, 2 May 2011, *SŠ, JZL, PM*, KF750744, KF750745; KF750943, KF750944 / **303DEH**, Spain, Castilla y León, Palencia, Dehesa de Montejo, grassland, 42°49.58'N, 4°29.03'W, 1120 m, 3 May 2011, *SŠ, JZL, PM*, KF750746, KF750747; KF750945, KF750946 / **305LUN**, Spain, Castilla y León, León, Caldas de Luna, rocky slopes above the village, 42°55.85'N, 5°51.96'W, 1200 m and a pasture in the village 42°55.69'N, 5°51.75'W, 1168 m, 3 May 2011, *SŠ, JZL, PM*, KF750748, KF750749; KF750947, KF750948 / **313PUJ**, Spain, Aragón, Zaragoza, rocky meadow N of the village of Purujosa, E of El Morón, 41°43.66'N, 1°44.94'W, 1525 m, 8 May 2011, *SŠ, JZL, PM*, KF750762, KF750763; KF750961, KF750962 / **314LUE**, Spain, La Rioja, Luezas, under the summit of a mountain NE of the village, rocky slopes, 42°17.83'N, 2°28.49'W, 1290 m, 9 May 2011, *SŠ, JZL, PM*, KF750764, KF750765; KF750963, KF750964 / **323GOL**, Spain, Castilla y León, Palencia, Cordillera Cantábrica, N of Brañosera, the NE exposed rocky slope of Canaleja (2098 m), above El Golobar, 42°57.99'N, 4°21.25'W, 1990 m, 2 Jul 2011, *SŠ, JZL, DRL*, KF750778, KF750779; KF750977, KF750978 / **324PIC**, Spain, Cantabria, Picos de Europa, Fuente Dé, rocks along the hiking path from the upper station of the cable car up to Horcados Rojos, 43°10.41'N, 4°49.30'W, 2070 m, 3 Jul 2011, *SŠ, JZL, DRL*, KF750780, KF750781; KF750979, KF750980; **A. fastigiatum** Heywood – **NE Iberian group: 260GNA**, Spain, Castilla y León, Soria, Mirador de la Galiana, rocks above Cañón del río Lobos, 41°43.90'N, 3°02.58'W, 1120 m, 26 May 2010, *SŠ, JZL, KM*, KF750714, KF750715; KF750913, KF750914 / **271JAV**, Spain, Aragón, Teruel, Sierra de Javalambre, ski resort Javalambre, meadow with the shrubs of *Juniperus* sp., 40°06.93'N, 1°01.00'W, 1853 m, 3 Jun 2010, *SŠ, JZL, KM*, KF750728, KF750729; KF750927, KF750928 / **272PEA**, Spain, Comunidad Valenciana, Castellón, S of the village of San Joan de Penyalgosa, Mt. Penyalgosa, rocky slopes, 40°13.52'N, 0°20.95'W, 1695 m, 4 Jun 2010, *SŠ, JZL, KM*, KF750730, KF750731; KF750929, KF750930, **locality of the holotype of A. montanum** var. **alcalatenicum** O.Bolós & Vigo / **310CMR**, Spain, Castilla-La Mancha, Cuenca, Cañamares, rocks along a road, 40°26.53'N, 2°15.49'W, 868 m, 7 May 2011, *SŠ, JZL, PM*, KF750758, KF750759; KF750957, KF750958 / **311TGC**, Spain, Castilla-La Mancha, Cuenca, W of Cerro de San Felipe (1839 m), shrubby slopes N of the village of Tragacete, 40°22.66'N, 1°52.87'W, 1445 m, 7 May 2011, *SŠ, JZL*,

Appendix S1. Continued.

