

Benito Valdés

## Checklist of the vascular plants collected during the fifth “*Iter Mediterraneum*” in Morocco, 8-27 June, 1992

### Abstract

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The vascular plants material collected during *Iter Mediterraneum V* of OPTIMA in Morocco has been studied. It comprises 2366 gatherings collected from 65 localities mainly in the Rif Mountains (28 localities) and the Middle Atlas (21 localities) plus 16 localities in the High Atlas, the “plaines et plateaux du Maroc oriental” and “Maroc atlantique nord”. The checklist includes 1416 species and subspecies which belong to 112 families. One species is new for the flora of Morocco (*Epilolium lanceolatum* Sebast. & Mauri), 18 are new records for the Middle Atlas, seven for central Middle Atlas, one for Jbel Tazekka, nine for the “plaines et plateaux du Maroc oriental”, three for “base Moulouya”, four for “Maroc atlantique nord”, three for High Atlas, and three for the Rif Mountains. The following new combinations are proposed: *Astragalus incanus* subsp. *fontianus* (Maire) Valdés, *Malva lusitanica* var. *hispanica* (R. Fern.) Valdés, *Nepa boivinii* var. *tazensis* (Braun-Blanq. & Maire) Valdés, *Ornithogalum baeticum* subsp. *algeriense* (Jord. & Fourr.) Valdés and *Ornithogalum baeticum* subsp. *atlanticum* (Moret) Valdés.

*Key words:* Flora of Morocco, Rif Mountains, Middle Atlas, High Atlas, Itinera Mediterranea, OPTIMA, vascular plants.

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### Introduction

During *Iter Mediterraneum V* the 65 localities indicated in Fig. 1 and listed below were visited between 9 and 26 June, 1992. A total of 2282 numbers with a gap of 19 (1131 to 1149) were registered in the field book, with a real number of 2366 gatherings including several “b” and some “c” and “d” numbers.

The following is an almost complete list of species and subspecies collected, arranged alphabetically by families. A total of 42 numbers have not been identified as they are missing in the sets of duplicates of Seville, Berlin, Reading and Salamanca and it has not been possible to trace them in other sets. Five more remain unidentified: one *Eucaliptus* sp. (gathering 54.1794), two gatherings of *Tamarix* without flowers or fruits (ns. 35.1194 and 53.1765) and two gatherings of *Chara* (*Chlorophyta*) without reproductive organs (ns. 51.1689 and 58.1924).

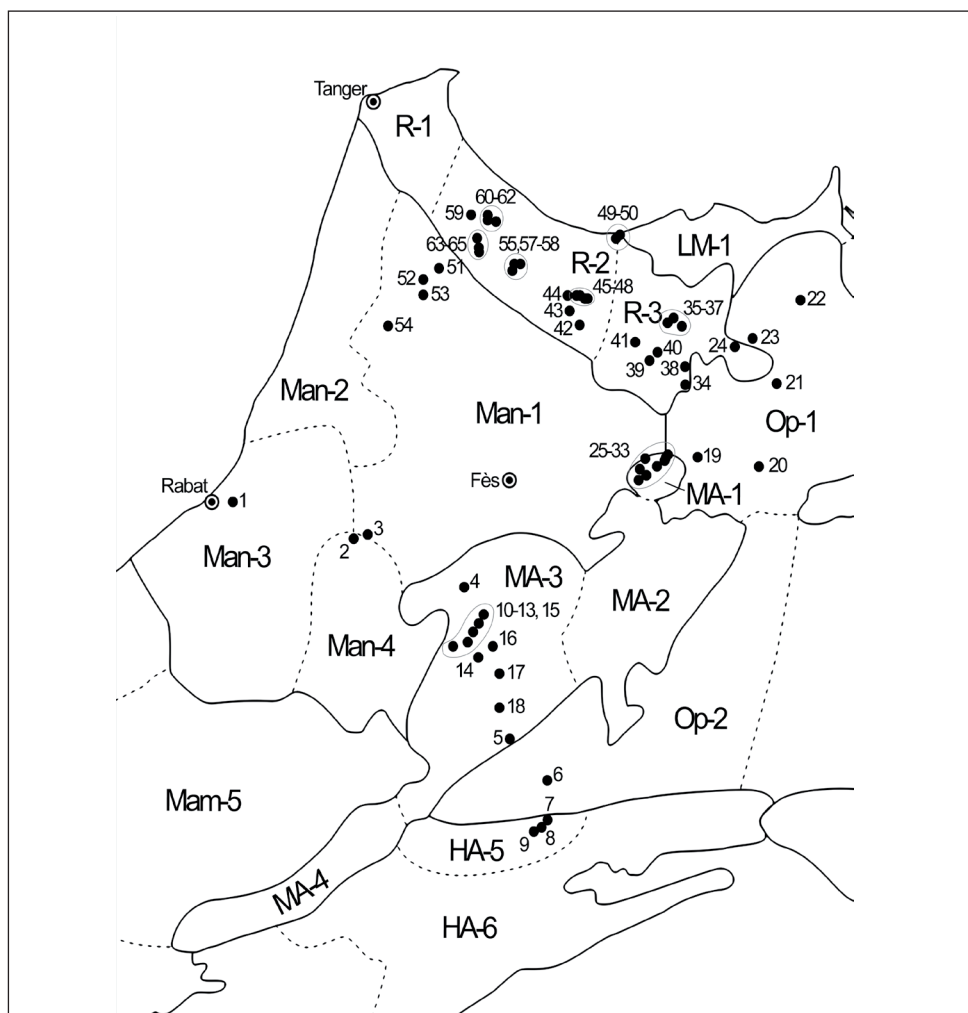


Fig. 1. Geographical position of the collecting sites (ns. 1 to 65; see the text) and geographical divisions used for chorological purposes in Fennane & Ibn Tattou (2005) and Ibn Tattou & Fennane (2009). HA, Haut Atlas: HA-5, Ayachi; HA-6, Haut Atlas oriental. MA, moyen Atlas: MA-1, Tazekka; MA-2, moyen Atlas nord-oriental; MA-3, moyen Atlas central; MA-4, moyen Atlas sud-occidental. Man, Maroc atlantique north: Man-1, Préfil/moyen Sebou; Man-2, Gharb; Man-3, Maâmora/Zemmour/Zaër; Man-4, Zaïane. Op, plaines et plateaux du Maroc oriental: Op-1, basse Moulouya; Op-2, haute Moulouya. LM, littoral de la Méditerranée: LM-1, Boccoya/Nekor. R, Rif: R-1, Tangérois; R-2, Rif centro-occidental; R-3, Rif oriental. The same primary divisions (HA, MA, Mam, Man, Op, LM, R) are used in Fennane & al. (1999, 2007).

## Localities

Most *Iter* activities were concentrated in the Middle Atlas (21 localities out of 65 visited) and the Rif Mountains (28 localities). Only 16 localities are outside these two areas: three in the High Atlas, six in the “plains and plateaux du Maroc oriental” (five in the “basse Moulouya”, Op-1 in fig. 1, and one in the “haute Moulouya”, Op-2 in fig. 1) and seven in “Maroc atlantique nord” (Mn in fig. 1).

For each locality listed below, the following data are given:

- a, Sequential number.
- b, Current province name in capitals, followed by the name of the province in 1992 in brackets.
- c, Locality.
- d, Geographical position according to longitude (referred to the Greenwich meridian), latitude and French Lambert Grid.
- e, Ecological data, when registered.
- f, Altitude over sea level.
- g, Collecting date.
- h, Number of gatherings collected.

1. KHÉMISSET (KÉNITRA): c. 12 km from Rabat on road to Meknès, forêt de la Maâmora; 34°2'N 6°42'W; FLNM379382; *Quercus suber* forest; 80 m; 09.06.1992; ns. 1.1-1.42b.
2. KHÉMISSET (MEKNÈS): c. 45 km E of Meknès, 2 km W of Oued Beht on Rabat to Meknès road; 33°52'N 5°57'W; FLNM449364; open rocky area with *Pinus halepensis*; 150 m; 09.06.1992; ns. 2.43-2.78.
3. KHÉMISSET (MEKNÈS): c. 42 km E of Meknès, 1 km E of Oued Beht on Rabat to Meknès road; 33°53'N 5°55'W; FLNM452364; degraded *Tetraclinis articulata* woodland with planted *Pinus halepensis*; 220 m; 09.06.1992; ns. 3.79-3.139.
4. IFRANE (MEKNÈS): c. 15 km from El Hajeb or road to Ifrane, forêt de Jaaba; 33°36'N 5°17'W; FLNM511333; *Quercus canariensis* wood; 1400 m; 09.06.1992; ns. 4.140-4.261.
5. MIDELT (KSAR-ES-SOUK = ERRACHIDIA): c. 10,5 km N Zaida, 3,5 km N Boullajoul, on Azrou to Midelt road; Plateau de l'Arid; 32°54'N 5°0'W; FLNM538255; 1470 m; 10.06.1992; ns. 5.262-5.269.
6. MIDELT (KSAR-ES-SOUK = ERRACHIDIA): Outskirt of Midelt on track to Cirque du Jaffar; Jbel Ayachi; 32°40'N 4°46'W; FLNM559229; 1500 m; 10.06.1992; ns. 6.270-6.290b.
7. MIDELT (KSAR-ES-SOUK = ERRACHIDIA): c. 15 km from Midelt, near village on road to Cirque du Jaffar; Jbel Ayachi; 32°38'N 4°46'W; FLNM459229; 1700 m; 10.06.1992; ns. 7.291-7.361.
8. MIDELT (KSAR-ES-SOUK = ERRACHIDIA): Above Midelt on track to Cirque du Jaffar; 32°33'N 4°24'W; FLNM546218; 2100 m; 10.06.1992; ns. 8.362-8.383.
9. MIDELT (KSAR-ES-SOUK = ERRACHIDIA): By forest house above Midelt on road to Cirque du Jaffar; 32°35'N 4°51'W; W & S facing slopes above road and below house; 1850 m; 10.06.1992; ns. 9.384-9.448.
10. IFRANE (MEKNÈS): c. 22 km to Ain-Leuh from Azrou-Midelt road; 33°25'N 5°12'W;

- FLNM518312; *Quercus ilex* subsp. *ballota*, *Viburnum tinus* woodland; 1450 m; 11.06.1992; ns. 10.449-10.492.
11. IFRANE (MEKNÈS): c. 17 km from Ain-Leuh from Azrou-Midelt road; 33°23'N 5°14'W; FLNM516309; scrub land in *Quercus ilex* subsp. *ballota* wood with some *Viburnum tinus*, *Cedrus libani* subsp. *atlantica* and *Ilex aquifolium*; 1585 m; 11.06.1992; ns. 11.493-11.497.
  12. IFRANE (MEKNÈS): c. 11 km from Azrou on road to Ain-Leuh; 33°22'N 5°15'W; FLNM514307; *Quercus ilex* subsp. *ballota* woodland with open grassy clearing; 1550 m; 11.06.1992; ns. 12.498-12.551.
  13. IFRANE (MEKNÈS): c. 4 km from Ain-Leuh on road to Tiouririne and Azrou; 33°20'N 5°21'W; FLNM505303; among rocky outcrops in cultivated area; 1150 m; 11.06.1992; ns. 13.552-13.574.
  14. IFRANE (MEKNÈS): c. 7 km from Azrou by road to Midelt; 33°16'N 5°12'W; FLNM559315; *Cedrus libani* subsp. *atlantica* forest surrounded by *Quercus ilex* subsp. *ballota* scrubland; 1650 m; 12.06.1992; ns. 14.575-14.617.
  15. IFRANE (MEKNÈS): c. 8 km from Azrou by road to Midelt; 33°26'N 5°11'W; FLNM521315; on *Cedrus libani* subsp. *atlantica* forest; 1800 m; 12.06.1992; ns. 15.618-15.621.
  16. IFRANE (MEKNÈS): c. 19 km from Azrou by road to Midelt; 33°19'N 5°7'W; FLNM525301; on *Cedrus libani* subsp. *atlantica* forest; 1900-2000 m; 12.06.1992; ns. 16-621b-16.675.
  17. IFRANE (MEKNÈS): c. 34 km from Azrou on road to Midelt; 33°12'N 5°4'W; FLNM531292; river bed banks and adjacent NE facing limestone cliffs; 1880 m; 12.06.1992; ns. 17.676-17.717.
  18. IFRANE (MEKNÈS) c. 44 km from Azrou on road to Midelt; 33°2'N 5°4'W; FLNM531270; wet area around fountain and SE facing limestone slopes; 2100 m; 12.06.1992; ns. 18.718-18.742.
  19. TAZA: c. 19 km from Taza, 46 km W from Guercif; 34°5'N 3°50'W; FLNM644406; basic marls with wheat; 520 m; 14.06.1992; ns. 19.743-19.802b.
  20. TAZA: c. 52 km from Taza, 13 km W from Guercif; 34°2'N 3°27'W; FLNM679402; semi-arid, stony area; planted area with *Schinus molle* and *Eucaliptus*; 520 m; 14.06.1992; ns. 20.803-20.814.
  21. TAZA: c. 25 km S of Saka, on road Guercif to Nador; 34°25'N 3°20'W; FLNM691226; rocky outcrop on arid plain; 435 m; 14.06.1992; n. 21-815.
  22. NADOR: c. 55 km from Nador on road to Guercif; 34°48'N 3°11'W; FLNM702468; limestone slopes heavily grazed; 500 m; 14.06.1992; ns. 22.816-22.835.
  23. TAZA: c. 4 km from village of Ain Zorah on road from Saka; 34°38'N 3°31'W; FLNM683450; limestone gorge; 890 m; 14.06.1992; ns. 23.836-23.878.
  24. TAZA: c. 4 km S of Ain Zorah on track to Mezguiten, 34°36'N 3°36'W; FLNM666445; basic soils; 1050 m; 14.06.1992; ns. 24.879-24.880.
  25. TAZA: c. 11 km from Taza on minor road S to Jbel Tazekka; 34°9'N 4°1'W; FLNM628395; hillsides and bank of river; 745 m; 15.06.1992; ns. 25.881-25.912.
  26. TAZA: c. 18 km from Taza along minor road to Gouffe de Friouato and Djbel Tazekka; 34°8'N 4°2'W; FLNM626394; limestone rocks under *Quercus ilex* subsp. *ballota*; 1200 m; 15.06.1992; ns. 26.913-26.945.
  27. TAZA: c. 42 km from Taza on minor road; 34°3'N 4°12'W; FLNM612383; 1200 m; 15.06.1992; ns. 27.946-27.996.

28. TAZA: c. 6 km SE of Sidi Abdallah (town from Fès-Taza road) along minor road to Bab Boudir; 34°9'N 4°19'W; FLNM601395; limestone gorge, W facing slopes and cliffs, with *Olea europaea* and *Ceratonia siliqua*; 340 m; 15.06.1992; ns. 28.997-28.1028.
29. TAZA: Around Summit of Jbel Tazekka; 34°5'N 4°11'W; FLNM613388; schistose; 1900 m; 16.06.1992; ns. 29.1029-29.1053, 29.1276-29.1313.
30. TAZA: c. 6 km up track on Jbel Tazekka, 3 km from summit; 34°5'N 4°11'W; FLNM614387; schistose; 1780 m; 16.06.1992; 30.1054-30.1088.
31. TAZA: c. 3 km from Taza up track on Jbel Tazekka; 34°4'N 4°10'W; FLNM614386; schistose; 1605 m; 16.06.1992; ns. 31.1089-31.1090.
32. TAZA: c. 27 km from Taza, along minor road to Bab Boudir; 34°6'N 4°5'W; FLNM621389; 1400 m; 16.06.1992; ns. 32.1091-32.1111b.
33. TAZA: c. 13 km SSW of Taza, 23 km from Taza, on minor road to Bab Boudir; 34°7'N 4°3'W; FLNM624391; 1420 m; 16.06.1992; ns. 33.1112-33.1130.
34. TAZA: c. 37 km from Taza on road to Nador, S of Dar-Caïd-Medboh; 34°26'N 3°54'W; FLNM637427; steep open mudstone and marls hills; 900 m; 17.06.1992; ns. 34.1150-34.1175.
35. TAZA: c. 14 km E from Boured, on road to Taza; 34°44'N 4°1'W; FLNM626460; slatey mudstones; 1350 m; 17.06.1992; ns. 35.1176-35.1221.
36. TAZA: c. 2 km E of Ajdir, 16 km E of Boured, on road to Taza; 34°45'N 3°59'W; FLNM630461; 860 m; 17.06.1992; ns. 36.1222-36.1250.
37. TAZA: Col du Nador, about 10 km from Aknoul on road to Boured; 34°43'N 3°56'W; FLNM634459; 1340 m; 17.06.1992; ns. 37.1251-37.1262.
38. TAZA: Junction with road to Mezguitem, 42 km from Taza; 34°30'N 3°54'W; FLNM637435; mudstone; 840 m; 17.06.1992; ns. 38.1263-38.1275.
39. TAZA: Western outskirts of Taineste, c. 40 km due NNW of Taza; 4°34'N 4°8'W; FLNM616441; 1100 m; 18.06.1992; 39.1314-39.1349.
40. TAZA: c. 9 km from Taineste, c. 42 km due NNW of Taza; 34°36'N 4°5'W; FLNM621445; 1000 m; 18.06.1992; ns. 40.1350-40.1376.
41. TAZA: Junction of road from Tahar Souk, Boured and Taineste; c. 50 km NNW of Taza; 34°39'N 4°13'W; FLNM609450; dry roadside banks and fields margins; 855 m; 18.06.1992; ns. 41.1377-41.1399.
42. TAOUNATE (FÈS): Ikaouen, c. 40 km N from Taounate on road to Targuist; 34°48'N 4°38'W; FLNM571466; 1000 m; 19.06.1992; ns. 42.1400-42.1456.
43. AL HOCEÏMA: c. 15 km SW of Issaguen (= Ketama) along road to Taounate and Fès; 34°53'N 4°38'W; FLNM570476; 1000 m; 19.06.1992; ns. 43.1457-43.1503.
44. AL HOCEÏMA: c. 4 km along track to Jbel Tidirhine, 1 km SW of Tleta Ketama and 9 km from Issaguen (= Ketama); 34°43'N 4°36'W; FLNM574477; *Quercus ilex* subsp. *ballota* woodland with stream above village; 1500 m; 20.06.1992; ns. 44.1504-43.1537.
45. AL HOCEÏMA: c. 15 km along track below summit of Jbel Tidirhine; 34°52'N 4°31'W; FLNM581474; 2000 m; 20.06.1992; 45.1538-45.1582.
46. AL HOCEÏMA: c. 14 km from Tleta Ketama along track to Jbel Tidirhine; 34°52'N 4°32'W; FLNM559474; 1850 m; 20.06.1992; ns. 46.1583-46.1603.
47. AL HOCEÏMA: c. 10 km from Tleta Ketama along track to Jbel Tidirhine; 34°53'N 4°34'W; FLNM576476; wet area, acid soils; 1750 m; 20.06.1992; ns. 47.1604-47.1634.
48. AL HOCEÏMA: c. 5 km from Tleta Ketama along track to Jbel Tidirhine, aux Eaux et Forêt house; 34°53'N 4°35'W; FLNM574476; fields of *Cannabis sativa*; 1550 m; 20.06.1992; ns. 48.1635-48.1643.

49. AL HOCEÏMA: c. 36 km from Targuist, 1 km above Torres de Alcalá; 35°10'N 4°19'W; FLNM599506; limestone rocks; 125 m; 21.06.1992; 49.1644-49.1656.
50. AL HOCEÏMA: c. 40 km N from Targuist, by Peñón de Vélez de la Gomera; 35°10'N 4°18'W; FLNM601508; 5 m; 21.06.1992; ns. 50.1657-50.1658.
51. CHEFCHAOUEN (TÉTOUAN): c. 29 km from Chefchaouen on road to Ouazzane, Douar el Kob; 35°2'N 5°26'W; FLNM488492; 115 m; 23.06.1992; ns. 1659-51.1735.
52. CHEFCHAOUEN (KÉNITRA): c. 23 km from Ouazzane on road to Chefchaouen; 34°57'N 5°32'W; FLNM488484; 105 m; 23.06.1992; ns. 52.1736-52.1764.
53. CHEFCHAOUEN (KÉNITRA): c. 16 km from Ouazzane on road to Chefchaouen; 34°55'N 5°32'W; FLNM488479; 110 m; 23.06.1992; ns. 53.1765-53.1785.
54. CHEFCHAOUEN (KÉNITRA): c. 21 km from Ouazzane on road to Souk El Arbaa du Gharb; 34°47'N 5°45'W; FLNM468465; 140 m; 23.06.1992; ns. 54.1786-54.1815.
55. CHEFCHAOUEN (TÉTOUAN): c. 2 km up track to Jbel Tizirane, start of track 72 km from Chefchaouen on road to Issaguen (= Ketama), 12 km from Bab Berred; 35°2'N 4°58'W; FLNM540492; 1480 m; 24.06.1992; ns. 55.1816-55.1823.
57. CHEFCHAOUEN (TÉTOUAN): c. 5 km up track to Jbel Tizirane, start of track 72 km from Chefchaouen on road to Issaguen (= Ketama), 14 km from Bab Berred; 35°2'N 4°56'W; FLNM543491; 1700 m; 24.06.1992; ns. 57.1824-57.1910.
58. CHEFCHAOUEN (TÉTOUAN): c. 71 km from Chefchaouen on road to Issaguen (= Ketama), 13 km from Bab Berred; 35°1'N 4°59'W; FLNM539490; ponds and surrounding fields; 1450 m; 25.06.1992; ns. 58.1911-58.1981.
59. CHEFCHAOUEN (TÉTOUAN): c. 20 km from Chefchaouen on route to Jbel Tassaout; 35°17'N 5°14'W; FLNM514529; N-facing limestone cliffs; 350 m; 25.06.1992; ns. 59.1982-59.1987.
60. CHEFCHAOUEN (TÉTOUAN): Jbel Tassaout, c. 44 km from Chefchaouen on route to Jbel Tassaout, 14 km above Talambote; 35°15'N 5°5'W; FLNM528517; limestones, forests of *Abies marocana*; 1600 m; 25.06.1992; ns. 60.1988-60.2065.
61. CHEFCHAOUEN (TÉTOUAN): Jbel Tassaout, c. 40 km from Chefchaouen on route to Jbel Tassaout, 10 km above Talambote; 35°16'N 5°8'W; FLNM524518; mixed forest of *Quercus ilex* subsp. *ballota* and *Q. alpestris*; 1565 m; 25.06.1992; ns. 61.2066-61.2121.
62. CHEFCHAOUEN (TÉTOUAN): Jbel Tassaout, c. 37 km from Chefchaouen on route to Jbel Tassaout, 7 km above Talambote; 35°17'N 5°8'W; FLNM521519; cultivated fields on limestone; 1195 m; 25.06.1992; ns. 62.2122-61.2143.
63. CHEFCHAOUEN (TÉTOUAN): Jbel Talassemthane, c. 34 km from Chefchaouen, 10 km above Bab Taza on track to Jbel Talassemthane; 35°6'N 5°11'W; FLNM200499; mixed forest of *Quercus ilex* subsp. *ballota* and *Q. alpestris*, limestone rocks; 1420 m; 26.06.1992; ns. 63.2144-63.2172.
64. CHEFCHAOUEN (TÉTOUAN): Jbel Talassemthane, c. 38 km from Chefchaouen, 14 km above Bab Taza on track to Jbel Talassemthane; 35°9'N 5°12'W; FLNM519504; mixed forest of *Abies maroccana* and *Cedrus libani* subsp. *atlantica*, on limestones; 1765-1900 m; 26.06.1992; ns. 64.2173-64.2277.
65. CHEFCHAOUEN (TÉTOUAN): Jbel Talassemthane, c. 35 km from Chefchaouen, 14 km above Bab Taza on track to Jbel Talassemthane; 35°7'N 5°11'W; FLNM520501; limestone rocks; 1560 m; 26.06.1992; ns. 65.2278-65.2282.

## Collectors

A. Achhal, F. Conti, M. Fennane, S.L. Jury, M. Lisci, P. Mazzola, Ch. Oberprieler, S. Peccenini, F.M. Raimondo, M. Rejdali, E. Rico, G.J. Stark, H. t'Hart, B. Valdés, R. Vogt, R.G. Wilson.