PM, KF750760, KF750761; KF750959, KF750960 / **315SSD**, Spain, Aragón, Zaragoza, Sierra de Santo Domingo, rocks along the path PR-Z114 from the village of Longás towards Las Peñas y Ermita de Santo Domingo (2 km of Ermita de Santo Domingo), 42°26.83'N, 0°56.08'W, 1236 m, 10 May 201, *SŠ, JZL, PM*, KF750766, KF750767; KF750965, KF750966 / **318OBA**, Spain, Aragón, Huesca, Congosto de Obarra, rocks along the road near a tunnel, 42°23.11'N, 0°36.90'E, 985 m, 26 Jun 2011, *SŠ, JZL, DRL*, KF750770, KF750771; KF750969, KF750970 / **326TUB**, Spain, Aragón, Huesca, Pyrenees, El Turbón, N of the village of Las Vilas del Turbón, ca. 500 m E of the spring Fuen de Canals, 42°25.22'N, 0°31.74'E, 1770 m, 6 Jul 2011, *SŠ, JZL, DRL*, KF750784, KF750785; KF750983, KF750984 / **343GUA**, Spain, Aragón, Huesca, Tozal de Guara, S exposed screes below the summit, 42°17.03'N, 0°14.00'W, 2077 m, 17 Aug 2011, *MdLH*, KF750794, KF750795; KF750993, KF750994, **locality of the holotype of *A. cuneifolium* subsp. *losanum*** P.Monts.; *A. fastigiatum* Heywood – **Baetic group**: **262CRI**, Spain, Andalucía, Cádiz, W of Grazalema, Sierra del Pinar mountain, northern foothill of Mt. Cerro de San Cristobal towards Puerto de las Cumbres, rocks, 36°46.10'N, 5°23.67'W, 1238 m, 28 May 2010, *SŠ, JZL, KM*, KF750716, KF750717; KF750915, KF750916 / **264MIJ**, Spain, Andalucía, Málaga, Sierra de Mijas, above the village of Mijas, rocks and dolomitic sands along a hiking path, 36°36.23'N, 4°39.61'W, 641 m, 29 May 2010, *SŠ, JZL, KM*, KF750718, KF750719; KF750917, KF750918 / **352ALH**, Spain, Andalucía, Málaga, Sierra de Mijas, Alhaurín el Grande, S of the town, rocks and dolomitic sands, 36°37.77'N, 4°40.41'W, 620 m and 36°37.64'N, 0°40.67'W, 672 m, 14 Apr 2012, *SŠ, PM, DRL*, KF750808, KF750809; KF751007, KF751008 / **266RAG**, Spain, Andalucía, Granada, Sierra Nevada, Puerto de la Ragua, along the hiking path to Mt. Chullo, metamorphic phyllites, 37°06.96'N, 3°01.59'W, 2120 m, 30 May 2010, *SŠ, JZL, KM*, KF750720, KF750721; KF750919, KF750920 / **268GAD**, Spain, Andalucía, Almería, Sierra de Gador, summit area, near the village of Castala, shrubby and rocky slopes, 36°54.09'N, 2°53.21'W, 1851 m, 1 Jun 2010, *SŠ, JZL, KM*, KF750722, KF750723; KF750921, KF750922, **locality of the holotype of *A. gadorensis*** P.Küpfer / **269ESP**, Spain, Murcia, Sierra de Espuña, Mt. Espuña, near the military area, calcareous rocks, 37°51.94'N, 1°34.36'W, 1500 m, 2 Jun 2010, *SŠ, JZL, KM*, KF750724, KF750725; KF750923, KF750924 / **319LOM**, Spain, Andalucía, Granada, Sierra Nevada, Loma del Mulhacén, rocky slopes, 37°01.86'N, 3°18.15'W, 3021 m, 28 Jun 2011, *SŠ, JZL, DRL*, KF750772, KF750773; KF750971, KF750972 / **321TRE**, Spain, Andalucía, Granada, Sierra Nevada, under Puerto del Trevelez (2801 m), screes, 37°06.78'N, 3°13.95'W, 2756 m, 30 Jun 2011, *SŠ, JZL, DRL*, KF750774, KF750775; KF750973, KF750974, **locus classicus of *A. diffusum* var. *corymbosum*** Pau / **322RAY**, Spain, Andalucía, Almería, Sierra Nevada, Cerro del Rayo (N of Beires), rocks, 37°04.75'N, 2°50.12'W, 2398 m, 1 Jul 2011, *SŠ, JZL, DRL*, KF750776, KF750777; KF750975, KF750976, **locality of the lectotype of *A. nevadense*** Willmott ex P.W.Ball & T.R.Dudley / **368SFI**, Spain, Andalucía, Almería, Sierra de los Filabres, Calar del Gallinero, rocks, 37°12.48'N, 2°36.45'W, 1912 m, 27 Apr 2012, *SŠ, PM, DRL*, KF750828, KF750829; KF751027, KF751028 / **369SMA**, Spain, Andalucía, Almería, Sierra de María, rocky grasslands, 37°41.27'N, 2°11.38'W, 1525 m, 27 Apr 2012, *SŠ, PM, DRL*, KF750830, KF750831; KF751029, KF751030 / **370GIL**, Spain, Andalucía, Jaén, Sierra de Cazorla, Puerto Gilillo, calcareous rocks, surroundings of a hiking path, 37°52.41'N, 2°59.54'W, 1748 m, 29 Apr 2012, *SŠ, PM, DRL*, KF750832, KF750833; KF751031, KF751032, **close to the locality of the holotype of *A. fastigiatum*** Heywood / **371NMU**, Spain, Castilla-La Mancha, Albacete, Calar del Mundo, Nacimiento del río Mundo, Cueva de los Chorros, rocks along the river, 38°27.13'N, 2°26.25'W, 1050 m, 30 Apr 2012, *SŠ, PM, DRL*, KF750834, KF750835; KF751033, KF751034; *A. fastigiatum* Heywood – **270BCT**, Spain, Valencia, Sierra de Mariola, rocky meadow close to the settlement Pinatell between towns of Bocairant and Alcoy, 38°44.72'N, 0°33.04'W, 895 m, 3 Jun 2010, *SŠ, JZL, KM*, KF750726, KF750727; KF750925, KF750926; *A. flexicaule* Jord.; **274VEX**, France, Provence-Alpes-Côte d'Azur, Vaucluse, Mt. Ventoux, SE of the summit, calcareous screes, 44°09.81'N, 5°18.40'E, 1686 m, 6 Jun 2010, *SŠ, JZL, KM*, KF750734, KF750735; KF750933, KF750934, **locality of the lectotype of *A. flexicaule*** Jord.; *A. gallaecicum* (S.Ortiz) Španiel & al.; **306LOU**, Spain, Galicia, A Coruña, Louro, Praia de Louro, Lagoa de Louro, sandy dunes, 42°45.10'N, 9°5.44'W, 7 m, 5 May 2011, *SŠ, JZL, PM*, KF750750, KF750751; KF750949, KF750950 / **307FIS**, Spain, Galicia, A Coruña, Fisterra, Praia de Langosteira, sandy dunes, 42°54.98'N, 9°15.94'W, 20 m, 5 May 2011, *SŠ, JZL, PM*, KF750752, KF750753; KF750951, KF750952 / **308PLM**, Spain, Galicia, A Coruña, Palmeira, Praia de Corna, sandy dunes, 42°35.17'N, 8°56.91'W, 8 m, 6 May 2011, *SŠ, JZL, PM*, KF750754, KF750755; KF750953, KF750954 / **309GRV**, Spain, Galicia, Pontevedra, O Grove, Lagoa de Bodeira, sandy dunes, 42°28.48'N, 8°54.55'W, 7 m, 6 May 2011, *SŠ, JZL, PM*, KF750756, KF750757; KF750955, KF750956, **locality of the holotype of *A. loiseleurii*** subsp. *gallaecicum* S.Ortiz; *A. gmelinii* Jord. & Fourr.; **15CSA**, Hungary, Komárom-Esztergom, Császárt, steppe, 