## Plant identification

The identification of the vascular plants collected has been done by the following participants and specialists:

- H. AbuSbaih (Nablus, †): some *Orobanche*  
 Z. Díaz Lifante (Sevilla): *Asphodelus*, *Anthericum*, *Centaurium* and *Blackstonia*  
 G. Domina (Palermo): *Orobanche*  
 M. Fennane (Rabat): some gatherings, including *Thesium* and some *Linum*  
 C. Gómez Campo (Madrid, †): *Crambe*  
 G. Gottschlich (Tübingen): *Pilosella*  
 J. Grau (Munich): some *Biscutella*  
 P. Jiménez Mejías (Sevilla): *Carex* and *Cyperus*  
 S. L. Jury (Reading): many gatherings, particularly *Convolvulaceae*, *Crassulaceae*, *Cyperaceae*, *Ranunculaceae*, *Rubiaceae* and *Umbelliferae*  
 M. Lidén (Uppsala): most *Fumaria*  
 M. A. Mateos (Sevilla): most gatherings from W Rif (localities 59 to 65)  
 Y. Menemen (Kirikkale): some *Convolvulus*  
 J. Molero (Barcelona): some *Euphorbia*  
 J. M. Montserrat (Barcelona): some *Cruciferae* and *Umbelliferae*  
 T. Navarro (Málaga): most *Teucrium*  
 S. Neves (Oeiras): some *Bupleurum*  
 Ch. Oberprieler (Regensburg): *Compositae* and *Campanulaceae*  
 S. Peccenini (Genova): most *Cistaceae*, *Primulaceae* and *Ericaceae*  
 F. Pina (Sevilla): *Lotus*  
 E. Rico (Salamanca): many gatherings, particularly *Caryophyllaceae*, *Geraniaceae*, *Papilionaceae* and *Rosaceae*  
 M. A. Rivas (Madrid): some *Festuca*  
 N. K. B. Robson (London): *Hypericum*  
 C. Romero Zarco (Sevilla): most *Juncus* and some *Gramineae* and *Papilionaceae*  
 A. Romo (Barcelona): some *Caryophyllaceae*, *Chenopodiaceae*, *Dipsacaceae*, *Plantaginaceae*, *Rosaceae* and *Scrophulariaceae*  
 R. W. Rutherford (Reading): many gatherings, particularly *Convolvulaceae*, *Crassulaceae*, *Cyperaceae*, *Ranunculaceae*, *Rubiaceae* and *Umbelliferae*  
 T. B. Ryves (Kingston): some *Agrostis*  
 H. Scholz (Berlin, †): *Gramineae*  
 I. Soriano (Barcelona): some *Cistaceae*, and some *Anagallis* and *Veronica*  
 L. S. Springate (Edinburgh): most *Sedum*  
 S. Talavera (Sevilla): *Lactuceae* and some *Genisteae* and *Silene*

J. M. Tison (L'Isle-D'Abeau): *Gagea*

P. Outila (Helsinki): *Chenopodium*

B. Valdés (Sevilla): most gatherings, except most *Compositae*, *Campanulaceae* and *Gramineae*

P. Vargas (Madrid): most *Saxifraga*

T. M. Upson (Cambridge): most *Lavandula*

R. Vogt (Berlin): *Compositae* and *Campanulaceae*

M. Wyse-Jackson (Dublin): some *Cerastium*

## Checklist

Families are arranged following the *Catalogue des plantes vasculaires du Nord du Maroc* (Valdés & al. 2002). Generic and specific delimitations and nomenclature follows basically *Flora iberica* (Castroviejo & al. 1987-2012) and for the families still not covered by this *Flora*, the *Catalogue* indicated above and *Med-Checklist* (Greuter & al. 1984-1989). For *Compositae* and *Gramineae* Greuter (2008) and Valdés & Scholz (2009) have respectively been followed.

For each taxon (species and subspecies), the accepted name followed by author(s) and place of publication are given. When differing from the accepted name, the names used by Maire (1952-1987), Valdés & al. (2002), Fennane & al. (1999, 2007), Fennane & Ibn Tattou (2005), Ibn Tattou & Fennane (2009), Greuter & al. (1984-1989) and Dobignard & Chatelain (2010-2012) are added as synonyms.

On a separate line, the individual gatherings are enumerated. The first or two first digits, in bold-faced type, indicate the locality number, and the other digits (one to four) the sequential collecting number. The species and subspecies endemic to Morocco are distinguished by one asterisk (\*) before the gatherings; those endemic to Morocco and Algeria by two asterisks (\*\*); those endemic to Morocco, Algeria and Tunisia by one dot (•) (data according Valdés & al., 2002, Fennane & Ibn Tattou 2005, Ibn Tattou & Fennane 2009 and Dobignard & Chatelain 2010-2012).

Varieties are not listed, but sometimes are included in the notes that follow some taxa.

Notes are signed individually by their authors, when different from the author of this present Checklist (B. Valdés). To avoid an excessive increase of bibliographic references authors of the *Flore pratique du Maroc* are indicated in the notes as Fennane & al. (1999, 2007), those of *Flora iberica* as Castroviejo & al. (1987-2012), and those of the *Catalogue des plantes vasculaires du nord du Maroc* as Valdés & al. (2002).

As the plant material collected was only labelled in Berlin and Reading, contributors to the *Flore pratique du Maroc* (Fennane & al. 1999, 2007) and authors of *Flore Vasculaire du Maroc. Inventaire et Chorologie* (Fennane & Ibn Tattou 2005, Ibn Tattou & Fennane 2009) were unable to use the complete original set of duplicates of Rabat (IAV) and consequently the chorological information which could have been provided by *Iter V* was not incorporated to those important works. Most notes of this checklist indicate the geographical areas of Morocco for which one or more of the gatherings collected constitute new records.



**Pteridophyta*****Selaginellaceae****Selaginella denticulata* (L.) Spring in *Flora* 21: 149 (1838)

28.1017, 43.1474, 51.1681, 52.1757

***Isoetaceae****Isoetes histrix* Bory in *Compt. Rend. Hebd. Séances Acad. Sci.* 18: 1166 (1844)

58.1978, 64.2269b

***Equisetaceae****Equisetum ramosissimum* Desf., *Fl. Atlant.* 2: 398 (1779)

36.1228, 51.1668

*Equisetum telmateia* Ehrh. in *Hannover. Mag.* 21: 287 (1783)

51.1683

***Adiantaceae****Adiantum capillus-veneris* L. *Sp. Pl.* 1096 (1753)

36.1237, 40.1358, 51.1673

*Cheilanthes acrostica* (Balb.) Tod. in *Giorn. Sci. Nat. Econ. Palermo* 1: 215 (1866)

22.826, 23.843, 28.1007b, 40.1358b

*Cheilanthes maderensis* Lowe in *Trans. Cambridge Philos. Soc.* 6: 528 (1838)

28.1007

*Cosentinia vellea* (Aiton) Tod. in *Giorn. Sci. Nat. Econ. Palermo* 1: 219 (1866)*Cheilanthes vellea* (Aiton) F. Muell., *Fragm.* 5: 123 (1866)subsp. *bivalens* (Reichstein) Rivas Mart. & Salvo in *Anales Jard. Bot. Madrid* 41(1): 196 (1984)

28.1009

subsp. *vellea*

22.827, 23.841, 49.1654

Note: As already indicated by Badré & Reichstein (1983), subsp. *vellea* and subsp. *bivalens* cannot be morphologically distinguished and consequently are not recognized in Castroviejo & al. (1986). Both subspecies differ in chromosome number, as subsp. *vellea* is a tetraploid with  $2n=116$  chromosomes, while subsp. *bivalens* is a diploid with  $2n=58$ , and consequently spores are smaller in subsp. *bivalens* than in subsp. *vellea* (Badré & Reichstein, l.c: 365). Subsp. *bivalens* was known from Spain, where it is rather common in the Baetic mountains, and in the Canary Islands (Badré & Reichstein, l.c: 365, Rivas Martínez & Salvo, 1984: 196, Cabezudo & al. 2000: 107). Dobignard & Chatelain (2010: 41) gave Morocco with question mark for the distribution of subsp. *bivalens*. The plants from locality 28 (28.1009) have spores ranging from 40 to 65  $\mu$  ( $\bar{X} = 53,3 \mu$ ) as in subsp. *bivalens*, while the plants collected in localities 22, 23 and 49, with spore sizes of 60-75, 62,5-75, 62,5-75

$\mu$ , respectively, are to be placed in subsp. *vellea*. On spite of the taxonomic value of the diploid and tetraploid cytotypes of *Cosentinia vellea*, gathering 28.1009 confirms the presence of subsp. *bivalens* in Morocco, where it must occur in other localities.

B. Valdés & D. Melero

### *Polypodiaceae*

*Polypodium cambricum* L., *Sp. Pl.* 1086 (1753)

36.1235, 51.1737

### *Hypolepidaceae*

*Pteridium aquilinum* (L.) Kuhn in Kersten, *Reisen Ost-Afr.* 3 (3): 11 (1879)

27.947, 44.1512, 57.1851

### *Aspleniaceae*

*Asplenium adiantum - nigrum* L., *Sp. Pl.* 1081 (1753)

30.1083, 53.1770

*Asplenium ceterach* L., *Sp. Pl.* 1080 (1753)

*Ceterach officinarum* DC. in Lam & DC., *Fl. Franç.*, ed. 3, 2: 566 (1805)

subsp. *ceterach*

8.362, 12.540, 22.828, 23.842b, 60.2043, 63.2149

Note: The presence of this taxon in locality 22 expands its known distribution in Morocco to the "plateaux du Maroc oriental" (Op; see Fennane & al., 1999: 43, Fennane & Ibn Tattou, 2005: 12).

*Asplenium hispanicum* (Coss.) Greuter & Burdet in *Willdenowia* 10: 17 (1980)

*Pleurosorus hispanicus* (Coss.) C.V. Morton, *Bull. Soc. Bot. France* 106: 233 (1959)

12.528, 22.829, 23.842, 63.2159

Note: Fennane & al. (1999:46) and Fennane & Ibn Tattou (2005: 13) indicated this taxon for the High and Middle Atlas and the Rif. The presence of this species in locality 22 expands the known distribution of this species to the "plateaux du Maroc oriental" area (Op.)

*Asplenium onopteris* L., *Sp. Pl.* 1081 (1753)

57.1864

*Asplenium trichomanes* L., *Sp. Pl.* 1080 (1753)

subsp. *quadriavalens* D.E. Mey. in *Ber. Deutsch. Bot. Ges.* 74: 456 (1962)

29.1299, 53.1769, 63.2154

### *Woodsiaceae*

*Cystopteris dickieana* R. Sim, *Gard. Farmer's J.* 2: 308 (1848)

63.2161

Note: Recorded for the first time for N Africa by Salvo & al. (1992: 289) in the Rif Mountains (N Morocco), was not included in the *Flore Pratique du Maroc* (Fennane & al.,

1999). This species, well characterized, amongst other features, by its rugose spores, has been recorded in Morocco in the last decade in the Rif Mountains and High and Middle Atlas by Valdés & al. (2002), Dobignard (2002), Mateos & Valdés (2003) and Fennane & Ibn Tattou (2005).

*Cystopteris fragilis* (L.) Bernh. in *Neues J. Bot.* 1 (2): 27 (1805)

17.701, 29.1287b, 46.1594, 47.1612, 57.1866

*Athyrium filix-femina* (L.) Roth, *Tent. Fl. Germ* 3: 65 (1799)

46.1587

### *Dryopteridaceae*

*Dryopteris filix-mas* (L.) Schott, *Gen. Fil.*, tab. 9 (1834)

46.1589, 46.1592

*Polystichum aculeatum* (L.) Roth, *Tent. Fl. Germ.* 3: 79 (1799)

46.1595

*Polystichum setiferum* (Forssk.) Woynar in *Mitt. Naturwiss. Vereins Steirmark* 49: 181 (1913)

27.962, 57.1868

### Gymnospermae

#### *Pinaceae*

*Abies marocana* Trab. in *Bull. Soc. Bot. France* 53: 154 (1906)

\* 60.2063, 64.2228

*Cedrus libani* A. Richard in Bory, *Dict. Class. Hist. Nat.* 3: 299 (1823)

subsp. *atlantica* (Endl.) Batt. & Trabut, *Fl. Algérie Tunisie* 397 (1902)

*Cedrus atlantica* (Endl.) Carrière, *Traité Gen. Conif.* 285 (1855)

\*\* 14.575, 44.1519, 64.2206

*Pinus halepensis* Mill., *Gard. Dict.*, ed. 8, n. 8 (1768)

2.43, 38.1266

*Pinus nigra* Arnold, *Reise Mariazell* 8 (1785)

subsp. *mauretanica* (Maire & Peyeryimh.) Heywood in *Feddes Repert. Spec. Nov. Regni Veg.* 66: 150 (1962)

64.2213

#### *Cupressaceae*

*Juniperus oxycedrus* L., *Sp. Pl.* 1040 (1753)

subsp. *oxycedrus*

9.443, 26.917, 39.1342, 60.1988, 61.2110, 64.2223

*Juniperus phoenicea* L., *Sp. Pl.* 1040 (1753)

subsp. *phoenicea*

64.2247

*Tetraclinis articulata* (Vahl) Mast. in *J. Roy. Hort. Soc.* 14: 250 (1892)

3.79, 23.870, 25.881, 38.1268, 49.1653

### *Ephedraceae*

*Ephedra fragilis* Desf., *Fl. Atlant.* 2: 273 (1799)

subsp. *fragilis*

3.138, 49.1655

*Ephedra nebrodensis* Guss., *Fl. Sicul. Syn.* 2: 63 (1845)

subsp. *nebrodensis*

23.837, 64.2224

### *Taxaceae*

*Taxus baccata* L., *Sp. Pl.* 1040 (1753)

47.1631

## Angiospermae. Dicotyledoneae

### *Aristolochiaceae*

*Aristolochia baetica* L., *Sp. Pl.* 961 (1753)

52.1753

*Aristolochia paucinervis* Pomel in *Bull. Soc. Sci. Phys. Algérie* 11: 136 (1874)

10.458, 41.1399

### *Ranunculaceae*

*Adonis flammea* Jacq., *Fl. Austriac.* 4: 29 (1776)

9.448

*Adonis stivalis* L., *Sp. Pl.*, ed. 2: 771 (1762)

subsp. *squarrosa* (Steven) Nyman, *Consp. Fl. Eur.* 4 (1878)

7.325, 9.447

*Aquilegia vulgaris* L., *Sp. Pl.* 533 (1753)

subsp. *cossoniana* (Maire & Sennen) Dobignard in *Saussurea* 18: 77 (1987)

47.1607

*Clematis flammula* L., *Sp. Pl.* 544 (1753)

4.253, 34.1171, 39.1338, 41.1382, 52.1747, 62.2134

*Delphinium favargerii* Blanché, Molero & Simon in *Lagascalía* 19: 75 (1997)

2.46, 3.139

*Nigella damascena* L., *Sp. Pl.* 534 (1753)

62.2138

*Ranunculus bulbosus* L., *Sp. Pl.* 554 (1753)

18.735

subsp. *aleae* (Willk.) Rouy & Fouc., *Fl. France* 1: 106 (1893)

46.1603

*Ranunculus circinatus* Sibth., *Fl. Oxon.* 175 (1794)

17.680

*Ranunculus macrophyllus* Desf., *Fl. Atlant.* 1: 437 (1798)

42.1400, 48.1643

*Ranunculus ophioglossifolius* Vill., *Hist. Pl. Dauphiné* 3: 731, tab. 49 (1789)

42.1448, 58.1936

*Ranunculus paludosus* Poir., *Voy. Barbarie* 2: 184 (1789)

14.586

*Ranunculus parviflorus* L. in Loefl., *Iter Hispan.* 303 (1758)

26.925, 42.1447

*Ranunculus peltatus* Schrank, *Baier. Fl.* 2: 103 (1789)

58.1937

*Ranunculus spicatus* Desf., *Fl. Atlant.* 1: 438 (1798)subsp. *fontqueri* Romo in *Bot. J. Linn. Soc.* 108: 209 (1992)

\* 16.640, 29.1037

Note: Plants of gathering 16.640 from Middle Atlas fully agree with the characters given by Romo (1992) for *R. spicatus* subsp. *fontqueri*, including polyachene and achene sizes and strongly hooked rather coiled achene beak. Plants from the summit of Jbel Tazekka (29.1037), not far from the type locality (Bab Bouldir) have achenes with coiled beak, but polyachenes are longer and narrower and achenes smaller than in the typical material, which should bring these plants to subsp. *blepharicarpos* (Boiss.) Grau. Achenes with coiled beak also occur in some localities of subsp. *blepharicarpos* of S. Spain (by instance, Antequera, Malaga province, SEV 90473 and Rute, Cordoba province, SEV 56158).

*Ranunculus trilobus* Desf., *Fl. Atlant.* 1: 437 (1798)

42.1442

### *Berberidaceae*

*Berberis hispanica* Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 3 (1852)

9.438, 64.2226

### *Coriariaceae*

*Coriaria myrtifolia* L., *Sp. Pl.* 1037 (1753)

39.1347, 51.1684

Note: Not given in Fennane & al. (1999: 100) for “Moroc atlantic nord”, from where gather-

ing 51.1684 comes, this area was included in the distribution of this species by Fennane & Iben Tattou (2005: 164).

### ***Papaveraceae***

***Glaucium corniculatum*** (L.) J. H. Rudolf, *Fl. Jen.* 13 (1781)

subsp. ***corniculatum***

35.1212

***Papaver atlanticum*** (Ball) Coss., *Ill. Fl. Atlant.* 1: 11 (1882)

subsp. ***mesatlanticum*** (Maire) Kadereit in *Edinb. J. Bot.* 53 (3): 303 (1996)

*P. rupifragum* subsp. *atlanticum* var. *mesatlanticum* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 36: 86 (1945)

16.649

***Papaver dubium*** L., *Sp. Pl.* 1196 (1753)

9.435, 16.654

***Papaver rhoeas*** L., *Sp. Pl.* 507 (1753)

4.261, 7.318, 40.1356, 51.1669

***Roemeria hybrida*** (L.) DC. in *Ann. Bot. (Usteri)* 3: 15 (1792)

35.1206

### ***Fumariaceae***

***Fumaria capreolata*** L., *Sp. Pl.* 701 (1753)

27.952

***Fumaria macrosepala*** Boiss., *Elench. Pl. Nov.* 8 (1838)

63.2164

***Fumaria melillaica*** Pugsley in *J. Linn. Soc., Bot.* 50: 547 (1937)

43.1458b

***Fumaria ouezanensis*** Pugsley in *J. Linn. Soc. Bot.* 47: 442 (1927)

subsp. ***ramosa*** Lidén in *Opera Bot.* 88: 75 (1986)

\* 43.1473

***Fumaria parviflora*** Lam., *Encycl.* 2: 567 (1788)

35.1209

***Fumaria pugsleyana*** (Pugsley) Lidén in *Anales Jard. Bot. Madrid* 41: 222 (1984)

7.330, 9.442

***Fumaria rifana*** Lidén in *Opera Bot.* 88: 76 (1986)

\* 43.1458

***Fumaria rupestris*** Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 4 (1842)

subsp. ***calycina*** Lidén in *Opera Bot.* 88: 59 (1986)

10.474

*Fumaria segetalis* (Hammar) Cout., *Fl. Portugal* 246 (1913)

17.679

*Hypocoum pendulum* L., *Sp. Pl.* 124 (1753)

7.321, 19.754

*Rupicapnos africana* (Lam.) Pomel, *Nouv. Mat. Fl. Atl.* 240 (1874)

subsp. *mairei* (Pugsley) Maire in Jahand. & Maire, *Cat. Pl. Maroc* 2: 261 (1932)

\*\* 40.1364

Note: The presence of this subspecies in locality 40 (9 km from Taineste) expands to the Rif the distribution area given by Fennane & al. (1999: 112) and Fennane & Ibn Tattou (2005: 308): Middle Atlas and “Maroc atlantique nord” (Cheovia/Doukkala, Mulay-Idriss).

*Sarcocapnos crassifolia* (Desf.) DC., *Syst. Nat.* 2: 130 (1821)

subsp. *crassifolia*

17.683

### *Urticaceae*

*Parietaria mauritanica* Durieu in *Rev. Bot. Recueil Mens.* 2: 427 (1847)

22.817

*Urtica pilulifera* L., *Sp. Pl.* 983 (1753)

36.1234

### *Fagaceae*

*Quercus canariensis* Willd., *Enum. Pl.* 975 (1809)

*Q. faginea* subsp. *baetica* (Webb) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 22: 65 (1931)

4.254, 27.991, 57.1839

Note: One of the gatherings (57.1839, from Jbel Tizirane) shows in the adult leaves only very sparse appressed long simple hairs along the main nerve and some of the secondary nerves, once the floccose indument is lost. Gathering 4.254 expands the known distribution area of this species in Morocco to “moyen Atlas central” (see Fennane & Ibn Tattou 2005: 240).

*Quercus coccifera* L., *Sp. Pl.* 995 (1753)

25.884, 52.1754

*Quercus faginea* Lam., *Encycl.* 1: 719 (1785)

subsp. *tlemcenensis* (A. DC.) Greuter & Burdet in *Willdenowia* 12: 44 (1982)

\*\* 44.1523, 60.2024

*Quercus ilex* L., *Sp. Pl.* 995 (1753)

subsp. *ballota* (Desf.) Samp. in *Bol. Soc. Brot.* 24: 102 (1908-1909)

*Q. rotundifolia* Lam., *Encycl.* 1: 723 (1785)

*Q. ilex* subsp. *rotundifolia* (Lam.) Morais in *Bol. Soc. Brot.*, ser 2, 14: 122 (1940)

4.257, 4.260, 9.446, 26.937, 60.2020

*Quercus pyrenaica* Willd., *Sp. Pl.* 4: 451 (1805)

55.1819

*Quercus suber* L., *Sp. Pl.* 995 (1753)

1.12, 27.994, 42.1407

### *Betulaceae*

*Betula pendula* Roth., *Tent. Fl. Germ.* 1: 405 (1788)

subsp. *fontqueri* (Rothm.) G. Moreno & Peinado in *Anales Jard. Bot. Madrid* 45: 359 (1988)

*Betula fontqueri* Rothm. in *Bol. Soc. Brot.*, ser. 2, 14: 149 (1940)

46.1601

Note: This gathering, on account of the characters of the bracts and achenes, belongs to *Betula pendula* var. *fontqueri* (Roth) G. Moreno & Peinado in *Anales Jard. Bot. Madrid* 45: 359 (1988).

### *Aizoaceae*

*Aizoon hispanicum* L., *Sp. Pl.* 488 (1753)

19.787

### *Cactaceae*

*Opuntia ficus-barbarica* A. Berger in *Monatsschr. Kakteenk.* 22: 181 (1912)

*O. maxima* auct., non Mill., *Gard Dict.*, ed. 8, n. 5 (1768)

39.1332

### *Chenopodiaceae*

*Anabasis syriaca* Iljin in *Bot. Mater. Gerb. Inst. Komarova Akad. Nauk S.S.S.R.* 7: 215 (1938)

20.803

*Atriplex glauca* L., *Cent. Pl.* 1: 341 (1755)

19.777

*Chenopodium exsuccum* (C. Loscos) Uotila in *Ann. Bot. Fenn.* 16: 237 (1979)

*Blitum exsuccum* C. Loscos in F. Loscos, *Trat. Pl. Aragón*, Supl. 8: 106 (1886)

23.857

Note: This species was not indicated in Morocco by Fennane & al. (1999), neither by Fennane & Ibn Tattou (2005). This gathering confirms its presence in N Morocco, from where it was recorded in Valdés & al. (2002: 115).

*Chenopodium murale* L., *Sp. Pl.* 219 (1753)

28.1025

*Chenopodium opulifolium* W.D.J. Koch & Ziz, *Cat. Pl.* 6 (1814)



3.130, 42.1422

*Polycnemum fontanesii* Durieu & Moq. in A. DC., *Prodr.* 13(2): 335 (1849)

\*\* 6.280, 23.856, 64.2246

Note: Two of the gatherings (6.280, 23.856) belong to the typical *P. fontanesii*, which have dentate staminal ring, while the third (64.2246) without teeth in the staminal ring belongs to subsp. *maroccanum* Murb. in *Acta Univ. Lund*, ser. 2, 18 (3): 27 (1922). But the presence or absence of teeth in the staminal ring seems not to be constant and there are not other characters which could support the separation of two taxonomic units within this species.

### *Portulacaceae*

*Montia Fontana* L., *Sp. Pl.* 87 (1753)

subsp. *amporitana* Sennen in *Bull. Acad. Int. Géogr. Bot.* 21: 110 (1911)

44.1525, 58.1942

### *Caryophyllaceae*

*Agrostemma githago* L., *Sp. Pl.* 435 (1753)

44.1534

*Arenaria armerina* Bory in *Ann. Gen. Sci. Phys.* 3: 5 (1820)

subsp. *armerina*

18.718, 61.2083, 64.2179

*Arenaria cerastioides* Poir., *Voy. Barbarie* 2: 166 (1789)

subsp. *saxigena* (Humbert & Maire) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 29: 409 (1938)

\* 26.938

*Arenaria grandiflora* L., *Syst. Nat.*, ed. 10: 1034 (1759)

subsp. *gomarica* L. Sáez, J. M. Monts.-Martí & Rosello in *Folia Geobot. Phytotax.* 37: 341 (2002)

\* 64.2200

*Arenaria leptoclados* (Rchb.) Guss., *Fl. Sicul. Syn.* 2: 396 (1825)

4.240, 10.483, 26.932b

*Arenaria pomelii* Munby in *Bull. Soc. Bot. France* 11: 45 (1864)

29.1281

*Arenaria serpyllifolia* L., *Sp. Pl.* 423 (1753)

4.240c, 14.599c, 29.1046b, 29.1279, 29.1309c, 30.1071e, 39.1333, 60.2016

*Bufonia mauritanica* Murb. in *Acta Univ. Lund.*, ser. 2, 1 (4): 32 (1905)

*B. perennis* subsp. *mauritanica* (Murb.) Pau & Font Quer in Font Quer, *Iter Marocc.* 1927, n. 158 (1928), in sched.

\*\* 7.304, 10.481, 16.671, 23.859, 35.1216

*Cerastium arvense* L., *Sp. Pl.* 438 (1753)

subsp. *arvense*

45.1549

*Cerastium brachypetalum* Pers., *Syn. Pl.* 1: 520 (1805)

subsp. *brachypetalum*

4.228, 4.240b, 30.1075d, 29.1308c

subsp. *roeseri* (Boiss. & Heldr.) Nyman, *Consp. Fl. Eur.* 109 (1878)

10.488, 29.1293b, 47.1631b, 57.1825

*Cerastium gibraltarium* Boiss., *Elench. Pl. Nov.* 24 (1838)

8.376, 12.514, 14.583, 16.668, 57.1828, 64.2189

*Cerastium glomeratum* Thuill. *Fl. Paris*, ed. 2, 226 (1800)

43.1464, 58.1952, 58.1957

*Cerastium gracile* Dufour in *Ann. Gén. Sci. Phys.* 7: 304 (1821)

9.389

*Cerastium pumilum* Curtis, *Fl. Londin.* 2, tab. 92 (1795)

29.1046, 29.1309

*Cerastium ramosissimum* Boiss., *Elench. Pl. Nov.* 23 (1838)

*C. gracile* subsp. *ramosissimum* (Boiss.) Font Quer in *Collect. Bot. (Barcelona)* 2: 142 (1948)

14.599, 45.1548, 57.1832

*Cerastium semidecandrum* L., *Sp. Pl.* 438 (1753)

*C. balearicum* F. Hermann in *Verh. Bot. Vereins Prov. Brandenburgh* 511: 247 (1913)

*C. pentandrum* L., *Sp. Pl.* 438 (1753)

14.588

*Corrigiola telephiifolia* Pourr. in *Hist. & Mém. Acad. Roy. Sci. Toulouse* 3: 316 (1788)

13.555

*Dianthus lusitanus* Brot., *Fl. Lusit.* 2: 177 (1805)

39.1318

*Dianthus pungens* L., *Mant. Pl. Altera* 240 (1771)

subsp. *brachyanthus* (Boiss.) Bernal, Fern. Casas, G. López, Laínz & Muñoz Garm. in *Anales Jard. Bot. Madrid* 44: 180 (1987)

*D. brachyanthus* Boiss, *Voy. Bot. Espagne* 2: 85 (1839)

*D. subacaulis* subsp. *brachyanthus* (Boiss.) P. Fourn., *Quatre Fl. France* 331 (1936)

45.1552, 64.2180

*Dianthus sylvestris* Wulfen in Jacq., *Collectanea* 1: 237 (1787)

subsp. *boissieri* (Willk.) Dobignard in *J. Bot. Soc. Bot. France* 20: 37 (2002)

*D. sylvestris* subsp. *longicaulis* auct., non (Ten.) Greuter & Burdet in *Willdenowia* 12: 187 (1982)

**9.384, 40.1350, 61.2079, 64.2176**

subsp. *longibracteatus* (Maire) Greuter & Burdet in *Willdenowia* 12: 187 (1982)

\* **23.877**

*Herniaria boissieri* J. Gay in *Rev. Bot. Recueil Mens.* 2: 370 (1847)

subsp. *maroccana* (Font Quer) Chavdhri in *Meded. Bot. Mus. Herb. Rijks Univ. Utrecht* 285: 367 (1968)

\* **45.1551**

*Herniaria cinerea* DC. in Lam. & DC., *Fl. Franç.*, ed. 3, 5: 375 (1815)

*H. hirsuta* subsp. *cinerea* (DC.) Cout., *Fl. Portugal.* 202 (1913)

**4.192, 23.861**

*Herniaria fontanesii* Gay in *Rev. Bot. Recueil Mens.* 2: 371 (1847)

subsp. *almeriana* Brummitt & Heywood in *Feddes Repert. Spec. Nov. Regni Veg.* 69: 31 (1964)

**7.294**

subsp. *fontanesii*

**19.781**

*Herniaria permixta* Guss., *Fl. Sicul. Syn.* 1: 292 (1843)

**47.1632, 57.1834**

*Loeflingia baetica* Lag., *Periód. Soc. Méd. Quir. Cádiz* 4(1): 5 (1824)

subsp. *vaucheri* (Briq.) A. Galán, Molina Abril & Sard. Rosc. in *Anales Jard. Bot. Madrid* 51: 301 (1994)

\* **1.2**

*Minuartia hybrida* (Vill.) Siskin in Komarov, *Fl. USSR* 6: 488 (1936)

subsp. *hybrida*

**4.245, 14.599b, 26.932, 60.2039, 63.2169b**

*Minuartia tenuissima* (Pomel) Mattf. in *Repert. Spec. Nov. Regni Veg. Beih.* 15: 103 (1922)

subsp. *tenuissima*

\*\* **18.718b**

*Minuartia verna* (L.) Hiern. in *J. Bot.* 37: 320 (1899)

subsp. *kabylica* (Pomel) Maire & Weiller in Maire, *Fl. Afrique N.* 9: 272 (1963)

\*\* **8.372**

*Moehringia pentandra* Gay in *Ann. Sci. Nat. (Paris)* 26: 230 (1832)

*M. trinervia* subsp. *pentandra* (J. Gay) Nyman, *Consp. Fl. Eur.* 112 (1878)

**4.237, 44.1533, 60.1998**

*Paronychia argentea* Lam, *Fl. Franç.* 3: 230, 1779

1.1, 3.137, 4.255, 7.297, 19.783, 23.862

*Paronychia capitata* (L.) Lam., *Fl. Franç.* 3: 229 (1779)

subsp. *capitata*

35.1220, 61.2079

*Paronychia echinulata* Chater in *Feddes Repert. Spec. Nov. Regni Veg.* 69: 52 (1964)

1.3, 43.1502, 52.1762

*Paronychia maroccana* Chaudhri in *Meded. Bot. Mus. Herb. Rijks Univ. Utrecht* 285: 261 (1968)

\* 65.2280, 64.2185

*Petrorhagia dubia* (Raf.) G. López & Romo in *Anales Jard. Bot. Madrid* 45: 363 (1988)

*P. velutina* (Guss.) P. W. Ball & Heywood in *Bull. Brit. Mus. (Nat. Hist.), Bot.* 3: 166 (1964)

27.990

Note: As indicated by López & Romo (1988: 363), *Dianthus dubius* Raf., the basionym of *Petrorhagia dubia* (Raf.) G. López & Romo, has priority over *Dianthus velutinus* Guss., the basionym of *Petrorhagia velutina* (Guss.) P.W. Ball & Heywood. This has however been overdue in Fennane & al. (1999: 249) and Fennane & Iben Tattou (2005: 123).

*Petrorhagia illyrica* (Ard.) P.W. Ball & Heywood in *Bull. Brit. Mus. (Nat. Hist.), Bot.* 3: 133 (1964)

subsp. *angustifolia* (Poir.) P.W. Ball & Heywood in *Bull. Brit. Mus. (Nat. Hist.), Bot.* 3: 136 (1964)

*Tunica illyrica* subsp. *angustifolia* (Poir.) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 30: 365 (1939)

32.1108, 58.1949

*Petrorhagia manteuilii* (Burnat) P.W. Ball & Heywood in *Bull. Brit. Mus. (Nat. Hist.), Bot.* 3: 164 (1964)

1.5, 4.224, 64.2192

*Polycarpon tetraphyllum* (L.) L., *Syst. Nat.*, ed. 10: 881 (1759)

subsp. *tetraphyllum*

23.860, 23.863, 27.978, 43.1500, 52.1755, 58.1945

*Rhodalsine geniculata* (Poir.) F. N. Williams in *Bull. Herb. Boissier* 6: 7 (1898)

*Minuartia geniculata* (Poir.) Thell. in *Mém. Soc. Sci. Nat. Cherbourg* 38: 232 (1912)

19.788

*Sagina apetala* Ard., *Animadv. Bot. Specim. Alt.* 22 (1764)

30.1071

*Sagina saginoides* (L.) Karsten, *Deutsche Fl.* 539 (1882)

*Spergella saginoides* (L.) Rchb., *Fl. Germ. Excurs.* 794 (1832)

46.1596

Note: Flower pedicels of these plants are particularly thin (0,2 – 0,3 m) and long (15 – 17 times longer than sepals).

***Scleranthus polycarpus*** L., *Cent. Pl.* 2: 216 (1756)

*S. annuus* subsp. *polycarpus* (L.) Thell. in Schinz, *Fl. Schweiz*, ed. 3: 109 (1914)

29.1049, 44.1529, 57.1846

***Silene abietum*** Font Quer & Maire in *Collect. Bot. (Barcelona)* 2: 199 (1949)

\* 61.2082

***Silene andryalifolia*** Pomel, *Nouv. Mat. Fl. Atl.* 2: 331-332 (1875)

*S. pseudovelutina* Rothm. in *Feddes Repert. Spec. Nov. Regni Veg.* 52: 282 (1943)

26.942

***Silene coelirosa*** (L.) Godron in Gren. & Godron, *Fl. France* 1: 221 (1847)

4.256, 12.500

***Silene colorata*** Poir., *Voy. Barbarie* 2: 163 (1789)

28.1028, 30.1062, 33.1125, 60.2026, 61.2109

***Silene cuatrecasasii*** Pau & Font Quer in Font Quer, *Iter Marocc.* 1927, n. 190 (1928), nom. in sched.

\* 45.1553, 57.1907, 61.2097

***Silene gallica*** L., *Sp. Pl.* 417 (1753)

27.987, 30.1077b, 42.1415, 43.1463

***Silene ibosii*** Emb. & Maire in *Mem. Soc. Sci. Nat. Maroc* 17: 22 (1928)

\* 35.1218, 39.1337, 43.1461

***Silene inaperta*** L., *Sp. Pl.* 419 (1753)

subsp. *inaperta*

3.132, 57.1907

***Silene imbricata*** Desf., *Fl. Atlant.* 1: 349, tab. 98 (1798)

\*\* 4.232, 12.516

***Silene laeta*** (Aiton) Godron in *Mém. Soc. Roy. Sci. Nancy* 1846: 174 (1847)

42.1420, 58.1964

***Silene latifolia*** Poir., *Voy. Barbarie* 2: 165 (1789)

subsp. *latifolia*

29.1044

***Silene martyi*** Emb. & Maire in *Pl. Rif. Nov.* 1: 3 (1927); *Mém. Soc. Sci. Nat. Maroc* 17: 20 (1928)

\* 39.1316, 41.1398

***Silene mekinensis*** Coss., *Ill. Fl. Atlant.* 1: 144 (1891)

\* 12.523

***Silene muscipula*** L., *Sp. Pl.* 420 (1753)

subsp. *muscipula*

20.804, 37.1260

*Silene patula* Desf., *Fl. Atlant.* 1: 356 (1798)

subsp. *patula*

12.509, 30.1077b

*Silene pomeli* Batt. in *Bull. Soc. Bot. France* 38: 219 (1891)

\*\* 28.999

*Silene portensis* L., *Sp. Pl.* 420 (1753)

subsp. *maura* Emb. & Maire in *Mém. Soc. Sci. Nat. Maroc* 15: 14 (1927)

\* 1.4

*Silene rosulata* Soy.-Will. & Godr. in Bory & Durieu, *Expl. Sci. Algérie, Atlas*, tab. 82 (1849)

subsp. *reeseana* (Maire) Jeanm. in *Willdenowia* 14: 47 (1984)

\* 64.2193

*Silene virescens* Coss., *Ill. Fl. Atlant.* 1: 143, tab. 92 (1890)

\* 16.663

*Silene vulgaris* (Moench) Garke, *Fl. N. Mitt.-Deutschland*, ed. 9: 64 (1869)

subsp. *vulgaris*

9.386, 19.785, 42.1413, 35.1214

*Spergula pentandra* L., *Sp. Pl.* 440 (1753)

45.1556

*Spergularia purpurea* (Pers.) G. Don f., *Gen. Hist.* 1: 425 (1831)

42.1405

*Stellaria alsine* Grimm in *Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur.* 3, App. 313 (1767)

48.1641

*Stellaria holostea* L., *Sp. Pl.* 422 (1753)

30.1066

*Stellaria media* (L.) Vill., *Hist. Pl. Dauphiné* 3: 415 (1788)

47.1628

*Stellaria pallida* (Dumort.) Piré in *Bull. Soc. Roy. Bot. Belgique* 2: 49 (1863)

26.922

*Telephium imperati* L., *Sp. Pl.* 271 (1753)

7.300, 64.2184

*Vaccaria hispanica* (Mill.) Rauschert in *Wiss. Z. Martin-Luther-Univ. Halle-Wittenberg, Mat. Naturwiss. Reihe* 14: 496 (1965)

subsp. *grandiflora* (Ser.) J. Holub in *Folia Geobot. Phytotax. Bohem.* 11: 83 (1976)

## 32.1100

Note: As indicated in Castroviejo & al. (1990: 420) the taxonomic value of this subspecies is very doubtful, as specimens with long petals with claws exceeding calyx sporadically occur in most populations. Accepted by Greuter & al. (1984: 288), Fennane & al. (1999: 255) and Fennane & Ibn Tattou (2005: 139), is included in the synonymy of subsp. *hispanica* by Dobignard & Chatelain (2011b: 291).

subsp. *hispanica*

7.298

*Velezia rigida* L., *Sp. Pl.* 332 (1753)

10.480, 60.1991, 61.2118

***Polygonaceae***

*Fallopia convolvulus* (L.) Å. Löve in *Taxon* 19: 300 (1970)

42.1408, 43.1492

*Polygonum aviculare* L., *Sp. Pl.* 362 (1753)

43.1493

*Rumex acetosella* L., *Sp. Pl.* 338 (1753)

subsp. *angiocarpus* (Murb.) Murb. in *Bot. Not.* 1899: 41 (1899)

29.1278, 29.1312, 58.1843

*Rumex bucephalophorus* L., *Sp. Pl.* 336 (1753)

subsp. *aegeus* Rechb. f. in *Bot. Not.* 139: 495 (1939)

10.487, 14.596, 27.995, 43.1502b

*Rumex intermedius* DC. in Lam & DC., *Fl. Franç.*, ed. 3, 5: 369 (1815)

44.1515

*Rumex papilio* Coss. & Balansa in *Bull. Soc. Bot. France* 20: 260 (1874)

\* 3.88, 28.1000

*Rumex pulcher* L., *Sp. Pl.* 336 (1753)

54.1803

*Rumex thyrsoides* Desf., *Fl. Atlant.* 1: 321 (1798)

10.485

***Plumbaginaceae***

*Armeria alpinifolia* Pau & Font Quer in Font Quer, *Iter Marocc.* 1927, n. 473 (1928), nom. in sched.

\* 45.1558

*Armeria ebracteata* Pomel in *Bull. Soc. Sci. Phys. Algérie* 11: 135 (1874)

\*\* 29.1298

*Limonium echioides* (L.) Mill., *Gard. Dict.*, ed. 8, n. 11 (1768)

\*\* 49.1649

***Limonium lobatum*** (L. f.) Chaz., *Suppl. Dict. Jard.* 2: 36 (1790)

*L. thouinii* (Viv.) Kuntze, *Revis. Gen. Pl.* 1: 396 (1891)

2.64, 2.65, 3.133

***Plumbago europea*** L., *Sp. Pl.* 151 (1753)

28.1026

### ***Paeoniaceae***

***Paeonia coriacea*** Boiss., *Elench Pl. Nov.* 7 (1838)

*P. mascula* subsp. *coriacea* (Boiss.) Malagarriga, *Sin. Fl. Iber.* 369 (1975)

12.498, 57.1842, 60.2004

### ***Guttiferae (Clusiaceae)***

***Hypericum humifusum*** L., *Sp. Pl.* 785 (1753)

58.1968

***Hypericum montanum*** L., *Fl. Suec.*, ed. 2: 266 (1755)

12.505, 27.992

***Hypericum perforatum*** L., *Syst. Nat.*, ed. 12, 2: 510 (1767)

52.1758, 54.1814

***Hypericum perforatum*** L. *Sp. Pl.* 785 (1753)

subsp. ***veronense*** (Schrank) H. Lindb. in *Oefvers. Förh. Finska Vetensk.-Soc.* 48: 73 (1906)

*H. perforatum* subsp. *angustifolium* (DC.) A. Fröhl in *Sitzber. Akad. Wiss. Wien. Math.-Nat. Kl.* 120(1): 534 (1911)

27.996, 36.1239

***Hypericum tomentosum*** L., *Sp. Pl.* 786 (1753)

subsp. ***tomentosum***

36.124, 51.1727

subsp. ***wallianum*** Maire in *Bull. Soc. Hist. Nat. Afrique N.* 27: 79 (1936)

\* 28.1016

Note: This subspecies differs from subsp. *tomentosum* by the lack of stipitate glands in the sepal margins and by its shorter indument. This gathering, collected in the area of Jbel Tazekka, expands to the Middle Atlas the distribution area of this taxon described from Rich (Maire & Wilczek, 1936: 79) and so far only known from the High Atlas.

### ***Malvaceae***

***Althaea longiflora*** Boiss. & Reut. in *Biblioth. Universelle Genève, ser.* 2, 38: 201 (1842)

4.220

***Malope malacoides*** L., *Sp. Pl.* 692 (1753)

subsp. ***stipulacea*** (Cav.) Maire in *Jahand. & Maire, Cat. Pl. Maroc* 2: 477 (1932)

64.2175



*Malva hispanica* L., *Sp. Pl.* 689 (1753)

2.62, 3.131, 13.558, 25.891, 51.1725, 54.1799

Note: Gathering 13.558 has puberulent mericaps. Gathering 25.891 has hairy staminal tube, with lax stiff simple hairs, which also occurs in some populations in the Iberian Peninsula.

*Malva lusitanica* (L.) Valdés in *Willdenowia* 41: 319 (2011)

*Lavatera triloba* L., *Sp. Pl.* 691 (1753)

*Lavatera flava* Desf., *Fl. Atlan.* 2: 119 (1798)

*L. lusitanica* L. *Sp. Pl.* 691 (1753)

*Malva flava* (Desf.) Alef. in *Oesterr. Bot. Z.* 12: 258 (1862)

subsp. **lusitanica**

*Lavatera triloba* L. *Sp. Pl.* 691 (1753) subsp. *triloba*

*L. flava* var. *purpurea* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 22: 37 (1931)

36.1245

Note: Following Fernandes (1967, 1993), *Malva flava* (Desf.) Alef. is considered co-specific with *Malva lusitanica* (L.) Valdés (*L. triloba* L.). Indeed there are no reasons to maintain two separate species. In the Iberian Peninsula all plants have pink-purplish flowers, while in NW Africa there are populations with pink-purplish and with yellow flowers (*Lavatera triloba* f. *flava* (Desf.) R. Fernandes in *Feddes. Reperit.* 74: 19, 1967). Gathering 36.1245 with pink-purplish flowers belong to var. *lusitanica* (*Lavatera flava* var. *purpurea* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 22: 37, 1931) which clearly differs from the plants from the Iberian Peninsula with very distinct big fasciculate and pedicellate hairs which constitute a separate variety: **Malva lusitanica** var. **hispanica** (R. Fern.) Valdés, **comb. nova** (basionym: *Lavatera triloba* var. *hispanica* R. Fernández in *Feddes Reperit.* 74: 19, 1967), which, so far, has not been recorded in Africa.

An older Linnaean name for *Malva lusitanica* could be *Lavatera micans* L. (*Sp. Pl.* 69, 1753) combined under *Malva* by Alefeld (in *Oesterr. Bot. Z.* 12: 259, 1862). But as demonstrated by Fernandes (1968: 435-437) this is a misleading synonym of *Lavatera triloba* (see also Jarvis 2007: 617), as it can be applied both to *L. triloba* L. and *L. maritima* Gouan.

*Malva neglecta* Wallr., *Syll. Pl. Nov.* 1: 140 (1824)

*M. rotundifolia* L., *Sp. Pl.* 688 (1753), p.p.

16.665

*Malva nicaeensis* All., *Fl. Pedem.* 2: 40 (1785)

7.292

*Malva subovata* (DC.) Molero & J. M. Monts. Martí in *Fontqueria* 55(38): 288 (2005)

subsp. **rupestris** (Pomel) Molero & J. M. Monts. Martí in *Lagascalía* 26: 153 (2006)

*Lavatera maritima* subsp. *rupestris* (Pomel) Greuter & Burdet in *Willdenowia* 12: 198 (1982)

• 23.858

*Malva tournefortiana* L., *Cent. Pl.* 1: 21 (1755)

10.486, 57.1840

*Malva trimestris* (L.) Salisb., *Prodr. Stirp. Chap. Allerton* 381 (1796)

*Lavatera trimestris* L., *Sp. Pl.* 692 (1753)

54.1800

### *Cistaceae*

*Cistus albidus* L., *Sp. Pl.* 524 (1753)

35.1181, 51.1722

*Cistus clusii* Dunal in CD., *Prodr.* 1: 266 (1824)

subsp. *clusii*

24.880

*Cistus creticus* L., *Syst. Nat.*, ed. 10: 1077 (1759)

12.508

*Cistus crispus* L., *Sp. Pl.* 524 (1753)

52.1764, 58.1981

*Cistus ladanifer* L., *Sp. Pl.* 523 (1753)

subsp. *mauritanus* Pau & Sennen in Sennen, *Diagn. Nouv.* 178 (1936)

*C. ladanifer* subsp. *africanus* Dans. in *Mém. Soc. Bot. France* 32: 7 (1951)

42.1409

Note: Dansereau (1951: 7) reised to subspecific level *Cistus ladanifer* var. *petiolatus* Maire, which represent *C. ladaniferus* in N Africa, characterized mainly by its petiolate leaves (Maire, 1924: 74). But at subspecific level *C. ladanifer* subsp. *mauritanus* Pau & Sennen (in Sennen, 1936: 178) has priority. Fennane & al. (1999: 305), Castroviejo & al. (1999: 330), Greuter & al. (1984: 316) and Fennane & Ibn Tattou (2005: 150) still used the name *C. ladaniferus* subsp. *africanus*, while Valdés & al. (2002: 199), Dobignard (2009: 21) and Dobignard & Chatelain (2011b: 299) correctly used the name *C. ladanifer* subsp. *mauritanus* for this taxon, which also occurs in some points of S. Spain (Serranía de Ronda, Castroviejo & al. 1999: 330).