47°31.23'N, 18°08.02'E, 189 m, 23 Apr 2007, *SŠ, NR*, JF703943; JF703816 / **52KRA**, Austria, Steiermark, Kraubath an der Mur, serpentine rocks in the pine forest, 47°16.93'N, 14°55.65'E, 635 m, 26 May 2007, *SŠ, MP, V/K*, JF704022; JF703895 / **94SAN**, Germany, Baden-Württemberg, S of Heidelberg, Sandhausen, 49°19.92'N, 8°39.62'E, 110 m, 12 Apr 2008, *KM, JZL, JPI*, JF704016; JF703889, **locality of the neotype of *A. gmelinii*** Jord. & Fourr. / **211HRU**, Czech Republic, Znojmo-jemsko-brněnská pahorkatina, Hrubčice, steppe on serpentine, 49°05.55'N, 16°17.76'E, 260 m, 16 Apr 2009, *SŠ, JZL*, JF703942; JF703815; *A. handelii* Hayek; **169OLY**, Greece, Thessalia, Larissa, Olympus, calcareous screes along the hiking path towards Mt. Skala (2866 m) and on Mt. Skolio (2911 m), 40°04.93'N, 22°21.00'E, 2911 m, 5 Jun 2008, *SŠ, KM*, KF750701–KF750703; KF750900–KF750902, **locus classicus of *A. handelii*** Hayek; *A. loiseleurii* P.Fourn.; **255BAY**, France, Aquitaine, Pyrénées-Atlantiques, Bayonne, Anglet, coastal sand dunes, 8 m, 4 Aug 2011, *MdLH & 24 May 2010, SŠ, JZL, KM*, voucher in MdLH herb., KF750704, KF750705; KF750903, KF750904, **locality of the lectotype of *A. loiseleurii*** P.Fourn. / **256ZAU**, Spain, Euskadi, Guipúzcoa, Zarautz, near the golf court, coastal sand dunes, 43°17.31'N, 2°09.21'W, 3 m, 24 May 2010, *SŠ, JZL, KM*, KF750706, KF750707; KF750905, KF750906 / **298OND**, France, Aquitaine, Landes, Ondres, coastal sand dunes, 11 m, 4 Aug 2011, *MdLH & 1 May 2011, SŠ, JZL, PM*, voucher in MdLH herb., KF750736, KF750737; KF750935, KF750936; *A. moellendorffianum* Asch. ex Beck; **120KIC**, Bosnia and Herzegovina, Hercegovacko-neretvanski kanton, town of Konjic, calcareous rocks and screes, 43°39.85'N, 17°58.27'E, 370 m, 25 Apr 2008, *SŠ, MP*, KF750665–KF750667; KF750864–KF750866, **locus classicus of *A. moellendorffianum*** Asch. ex Beck; *A. montanum* L. (s.str.) – **northern diploids**: **95BAS**, Switzerland, Baselland, S of Basel, Aesch, calcareous rocks below the castle ruin of Pfeffingen, 47°27.18'N, 7°35.65'E, 390 m, 13 Apr 2008, *TB, KM, JZL*, JF703931, JF704040; JF703804, JF704063, **locality of the conserved type of *A. montanum*** L. / **147TRO**, Germany, Baden-Württemberg, Trochtelfingen, calcareous rocky slope, 48°20.16'N, 9°14.95'E, 715 m, 17 May 2010, *MT, SŠ, JZL, KM*, JF704039, JF703930; JF704062, JF703803 / **247NGB**, Germany, Baden-Württemberg, Neuburg (near Munderkingen), steep rocks in the forest, jurassic limestone, 48°14.91'N, 9°34.91'E, 544 m, 18 May 2010, *MT, SŠ, JZL, KM*, JF704048, JF704047; JF704070, JF704071 / **253CIN**, France, Rhône-Alpes, Ain, near the road on calcareous rocks SE of the village of Cerin, 45°45.90'N, 5°33.65'E, 