*Cistus laurifolius* L., *Sp. Pl.* 523 (1753)

subsp. *atlanticus* (Pit.) Sennen & Mauricio, *Diagn. Nouv.* 178 (1936) [*Cat. Fl. Rif Orient.* 12 (1937)]

\* 15.618, 43.1419, 44.1514

*Cistus monspeliensis* L., *Sp. Pl.* 524 (1753)

51.1717

*Cistus salvifolius* L., *Sp. Pl.* 524 (1753)

25.894, 27.968c, 60.2012

*Fumana fontanesii* Pomel, *Mat. Fl. Atl.* 10 (1860)

*Pomelina fontanesii* (Pomel) Güemes & Raynaud in *Nat. Monspel., sér. Bot.* 56: 164 (1992)

38.1267

*Fumana laevipes* (L.), Spach in *Ann. Sci. Nat., Bot., sér 2*, 6: 359 (1836)

22.833, 49.1645

*Fumana laevis* (Cav.) Pau in *Bol. Soc. Esp. Hist. Nat.* 1: 209 (1901)

38.1273

*Halimium atlanticum* Humbert & Maire in *Mém. Soc. Sci. Nat. Maroc* 15: 10 (1927)

\* 29.1280, 42.1455

*Halimium atriplicifolium* (Lam.) Samp. in *Ann. Sci. Nat., Bot., sér. 2*, 6: 366 (1836)

subsp. *macrocalycinum* (Pau) Greuter & Burdet in *Willdenowia* 11: 275 (1981)

\* 61.2087

*Halimium lasiocalycinum* (Boiss. & Reut.) Engl. & Pax in Engl. & Drude, *Veg. Erde* 9(3.2): 534 (1921)

subsp. *rhiphaeum* (Pau & Font Quer) Maire in *Cavanillesia* 2: 47 (1929)

\* 42.1410, 44.1511

*Helianthemum apenninum* (L.) Mill., *Gard. Dict.*, ed. 8, n. 4 (1768)

23.849, 35.1182

*Helianthemum cinereum* (Cav.) Pers., *Syn. Pl.* 2: 76 (1806)

subsp. *rotundifolium* (Dunal) Greuter & Burdet in *Willdenowia* 11: 275 (1981)

*H. cinereum* subsp. *rubellum* (Fiori) Maire in *Cavanillesia* 3: 50 (1930)

12.532, 14.587, 45.1581, 57.1876, 60.1996, 60.2034, 64.2220

*Helianthemum croceum* (Desf.) Pers., *Syn. Pl.* 2: 79 (1806)

6.275, 7.313, 14.590, 29.1303, 54.1570, 57.1831, 57.1867, 64.2204

Note: A very polymorphic taxon, particularly in relation to flower color and the indument of the leaves and calyx. In most gatherings (6.275, 7.313, 14.590, 29.1303, 54.1570, 57.1831 and 57.1867) the upper surface of leaves is more or less laxely covered by irregular stellate hairs which may be reduced to two or three branches, while in gathering 64.2204 the indument is formed by dense regular stellate hairs.

*Helianthemum helianthemoides* (Desf.) Grosser in Engl., *Pflanzenr.* 14: 87 (1903)

● 32.1098

*Helianthemum ledifolium* (L.) Mill, *Gard. Dict.*, ed. 8, n. 20 (1768)

2.73

*Helianthemum syriacum* (Jacq.) Dum. Cours., *Bot. Cult.* 3: 129 (1802)

subsp. *thibaudi* (Pers.) Meikle in *Israel J. Bot.* 19: 253 (1970)

38.1275

*Helianthemum violaceum* (Cav.) Pers., *Syn. Pl.* 2: 78 (1806)

subsp. *subobtusatum* (Maire) I. Soriano in *Lagascalìa* 18: 240 (1996)

*H. pilosum* subsp. *subobtusatum* (Maire) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 26: 189 (1935)

● 7.317, 9.403

Note: Although Fennane & al. (1999: 45) and Fennane & Ibn Tattou (2005: 157) use *H. pilosum* (L.) Pers. as it has traditionally been done, the reasons given by López (1992) are clear enough to consider this name a latter homonym of *H. pilosum* Mill. The correct name for this W Mediterranean species is *H. violaceum* (Cav.) Pers., as adopted in Castroviejo & al. (1993: 377), Valdés & al. (2002: 207) and by Dobignard & Chatelain (2011b: 326). It is represented in Morocco by subsp. *obtusatum* (Maire) I. Soriano. Both gatherings expand the known distribution area of this taxon in Morocco to the Middle Atlas (see Fennane & al. 1999: 157, Fennane & Ibn Tattou 2005: 321).

*Tuberaria guttata* (L.) Fourr. in *Ann. Soc. Linn. Lyon, nov. ser.* 16: 340 (1868)

1.29, 52.1760, 13.559

*Tuberaria lignosa* (Sweet) Samp. in *Bol. Soc. Brot., ser. 2*, 1: 128 (1922)

*Xolantha tuberosa* (L.) Gallego, Muñoz Garm. & Navarro in Castroviejo & al., *Fl. iber.* 3: 353 (1993)

27.959, 57.1836

*Tuberaria macrosepala* (Boiss.) Willk., *Icon. Descr. Pl. Nov.* 2: 80 (1859)

*Xolantha macrosepala* (Boiss.) Gallego, Muñoz Garm. & C. Navarro in S. Castroviejo & al., *Fl. iber.* 3: 362 (1993)

27.984, 29.1302

### *Violaceae*

*Viola kitaibeliana* Schult. in Roem. & Schult., *Syst. Veg.* 5: 383 (1819)

10.479

Note: This gathering expands to the Middle Atlas the known distribution area of this species in Morocco (see Fennane & al. 1999: 327, Fennane & Ibn Tattou 2005: 396).

*Viola maroccana* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 23: 168 (1932)

\* 12.534

*Viola munbyana* Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 15 (1852)

29.1296, 45.1562, 57.1889

*Viola palustris* L., *Sp. Pl.* 934 (1753)

46.1600

*Viola parvula* Tineo, *Pl. Rar. Sic. Pugill.* 5 (1817)

45.1576

*Viola reichenbachiana* Boreau, *Fl. Centre France*, ed. 3, 2: 78 (1857)

47.1616, 57.1887, 60.2009

### *Cucurbitaceae*

*Citrullus colocynthis* (L.) Schrad. in *Linnaea* 12: 414 (1838)

19.802

*Salicaceae**Populus alba* L., *Sp. Pl.* 1034 (1753)

36.1222

*Populus nigra* L., *Sp. Pl.* 1034 (1753)

7.327

*Salix atrocinerea* Brot., *Fl. Lusit.* 1: 31 (1804)*S. cinerea* subsp. *atrocinerea* (Brot.) Guinier, *Atl. Arb.* 9, n. 29: 2 (1912)

51.1734, 46.1598, 36.1224, 36.1246, 42.1445

*Salix pedicellata* Desf., *Fl. Atlant.* 2: 362 (1799)

65.2279

*Salix purpurea* L., *Sp. Pl.* 1017 (1753)

36.1229, 36.1226, 40.1359

*Capparaceae**Capparis spinosa* L., *Sp. Pl.* 503 (1753)subsp. *rupestris* (Sibth. & Sm.) Nyman, *Consp. Fl. Eur.* 68 (1878)*C. orientalis* Veil. in Duhamel, *Traité Arbr. Arbust.*, ed. 2, 1: 142 (1801)

22.832, 28.998

*Cleome amblyocarpa* Barrate & Murb. in *Acta Univ. Lund*, ser. 2, 1(4): 25 (1905)

6.272

*Cleome violacea* L., *Sp. Pl.* 672 (1753)

39.1321

*Cruciferae (Brassicaceae)**Alyssum alyssoides* (L.) L., *Syst. Nat.*, ed. 10, 2: 1130 (1759)

64.2212

*Alyssum atlanticum* Desf., *Fl. Atlant.* 2: 70 (1798)

16.675, 45.1565, 57.1850

Note: Plants of gathering n. 16.675 have stellate hairs and long stiff simple or bifurcate hairs, particularly in the leaf-margins.

*Alysum granatense* Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 9 (1852)

4.204b, 9.400

*Alysum linifolium* Willd., *Sp. Pl.* 3: 467 (1800)

9.398

*Alyssum serpyllifolium* Desf., *Fl. Atlant.* 2: 70 (1798)

*A. alpestre* subsp. *serpyllifolium* (Desf.) Rouy & Foucaud, *Fl. France* 2: 176 (1895)

61.2077b, 64.2218

*Alyssum simplex* Rudolphi in *J. Bot. (Schader)* 1799(2): 290 (1799)

3.91, 9.409, 61.2077

*Arabidopsis thaliana* (L.) Heynh in Holl & Heynh, *Fl. Sachsen* 538 (1842)

14.595, 29.1310, 30.1075b, 30.1271c, 57.1865

*Arabis alpina* (L.), *Sp. Pl.* 664 (1753)

subsp. *caucasica* (Willd.) Briq., *Prodr. Fl. Corse* 2 (1): 48 (1913)

17.716, 29.1313, 60.2027

Note: The material collected, both in Middle Atlas (17.716, 29.1313) and the Rif (60.2027), unambiguously belong to subsp. *caucasica*.

*Arabis josiae* Jahand. & Maire in *Bull. Soc. Hist. Nat. Afrique N.* 14: 66 (1923)

\* 10.468, 29.1306, 60.2037

*Arabis nova* Vill., *Prosp. Hist. Pl. Dauphiné* 39 (1779)

subsp. *iberica* Bolòs & Vigo, *Fl. Països Catalans* 2: 827 (1990)

45.1581b, 64.2198

*Arabis parvula* Dufour, *Syst. Nat.* 2: 228 (1821)

17.715, 45.1582

*Arabis pubescens* (Desf.) Poir. in Lam., *Encycl., Suppl.* 1: 413 (1811)

subsp. *leucanthemifolia* (Pau & Font Quer) Maire, *Fl. Afrique N.* 13: 326 (1967)

\* 45.1580

subsp. *pubescens*

\*\* 4.195, 12.522, 30.1074

*Arabis verna* (L.) R. Br. in W. T. Aiton, *Hort. Kew.*, ed. 2, 4: 105 (1812)

26.938b

*Biscutella atlantica* (Maire) Greuter & Burdet in *Willdenowia* 13: 86 (1983)

*B. sempervirens* auct., non L., *Mant. Pl. Altera* 255 (1771)

*B. laevigata* subsp. *atlantica* (Maire) Maire, *Fl. Afrique N.* 13: 147 (1967)

64.2211

*Biscutella baetica* Boiss. & Reut. in Boiss., *Diagn. Pl. Orient.*, ser. 2, 1: 42 (1854)

*B. didyma* auct., non L., *Sp. Pl.* 653 (1753)

58.1974

Note: *Biscutella* ser. *Lyratae* Malin. is represented in Morocco by two species: *B. didyma* L. and *B. baetica* Boiss. & Reut., characterized by their unwinged stamen filaments. As clearly indicated by Dobignard & Chatelain (2011b: 60) and in a way by Fennane & al. (1999: 403) and Fennane & Ibn Tattou (2005: 71), *B. lyrata* L. (= *B. microcarpa* DC.) with four stamens with winged filaments, does not exist in Morocco; it is endemic of S Spain (Castroviejo & al. 1993: 296). *B. didyma* L., which is frequent in C and E Mediterranean, is common all around Morocco, and most references of *B. baetica* Boiss. & Reut. in Valdés & al. (2002: 259) have to be referred to this species. It has dense fruiting inflorescences with fruits with

erecto-patent or erect pedicels which are normally not longer than twice the length of the silicules and basal leaves are usually lyrate. *B. baetica* Boiss. & Reut., which substitutes *B. didyma* in Spain, differs from *B. didyma* mainly by its lax fruiting racemes and fruits with patent or erecto-patent pedicels which are two to three and a half times longer than silicules, its basal leaves are oblanceolate and regularly dentate, and silicules are smaller (3-4 x 6-8 mm) than in *B. didyma* (3,5-6,2 x 7-10,5 mm). Out of almost one hundred gatherings of *Biscutella* sect. *Lyratae* from Morocco kept in the Herbarium of the University of Sevilla (SEV), only 12 belong to *B. baetica*, all from N Morocco; all the other, from Tanger in the Nord to Anti-Atlas in the south, belong to *B. didyma*.

*Biscutella didyma* L., *Sp. Pl.* 653 (1753)

*B. microcarpa* auct., non DC. in *Ann. Mus. Natl. Hist. Nat.* 18: 298 (1811)

1.32, 2.69, 4.209, 13.560, 26.945, 39.1314, 51.1710

*Biscutella frutescens* Coss., *Not. Pl. Crit.* 27 (1849)

12.513

*Brassica fruticulosa* Cirillo, *Pl. Rar. Neapol.* 2: 7 (1792)

subsp. *cossoniana* (Boiss. & Reut.) Maire in *Mém. Soc. Sci. Nat. Maroc* 17: 26 (1928)

6.271

Note: This gathering confirms the presence of this species in the “plaines et plateaux du Maroc oriental”, from where it had already been recorded by Dobignard (2009: 24).

*Capsella bursa-pastoris* (L.) Medicus, *Pflanzengatt.* 85 (1792)

1.26, 4.197, 10.477, 29.1305b

*Cardamine hirsuta* L., *Sp. Pl.* 655 (1753)

12.519, 29.1307

*Carrichtera annua* (L.) DC. in *Mém. Mus. Hist. Nat.* 7: 250 (1821)

3.110

*Coincya monensis* (L.) Greuter & Burdet in *Willdenowia* 13: 87 (1983)

29.1047, 29.1286, 45.1577

*Cordylocarpus muricatus* Desf., *Fl. Atlant.* 2: 79 (1798)

19.768

*Crambe filiformis* Jacq., *Icon. Pl. Rar.* 3, tab. 504 (1794)

36.1223

*Diploaxis tenuisiliqua* Delile, *Index Sem. Hort. Monsp.* 1847: 7 (1847)

\*\* 2.63, 3.101

*Draba hispanica* Boiss., *Elench. Pl. Nov.* 13 (1838)

subsp. *hispanica*

64.2219

*Erophila verna* (L.) Chevall., *Fl. Gén. Env. Paris* 2: 898 (1827)

subsp. *praecox* (Steven) Walters in *Feddes Repert. Spec. Nov. Regni Veg.* 69: 57 (1964)

*E. praecox* (Steven) DC., *Syst. Nat.* 2: 237 (1821)

**30.1071b**

*Eruca vesicaria* (L.) Cav., *Descr. Pl.* 426 (1802)

subsp. *sativa* (Mill.) Thell. in Hegi, *Ill. Fl. Mitt.-Eur.* 4: 201 (1918)

*E. sativa* Mill., *Gard. Dict.* ed. 8, n. 1 (1768)

**5.263, 7.307, 7.335**

*Erucastrum leucanthum* Coss. & Durieu in *Bull. Soc. Bot. France* 2: 307 (1855)

\*\* 7.311

*Erucastrum littoreum* (Pau & Font Quer) Maire in *Cavanillesia* 2: 46 (1969)

\* 39.1336

*Erucastrum* cf. *varium* (Durieu) Durieu in Bory & Durieu, *Expl. Sci. Algérie, Atlas*, tab. 75 (1849)

• 19.766, 43.1503

*Erysimum gramineum* Pomel, *Nouv. Mat. Fl. Atl.* 2: 371 (1875)

\*\* 9.434, 14.581, 16.664

*Erysimum incanum* Kunze in *Flora* 29: 753 (1846)

subsp. *incanum*

**61.2108**

subsp. *mairei* (Sennen & Mauricio) Nieto Fel. in *Anales Jard. Bot. Madrid* 47:278 (1990)

**9.393**

*Erysimum nervosum* Pomel, *Nouv. Mat. Fl. Atl.* 370 (1875)

\*\* 64.2217

*Guenthera repanda* (Willd.) Gómez Campo in *Anales Jard. Bot. Madrid* 60: 304 (2003)

*Brassica repanda* (Willd.) DC., *Syst. Nat.* 2: 598 (1800)

**18.738**

subsp. *confusa* (Emb. & Maire) Gómez Campo in *Anales Jard. Bot. Madrid* 60: 305 (2003)

*Brassica repanda* subsp. *confusa* (Emb. & Maire) Heywood in *Feddes Repert. Spec. Nov. Regni Veg.* 66: 153 (1962)

**9.430**

*Hirschfeldia incana* (L.) Lagr.-Foss., *Fl. Tarn Garonne* 19 (1847)

**2.67, 4.180**

*Hormatophylla spinosa* (L.) P. K pfer in *Boissiera* 23: 208 (1974)

*Alyssum spinosum* L., *Sp. Pl.* 650 (1753)

*Ptilotrichum spinosum* (L.) Boiss., *Voy. Bot. Espagne* 2: 46 (1839)

**8.375, 45.1571**

*Hornungia petraea* (L.) Rechb., *Deutschl. Fl.* 1: 33 (1837)

subsp. *petraea*



8.380

*Iberis carnosa* Willd., *Sp. Pl.* 3: 455 (1800)subsp. *rhomarensis* (J.M. Monts.-Martí) Valdés & M. A. Mateos in *Lagascalia* 29: 218 (2009)*I. lagascana* subsp. *rhomarensis* J.M. Monts.-Martí in *Lagascalia* 18: 244 (1996).

\* 64.2209, 60.2021

subsp. *senneniana* (Pau) Dobignard in *J. Bot. Soc. Bot. France* 46-47: 27 (2009)

\* 45.1575

*Isatis djurdjurae* Coss. & Durieu in *Bull. Soc. Bot. France* 4: 523 (1857)

\*\* 45.1568, 57.1859, 64.2215

*Jonopsidium prolongoi* (Boiss.) Batt. in *Bull. Soc. Bot. France* 43: 259 (1896)

60.1992, 61.2111, 64.2202

*Lepidium heterophyllum* Benth., *Cat. Pl. Pyrénées* 95 (1826)subsp. *riphanum* (Emb. & Maire) J.M. Monts.-Martí in *Lagascalia* 18: 241 (1996)

\* 57.1827

*Lepidium hirtum* (L.) Sm., *Comp. Fl. Brit.*, ed. 2: 98 (1816)subsp. *afrum* (Pau & Font Quer) J.M. Monts.-Martí in *Lagascalia* 18 (2): 243 (1996)*L. hirtum* var. *afrum* (Pau & Font Quer) Font Quer in *Mem. Acad. Ci. Barcelona* 22(18): 14 (1931)

\* 61.2111b, 64.2214

Note: Although it is not recognized by Dobignard & Chatelain (2011b: 124), and only at varietal level under subsp. *dhayense* (Murb.) Thell. by Dobignard (2009: 29), this subspecies, endemic of the Rif mountains (Montserrat 1996: 242, Valdés & al. 2002: 258, Fennane & Ibn Tattou 2005: 89), clearly differs from subsp. *dhayense*, which occurs in Morocco in the Rif Mountains and High & Middle Atlas (Montserrat l. c., Fennane & Ibn Tattou l. c.). In the Rifian plants collected (both gatherings)<sup>1</sup> silicules, of 5'4-7'3 x 3-5 mm and densely haired with hairs somewhat flexuose, almost wooly, have the wing 1-2'2 mm wide in the apical side, the notch not deeper than 0'4 mm and the style measures from 1'4 to 2'7 mm. In the material of subsp. *dhayense* collected during *Iter V* (4.204, 12.525), silicules measure 6'8-8'4 x 4-5'5 mm, the indument is quite laxer than in the Rifian plants, with stiff and straight hairs, the wing of the silicules is quite wider in the apical side (2'5-3'5 mm), the apical notch deeper (0'5-1 mm) and the style somewhat shorter (1-1'7 mm).

subsp. *dhayense* (Munby) Thell. in *Viertel. Naturf. Ges. Zürich* 51: 153 (1906)

\*\* 4.204, 12.525

*Lobularia maritima* (L.) Desv. in *J. Bot. Agric.* 3: 162 (1815)subsp. *maritima*

28.1011

<sup>1</sup> As well as in plants from Jbel Lakraa (SEV 156506); Jbel Tasaot (SEV 218705); Jbel Lexhab (SEV 154884) and Jbel Talavssise (SEV 156505).

***Malcolmia africana*** (L.) R. Br. in Aiton, *Hort. Kew.*, ed. 2, 4: 121 (1812)

7.323

***Malcolmia triloba*** (L.) Spreng., *Syst. Veg.* 2: 899 (1829)

*M. lacera* auct., non (L.) DC., *Syst. Nat.* 2: 445 (1821)

subsp. ***broussonetii*** (DC.) Díez-Garretas & Asensi in *Lazaroa* 23: 119 (2002)

*M. lacera* subsp. *broussonetii* (DC.) Greuter & Burdet in *Willdenowia* 13: 94 (1983)

*M. patula* subsp. *broussonetii* (DC.) Maire in Jahand. & Maire, *Cat. Pl. Maroc* 2: 309 (1932)

\* 1.34

Note: As indicated by López (1986: 320), *Cheilanthus lacerus* L. does not belong to genus *Malcolmia* and it cannot be used as basionym for this species, as it has traditionally been done. The correct name for this species is *Malcolmia triloba* (L.) Spreng., as adopted in Castroviejo & al. (1998: 82), Valdés & al. (2002: 252) and by Dobignard & Chatelain (2011 b: 131).

***Mathiola fruticulosa*** (L.) Maire in Jahand. & Maire, *Cat. Pl. Maroc* 2: 311 (1932)

subsp. ***fruticulosa***

9.440, 34.1174, 35.1193, 37.1259

***Mathiola lunata*** DC., *Syst. Nat.* 2: 176 (1821)

17.774

***Mathiola parviflora*** (Schousb.) R. Br. in W.T. Aiton, *Hort. Kew.*, ed. 2, 4: 120 (1812)

3.92

***Neslia paniculata*** (L.) Desv. in *J. Bot. Agric.* 3: 162 (1815)

subsp. ***thracica*** (Velen.) Bornm. in *Oesterr. Bot. Z.* 44: 125 (1894)

*N. apiculata* Fisch., C.A. Mey. & Avé-Llall., *Index Sem. Hort. Petrop.* 8: 68 (1842)

32.1095

***Notoceras bicornis*** (Aiton) Amo, *Fl. Fan. Penins. Ibér.* 6: 536 (1873)

20.814

***Psychine stylosa*** Desf., *Fl. Atlant.* 2: 36 (1798)

● 19.771, 34.1166

***Raffenaldia primuloides*** Godron in *Mém. Acad. Sci. Montpellier, Sect. Méd.* 1: 413 (1853)

\*\* 14.579, 16.694

***Raphanus raphanistrum*** L., *Sp. Pl.* 669 (1753)

subsp. ***raphanistrum***

6.290 bis, 7.334, 13.567

***Rorippa nasturtium-aquaticum*** (L.) Hayek, *Sched. Fl. Stiriac.*, n. 170 (1905), nom. in sched.; *Sched. Fl. Stiriac.* 3-4: 22 (1905)

*Nasturtium officinale* R. Br. in W.T. Aiton, *Hort. Kew.*, ed. 2, 4: 110 (1812)

36.1225

***Sinapis alba*** L., *Sp. Pl.* 668 (1753)subsp. ***mairei*** (H. Lindb. f.) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 24: 197 (1933)

34.1151

Note: Indicated by Fennane & Ibn Tattou (2005: 97) for the “Maroc atlantique nord” and “Maroc atlantique moyen”, this gathering expands to the Rif the known distribution area of this subspecies in Morocco.

***Sisymbrium crassifolium*** Cav., *Descr. Pl.* 437 (1802)

9.445

***Sisymbrium erysimoides*** Desf., *Fl. Atlant.* 2: 84 (1798)

28.1006

***Sisymbrium irio*** L., *Sp. Pl.* 659 (1753)

7.316

***Sisymbrium officinale*** (L.) Scop., *Fl. Carniol.*, ed. 2, 2: 26 (1772)

10.471

***Sisymbrium runcinatum*** DC., *Syst. Nat.* 2: 478 (1821)

5.567

***Teesdalia nudicaulis*** (L.) R. Br. in W.T. Aiton, *Hort. Kew.*, ed. 2, 4: 83 (1812)

57.1863

***Thlaspi perfoliatum*** L., *Sp. Pl.* 646 (1753)

30.1075c

subsp. ***perfoliatum***

9. 395

subsp. ***tineoi*** (Paol.) Maire in *Jahand. & Maire, Cat. Pl. Maroc* 2: 273 (1932)

14.592, 29.1305, 45.1578

***Resedaceae******Reseda alba*** L., *Sp. Pl.* 449 (1753)subsp. ***myriosperma*** (Murb.) Maire in *Jahand. & Maire, Cat. Pl. Maroc* 2: 315 (1932)

*R. alba* L. subsp. ***tricuspis*** (Coss.) Maire in *Jahand. & Maire, Cat. Pl. Maroc* 2: 315 (1932)

\*\* 3.105

***Reseda lanceolata*** Lag., *Elench. Pl.* 17 (1816)subsp. ***constricta*** (Lange) Valdés Berm. in Castroviejo & al., *Fl. iber.* 4: 464 (1993)

35.1187

Note: Not recognized by Fennane & Ibn Tattou (2005: 336), the characters indicated in Castroviejo & al (1993: 464) and Valdés & al. (2002: 267) clearly separate this subspecies from the typical *R. lanceolata*. It is endemic of Morocco and southern Spain.

***Reseda lutea*** L., *Sp. Pl.* 449 (1753)

subsp. *lutea*

3.105b, 7.328

*Reseda luteola* L., *Sp. Pl.* 448 (1753)

subsp. *biaui* (Pit.) Maire in Jahand. & Maire, *Cat. Pl. Maroc* 2: 318 (1932)

\* 4.176

subsp. *luteola*

9.426, 27.953

*Reseda phyteuma* L., *Sp. Pl.* 449 (1753)

subsp. *phyteuma*

4.173, 35.1190

*Sesamoides purpurascens* (L.) G. López in *Anales Jard. Bot. Madrid* 42: 321 (1986)

*Astrocarpus sesamoides* subsp. *purpurascens* (L.) Rouy & Fouc., *Fl. France* 2: 253 (1895)

16.669, 27.965, 45.1573

Note: The plants from the three localities have linear cauline leaves and oblanceolate to spatulate rosette leaves. They all belong to the typical *Sesamoides purpurascens*, presumably the only species of *Sesamoides* represented in Morocco, as accepted by Fennane & Ibn Tattou (2005: 337).

### *Ericaceae*

*Erica arborea* L., *Sp. Pl.* 353 (1753)

42.1441

*Arbutus unedo* L., *Sp. Pl.* 395 (1753)

42.1451

### *Primulaceae*

*Anagallis arvensis* L., *Sp. Pl.* 148 (1753)

19.765, 23.850, 25.882b, 43.1502c, 51.1712

*Anagallis crassifolia* Thore, *Essai Chloris* 62 (1803)

58.1971

*Anagallis foemina* Mill., *Gard. Dict.*, ed. 8, n. 2 (1768)

*A. arvensis* subsp. *caerulea* (Schreb.) Hartm., *Sv. Norsk Exc.-Fl.* 32 (1846)

2.75, 23.850, 34.1167, 51.1712

*Anagallis monelli* L., *Sp. Pl.* 148 (1753)

subsp. *collina* (Schousb.) H. Lindb. in *Acta Soc. Sci. Fenn., Ser. B, Opera Biol.* 1(2): 115 (1932)

4.198, 7.331, 18.742, 53.1782

Note: All plants collected during the *Iter* have red flowers and belong to *A. monelli* subsp. *collina* (Schousb.) Maire, based on *A. collina* Schousb, described as having "Laciniae co-

rolla... phoenicea basi purpurea” (Schousboe, 1800: 78). Their leaves are ovate-lanceolate or ovate, except in gathering 7.33 which has linear or narrowly elliptical leaves. This subspecies must not be synonymized to subsp. *monelli* as in Valdés & al. (2002: 274) and Fenane & al. (1999: 456), nor to subsp. *linifolia* (L.) Maire, both with very doubtful taxonomic value.

*Androsace maxima* L., *Sp. Pl.* 141 (1753)

9.444, 16.673, 64.2195

*Astenolinon linum-stellatum* (L.) Duby in DC., *Prodr.* 8: 68 (1844)

27.989

*Primula acaulis* (L.) L., *Fl. Angl.* 12 (1754)

subsp. *atlantica* (Maire & Wilczek) Greuter & Burdet in *Willdenowia* 19: 42 (1989)

\*\* 46. 1599, 47.1618, 60.2013

*Samolus valerandi* L., *Sp. Pl.* 171 (1753)

39.1328

### *Crassulaceae*

*Pistorinia breviflora* Boiss., *Elench. Pl. Nov.* 42 (1838)

subsp. *breviflora*

1.42b, 4.248, 10.492, 13.562

*Sedum acre* L., *Sp. Pl.* 432 (1753)

*S. acre* subsp. *negletum* (Ten.) Arcangeli, *Comp. Fl. Ital.* 245 (1882)

17.677, 64.2206

*Sedum album* L., *Sp. Pl.* 4330 (1753)

2.835, 45.1566, 57.1844, 58.1982

*Sedum amplexicaule* DC. in *Mém. Agric. Soc. Agric. Dép. Seine* 11: 12 (1808)

subsp. *tenuifolium* (Sm.) Greuter in *Willdenowia* 11: 277 (1981)

*S. tenuifolium* (Sm.) Strobl. in *Oesterr. Bot.* 2. 34: 295 (1884)

16.648

*Sedum brevifolium* DC. in *Nouv. Bull. Sci. Soc. Philom. Paris* 1: 117 (1808)

47.1622

*Sedum dasyphyllum* L., *Sp. Pl.* 431 (1753)

17.681, 26.918, 36.1249, 43.1484, 45.1551b

*Sedum forsterianum* Sm. in Sowerby, *Engl. Bot.*, tab. 1802 (1807)

27.993, 41.1426, 43.1494, 57.835, 60.2019

*Sedum gypsicola* Boiss. & Reut. in *Biblioth. Universelle Genève*, ser. 2, 38: 205 (1842)

12.521, 14.594, 26.916, 60.2035

*Sedum jaccardianum* Maire & Wilczek in *Bull. Soc. Hist. Nat. Afrique N.* 16: 31 (1925)

\* 16.644

Note: The plants collected fully agree with the description by Maire (in Braun-Blanquet & Maire 1925: 31, Maire 1976: 318) as they have stems, leaves, inflorescence axis and pedicels glandular-pubescent and not only the inflorescence axis as indicated in Fennane & al. (1999: 469).

***Sedum maireanum*** Sennen, *Diagn. Nouv.* 190 (1936)

*S. villosum* subsp. *aristatum* (Emb. & Maire) M. Lainz in *Anales Inst. Forest. invest.* 1967: 31 (1968)

44.1521, 45.1541, 57.1838

***Sedum modestum*** Ball in *J. Bot.* 11: 333 (1873)

\* 26.913

***Sedum mucizonia*** (Ortega) Raym.-Hamet in *Candollea* 4: 39 (1929)

subsp. *mucizonia*

*Mucizonia hispida* A. Berger in Engl. & Prantl, *Nat. Pflanzenfam.*, ed. 2, 18(a): 420 (1930)

10.490, 26.920, 63.2146

***Sedum rubens*** L., *Sp. Pl.* 432 (1753)

4.248b, 10.491, 26.919, 62.2141

***Sedum sediforme*** (Jacq.) Pau in *Actas Mem. Prim. Congr. Nat. Esp. Zaragoza* 246 (1909)

23.864, 25.901, 28.1005, 39.1320

***Umbilicus gaditanus*** Boiss., *Diagn. Pl. Orient.*, ser. 1, 6: 58 (1846)

29.1039

***Umbilicus rupestris*** (Salisb.) Dandy in Ridd. & al., *Fl. Gloucestershire* 611 (1948)

10.489, 26.923, 40.1355, 57.1849, 63.2144

### ***Saxifragaceae***

***Saxifraga globulifera*** Desf., *Fl. Atlant.* 1: 342, t. 96, fig. 1 (1798)

10.456b, 10.504, 17.691, 26.943, 29.1277, 46.1593, 60.2033, 63.2162, 64.2182

***Saxifraga granulata*** L., *Sp. Pl.* 403 (1753)

16.670, 29.1304, 64.2182b

***Saxifraga tricrenata*** Pau & Font Quer in Font Quer, *Iter Maroc.* 1928, n. 156 (1929), nom. in sched.

\* 45.1544, 45.1545, 60.1990, 61.2116, 64.2188

***Saxifraga wernerii*** Font Quer & Pau in *Cavanillesia* 4: 29 (1931)

\* 64.2182c

### ***Grossulariaceae***

***Ribes uva-crispa*** L., *Sp. Pl.* 201 (1753)

8.366

**Rosaceae*****Agrimonia eupatoria*** L., *Sp. Pl.* 448 (1753)

51.1729, 52.1752

***Aphanes cornucopioides*** Lag., *Elench. Pl.* 7 (1816)

4.207, 14.607, 60.2030

Note: In Middle Atlas it was known only in Tazekka (MA-1 in Fennane & Ibn Tattou, 2005: 341). Gatherings 4.207 and 14.607 expands its presence to central Middle Atlas.

***Aphanes floribunda*** (Murb.) Rothm. in *Repert. Spec. Nov. Regni Veg.* 42: 172 (1937)

26.930, 27.986, 29.1283, 30.1065

***Crataegus granatensis*** Boiss., *Elench. Pl. Nov.* 41 (1838)

14.604, 35.1189

Note: Ibn Tattou & Fennane (2009: 342) indicated this species for the High and Middle Atlas and in Valdés & al. (2002: 294) is not given for N Morocco. Gathering 35.1189, from Boured (Aknowl region), confirms the presence of this species in the Rif mountains, from where it was already recorded by Dobignard (2009: 35), who also indicated this species in the Beni-Snassen mountains.

***Crataegus laciniata*** Ucria in *Nuova Racc. Opusc. Aut. Sicil.* 6: 251 (1793)*C. orientalis* subsp. *presliana* K.L. Chr. in *Syst. Bot. Monogr.* 35: 44 (1992)

14.611, 60.2008

***Crataegus monogyna*** Jacq., *Fl. Austriac.* 3: 50 (1775)

4.216, 52.1761

***Geum sylvaticum*** Pourr. in *Hist. & Mém. Acad. Roy. Sci. Toulouse* 3: 319 (1788)*G. atlanticum* Desf., *Fl. Atlant.* 1: 402 (1798)

14.597, 44.1509, 57.1860

***Geum urbanum*** L., *Sp. Pl.* 501 (1753)

47.4611, 60.2041

***Potentilla maura*** Wolf in *Biblioth. Bot.* 71: 437 (1908)

\* 17.706

***Potentilla micrantha*** DC. in Lam. & DC., *Fl. Franç.*, ed. 3, 4: 468 (1805)

29.1282, 30.1082, 44.1508, 46.1586, 57.1852

***Potentilla recta*** L., *Sp. Pl.* 497 (1753)

12.527

***Potentilla reptans*** L., *Sp. Pl.* 499 (1753)

7.310, 9.397, 51.1730

***Prunus lusitanica*** L. *Sp. Pl.* 473 (1753)

47.1613

***Prunus mahaleb*** L., *Sp. Pl.* 472 (1753)

26.929

*Prunus prostrata* Labill., *Icon. Pl. Syr.* 1: 15. t. 6 (1791)

17.697, 45.1579, 64.2268

*Rosa andegavensis* Bastard, *Essai Fl. Maire et Loire* 189 (1809)

51.1687

*Rosa agrestis* Savi, *Fl. Pis.* 1: 475-476 (1798)

35.1202

*Rosa corymbifera* Borkh., *Vers. Forsbot. Besch.* 319-320 (1790)*R. canina* subsp. *dumetorum* (Thuill.) Fr., *Novit. Fl. Suec.* 6(2): 102 (1823)

60.2048

*Rosa micrantha* Sm., *Engl. Bot.* 35, t. 2490 (1812)

46.1584

*Rosa sempervirens* L., *Sp. Pl.* 492 (1753)

40.1352, 52.1748

*Rosa sicula* Tratt., *Rosac. Monogr.* 2: 86 (1823)

7.293, 60.2023

*Rubus ulmifolius* Schott in *Isis (Oken)* 2(5): 821 (1818)

39.1326

*Sanguisorba ancistroides* (Desf.) Ces., *Stirp. Ital. Rar.* 2, in pag. Ad tab. S. dodecandrae (1842)

8.373

*Sanguisorba verrucosa* (G. Don) Ces., *Stirp. Ital. Rar.* 2 (1842)*S. minor* subsp. *magnolii* (Spach) Briq., *Prodr. Fl. Corse* 2(1): 209 (1913)

4.163, 16.637

*Sorbus aria* (L.) Crantz, *Stirp. Austr. Fasc.* 2: 46 (1763)*S. aria* subsp. *meridionalis* (Guss.) Kerner, *Fl. Exs. Austr.-Hung.* n. 2447 (1896)

46.1591, 64.2187

**Caesalpinaceae***Ceratonia siliqua* L., *Sp. Pl.* 1026 (1753)

51.1732

**Papilionaceae (Fabaceae)***Adenocarpus boudyi* Batt. & Maire in *Bull. Stat. Rech. Forest. N. Afrique* 1: 214 (1921)

\* 15.620

*Adenocarpus complicatus* (L.) J. Gay in Durieu, *Pl. Hisp.-Lusit., Sect. I, Astur.* n. 350 (1836)subsp. *nainii* (Maire) P.E. Gibbs in *Bol. Soc. Brot., ser. 2*, 41: 92 (1967)



\* 27.963

*Adenocarpus decorticans* Boiss., *Notice Abies Pinsapo* 9 (1838)

29.1290

*Anthyllis cytisoides* L., *Sp. Pl.* 720 (1753)

38.1265

*Anthyllis polycephala* Desf., *Fl. Atlant.* 2: 150-151, tab. 195 (1798)

40.1368, 60.2059, 64.2197

*Anthyllis tejedensis* Boiss. in *Biblioth. Universelle Genève*, ser. 2, 13: 408 (1838)

subsp. *tejedensis*

61.2100

*Anthyllis vulneraria* L. *Sp. Pl.* 719 (1753)

subsp. *fatmae* Font Quer in *Mém. Acad. Ci. Barcelona* 22(18): 16-17 (1931)

\* 64.2277

subsp. *maura* (G. Beck) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 20: 20 (1929)

4.229, 60.2015

subsp. *reuteri* Cullen in *Watsonia* 6: 389 (1968)

35.1185, 41.1395, 64.2174

subsp. *saharae* (Sagorski) Jahand. & Maire, *Cat. Pl. Maroc* 2: 396 (1932)

\*\* 16.657

*Argyrocytisus battandieri* (Maire) C. Raynaud in *Bull. Soc. Bot. France* 121: 360 (1975)

\* 11.495, 57.1847

*Argyrololium zanonii* (Turra) P.W. Ball in *Feddes Repert.* 79: 41 (1968)

subsp. *zanonii*

4.201, 35.1186

*Astragalus armatus* Willd., *Sp. Pl.* 3: 1330 (1802)

subsp. *numidicus* (Murb.) Tietz in *Mitt. Bol. Staatssamml. München* 27: 251 (1988)

7.314, 34.1150, 64.2203

*Astragalus caprinus* L., *Sp. Pl.*, ed. 2, 2: 1071 (1763)

subsp. *caprinus*

16.667

*Astragalus cymbaecarpus* Brot., *Phytogr. Lusit. Select.* 63 (1800)

54.1807

*Astragalus echinatus* Murray, *Prodr. Stirp. Gott.* 222 (1770)

35.1201, 54.1811

*Astragalus epiglottis* L., *Sp. Pl.* 759 (1753)

4.168, 51.1726

Note: Plants of gathering 51.1726 with very short peduncles belongs to subsp. *epiglottis*,

while those of gathering 4.168, with long peduncles, belongs to subsp. *asperulus* (Dufour) Nyman, *Consp. Fl. Eur.* 196 (1878) (*A. ephippium* Pomel in *Bull. Soc. Sci. Phys. Algérie* 11: 183, 1874, *A. epiglottis* var. *longipes* Lange in *Vidensk. Meddel. Dansk Naturhist. Foren Kjøbenhavn* 1865: 179, 1965). But as indicated in Castroviejo & al. (1999: 292) these names correspond to two extremes of a wide peduncle length variability, which makes unappropriate to recognize taxonomic groups based on this character.

*Astragalus glaux* L., *Sp. Pl.* 759 (1753)

4.158, 32.1102

Note: Plants from both gatherings have scarce black hairs on calyx-teeth.

*Astragalus hamosus* L., *Sp. Pl.* 758 (1753)

1.41

*Astragalus incanus* L., *Syst. Nat.*, ed. 10: 1175 (1759)

subsp. *incurvus* (Desf.) Chater in *Feddes Repert.* 79: 51 (1968)

\*\* 9.408, 33.1120

Note: Plants of gatherings 9.408, with leaflets widely elliptic, obtuse and mucronate, and legumes c. 20 mm and purple-spotted belong to subsp. *incurvus*. This gathering expands the known distribution area of this subspecies in Morocco to the High Atlas.

subsp. *nummularioides* (Desf.) Maire in *Jahand. & Maire, Cat. Pl. Maroc* 2: 414 (1932)

64.2196

Note: The plants of this gathering, collected in Jbel Talassemthane, were attributed by Mateos & Valdés (2010a: 53) to *A. fontianus* Maire. But these plants, with fruits of 18-19 x 7,5-8,5 mm, fully agree with the material of *A. incanus* subsp. *nummularioides* (Desf.) Maire studied from different localities, both in Morocco and the Iberian Peninsula. *A. fontianus* was described by Maire (1949: 134) with plants collected by Font Quer in Jbel Lakrâa (= Jbel Leekhab) at about 2.100 m (Font Quer, *Iter Moroccanum* 1930, n. 356, 1932, as *A. incanus* subsp. *nummularioides*; BC 97.983; one duplicate in Montpellier, MPU 4723, chosen as lectotype by Dobignard 2009: 35). The plants of *Iter Moroccanum* n. 356 differ from *A. incanus* subsp. *nummularioides* by their bigger fruits (of (17-) 19-23 x 10-13 mm in the material in BC, two sheets studied) and as in this subspecies, fruit valves are very thick (1-1,5 mm). Plants from Jbel Lakrâa, collected between 1800 and 2100 m (SEV 155791) have even bigger fruits (22,5-27 x c. 12 mm). Although *A. fontianus*, which is recognised as a separate species by Raynaud & Sauvage (1975: 174), Dobignard (1009: 35 and Dobignard & Chatelain (2012: 28), may represent an extreme variant of *A. incanus* subsp. *nummularioides*, they are distinct enough to be separated at subspecific level within *A. incanus* and not to be taken as a mere synonym of this species as it has been considered by Fennane & Ibn Tattou (2005: 190) and Fennane & al. (2007: 76). Consequently, the following new combination is proposed for this endemic taxon of the high altitudes of Jbel Lakrâa: *A. incanus* subsp. *fontianus* (Maire) Valdés, **comb. nova** (basionym: *A. fontianus* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 39: 134, (1949).

*Astragalus sesameus* L., *Sp. Pl.* 759 (1753)

4.151, 14.600, 32.1110, 34.1159

*Astragalus stella* Gouan, *Ill. Observ. Bot.* 50 (1773)

7.312

*Bituminaria bituminosa* (L.) C.H. Stirt. in *Bothalia* 13: 318 (1981)

*Psoralea bituminosa* L., *Sp. Pl.* 763 (1753)

3.113, 23.855, 51.1733

*Calicotome intermedia* C. Presl in *Abh. Königl. Böhm. Ges. Wiss.*, ser. 5, 3: 481 (1845)

25.887

*Colutea atlantica* Browicz in *Monogr. Bot.* 14: 127 (1963)

\* 35.1203

*Coronilla minima* L., *Cent. Pl.* 2: 28 (1756)

subsp. *minima*

9.401

Note: This gathering confirms the presence of this subspecies in Morocco, indicated by Jahandiez & Maire (1932: 419, as var. *eu-minima*) for the Middle Atlas, High Atlas and SW Morocco.

*Coronilla pentaphylla* (Desf.) Batt. in Batt. & Trabut, *Fl. Algérie* 1: 285 (1889)

*C. valentina* subsp. *pentaphylla* Desf., *Fl. Atlant.* 2: 17 (1799)

12.511

*Coronilla scorpioides* (L.) Koch, *Syn. Fl. Germ. Helv.* 188 (1835)

4.212, 19.749, 23.1129

*Coronilla valentina* L., *Sp. Pl.* 742 (1753)

subsp. *glauca* (L.) Batt. in Batt. & Trab., *Fl. Algérie* 1: 285 (1889)

52.1742

*Coronilla viminalis* Salisb., *Parad. Lond.*, tab. 13 (1800)

28.1021

*Cytisus balansae* (Boiss.) Ball in *J. Bot.* 11: 303 (1873)

subsp. *balansae*

\*\* 9.417, 18.726

*Cytisus fontanesii* Ball in *J. Linn. Soc. Bot.* 16: 405 (1878)

subsp. *fontanesii*

7.296, 60.2061

*Cytisus grandiflorus* (Brot.) DC., *Prodr.* 2: 154 (1825)

subsp. *haplophyllus* (Maire & Sennen) Maire & Jahand. & Maire, *Cat. Pl. Maroc* 2: 365 (1932)

\* 42.1428

*Cytisus maurus* Humbert & Maire in *Mém. Soc. Sci. Nat. Maroc* 15: 21 (1927)

*C. scoparius* subsp. *maurus* (Humbert & Maire) Talavera in *Anales Jard. Bot. Madrid* 57: 212 (1999)

\* 27.977b, 29.1289

*Cytisus striatus* (Hill) Rothm. in *Feddes Repert. Spec. Nov. Regni Veg.* 53: 149 (1944)  
43.1481

*Cytisus villosus* Pourr. in *Hist. & Mém. Acad. Roy. Sci. Toulousse* 3: 317 (1788)

*C. triflorus* L'Hér., *Stirp. Nov.* 184 (1791), non Lam., *Encycl.* 2(1): 250 (1786)

27.977

*Dorycnium rectum* (L.) Ser. in DC., *Prodr.* 2: 208 (1825)

51.1735

*Ebenus pinnata* Aiton, *Hort. Kew.* 3: 27 (1789)

38.1263

*Erinacea anthyllis* Link, *Handbuch* 2: 156 (1831)

subsp. *anthyllis*

18.731, 64.2178

*Erophaca baetica* (L.) Boiss., *Voy. Bot. Espagne.* 2: 177 (1840)

subsp. *baetica*

*Astragalus lusitanicus* Lam., *Encycl.* 1: 312 (1783) subsp. *lusitanicus*

42.1416

*Genista cephalantha* Spach in *Ann. Sci. Nat., Bot., sér.* 3, 2: 254 (1844)

\*\* 61.2067

*Genista clavata* Poir. in Lam., *Encycl., Suppl.* 2: 717 (1812)

\* 54.1810

*Genista pseudopilosa* Coss., *Notes Pl. Crit.* 102 (1851)

16.662, 18.720

*Genista quadriflora* Munby in *Bull. Soc. Bot. France* 2: 283 (1855)

\*\* 10.473, 57.1826

Note: Fennane & Ibn Tattou (2005: 201) and Dobignard & Chatelain (2012: 68) consider *G. moleroi* Talavera & Gibbs synonym of *G. quadriflora* Munby. But, among other characters, in *G. moleroi* the stems have 10 ribs instead of 12 and the calyx is bigger (4'5-6 mm in *G. moleroi* and 3'5-4 mm in *G. quadriflora*). So far, *G. moleroi* only occurs in N Morocco, while *G. quadriflora* covers a wider area: NW Algeria and Rifian and Atlas Mountains.

*Genista tournefortii* Spach in *Ann. Sci. Nat. Bot., ser.* 3, 2: 269 (1844)

subsp. *jahandiezii* (Batt.) Talavera & Gibbs in *Lagascalia* 18: 271 (1996)

\* 14.601

Note: This subspecies, endemic of Morocco, is vicariant with subsp. *tournefortii*, endemic of the Iberian Peninsula.

*Genista tricuspidata* Desf., *Fl. Atlant.* 2: 138 (1798)

23.854

*Hedysarum boveanum* Basiner in *Mém. Acad. Imp. Sci., St-Pétersbourg Divers Savants* 6: 50, 64 (1846)

subsp. *europaeum* Guitt. & Kerguélen in *Bull. Soc. Échange Pl. Vasc. Eur. Occid. Bassin Médit.* 23: 81 (1991)

*H. humile* auct., non L. in Loeffl., *Iter Hispan.* 293 (1758)

9.402

Note: This gathering confirms the presence of this taxon in the High Atlas (see Fennane & Ibn Tattou, 2005: 203)

*Hedysarum glomeratum* F.G. Dietr. *Vollst. Lex. Gärtn.* 4: 534 (1804)

*H. spinosissimum* subsp. *capitatum* (Desf.) Aschers. & Graebn., *Syn. Mitteleur. Fl.* 6(2): 870 (1909)

19.750

*Hymenocarpus lotoides* (L.) Vis., *Fl. Dalmat.* 3: 279 (1851)

*Anthyllis lotoides* L., *Sp. Pl.* 720 (1753)

42.1424, 43.1489, 57.1837

*Hippocrepis atlantica* Ball in *J. Bot.* 11: 307 (1873)

\*\* 6.275b, 7.299, 7.306, 12.507, 32.1111, 33.1124, 34.1156

Note: Gatherings 6.275b, 12.507 and 32.1111 expands the distribution area of this species to the “plaines et plateaux du Maroc oriental” (High Moulouya) and to the Middle Atlas, as it was only recorded for the Saharian Atlas, High Atlas and the Rif Mountains (Jahandiez & Maire, 1932: 421, Fennane & al. 2007: 177, as *H. scabra* var. *atlantica* (Ball) Maire, Fennane & Ibn Tattou 2005: 204).