700 m, 22 May 2010, *SŠ, JZL, KM*, JF704051, JF704052; JF704074, JF704075 / **290SOU**, France, Rhône-Alpes, Ain, Souclin, calcareous rocks, near the cross on the hill above the village, 45°52.77'N, 5°25.44'E, 739 m, 28 Apr 2011, *SŠ, JZL, PM*, KF750681, KF750682; KF750880, KF750881 / **291IOUS**, France, Rhône-Alpes, Ain, Oussiat, gravel and sand, 46°03.41'N, 5°22.30'E, 245 m, 29 Apr 2011, *SŠ, JZL, PM*, KF750683, KF750684; KF750882, KF750883 / **292GBX**, France, Rhône-Alpes, Ain, Port Galland, Loyettes, the reserve Les Gaboureaux, close to the reserve, gravel and sand, 45°48.39'N, 5°12.90'E, 198 m, 29 Apr 2011, *SŠ, JZL, PM*, KF750685, KF750686; KF750884, KF750885 / **294AUB**, France, Rhône-Alpes, Isère, Auberives en Royans, stony and sandy slope, 45°03.79'N, 5°18.29'E, 208 m, 29 Apr 2011, *SŠ, JZL, PM*, KF750689, KF750690; KF750888, KF750889 / **295GLL**, France, Rhône-Alpes, Isère, N of the mountain la Graille, rocky slopes along a road, 45°10.08'N, 5°35.95'E, 1251 m, 30 Apr 2011, *SŠ, JZL, PM*, KF750691, KF750692; KF750890, KF750891 / **296CHR**, France, Rhône-Alpes, Isère, Engins, Mt. Charande (1709 m), rocks under the summit, SE exposition, 45°11.19'N, 5°35.56'E, 1699 m, 30 Apr 2011, *SŠ, JZL, PM*, KF750693, KF750694; KF750892, KF750893 / **297MEA**, France, Rhône-Alpes, Isère, Gorges du Méaudret, rocks in the gorge along a road, 45°06.49'N, 5°31.79'E, 1000 m, 30 Apr 2011, *SŠ, JZL, PM*, KF750695, KF750696; KF750894, KF750895 / **347MOV**, Switzerland, Jura, Movelier, rocks at the top of the mountain Halbschälle, southern exposure, 47°25.00'N, 7°20.8'E, 870 m, 13 Nov 2011, *MdLH*, KF750800, KF750801; KF750999, KF751000 / **348FLU**, Switzerland, Solothurn, Hofstetten-Flüh, at the top of the rocks "Flühe", 47°29.22'N, 7°30.1'E, 530 m, 13 Nov 2011, *MdLH*, KF750802, KF750803; KF751001, KF751002 / **349BDF**, Switzerland, Bern, Burgdorf, at the bottom of the sandstone rocks along the river, after the Ziegel bridge (Ziegelbrücke), 47°03.57'N, 7°38.63'E, 543 m, 19 Nov 2011, *MdLH*, KF750804, KF750805; KF751003, KF751004; *A. montanum* L. (s.str.) – **southern diploids**: **375DOU**, France, Midi-Pyrénées, Tarn, Dourgne, the gorge S of the village, calcareous rocks, 43°28.56'N, 2°08.81'E, 337 m, 17 Jun 2012, *SŠ, EZ*, KF750842, KF750843; KF751041, KF751042 / **376BED**, France, Midi-Pyrénées, Ariège, Bèdeilhac-et-Aynat, rocks and screes above the hiking path, 42°52.08'N, 1°33.67'E, 720 m, 17 Jun 2012, *SŠ, EZ*, KF750844, KF750845; KF751043, KF751044 / **377PAI**, France, Languedoc-Roussillon, Aude, Col de Pailhères, between Ax-les-Thermes and Mijanès, rocky sites on the horse pasture, 42°44.16'N, 1°59.78'E, 1979 m, 17 Jun 2012, *SŠ, EZ*, KF750846, KF750847; KF751045, KF751046 / **379TUC**, France,

Appendix S1. Continued.

Languedoc-Roussillon, Aude, Tuchan, Pech de Fraysse, NW exposed slope, on the rocks among box trees (*Buxus sempervirens* L.), 42°54.02'N, 2°40.11'E, 877 m, 19 Jun 2012, SŠ, EZ, KF750850, KF750851; KF751049, KF751050; *A. montanum* L. (s.str.) – **tetraploids: 293CHA**, France, Rhône-Alpes, Isère, Chasse sur Rhône, a dry slope near the cemetery, 45°35.00'N, 4°48.19'E, 176 m, 29 Apr 2011, SŠ, JZL, PM, KF750687, KF750688; KF750886, KF750887, **locality of the lectotype of *A. psammeum* Jord. & Fourr. / 372RIV**, France, Languedoc-Roussillon, Hérault, Les Rives, calcareous rocks at the edge of the pasture beside the road, 43°53.28'N, 3°16.58'E, 774 m, 1 May 2012, SŠ, PM, DRL, KF750836, KF750837; KF751035, KF751036 / **373SPT**, France, Languedoc-Roussillon, Lozère, St Pierre des Tripiers, W of the village, towards la Boulangerie, sands, 44°13.58'N, 3°16.13'E, 976 m, 1 May 2012, SŠ, PM, DRL, KF750838, KF750839; KF751037, KF751038 / **374PEU**, France, Centre, Indre-et-Loire, Chinon, Le Pérou, calcareous sands, under pines, 47°11.42'N, 0°13.09'E, 73 m, 15 June 2012, SŠ, EZ, KF750840, KF750841; KF751039, KF751040, **locality of the lectotype of *A. montanum* subsp. *collicolum* (Rouy & Foucaud) P.Fourn. / 378GAR**, France, Midi-Pyrénées, Haute-Garonne, Bezins-Garraux, Pic du Gar, a shallow glen on the steep SE exposed slope, calcareous rocks, 42°56.87'N, 0°41.73'E, 1654 m, 18 Jun 2012, SŠ, EZ, KF750848, KF750849; KF751047, KF751048; *A. montanum* L. (s.l.) – **CH, Simplon: 350SIM**, Switzerland, Valais, Wassermatte, along the way to Simplon pass, steppe like meadow, 46°17.77'N, 8°02.68'E, 1325 m, 22 Nov 2011, MdLH, KF750806, KF750807; KF751005, KF751006; *A. montanum* L. (s.l.) **from Balkans: 81VIHm**, Bulgaria, Blagoevgrad, Pirin Mts., rocky meadows along the hiking path (green and red sign) from Banderica to Mt. Vichren, 41°46.21'N, 23°24.72'E, 2368 m and 41°46.32'N, 23°24.19'E, 2543 m, 17 Jul 2007, SŠ, VK, LM, KF750660, KF750661; KF750859, KF750860 / **106PAG**, Croatia, Zadarska županija, Pag island, rocks near the road above the village of Pag, 44°26.33'N, 15°02.23'E, 162 m, 19 Apr 2008, SŠ, MP, KF750657–KF750659; KF750856–KF750858, **locus classicus of *A. montanum* “proles” *pagense* Jos. Baumgartner / 134SUM**, Serbia, Južni Banat, Deliblatska peščara, village of Šumarak between villages of Gaj and Dubovac, sandy area in the village, 44°49.11'N, 21°08.58'E, 105 m, 13 May 2008, SŠ, JŠ, JF703921; JF703794 / **143MAG**, Serbia, Raška, Maglič fortress above the river Ibar, serpentine slopes, 43°36.78'N, 20°33.07'E, 374 m, 18 May 2008, SŠ, JŠ, KF750674, KF750675; KF750873, KF750874 / **192BOA**, Montenegro, Šavnik, between the settlements of Šavnik and Boan near a crossroad to Timar, along the road above the river Bukovica, calcareous screes, 42°59.20'N, 19°11.30'E, 1193 m, 19 Jun 2008, SŠ, MPI, KF750668–KF750670; KF750867–KF750869 / **193KOM**, Montenegro, Andrijevica, Komovi Mts., Mt. Kom Vasojevički, calcareous rocks in the upper part of the mount, 42°41.39'N, 19°40.26'E, 2296 m, 19 Jun 2008, SŠ, MP, KF750671–KF750673; KF750870–KF750872; Montenegro, Durmitor, E of the summit of Mt. Bobotov Kuk, 2300 