*Hippocrepis neglecta* Lassen in *Willdenowia* 19: 61 (1989)

\* 4.157 bis, 4.199

*Lathyrus nissolia* L., *Sp. Pl.* 729 (1753)

61.2072

*Lens nigricans* (M. Bieb.) Godron, *Fl. Lorraine* 1: 173 (1843)

4.179

*Lotus arenarius* Brot., *Fl. Lusit.* 2: 120 (1805)

1.39, 2.53

*Lotus conimbricensis* Brot., *Phytogr. Lusit. Select.* 1: 59 (1800)

28.1950

*Lotus corniculatus* L., *Sp. Pl.* 773 (1753)

subsp. *corniculatus*

64.2232

*Lotus eriosolen* (Maire) Mader & Podlech in *Mitt. Bot. Staatssamml. München* 28: 544 (1989)

\* 6.281

*Lotus longisiliquosus* R. Roem. in *Linnaea* 25: 22 (1852)

34.1155, 58.1950, 63.2153, 64.2232

*Lotus ornithopodioides* L., *Sp. Pl.* 775 (1753)

51.1709

*Lotus parviflorus* Desf., *Fl. Atlant.* 2: 206 (1799)

58.1961

*Lotus palustris* Willd., *Sp. Pl.* 3: 1394 (1802)

51.1728

*Lotus uliginosus* Schkuhr, *Bot. Handb.* 2: 412 (1796)

35.1196

Note: This species has frequently been included in the synonymy of *L. pedunculatus* Cav. However, it differs from the latter by its obovate, obovate-elliptic or occasionally elliptic, and rarely subrhombic or suborbicular central leaflets with obtuse or rounded apex, calyx teeth shorter than tube and upper calyx-lip teeth separated by an acute sinus. In *L. pedunculatus* central leaflets are elliptic, rhombic or subrhombic with acute or subacute apex, calyx teeth generally longer than or as long as calyx tube, and upper calyx-lip teeth separated by an obtuse sinus. Besides, *L. uliginosus* plants are more robust and hairy than those of *L. pedunculatus*.

F. Pina

*Lotus weilleri* Maire in *Bull. Soc. Hist. Nat. Afrique N.*, 19: 40 (1928)

\* 3.106

*Medicago doliata* Carmign. in *Giorn. Pisano Lett.* 1: 48(1810)

4.172, 32.1103

*Medicago littoralis* Loisel., *Not. Fl. France* 118 (1810)

19.746

*Medicago lupulina* L., *Sp. Pl.* 779 (1753)

4.193, 64.2267

*Medicago minima* (L.) L., *Fl. Angl.* 21 (1754)

4.170

*Medicago polymorpha* L., *Sp. Pl.* 779 (1753)

54.1809

*Medicago suffruticosa* DC. in Lam. & DC., *Fl. Franç.*, ed. 3, 4: 541 (1805)

subsp. *leiocarpa* (Benth.) Urban in *Verh. Bot. Vereins Prov. Brandenburg* 15: 58 (1873)

*M. suffruticosa* subsp. *maroccana* (Batt.) Maire in Jahand. & Maire, *Cat. Pl. Maroc* 381 (1932)

12.515, 64.2210

*Medicago truncatula* Gaertn., *Fruct. Sem. Pl.* 2: 350 (1791)

3.104

*Melilotus sulcatus* Desf., *Fl. Atlant.* 2: 193 (1799)

4.177, 35.1179

Note: Not indicated for N. Morocco in Valdés & al. (2002: 356) as only *M. segetalis* (Brot.) Ser (as *M. sulcatus* subsp. *segetalis* (Brot.) P. Fourn.) is recorded in this area, gathering 35.1179 confirms its presence in the Rif (Aknoul region), as correctly indicated in Fennane & al. (2007: 154).

*Nepa boivinii* (Webb) Webb, *Otia Hispan.*, ed. 2, 30 (1853)

*Stauracanthus boivinii* (Webb) Samp., *Lista Esp. Herb. Portug.*, *Apêndice* 3: 8 (1914)

27.946, 35.1176, 42.1404

Note: A very polymorphic species. Plants from Jbel Tazekka (gathering 27.946) are more densely branched than the plants from the Rif (gatherings 35.1176 and 42.1404); they can be keyed out as var. *Nepa boivini* var. *tazensis* (Braun-Blanq. & Maire.) Valdés, **comb. nov.** (basionym: *Ulex webbianum* var. *tazensis* Braun-Blanq. & Maire in *Bull. Soc. Hist. Nat. Afrique N.* 16: 29, 1925).

*Onobrychis humilis* (Loefl.) G. López in *Anales Jard. Bot. Madrid* 42: 321 (1986)subsp. *jahandiezii* (Sirj.) Greuter & Burdet in *Willdenowia* 19: 33 (1989)

\* 4.217, 32.1104, 33.1115

*Onobrychis saxatilis* (L.) Lam., *Fl. Franç.* 2: 653 (1779)

38.1270

*Ononis cephalotes* Boiss., *Elench. Pl. Nov.* 33 (1838)

60.2025

*Ononis cristata* Mill., *Gard. Dict.*, ed. 8, n. 9 (1768)

9.406

*Ononis hispida* Desf., *Fl. Atlant.* 2: 146 (1798)subsp. *arborescens* (Desf.) Sirj. in *Beih. Bot. Centralbl.* 49(2): 559 (1932)

25.899

subsp. *hispida*

4.165, 33.1121

Note: Both gatherings expand the known area of this subspecies in Morocco to Middle Atlas.

*Ononis mitissima* L., *Sp. Pl.* 717 (1753)

41.1392, 51.1674, 54.1808

*Ononis natrix* L., *Sp. Pl.* 717 (1753)subsp. *natrix*

17.711, 12.503, 34.1153, 49.1646

Note: Gathering 17.711 expands the known distribution area of this subspecies in Morocco to Middle Atlas (see Fennane & Ibn Tattou 2005: Fennane & al. 2007: 102).

*Ononis pendula* Desf., *Fl. Atlant.* 2: 147 (1798)

51.1679

*Ononis pseudoserotina* Batt. & Pit. in Pit., *Contr. Fl. Maroc* 12 (1918)

\* 4.184, 10.467b

*Ononis pubescens* L., *Mant. Pl. Alt.* 267 (1771)

41.1381

*Ononis pusilla* L., *Syst. Nat.*, ed. 10: 1159 (1759)

7.295

*Ononis ramosissima* Desf., *Fl. Atlant.* 2: 142, tab. 186 (1798)

*O. natrix* subsp. *ramosissima* (Desf.) Batt. in Batt. & Trab., *Fl. Algérie* 1: 213 (1889)

33.1128

Note: This gathering expands to Middle Atlas the known distribution area of this species in Morocco (see Fennane & Ibn Tattou 2005: 221, Fennane & al. 2007: 119).

*Ononis reclinata* L., *Sp. Pl.*, ed. 2: 1011 (1763)

subsp. *mollis* (Savi) Bég. in *Boll. Soc. Bot. Ital.* 1912: 134 (1912)

*O. mollis* Savi in *Mem. Mat. Fis. Soc. Ital.* 9: 351, tab. 8 (1802)

23.853, 54.1815

subsp. *reclinata*

3.99

*Ononis reuteri* Boiss. in Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 30 (1852)

63.2157

*Ononis sicula* Guss., *Cat. Pl. Hort. Boccadifalco* 78 (1821)

3.126

Note: Known from most of the country (Fennane & al. 2007: 116, Fennane & Ibn Tattou 2005: 224), this gathering confirms the presence of this species in the area of Zerhoun, from where it was not recorded in Valdés & al. (2002: 373).

*Ononis speciosa* Lag., *Gen. Sp. Nov.* 22 (1816)

35.1191

*Ononis spinosa* L., *Sp. Pl.* 716 (1753)

subsp. *australis* (Sirj.) Greuter & Burdet in *Willdenowia* 19: 33 (1989)

7.302

*Ononis thomsonii* Oliver in *Hooker's Icon. Pl.*, tab. 1829 (1989)

\* 8.364, 9.428

subsp. *thomsonii*

\* 12.533, 16.643, 18.725, 64.2208



***Ononis viscosa*** L., *Sp. Pl.* 718 (1753)

subsp. ***subcordata*** (Cav.) Sirj. in *Beih. Bot. Centralbl.* 49(2): 527 (1932)

51.1723, 54.1813

***Ornithopus compressus*** L., *Sp. Pl.* 744 (1753)

29.1288, 57.1856, 60.2057

***Ornithopus isthmocarpus*** Coss., *Not. Pl. Crit.* 36 (1849)

*O. sativus* subsp. ***isthmocarpus*** (Coss.) Dostal, *Kvétena CSR*: 788 (1948)

1.40

Note: The plants of this gathering, with legumes more or less straight with curved beak less than 1 cm long seem to belong to the hybrid between *O. sativus* Brot. and *O. isthmocarpus* Coss. (*O. sativus* subsp. *macrorhynchus* (Willk.) Talavera, Artista & P.L. Ortiz in *Anales Jard. Bot. Madrid* 57: 227, 1999).

***Pisum sativum*** L., *Sp. Pl.* 727 (1753)

subsp. ***elatius*** (M. Bieb.) Asch. & Graebn., *Syn. Mitteleur. Fl.* 6(2): 1064 (1910)

10.465b

Note: The plants of this gathering, with one-flowered non aristate peduncles of c. 1/4 – 1/3 of the length of the stipules, belong to var. *brevipedunculatum* P.H. Davis & Meikle in *Notes Roy. Bot. Gard. Edinburgh* 29: 320 (1969).

***Pterospartum tridentatum*** (L.) Willk. in Willk. & Lange, *Prodr. Fl. Hispan.* 3: 441 (1877)

subsp. ***riphaeum*** (Pau & Font Quer) Talavera & Gibbs in *Lagascalía* 18: 266 (1996)

*Genista tridentata* subsp. ***riphaea*** (Pau & Font Quer) Greuter in *Willdenowia* 15: 429 (1986)

\* 45.1574

***Scorpiurus muricatus*** L., *Sp. Pl.* 745 (1753)

52.1739

***Scorpiurus sulcatus*** L., *Sp. Pl.* 745 (1753)

3.127, 19.748, 33.1112

***Teline linifolia*** (L.) Webb in Webb & Berth., *Hist. Nat. Iles Canaries* 3(2, 2): 41 (1842)

subsp. ***linifolia***

1.38

***Tetragonolobus conjugatus*** (L.) Link, *Enum. Hort. Berol. Alt.* 2: 264 (1822)

subsp. ***requienii*** (Sanguinetti) E. Domínguez & E. F. Galiano in *Lagascalía* 8: 206 (1979)

54.1804

***Tetragonolobus maritimus*** (L.) Roth, *Ten. Fl. Germ.* 1: 323 (1788)

18.721

***Trifolium arvense*** L., *Sp. Pl.* 769 (1753)

30.1060

***Trifolium campestre*** Schreb. in Sturm, *Deutschl. Fl., Abth.* 1, 16 (1804)

4.141

*Trifolium dubium* Sibth., *Fl. Oxon.* 231 (1794)

58.1969

*Trifolium fragiferum* L., *Sp. Pl.* 772 (1753)

42.1419

*Trifolium gemellum* Willd., *Sp. Pl.* 3: 1376 (1802)

4.148b

*Trifolium glomeratum* L., *Sp. Pl.* 770 (1753)

3.146, 30.1069

*Trifolium hirtum* All., *Auct. Fl. Pedem.* 20 (1789)

4.153

*Trifolium lappaceum* L., *Sp. Pl.* 768 (1753)

53.1783

*Trifolium ochroleucon* Huds., *Fl. Angl.* 283 (1762)

30.1086, 57.1833

*Trifolium phleoides* Willd., *Sp. Pl.* 3: 1377 (1802)subsp. *willkommii* (Chabert) Muñoz Rodr. in *Acta Bot. Malac.* 17: 105 (1992)

4.144, 30.1056

Note: According Muñoz (1992: 106), this subspecies is endemic of the Iberian Peninsula and NW Morocco. It has been indicated for Morocco by Fennane & Ibn Tattou (2005: 233) and Fennane & al. (2007: 145) without precise geographic distribution. Recorded in several areas of the Rifian mountains (Valdés & al. 2002: 343, Mateos & Valdés 2010a: 89), gathering 4.144 from Forêt de Jaaba and 30.1056 from Jbel Tazekka expand to the Middle Atlas the distribution area of this subspecies. It has also been collected between Arzou and Timahdite (Valdés & al., SEV 157206), also in Middle Atlas.

*Trifolium scabrum* L., *Sp. Pl.* 770 (1753)

32.1111b, 51.1679b, 53.1784

*Trifolium stellatum* L., *Sp. Pl.* 769 (1753)

58.1929

*Trifolium strictum* L., *Cent. Pl.* 1: 24 (1755)

58.1954

*Trifolium suffocatum* L., *Mant. Pl.* 276 (1771)

26.915

Note: This gathering expands the known distribution area of this species in Morocco to Middle Atlas (Jbel Tazekka) (see Fennane & Ibn Tattou 2005: 234; Fennane & al., 2007: 135).

*Trifolium tomentosum* L., *Sp. Pl.* 771 (1753)

4.213

*Trigonella gladiata* M. Bieb., *Fl. Taur.-Cauc.* 2: 222 (1808)

10.459b

*Trigonella monspeliaca* L., *Sp. Pl.* 777 (1753)

*Medicago monspeliaca* (L.) Trautr. in *Bull. Sci. Acad. Imp. Sci. St. Petersbourg* 8: 272 (1841)

4.169

*Trigonella polyceratia* L., *Sp. Pl.* 777 (1753)

*Medicago polyceratia* (L.) Trautv. in *Bull. Sci. Acad. Imp. Sci. St. Petersbourg* 8: 277 (1841)

4.190, 60.2046

*Tripodium tetraphyllum* (L.) Fourr. in *Ann. Soc. Linn. Lyon*, sér. 2, 16: 359 (1868)

*Anthyllis tetraphylla* L., *Sp. Pl.* 719 (1753)

2.61, 3.123, 25.898, 51.1724

*Vicia altissima* Desf., *Fl. Atlant.* 2: 163 (1799)

46.1588

*Vicia amhicarpa* L., *Sp. Pl.*, ed. 2: 1030 (1763)

*V. sativa* subsp. *amhicarpa* (L.) Batt. in Batt. & Trabut, *Fl. Algérie* 1: 268 (1889)

16.666

*Vicia angustifolia* L., *Amoen. Acad.* 4: 105 (1759)

*V. sativa* subsp. *nigra* (L.) Ehrh. in *Hannover Mag.* 18: 229 (1780)

16.653

*Vicia disperma* DC., *Cat. Pl. Hort. Monsp.* 154 (1813)

10.461b

*Vicia ervilia* (L.) Willd., *Sp. Pl.* 1103 (1802)

36.1248

*Vicia lathyroides* L., *Sp. Pl.* 736 (1753)

14.609

*Vicia lecomtei* Humb. & Maire in *Mem. Soc. Sci. Nat. Maroc* 15: 30 (1927)

subsp. *embergeri* (Font Quer & Maire) Maire in Jahand. & Maire, *Cat. Pl. Maroc* 2: 433 (1932)

\* 57.1872b

Note: Plants of n. 57.1872b clearly differ from those of gathering 29.1285 collected in the type locality of *V. lecomtei* (Jbel Tazekka, Maire 1927: 31). It is not possible to see the colour of the corolla any longer in these materials, collected twenty years ago, but the characters of the plants of gathering 57.1872b, which agree with the diagnostic characters indicated by Font Quer & Maire (in Emberger & Maire 1929: 4), are clear enough to separate the Rifian plants from those from Mount Tazekka at subspecific level, as combined

by Maire (in Jahandiez & Maire 1932: 433) and accepted by Fennane & Ibn Tattou (2005: 237), although not by Dobignard (2009: 41) neither by Dobignard & Chatelain (2012: 200).

subsp. *lecomtei*

\* 29.1285

Note: The ovary of these plants is hairy, as in a way corresponds to hairy fruits, and not glabrous as described by Maire (1927: 31).

*Vicia lutea* L., *Sp. Pl.* 736 (1753)

subsp. *lutea*

43.1462

subsp. *vestita* (Boiss.) Rouy, *Fl. France* 5: 219 (1899)

54.1812

*Vicia murbeckii* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 19: 43 (1928)

\* 12.512

Note: This gathering expands to Middle Atlas the known distribution area of this Moroccan endemic (see Fennane & Ibn Tattou 2005: 238, Fennane & al. 2007: 102).

*Vicia parviflora* Cav., *Anales Ci. Nat.* 4: 73 (1801)

63.2167

*Vicia peregrina* L., *Sp. Pl.* 737 (1753)

19.747

*Vicia pubescens* (DC.) Link, *Handbuch* 2: 190 (1831)

43.1475

*Vicia sativa* L., *Sp. Pl.* 736 (1753)

subsp. *sativa*

33.1126

*Vicia tenuifolia* Roth, *Tent. Fl. Germ.* 1: 309 (1788)

subsp. *villosa* (Batt.) Greuter in *Willdenowia* 16: 114 (1986)

60.2051, 64.2194

*Vicia vicioides* (Desf.) Cout., *Fl. Portugal* 363 (1913)

26.931

### *Haloragaceae*

*Myriophyllum alterniflorum* DC. in Lam. & DC., *Fl. Franç.*, ed. 3, 5: 529 (1815)

58.1943

*Myriophyllum spicatum* L., *Sp. Pl.* 992 (1753)

17.676

### *Lythraceae*

*Lythrum borysthenicum* (Schrenk) Litv. in Majevski, *Fl. Sred. Ross.*, ed. 5: 209 (1917)

58.1977

*Lythrum junceum* Banks & Solander in A. Russell, *Nat. Hist. Aleppo.*, ed. 2, 2: 253 (1794)  
39.1343, 51.1715

*Lythrum portula* (L.) D. A. Webb in *Feddes Repert.* 74: 13 (1967)  
58.1973

### *Thymelaeaceae*

*Daphne gnidium* L., *Sp. Pl.* 357 (1753)

subsp. *gnidium*

51.1694

subsp. *mauritanica* (Nieto Fel.) J.J. Halda in *Acta. Mus. Richnov. Sect. Nat.* 7(1): 6 (2000)  
*D. mauritanica* Nieto Fel. in *Anales Jard. Bot. Madrid* 53: 192 (1995)

● 25.896

Note: Although Nieto (1995: 197) recorded this taxon from two localities of Beni-Snassen mountains, and from Jbel Trhat (N of Fes) it was not included in the *Catalogue des Plantes Vasculaires du Nord du Maroc* (Valdés & al. 2002). Gathering 25.896, collected in Jbel Tazekka is the fourth record of this subspecies for the area covered by the *Catalogue*.

*Daphne laureola* L., *Sp. Pl.* 357 (1753)

*D. laureola* subsp. *latifolia* (Coss.) Rivas Mart. in *Publ. Inst. Biol. Aplicada* 42: 112 (1967)

14.593, 46.1585

*Thymelaea virgata* (Desf.) Endl., *Gen. Pl. Suppl.* 4 (2): 66 (1848)

subsp. *broussonetii* (Ball) K. Tan in *Notes Roy. Bot. Gard. Edinburgh* 38: 228 (1980)

\*\* 4.219, 32.1105, 64.2236

Note: Although it is not recognized in Fennane & al. (2007: 193), Fennane & Ibn Tattou (2005: 389) and Valdés & al. (2002: 405), this subspecies differs from the typical *Th. virgata* by its stems, glabrous in their lower part, and its middle stem leaves almost glabrous, with only some marginal hairs. As indicated by Tan (1980: 228), this subspecies seems to be more common in Morocco than subsp. *virgata*.

### *Myrtaceae*

*Myrtus communis* L., *Sp. Pl.* 471 (1753)

43.1501, 51.1675

### *Onagraceae*

*Epilobium lanceolatum* Sebast. & Mauri, *Fl. Roman. Prodr.* 138, tab. 1 (1818)

60.2036

Note: This gathering from the Rif mountains seems to be the first record of this species for Morocco as non of the traditional floras and checklists neither the most recent ones (Fennane & al. 2007, Valdés & al. 2002, Fennane & Ibn Tattou 2005) include it for the flora of

this country. The closest known localities are Sierra de las Nieves (Malaga province) in S Spain (Romero 2009: 245) and the Kabila and Atlas Tellien in Algeria (Quezel & Santa 1963: 639).

E. Rico

*Ludwigia palustris* (L.) Elliot, *Sketch Bot. S. Carolina* 1: 211 (1817)

42.1443

### *Santalaceae*

*Osyris alba* L., *Sp. Pl.* 1022 (1753)

52.1738

*Osyris quadripartita* Decne in *Ann. Sci. Nat., Bot.*, sér. 2, 6: 65 (1836)

28.1022

*Thesium humifusum* DC. in Lam. & DC., *Fl. Franç.*, ed. 3, 5: 366 (1815)

*Thesium divaricatum* Mert. & Koch in Röhling, *Deutsch. Fl.*, ed. 3, 2: 285 (1826)

4.225, 10.501

*Thesium mauritanicum* Batt. in *Bull. Soc. Bot. France.* 35: 393 (1888)

\*\* 6.282, 7.305

### *Loranthaceae (Viscaceae)*

*Viscum cruciatum* Boiss., *Voy. Bot. Espagne* 2: 274 (1840)

39.1344

### *Rafflesiaceae*

*Cytinus hypocistis* (L.) L., *Syst. Nat.* ed. 12, 2: 602 (1767)

subsp. *lutescens* (Batt.) Maire in *Mem. Soc. Sci. Nat. Maroc* 21-22: 15 (1930)

16.672

subsp. *macranthus* Wettst. in *Ber. Deutsch. Bot. Ges.* 35: 95 (1917)

57.1855, 62.2142

### *Aquifoliaceae*

*Ilex aquifolium* L., *Sp. Pl.* 125 (1753)

11.493, 46.1583

### *Euphorbiaceae*

*Chamaesyce canescens* (L.) Prokh., *Consp. Syst. Tithymalus* 19 (1933)

subsp. *canescens*

*Euphorbia chamaesyce* L., *Sp. Pl.* 455 (1753) subsp. *chamaesyce*

5.136, 19.780

*Euphorbia characias* L., *Sp. Pl.* 463 (1753)

60.2002

*Euphorbia dracunculoides* Lam., *Encycl.* 2: 428 (1788)

subsp. *inconspicua* (Ball) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 20: 202 (1929)

23.871, 28.1027, 32.871

*Euphorbia exigua* L., *Sp. Pl.* 456 (1753)

subsp. *exigua*

19.786, 25.882, 34.1160

*Euphorbia falcata* L., *Sp. Pl.* 456 (1753)

subsp. *falcata*

4.249, 32.1106, 62.2132

Note: Gatherings 4.249 and 32.1106 are keyed out as var. *acuminata* (Lam.) St. Amans in St. Amans & Chaub., *Fl. Agen.* 189, 1818; gathering 62.2132, as var. *marocanna* Murb., *Contr. Fl. Maroc* 2: 6, 1923.

*Euphorbia medicaginea* Boiss., *Elench. Pl. Nov.* 82 (1838)

3.134, 51.1676

*Euphorbia nicaeensis* All., *Fl. Pedem.* 1: 285 (1785)

subsp. *nicaeensis*

4.259, 14.578, 18.724

*Euphorbia segetalis* L., *Sp. Pl.* 458 (1753)

60.2054, 64.2191

Note: Plants of gathering 60.2054, with somewhat woody base, are keyed out as var. *pinea* (L.) Lange in Willk. & Lange, *Prodr. Fl. Hispan.* 3: 499, 1877.

*Mercurialis annua* L., *Sp. Pl.* 1038 (1753)

22.825, 43.1476

Note: Plants of gathering 43.1476 are andromoeious, a situation rather frequent in populations of *M. ambigua* L. f. But all their characters agree with those given by Güemes (1997) for *M. annua* L.