m, MM, PS, BF, voucher in IB; Bosnia and Herzegovina, Prenj, summit of Mt. Lupoglav, 2095 m, MM, PS, BF, voucher in IB; *A. orophilum* Jord. & Fourr.: **91TDE**, France, Provence-Alpes-Côte d'Azur, Alpes-Maritimes, Maritime/Ligurian Alps, Tende, below Col de Tende, rocky slope, 44°8.37'N, 7°33.00'E, 1851 m, 17 Jun 2007, MP, 6 Jun 2010, SŠ, JZL, KM, JF704031–JF704034; JF703904–JF703907, **locus classicus of *A. pedemontanum* Rupr. / 92CEN**, France, Rhône-Alpes, Savoie, Cottian/Graian Alps, Massif du Mont Cenis, above Lac du Mont Cenis, rocks above a road, 45°14.57'N, 6°56.77'E, 2086 m, 18 Jun 2007, MP, 07 Jun 2010, SŠ, JZL, KM, JF704035–JF704037, JF703919; JF703908–JF703910, JF703792, **locality of the lectotype of *A. pedemontanum* Rupr. & locality of the lectotype of *A. orophilum* Jord. & Fourr. / 316MGR**, France, Provence-Alpes-Côte d'Azur, Hautes-Alpes, Cottian Alps, Montgenèvre, meadows and rocky slopes under the cable car, 44°55.27'N, 6°43.44'E, 1990 m, 12 May 2011, SŠ, JZL, PM, KF750679, KF750680; KF750878, KF750879 / **381SPP**, Italy, Piemonte, Cuneo, Cottian Alps, Valle Maira, meadows along the road between the villages of Elva and Stroppio, Costa Cavallina, 44°31.43'N, 7°06.25'E, 1916 m, 24 Jun 2012, SŠ, EZ, KF750852, KF750853; KF751051, KF751052 / **382AGN**, France, Provence-Alpes-Côte d'Azur, Hautes-Alpes, Cottian Alps, Col d'Agnel, rocky slopes along a road, 44°41.80'N, 6°57.30'E, 2430 m, 25 Jun 2012, SŠ, EZ, KF750854, KF750855; KF751053, KF751054; *A. ovirensense* A.Kern. (s.l.): **345VTT**, Italy, Veneto, Belluno, Vette Grande, 46°05.18'N, 11°50.10'E, 1950 m, 7 Sep 2011, MdLH, KF750796, KF750797; KF750995, KF750996 / **346BAL**, Italy, Lombardia, Brescia, Mte Baldo, 45°43.10'N, 10°50.08'E, 1974 m, 6 Sep 2011, MdLH, voucher in MdLH herb., KF750798, KF750799; KF750997, KF750998 / Italy, Alpi Giulie, Jôf del Montasio, summit crest E of the summit, 2750 m, MM, PS, BF, voucher in IB / Austria, Karawanken, Mt. Hochobir, 0.3 km S of the summit, 2070 m, MM, PS, BF, voucher in IB, **locality of the lectotype of *A. ovirensense* A.Kern. / Austria, Hochschwab, western and northern slopes of Mt. Karlhochkogel, 2096 m, MM, PS, BF, voucher in IB; *A. repens* Baumg.: 150LAV**, Austria, Kärnten, Lavamünd, in the forest near the calvary and the church Dreifaltigkeitskirche, 46°38.39'N, 14°57.04'E, 500 m, 26 May 2008, SŠ, JZL, KM, JF704025, JF704060; JF703898, JF704083 / **72POS**, Romania, Braşov, Poiana Braşov, Postăvarul, rocky slopes, 45°34.14'N, 25°34.07'E, 1799 m, 6 Jul 2007, SŠ, VK, LM, JF703974; JF703847, **locus classicus of *A. repens* Baumg. / 73PIA**, Romania, Neamt, Munţii Ceahlău, Parcul Naţional Ceahlău, Izvoru Muntelui, near the hiking path (blue sign) leading from Cabana Izvorul Muntelui to Piatra cu Apă, rocky slopes, 46°57.84'N, 25°57.73'E, 1498 m, 7 Jul 2007, SŠ, VK, LM, JF703997; JF703870; *A. rhodanense* Jord. & Fourr.: **254TAI**, France, Rhône-Alpes, Drôme, Tain l'Hermitage, granite rocks E of the river of Rhône among vineyards, 45°04.90'N, 4°49.87'E, 168 m, 23 May 2010, SŠ, JZL, KM, KF750697, KF750698; KF750896, KF750897, **locality of the neotype of *A. rhodanense* Jord. & Fourr.**