*Mercurialis reverchonii* Rouy, *Naturaliste* 9: 199 (1887)

27.980, 63.2148

### *Rhamnaceae*

*Rhamnus lycioides* L., *Sp. Pl.*, ed. 2: 279 (1762)

subsp. *oleoides* (L.) Maire in Jahand. & Maire, *Cat. Pl. Maroc* 2: 476 (1932)

3.121, 23.851, 26.944, 38.1272

*Rhamnus myrtifolia* Willk. in *Linnaea* 25: 18 (1852)

*R. alaternus* subsp. *myrtifolia* (Willk.) Maire in Jahand. & Maire, *Cat. Pl. Maroc* 2: 475 (1932)

64.2252

*Rhamnus pumila* Turra in *Giorn. Ital. Sci. Nat. Agric. Arti. Commer.* 1: 120 (1764)

64.2240

*Ziziphus lotus* (L.) Lam., *Encycl.* 3: 317 (1789)

subsp. *lotus*

2.57, 19.744

### *Linaceae*

*Linum bienne* Mill., *Gard. Dict.*, ed. 8, n. 8 (1768)

58.1980

*Linum munbyanum* Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 24 (1852)

*L. tenue* subsp. *munbyanum* (Boiss. & Reut.) Batt. in Batt. & Trab., *Fl. Algérie* 1: 175 (1888)

\*\* 35.1180

*Linum strictum* L., *Sp. Pl.* 279 (1753)

4.205, 23.852

*Linum tenue* Desf., *Fl. Atlant.* 1: 280 (1798)

2.55, 3.117, 32.1099, 51.1690

*Radiola linoides* Roth, *Tent. Fl. Germ.* 2 (1): 199 (1789)

43.1498

### *Polygalaceae*

*Polygala boissieri* Coss., *Notes Pl. Crit.* 100 (1851)

57.1869

*Polygala monspeliaca* L., *Sp. Pl.* 702 (1753)

61.2070

### *Aceraceae*

*Acer opalus* Mill., *Gard. Dict.*, ed. 8, n. 8 (1768)

subsp. *granatense* (Boiss.) Font Quer & Rothm., *Sched. Fl. Iber. Cent.* 1: 56 (1934)

57.1862, 60.2018, 64.2183

### *Anacardiaceae*

*Pistacia atlantica* Desf., *Fl. Atlant.* 2: 364 (1799)

3.116

*Pistacia lentiscus* L., *Sp. Pl.* 1026 (1753)

25.905, 39.1345, 49.1651

*Pistacia terebinthus* L., *Sp. Pl.* 1025 (1753)

subsp. *terebinthus*

36.1242, 40.1354

*Rhus pentaphylla* (Jacq.) Desf., *Fl. Atlant.* 1: 267 (1798)



49.1656

**Rutaceae*****Haplophyllum linifolium*** (L.) G. Don f., *Gen. Syst.* 1: 780 (1831)

7.291

***Ruta angustifolia*** Pers., *Syn. Pl.* 1: 464 (1805)

40.1370

***Ruta montana*** (L.) L., *Amoen. Acad.* 3: 52 (1756)

3.119

**Zygophyllaceae*****Peganum harmala*** L., *Sp. Pl.* 444 (1753)

3.124

**Oxalidaceae*****Oxalis corniculata*** L., *Sp. Pl.* 435 (1753)

43.1496

**Geraniaceae*****Erodium aethiopicum*** (Lam.) Brumh. & Thell. in *Mém. Soc. Sci. Nat. Cherbourg*, sér. 4, 38: 352 (1911)*E. bipinnatum* Willd., *Sp. Pl.* 3: 628 (1800), nom. illeg.

1.42, 4.154, 7.308, 29.1030

Note: Gatherings 4.154 and 29.1030 expand the known distribution area of this species in Morocco to Middle Atlas. It is recorded by Fennane & Ibn Tattou (2005: 245) and Fennane & al. (2007: 273) from the neighbouring areas “Maroc atlantique nord” and “plaines et plateaux du Maroc oriental”.

***Erodium chium*** (L.) Willd., *Phytographia* 10 (1975)

2.49b

***Erodium cicutarium*** (L.) L'Hér. in Aiton, *Hort. Kew.* 2: 414 (1789)

57.1872

***Erodium guttatum*** (Desf.) Willd., *Sp. Pl.* 3: 636 (1800)

6.279

***Erodium laciniatum*** (Cav.) Willd., *Sp. Pl.* 3: 636 (1800)subsp. ***pulverulentum*** (Boiss.) Batt. in Batt. & Trabut, *Fl. Algérie* 1: 126 (1888)

3.129

***Erodium malacoides*** (L.) L'Hér. in Aiton, *Hort. Kew.* 2: 415 (1789)subsp. ***malacoides***

4.155, 10.462b

subsp. ***brevirostre*** (Maire & Sam.) Guitt. in *Boissiera* 20: 84 (1972)

\* 19.752

*Erodium stellatum* Delile, *Index Sem. Hort. Monsp.* 1838: 6 (1839)

19.751

Note: This gathering expands to the "plateaux du Maroc oriental" (Haute Moulouya) the known distribution area in Morocco of this species.

*Geranium cataractarum* Coss., *Not. Pl. Crit.* 99 (1851)

subsp. *pitardii* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 15: 96 (1924)

\* 17.704, 17.708

*Geranium lucidum* L., *Sp. Pl.* 982 (1753)

29.1292, 63.2168

*Geranium malviflorum* Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 27 (1852)

16.621b, 30.1055, 57.1845

*Geranium purpureum* Vill., *Hist. Pl. Dauphiné* 1: 72 (1786)

*G. robertianum* subsp. *purpureum* (Vill.) Nyman, *Consp. Fl. Eur.* 138 (1878)

2.51, 10.476, 25.892b, 43.1465, 61.2075

*Geranium pusillum* Burm. f., *Spec. Bot. Geran.* 27 (1759)

53.1785

*Geranium pyrenaicum* Burm. f., *Spec. Bot. Geran.* 27 (1759)

17.678

*Geranium robertianum* L., *Sp. Pl.* 681 (1753)

47.1634

*Geranium rotundifolium* L., *Sp. Pl.* 683 (1753)

2.49, 25.892

### *Araliaceae*

*Hedera maroccana* McAlister in *Plantsman* 15: 126-127 (1993)

*H. helix* subsp. *maroccana* (McAlister) M. Fennane in *Trav. inst. Sc., Sér. Bot.* 37: 52 (2005)

36.1231, 40.1376, 47.1615, 60.2029

### *Umbelliferae (Apiaceae)*

*Ammi majus* L., *Sp. Pl.* 243 (1753)

42.1444

*Ammi visnaga* (L.) Lam., *Fl. Franç.* 3: 462 (1779)

54.1790

*Ammoides pusilla* (Brot.) Breistr. in *Bull. Soc. Sci. Dauph.* 61: 628 (1947)

19.760, 59.1985

*Anthriscus caucalis* Bieb., *Fl. Taur.-Cauc.* 1: 230 (1808)

4.242

*Apium inundatum* (L.) Rchb. f., *Icon. Fl. Germ. Helv.* 21: 9 (1863)

58.1921

*Apium nodiflorum* (L.) Lag., *Amen. Nat. Españ.* 101 (1821)

36.1225b

*Apium repens* (Jacq.) Lag., *Amen. Nat. Españ.* 1(2): 101 (1821)

58.1920

*Bifora testiculata* (L.) Spreng. in Roem. & Schult., *Syst. Veg.* 6: 448 (1820)

12.535, 35.1163

*Bunium alpinum* Waldst. & Kit., *Pl. Rar. Hung.* 2: 199 (1804)

30.1064

subsp. *atlanticum* Maire in Emb. & Maire, *Pl. Rif. Nov.* 1: 9 (1927)*B. atlanticum* (Maire) Dobignard in *J. Bot. Soc. Bot.* 46-47: 45 (2009)

32.1101, 57.1861

*Bunium bulbocastanum* L., *Sp. Pl.* 243 (1753)

12.546, 41.1377

*Bupleurum balansae* Boiss. & Reut., *Diagn. Pl. Orient.*, ser. 2, 2: 83 (1856)

\*\* 37.1261

*Bupleurum frutescens* L., *Cent. Pl.* 1: 9 [*Amoen. Acad.* 4: 269] (1753)subsp. *spinosum* (Gouan) O. Bolòs & Vigo in *Butll. inst. Catalana Hist. Nat.* 38, *Sect. Bot.* 1: 83 (1974)*B. spinosum* Gouan, *Ill. Observ. Bot.* 8 (1773)

63.2163

*Bupleurum lancifolium* Hornem., *Hort. Bot. Hafn.* 1: 267 (1813)

41.1396

*Bupleurum montanum* Coss. in *Bull. Soc. Bot. France* 3: 706-707 (1857)

\*\* 61.2102

*Bupleurum rigidum* L., *Sp. Pl.* 238 (1753)subsp. *paniculatum* (Brot.) H. Wolf in Engl., *Pflanzenr.* 43 (IV. 228): 154 (1910)

12.530

*Conopodium bourgaei* Coss., *Notes Pl. Crit.* 110 (1851)

45.1538, 57.1857

*Conopodium bunioides* (Boiss.) Calest. in *Webbia* 1: 279 (1905)subsp. *atlantis* (Humb. & Maire) Molero in *Lagascalìa* 21: 249 (1999)

\* 29.1291, 30.1087

Note: *Conopodium bunioides* is considered endemic of Spain in Castroviejo & al. (2003: 173). However, Humbert & Maire (in Maire 1927: 35) had already identified with *C. bun-*

*ioides* (as var. *atlantis*) plants collected in "monte Tazekka" which were raised latter to subspecific level by Molero (in Montserrat 1999: 249). Plants of gatherings 29.1291 and 30.1087 from Jbel Tazekka agree with those from Sierra Nevada (S Spain, the type locality of *C. bunioides*) even by their scarce indument in stems and leaf sheaths, and confirm the presence of this species in Morocco. Leaves of plants from Jbel Tazekka have more divisions than those from Sierra Nevada and the central lobe of their terminal segments is scarcely longer than the lateral ones, while in the plants of Sierra Nevada the central lobe is much longer than the laterals. Plants are more robust in Jbel Tazekka than in Sierra Nevada. This subspecies, which seems to be endemic of Mount Tazekka was already accepted by Valdés & al. (2002: 459), Fennane & Ibn Tattou (2005: 36) and Fennane & al. (2007: 307).

***Conopodium glaberrimum*** (Desf.) Engstrand in *Bot. Not.* 126: 153 (1973)

• 12.538, 27.968, 30.1088, 44.1520, 61.2120, 64.2186

***Daucus carota*** L., *Sp. Pl.* 242 (1753)

51.1686

***Daucus crinitus*** Desf., *Fl. Atlant.* 1: 242 (1798)

19.743, 33.1114, 51.1663

Note: Gathering 19.743 expands to the "plaines et plateaux du Maroc oriental" the known distribution area of this species in Morocco (see Fennane & Ibn Tattou 2005: 38, Fennane & al. 2007: 298).

***Daucus durieua*** Lange in Willk. & Lange, *Prodr. Fl. Hispan.* 3: 23 (1874)

10.464, 43.1467

***Eryngium argyreum*** Maire, *Bull. Soc. Hist. Nat. Afrique N.* 15: 82 (1924)

\* 2.76, 28.997

***Eryngium caespitiferum*** Font Quer & Pau in *Cavanillesia* 4: 30 (1931)

\* 64.2234

***Eryngium campestre*** L., *Sp. Pl.* 233 (1753)

19.753

Note: This gathering expands to the "plaines et plateaux du Maroc oriental" the known distribution area of this species in Morocco (see Fennane & Ibn Tattou 2005: 41, Fennane & al. 2007: 290).

***Eryngium dilatatum*** Lam., *Encycl.* 4 (2): 755 (1798)

4.222

Note: This gathering expands to the Middle Atlas the distribution area of this species in Morocco (see Fennane & Ibn Tattou 2005: 41, Fennane & al. 2007: 290).

***Eryngium ilicifolium*** Lam., *Encycl.* 4(2): 757 (1798)

19.757

***Eryngium tenue*** Lam., *Encycl.* 4: 755 (1798)

1.37

Note: The record for Maâmora (Valdés & al. 2002: 471), which is confirmed by this gathering, was not considered in Fennane & Ibn Tattou (2005: 41).

*Eryngium tricuspdatum* L., *Demonstr. Pl.* 8 (1753)

1.33, 2.71, 27.972, 41.1380, 42.1411

*Eryngium triquetrum* Vahl, *Symb. Bot.* 2: 46 (1791)

19.745, 60.2017

*Heracleum sphondylium* L., *Sp. Pl.* 249 (1753)

17.687, 29.1276

*Hohenackeria excapa* (Stev.) Koso-Pol. in *Trudy Bot. Sada Jurév.* 15 (2-3): 120 (1914)

9.404, 14.584

*Kundmannia sicula* (L.) DC., *Prodr.* 4: 143 (1830)

54.1801

*Myrrhoides nodosa* (L.) Cannon in *Feddes Repert.* 79: 65 (1968)

*Physocaulis nodosus* (L.) Tausch in *Flora (Regensb.)* 17: 342 (1834)

10.453c

*Oenanthe fistulosa* L., *Sp. Pl.* 254 (1753)

58.1915

*Orlaya daucooides* (L.) Greuter in *Boissiera* 13: 92 (1967)

41.1378, 64.2221

*Ridolfia segetum* Moris, *Enum Horti Taur.* 43 (1841)

20.809, 51.1666

*Sanicula europaea* L., *Sp. Pl.* 235 (1753)

47.1605, 60.2014

*Scandix australis* L., *Sp. Pl.* 257 (1753)

subsp. *australis*

16.660

*Scandix pecten-veneris* L., *Sp. Pl.* 256 (1753)

19.756, 34.1162

*Stoibrax dichotomum* (L.) Raf., *Good Book* 52 (1840)

*Brachyapium dichotomum* (L.) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 23: 186 (1932)

6.286, 28.1002

*Thapsia villosa* L., *Sp. Pl.* 261 (1753)

32.1107, 61.2090, 64.2225

*Torilis arvensis* (Huds.) Link, *Enum. Hort. Berol. Alt.* 1: 265 (1821)

subsp. *neglecta* (Schult.) Thell. in *Hegi, Ill. Fl. Mitt.-Eur.* 5(2): 1055 (1926)

51.1670

subsp. *purpurea* (Ten.) Hayek in *Repert. Spec. Nov. Regni Veg. Beih.* 30(1): 1057 (1927)

25.907

subsp. *recta* Jury in *Lagascalia* 18: 282 (1996)

53.1770b, 41.1387

*Torilis elongata* (Hoffmanns. & Link) Samp. in *Ann. Sci. Acad. Polytechn. Porto* 14: 154 (1921)

4.247, 8.378, 9.394, 60.2049

*Torilis leptophylla* (L.) Rchb. f., *Icon. Fl. Germ. Helv.* 21: 169, tab. 2010 (1866)

35.1204, 62.2143

*Torilis nodosa* (L.) Gaertn., *Fruct. Sem. Pl.* 1: 82 (1788)

12.531, 25.902, 60.2038

### *Gentianaceae*

*Blackstonia grandiflora* (Viv.) Pau in *Mem. Real Soc. Esp. Hist. Nat.* 12: 361 (1924)

*B. perfoliata* subsp. *grandiflora* (Viv.) Maire in *Jahand. & Maire, Cat. Pl. Maroc* 3: 578 (1934)

41.1383, 51.1671

*Blackstonia perfoliata* (L.) Huds., *Fl. Angl.* 146 (1762)

subsp. *intermedia* (Ten.) Zeltner in *Bull. Soc. Neuchâtel. Sci. Nat.* 93: 45 (1970)

53.1779b

*Centaureum spicatum* (L.) Fritsch, *Mitt. Naturwiss. Vereins Univ. Wien*, ser. 2, 5: 97 (1907)

52.1745

*Centaureum suffruticosum* (Griseb.) Ronniger in *Mitt. Naturwiss. Vereins Steiermark* 52: 321 (1916)

*C. erytraea* subsp. *suffruticosum* (Griseb.) Greuter in *Willdenowia* 11: 279 (1981)

25.903, 27.968b, 38.1274

*Centaureum tenuiflorum* (Hoffmanns. & Link) Fritsch in *Mitt. Naturwis. Vereins Univ. Wien*, ser. 2, 5: 97 (1907)

*C. pulchellum* subsp. *tenuiflorum* (Hoffmanns. & Link) Maire in *Jahand. & Maire, Cat. Pl. Maroc* 3: 576 (1934)

42.1438, 53.1779

### *Apocynaceae*

*Nerium oleander* L., *Sp. Pl.* 209 (1753)

25.908

### *Asclepiadaceae*

*Caralluma europaea* (Guss.) N.E. Br. in *Gard. Chron.*, ser. 3, 12: 369 (1892)

3.128

*Caralluna hesperidium* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 13: 17 (1922)

\* 49.1648

*Caralluma munbyana* (Decaisne) N.E. Br. in *Gard. Chron.*, ser. 3, 12: 370 (1892)

22.834

*Periploca laevigata* Aiton, *Hort. Kew.* 1: 301 (1789)

*P. angustifolia* Labill., *Icon. Pl. Syr.* 2: 13 (1791)

23.839

Note: According to Castroviejo & al. (2012: 131) and Dobignard & Chatelain (2011a: 134), the plants from the Canary Islands (type locality of *P. laevigata*), have to be considered co-specific with *P. angustifolia* Labill. However, plants of gathering 23.839, as those from S Spain, have smaller leaves than the plants from the Canary Islands.

### *Solanaceae*

*Lycium barbarum* L., *Sp. Pl.* 192 (1753)

36.1227

*Solanum alatum* Moench, *Methodus* 474 (1794)

23.878

*Solanum nigrum* L., *Sp. Pl.* 186 (1753)

42.1440

*Withania frutescens* (L.) Pauquy, *Belladone* 15 (1825)

28.1015

### *Convolvulaceae*

*Convolvulus arvensis* L., *Sp. Pl.* 153 (1753)

7.320

*Convolvulus cantabrica* L., *Sp. Pl.* 158 (1753)

4.233, 10.457b

*Convolvulus lineatus* L., *Syst. Nat.*, ed. 10: 923 (1759)

5.265, 64.2199

*Convolvulus pitardii* Batt. in Pit., *Explor. Sci. Maroc, Bot.* 74 (1913)

\* 43.1482

*Convolvulus sabatius* Viv., *Fl. Libic. Spec.* 67 (1824)

subsp. *mauritanicus* (Boiss.) Murb. in *Acta Univ. Lund*, ser. 2, 19(1): 19 (1923)

\*\* 63.2155, 64.2276

*Convolvulus siculus* L., *Sp. Pl.* 156 (1753)

subsp. *siculus*

3.111

*Convolvulus supinus* Coss. & Kralik in *Bull. Soc. Bot. France* 4: 400 (1857)

5.264, 6.289

*Convolvulus tricolor* L., *Sp. Pl.* 158 (1753)

51.1685

### *Cuscutaceae*

*Cuscuta approximata* Bab. in *Ann. Mag. Nat. Hist.* 13: 253 (1844)

*C. maroccana* Trabut in *Bull. Soc. Bot. France* 53 (Ses. Extr.): 40 (1906)

28.1024

Note: This gathering expands to the Middle Atlas the known distribution area of this species in Morocco (see Fennane & Ibn Tattou 2005: 163, Fennane & al. 2007: 375).

*Cuscuta campestris* Yunck in *Mem. Torrey Bot. Club* 18: 138, fig. 14 (1932)

1.27

Note: Not given for N Morocco in Valdés & al. (2002: 40), this gathering indicates that it is present at least in Forêt de la Maâmora.

*Cuscuta epithimum* (L.) L., *Fl. Monsp.* 11 (1756)

subsp. *kotschyi* (Desmoul.) Arcangeli, *Comp. Fl. Ital.* 480 (1882)

42.1423

### *Boraginaceae*

*Anchusa azurea* Mill., *Gard. Dict.*, ed. 8, n. 9 (1768)

*A. italica* Retz., *Observ. Bot.* 1: 12 (1779)

7.303, 19.755, 43.1457

*Anchusa undulata* L., *Sp. Pl.* 133 (1753)

subsp. *atlantica* (Ball) Braun-Blanq. & Maire in *Bull. Soc. Hist. Nat. Afrique N.* 16: 37 (1925)

*A. atlantica* Ball in *J. Bot.* 11: 373 (1873)

\*\* 16.638

subsp. *pseudogranatensis* (Braun-Blanq. & Maire) Ouyahya in *Trav. inst. Sci., ser. Bot.* 37: 56 (2005)

\* 39.1325

Note: *Anchusa undulata* is a very polymorphic species, both in Morocco and the Iberian Peninsula (see Braun-Blanquet & Maire 1925: 36-38, Fennane & al. 2007: 387, Valdés 2009: 314-316). *A. pseudogranatensis* (Braun-Blanq. & Maire) Sennen was neglected in Valdés & al. (2002: 495), as was considered a synonym of *A. undulata* subsp. *atlantica*. It was though correctly recognized as a separate subspecies in Fennane & al. (l. c.), mainly based in the presence in the stems of an antrorse indument of only one kind of stiff hairs, a character that does not occur in any other plants of *A. undulata*.

*Asperugo procumbens* L., *Sp. Pl.* 138 (1753)

17.705

*Buglossoides arvensis* (L.) I.M. Johnst. in *J. Arnold Arbor.* 35: 42 (1954)



64.2263

*Cerintho gymnantra* Gaspar. in *Rendiconti Accad. Sci. Napoli* 1: 72 (1842)*C. major* subsp. *gymnantra* (Gaspar.) Rouy, *Fl. France* 10: 279 (1908)

4.239, 10.466

Note: Gathering 10.466 is keyed out as var. *macrosiphonia* Murb. in *Acta Univ. Lund* 34 (7): 17, 1898.*Cynoglossum cheirifolium* L., *Sp. Pl.* 134 (1753)subsp. *heterocarpum* (G. Kunze) Font Quer in *Mem. Acad. Ci. Barcelona* 22(18): 351 (1931)

9.387, 39.1319, 64.2243

*Cynoglossum creticum* Mill., *Gard. Dict.*, ed. 8, n. 3 (1768)

57.1910

*Cynoglossum dioscoridis* Vill., *Prosp. Hist. Pl. Dauphiné* 21 (1779)

10.452, 29.1034, 47.1617, 60.2044

*Echium boissieri* Steud., *Nomencl. Bot.*, ed. 2, 1: 540 (1840)

54.1805

*Echium creticum* L., *Sp. Pl.* 139 (1753)subsp. *algarbiense* R. Fernandes in *Bol. Soc. Brot.*, ser. 2, 43: 154 (1969)

39.1317, 39.1324

Note: On account of their big flowers (25-32 mm), the plants of both gatherings could be identified as *E. creticum* subsp. *creticum*. But their habit, the white hispid indument of stems, leaves and inflorescences where it is particularly dense, the long and narrow calyx lobes (less than 1m wide) and the stamens with glabrous filaments and short anthers (0,7 – 0,8 mm), strongly differ from the typical *E. creticum* (*E. grandiflorum* Desf. *Fl. Atlant.* 1: 166, 1798, as unambiguously identified by Fernandes, 1969) which seems not to occur in Morocco. These characters of the plants collected agree with those given by Fernandes (l. c.) for *E. creticum* subsp. *algarbiense*. Fernandes separated two forms of this variety: *f. algarbiense* with glabrous stamen filaments and *f. maroccana* with hairy filaments. The plants of both gatherings have glabrous filaments, but the presence or absence of hairs in the stamen's filaments has no taxonomic value and it occurs in other species of *Echium* closely related with *E. creticum*, as, by instance, *E. sabulicola* Pomel and *E. velutinum* Coincy. This taxon (under var. *algarbiense f. maroccana* R. Fernandes) was indicated by Fernandes (1969: 154) in the Middle Atlas (El Hamman) and lower High Atlas (Talkoun in Tessaout Valley). These gatherings expands to the Rif the distribution area of this subspecies.

subsp. *sauvagei* (R. Fernandes) Valdés in *Lagascalía* 27: 58 (2007)

\* 25.886

*Echium flavum* Desf., *Fl. Atlant.* 1: 165 (1798)

45.1547, 57.1904

*Echium humile* Desf., *Fl. Atlant.* 1: 165 (1798)subsp. *pycnanthum* (Pomel) Greuter & Burdet in *Willdenowia* 11: 37 (1981)

7.301

*Echium plantagineum* L., *Mant. Pl. Alt.* 202 (1771)

52.1743

*Echium sabulicola* Pomel, in *Bull. Soc. Sci. Phys. Algérie* 11: 90 (1874)subsp. *decipiens* (Pomel) Klotz in *Wiss. Z. Martin-Luther-Univ. Halle-Wittenberg, Math.-Naturwiss. Reihe* 11: 1091 (1962)

22.818

*Lappula barbata* (Bieb.) Gürke in Engler & Prantl, *Nat. Pflanzenfam.* IV (3a): 107 (1897)

9.385

*Myosotis debilis* Pomel, *Nouv. Mat. Fl. Atl.* 2: 298 (1875)

58.1932

*Myosotis decumbens* Host, *Fl. Austriac.* 1: 228 (1827)subsp. *rifana* (Maire) Greuter & Burdet in *Willdenowia* 12: 35 (1982)

\*\* 57.1908

*Myosotis ramosissima* Rochel in Schult., *Österr. Fl.*, ed. 2, 1: 366 (1814)subsp. *gracillima* (Loscos & Pardo) Rivas Mart. in *Anales Inst. Bot. Cavanilles* 34(2): 555 (1978)

57.1891

subsp. *ramosissima*

4.236, 14.612, 30.1075, 47.1630, 58.1927

*Myosotis stricta* Roem. & Schult., *Syst. Veg.* 4: 104 (1819)*M. micrantha* sensu Sauvage & Vindt in *Trav. Inst. Sci. Cherifien (Bot.)* 3: 126 (1954), non Lehm. in *Neue Schr. Naturf. Ges. Halle* 3(2): 24 (1827)

14.602

*Neatostema apulum* (L.) J.M. Johnst. in *J. Arnold Arbor.* 34: 2 (1953)

23.867

*Nonea micrantha* Boiss. & Reut., *Diagn. Pl. Nov. Hisp.* 21 (1842)

3.120

Note: This gathering expands to "Maroc atlantique nord" the known distribution area of this species in Morocco (see Fennane &amp; Ibn Tattou 2005: 65, Fennane &amp; al. 2007: 388).

*Onosma tricerosperma* Lag., *Elench. Pl.* 10 (1816)subsp. *mauretanica* (Maire) G. López in *Anales Jard. Bot. Madrid* 52: 50 (1994)*O. fastigiata* subsp. *mauretanica* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 15: 388 (1924)

17.709, 64.2275

**Verbenaceae***Verbena officinalis* L., *Sp. Pl.* 20 (1753)

35.1208

*Vitex agnus-castus* L., *Sp. Pl.* 638 (1753)

3.125, 52.1750

***Labiatae (Lamiaceae)***

*Acinos alpinus* (L.) Moench, *Methodus* 407 (1794)

subsp. *meridionalis* (Nyman) P.W. Ball in *Bot. J. Linn. Soc.* 65: 344 (1972)

*Satureja alpina* subsp. *meridionalis* (Nyman) Greuter & Burdet in *Willdenowia* 14: 302 (1985)

4.231, 12.539, 29.1287, 45.1550, 57.1870, 60.2053b

*Acinos rotundifolius* Pers., *Syn. Pl.* 2: 131 (1806)

*Satureja rotundifolia* (Pers.) Briq. in Engler & Prantl, *Nat. Pflanzenfam.* IV (3a): 302 (1896)

9.392

*Ajuga iva* (L.) Schreb., *Pl. Verticill. Unilab.* 25 (1773)

16.645, 53.1774

Note: Plants of gathering 16.645 are keyed out as var. *pseudoiva* (DC.) A. DC., *Prodr.* 12: 600 (1848) (*A. iva* subsp. *pseudoiva* (DC.) Briq., *Lab. Alpes Marit.* 112 (1891), and those of gathering 53.1774 as var. *iva*.

*Ballota hirsuta* Benth., *Lab. Gen. Spec.* 595 (1834)

23.838

subsp. *maroccana* (Murb.) Patzak in *Ann. Naturhist. Mus. Wien* 63: 59 (1959)

\*\* 2.78

*Calamintha baborensis* Batt. in Batt. & Trab., *Fl. Algerie* 1: 679 (1890)

*Satureja baborensis* (Batt.) Briq. in Engler & Prantl, *Nat. Pflanzenfam.* IV(3a): 301 (1896)

*Satureja grandiflora* subsp. *baborensis* (Batt.) Maire in Jahand. & Maire, *Cat. Pl. Maroc* 3: 647 (1934)

\*\* 29.1300, 46.1602, 57.1871

*Calamintha nepeta* (L.) Savi, *Fl. Pis.* 2: 63 (1798)

*Satureja nepeta* (L.) Scheele in *Flora* 26: 577 (1843)

subsp. *nepeta*

28.1019, 51.1659

*Cleonia lusitanica* L., *Sp. Pl.*, ed. 2, 2: 837 (1763)

25.897, 41.1388, 53.1778

*Clinopodium vulgare* L., *Sp. Pl.* 587 (1753)

subsp. *arundanum* (Bois.) Nyman, *Consp. Fl. Eur.* 587 (1881)

*Satureja vulgaris* subsp. *arundana* (Boiss.) Greuter & Burdet in *Willdenowia* 14: 306 (1985)

12.542, 44.1518, 57.1858, 60.2052

*Lamium amplexicaule* L., *Sp. Pl.*, 579 (1753)

48.1637

*Lamium flexuosum* Ten., *Fl. Napol.* 1: 34 (1811-1815)

29.1294, 47.1619

*Lavandula dentata* L., *Sp. Pl.* 572 (1753)

23.840, 49.1652

*Lavandula multifida* L., *Sp. Pl.* 572 (1753)

2.66, 28.1020

*Lavandula pedunculata* (Mill.) Cav., *Descr. Pl.* 70 (1801)

subsp. *atlantica* (Braun-Blanq.) Romo in *Bot. J. Linn. Soc.* 108: 207 (1992)

*Lavandula stoechas* subsp. *atlantica* Braun-Blanq. in *Bull. Soc. Hist. Nat. Afrique* N. 13 (2): 191 (1822)

\* 27.957

*Marrubium alyssoides* Pomel in *Bull. Soc. Sci. Phys. Algérie* 11: 120 (1874)

\*\* 19.776

*Marrubium echinatum* Ball in *J. Bot.* 13: 175 (1875)

\* 10.449

*Marrubium heterocladum* Emb. & Maire, *Pl. Rif. Nov.* 1: 9 (1927)

\* 63.2145

*Marrubium litardieri* Marmey in *Trav. Inst. Sci. Chérif., sér. Bot.* 14: 48 (1958)

\* 9.405

*Melissa officinalis* L., *Sp. Pl.* 592 (1753)

51.1667

*Mentha pulegium* L., *Sp. Pl.* 577 (1753)

42.1436, 51.1672, 51.1715b

*Nepeta amethystina* Poir. in Lam., *Encycl., Suppl.* 2: 206 (1811)

6.288

*Origanum compactum* Benth., *Labiata. Gen. Spec.* 334 (1834)

51.1662

*Origanum elongatum* (Bonnet) Emb. & Maire, *Pl. Rif. Nov.* 1: 9 (1927)

\* 39.1327

*Origanum grosii* Pau & Font Quer in Font Quer, *Iter Marocc.* 1928, n. 352 (1929), nom. in sched.

\* 43.1495

***Origanum* cf. *vulgare* L., *Sp. Pl.* 590 (1753)**

**35.1199**

Note: Too immature material to give a precise identification.

***Phlomis bovei* De Noé in *Bull. Soc. Bot. France* 2: 585 (1855)**

subsp. ***maroccana* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 19: 62 (1928)**

**\* 10.450**

***Phlomis herba-venti* L., *Sp. Pl.* 586 (1753)**

**34.1165**

***Prunella laciniata* (L.) L., *Sp. Pl.*, ed. 2: 837 (1763)**

**51.1677, 55.1821**

***Prunella vulgaris* L., *Sp. Pl.* 600 (1753)**

**58.1913, 58.1975**

***Rosmarinus officinalis* L., *Sp. Pl.* 23 (1753)**

**24.879**

***Salvia argenta* L., *Sp. Pl.*, ed. 2, 1: 38 (1762)**

*S. argentea* subsp. *patula* (Desf.) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 15: 90 (1924)

**13.565, 62.2129**

***Salvia barrelieri* Etl., *Comm. Bot.-Med. Salvia* 46 (1777)**

*S. bicolor* Lam., *Tabl. Encycl.* 1: 69 (1791)

**41.1397**

***Salvia phlomoides* Asso, *Introd. Oryctogr. Zool. Aragon.* 158 (1784)**

subsp. ***africana* (Maire) Greuter & Burdet in *Willdenowia* 14: 301 (1985)**

**● 9.396**

***Salvia viridis* L., *Sp. Pl.* 24 (1753)**

**28.1003**

***Satureja graeca* L., *Sp. Pl.* 568 (1753)**

**59.1983**

***Scutellaria orientalis* L., *Sp. Pl.* 598 (1753)**

subsp. ***demnatisensis* Batt., *Contr. Fl. Atl.* 66 (1919)**

**\* 9.388**

***Sideritis hirsuta* L., *Sp. Pl.* 575 (1753)**

**9.391, 61.2092**

***Sideritis incana* L., *Sp. Pl.*, ed. 2, 2: 208 (1763)**

**18.722**

***Sideritis montana* L., *Sp. Pl.* 575 (1753)**

subsp. ***abracteata* (Asso) Murb. in *Acta Univ. Lund* 34(7): 35 (1898)**

4.241

*Stachys arenaria* Vahl, *Symb. Bot.* 2: 64 (1791)subsp. *mollis* (Benth.) F. Gómiz in *Anales Jard. Bot. Madrid* 58: 199 (2000)

\* 13.573, 27.964

*Stachys circinata* L'Hér., *Stirp. Nov.* 51 (1786)subsp. *circinata*

10.450b, 64.2264

*Stachys fontqueri* Pau in *Mem. Real Soc. Esp. Hist. Nat.* 12: 377 (1924)

\* 61.2086, 64.2227

*Stachys mouretii* Batt. & Pit. in Pit., *Contr. Fl. Maroc* 32 (1918)

\* 14.591

*Stachys ocymastrum* (L.) Briq., *Lab. Alp. Mar.* 252 (1893)

51.1678

*Stachys saxicola* Coss. in *Bull. Soc. Bot. France* 20: 257 (1873)subsp. *platyodon* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 23: 208 (1932)

\* 28.1023

Note: This taxon, not given in Valdés & al. (2002: 517), was collected in a limestone gorge c. 6 km SE of Sidi Abdallah (Jbel Tazekka), from where it was indicated by Fennane & Ibn Tattou (2005: 273) and Fennane & al. (2007: 463).

*Teucrium botrys* L., *Sp. Pl.* 562 (1753)

61.2121

*Teucrium capitatum* L., *Sp. Pl.* 566 (1753)*T. polium* subsp. *capitatum* (L.) Arcangeli, *Comp. Fl. Ital.* 559 (1882)

34.1158

*Teucrium chamaedrys* L., *Sp. Pl.* 565 (1753)

34.1160b, 35.1200, 35.1205, 37.1262

*Teucrium decipiens* Coss. & Balansa in *Bull. Soc. Bot. France* 20: 258 (1874)

\* 3.122

*Teucrium embergeri* (Sauvage & Vindt) El Oualidi, T. Navarro & A. Martín in *Acta Bot. Malac.* 22: 198 (1997)

\* 4.223, 6.290, 61.2099, 64.2177

*Teucrium fruticans* L., *Sp. Pl.* 563 (1753)

3.118

*Teucrium joannis* (Sauvage & Vindt) El Oualidi, T. Navarro & A. Martín in *Acta Bot. Malac.* 22: 198 (1997)

\* 25.889, 33.1118

*Teucrium resupinatum* Desf., *Fl. Atlant.* 2: 4 (1798)

41.1393, 51.1680, 54.1792

*Teucrium rotundifolium* Schreb., *Pl. Vert. Unilab.* 42 (1773)

18.730, 35.1195, 40.1375

*Thymus algeriensis* Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 95 (1852)

64.2181

*Thymus munbyanus* Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 96 (1852)

subsp. *ciliatus* (Desf.) Greuter & Burdet in *Willdenowia* 15: 82 (1985)

*Th. ciliatus* (Desf.) Benth., *Labiata. Gen. Spec.* 348 (1834), nom. illeg.

\*\* 6.287, 61.2105

*Thymus zygis* L., *Sp. Pl.* 591 (1753)

subsp. *gracilis* (Boiss.) R. Morales in *Anales Jard. Bot. Madrid* 41(1): 93 (1984)

13.553, 33.1130

*Thymus willdenowii* Boiss., *Elench. Pl. Nov.* 73 (1838)

*Th. hirtus* Willd., *Enum. Pl.* 623 (1809), non Link in Russell, *Nat. Hist. Aleppo*, ed. 2, 2: 256 (1794)

7.319, 16.622, 32.1094

### *Callitrichaceae*

*Callitriche obtusangula* Le Gall, *Fl. Morbihan* 202 (1852)

58.1928

*Callitriche stagnalis* Scop., *Fl. Carniol.*, ed. 2, 2: 251 (1772)

42.1453, 42.1454, 58.1928b

### *Plantaginaceae*

*Plantago afra* L., *Sp. Pl.*, ed. 2: 168 (1762)

25.904

*Plantago albicans* L., *Sp. Pl.* 114 (1753)

19.759, 19.762

Note: Plants of gathering 19.759 are keyed out var. *latifolia* Willk. in Willk. & Lange, *Prodr. Fl. Hispan.* 2: 354 (1868).

*Plantago coronopus* L., *Sp. Pl.* 115 (1753)

subsp. *commutata* (Guss.) Pilg. in *Repert. Spec. Nov. Regni Veg.* 28: 287 (1930)

*P. weldenii* Rechb., *Fl. Germ. Excurs.* 396 (1831)

14.576, 26.914

Note: Gathering 14.576 expands the known distribution area of this subspecies in Morocco to “moyen Atlas central” (see Fennane & Ibn Tattou 2005: 310, Fennane & al. 2007: 499).

subsp. *coronopus*

1.30, 19.761

***Plantago cupanii*** Guss., *Fl. Sicul. Prodr.* 1: 190 (1827)

*P. coronopus* subsp. *cupanii* (Guss.) Nyman, *Consp. Fl. Eur.* 617 (1881)

4.243

***Plantago lagopus*** L., *Sp. Pl.* 114 (1753)

1.23, 25.906, 53.1777

***Plantago mauritanica*** Boiss. & Reut., *Pugillus. Pl. Afr. Bor. Hispan.* 105 (1852)

\*\* 3.82, 12.518, 16.636

***Plantago ovata*** Forssk., *Fl. Aegypt.-Arab.* 31 (1775)

19.761b

### ***Oleaceae***

***Jasminum fruticans*** L., *Sp. Pl.* 7 (1753)

12.524

***Olea europaea*** L., *Sp. Pl.* 8 (1753)

var. *sylvestris* (Mill.) Lehr, *Diss. Bot.-Med.* 20 (1779)

*O. europaea* subsp. *oleaster* (Hoffmanns. & Link) Negodi in *Arch. Bot. Sist.* 3: 79 (1927)

3.115, 23.836

***Phillyrea angustifolia*** L., *Sp. Pl.* 7 (1753)

38.1271

***Phillyrea latifolia*** L., *Sp. Pl.* 8 (1753)

*Ph. media* L., *Syst. Nat.*, ed. 10, 2: 847 (1759)

40.1369, 52.1746, 53.1767, 63.2160

### ***Scrophulariaceae***

***Anarrhinum fruticosum*** Desf., *Fl. Atlant.* 2: 52, t. 142 (1798)

subsp. *fruticosum*

7.315

***Anarrhinum laxiflorum*** Boiss., *Elench. Pl. Nov.* 71 (1838)

64.2266

***Anarrhinum pedatum*** Desf., *Fl. Atlant.* 2: 52, tab. 142 (1798)

• 27.976, 41.1391

***Antirrhinum majus*** L., *Sp. Pl.* 617 (1753)

subsp. *cirrhigenum* (Ficalho) Franco in *Bot. J. Linn. Soc.* 64: 275 (1971)

61.2094

subsp. *majus*

39.1330

***Bartsia trixago*** L., *Sp. Pl.* 602 (1753)



- Bellardia trixago* (L.) All., *Fl. Pedem.* 1: 61 (1785)  
12.548
- Chaenorhinum rubrifolium* (DC.) Fourr. in *Ann. Soc. Linn. Lyon*, sér. 2, 17: 127 (1869)  
14.589
- Chaenorhinum suttonii* Benedi & J.M. Monts. Martí in *Collect. Bot. (Barcelona)* 20: 70 (1991)  
\*\* 40.1361
- Chaenorhium villosum* (L.) Lange in Willk. & Lange, *Prodr. Fl. Hispan.* 2: 580 (1870)  
subsp. *granatensis* (Willk.) Valdés in *Lagasalia* 14: 94 (1986)  
17.698, 36.1230, 60.2045, 65.2281
- Note: Gathering 17.698 expands to “moyen Atlas central” the distribution area of this subspecies, recorded so far in Middle Atlas only in Jbel Tazekka (Fennane & Ibn Tattou 2005: 363; Fennane & al. 2007: 527).
- Digitalis mauretunica* (Emb. & Maire) Ivanina in *Trudy Bot. inst. Akad. Nauk S.S.S.R., Ser. 1, Fl. Sist. Vyssk. Rast.* 11: 227 (1955)  
\* 48.1636
- Digitalis obscura* L., *Sp. Pl.*, ed. 2: 867 (1763)  
subsp. *riphaea* (Pau & Font Quer) Valdés & Mateos in *Lagasalia* 30: 200 (2010)  
\* 61.2091
- Erinus alpinus* L., *Sp. Pl.* 630 (1753)  
64.2241
- Kickxia commutata* (Rehb.) Fritsch, *Excursionsfl. Oesterreich*: 492 (1897)  
subsp. *commutata*  
53.1771
- Linaria amethystea* (Vent.) Hofmanns. & Link, *Fl. Port.* 1(8): 253, tab. 47, (1811)  
subsp. *broussonetii* (Poir.) Malato-Beliz in *Bol. Soc. Brot.*, ser. 2, 57: 227 (1984)  
4.246, 30.1072
- Linaria arvensis* (L.) Desf., *Fl. Atlant.* 2: 45 (1798)  
16.647
- Linaria gharbensis* Batt. & Pit. in Pit., *Contr. Etude Fl. Maroc* 27 (1918)  
15.619
- Linaria maroccana* Hook. f. in *Bot. Mag.* 98, tab. 5983 (1872)  
42.1421
- Linaria micrantha* (Cav.) Hoffmanns. & Link, *Fl. Portug.* 1: 258 (1811)  
64.2255
- Linaria multicaulis* (L.) Mill., *Gard. Dict.*, ed. 8, n. 7 (1768)  
subsp. *heterophylla* (Desf.) D.A. Sutton, *Rev. Antirrhineae* 448 (1988)

4.244, 14.577, 60.2053b

*Linaria pseudo-viscosa* Murb. in *Acta Univ. Lund* 34(7): 21 (1898)

26.1590

*Linaria simplex* (Willd.) DC. in Lam. & DC., *Fl. Franç.*, ed. 3, 3: 588 (1805)

16.647b, 64.225b

*Linaria tristis* (L.) Mill., *Gard. Dict.*, ed. 8, n. 8 (1768)

subsp. *mesatlantica* D.A. Sutton, *Rev. Antirhineae* 377 (1988)

\* 16.633

subsp. *pectinata* (Pau & Font Quer) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 22: 308 (1931)

\* 26.938c, 36.1233, 39.1323, 45.1572, 59.1984, 61.2119, 62.2127, 64.2259

*Misopates orontium* (L.) Raf., *Autik. Bot.* 158 (1840)

4.227, 28.1003, 39.1329, 41.1379, 43.1466

Notes: Plants of gatherings 41.1379 and 43.1466 have big corollas (16-19 mm), but their glandular-pubescent inflorescences and capsules clearly place them in this species.

*Parentucellia latifolia* (L.) Caruel in Parl., *Fl. Ital.* 6: 480 (1885)

14.582

*Parentucellia viscosa* (L.) Caruel in Parl., *Fl. Ital.* 6: 482 (1885)

42.1431

*Scrophularia arguta* Aiton, *Hort. Kew.* 2: 342 (1789)

2.70

*Scrophularia auriculata* L., *Sp. Pl.* 620 (1753)

29.1284, 42.1414, 48.1639

*Scrophularia canina* L., *Sp. Pl.* 621 (1753)

subsp. *canina*

5.262, 16.626, 27.955, 39.1315

*Scrophularia lyrata* Willd., *Hort. Berol.* 55 (1805)

12.526, 57.1854

*Verbascum faurei* (Murb.) Hub.-Morath in *Bauhinia* 5: 12 (1973)

*Celsia faurei* Murb. in *Acta Univ. Lund, ser. 2*, 17(9): 7 (1921)

\*\* 10.451

*Verbascum rotudifolium* Ten., *Fl. Napol.* 1: 66 (1815)

subsp. *haenseleri* (Boiss.) Murb. in *Bull. Soc. Hist. Nat. Afrique N.* 18: 83 (1933)

64.2222

*Verbascum sinuatum* L., *Sp. Pl.* 178 (1753)

3.107, 51.1661, 54.1796

*Veronica arvensis* L., *Sp. Pl.* 13 (1753)

14.580b, 61.2113

*Veronica beccabunga* L., *Sp. Pl.* 12 (1753)

subsp. *beccabunga*

64.2235

*Veronica hederifolia* L., *Sp. Pl.* 13 (1753)

subsp. *heredifolia*

30.1061

*Veronica praecox* All., *Auct. Fl. Pedem.* 5 (1789)

61.2113b

*Veronica rosea* Desf., *Fl. Atlant.* 1: 13 (1798)

subsp. *atlantica* (Ball) I. Soriano in *Lagascalìa* 18: 299 (1996)

\*\* 18.733, 64.2256

*Veronica serpyllifolia* L., *Sp. Pl.* 12 (1753)

46.1597

Note: This gathering expands to the Middle Atlas the distribution area of this species in Morocco previously known only in the Rif mountains (Fennane & Ibn Tattou 2005: 382, Fenanne & al. 2007: 548).

*Veronica verna* L., *Sp. Pl.* 14 (1753)

14.580, 29.1301, 45.1560, 61.2113c

### *Globulariaceae*

*Globularia alypon* L., *Sp. Pl.* 95 (1753)

38.1269

### *Orobanchaceae*

*Orobanche alba* Willd., *Sp. Pl.* 3: 450 (1800)

16.623

*Orobanche amethystea* Thuill., *Fl. Paris*, ed. 2: 317 (1800)

33.1116

*Orobanche artemisiae-campestris* Gaudin, *Fl. Helv.* 4: 179 (1829)

12.551

*Orobanche crenata* Forssk., *Fl. Aegypt.-Arab.* 113 (1775)

16.629

*Orobanche hederæ* Duby, *Bot. Gall.* 1: 350 (1828)

16.631

*Orobanche minor* Sm. in Sowerby, *Eng. Bot.*, tab. 422 (1797)

13.571, 64.2230, 64.2270

*Orobanche sanguinea* C. Presl. in J. Presl. & C. Presl., *Delic. Prag.* 71 (1822)

63.2150

**Lentibulariaceae**

***Utricularia australis*** R. Br., *Prodr. Fl. Nov. Holl.* 430 (1810)

58.1933

**Campanulaceae**

***Campanula dichotoma*** L., *Cent. Pl.* 2: 10 (1755)

*C. afra* Cav. in *Anales Ci. Nat.* 3: 21 (1801)

3.84, 25.890, 40.1363, 43.1472, 53.1766

Note: Gathering 3.84 expands to "Maroc atlantique nord" the known distribution area of this species in Morocco (see Fennane & Ibn Tattou 2005: 102).

***Campanula erinus*** L., *Sp. Pl.* 169 (1753)

39.1335

***Campanula filicaulis*** Durieu in Bory & Durieu, *Expl. Sci. Algérie, Atlas*: tab. 62, f. 3 (1849)

7.353, 9.411, 16.628, 63.2165

***Campanula lusitanica*** L. in Loeffl., *Iter Hispan.* 111 (1758)

subsp. *lusitanica*

26.939, 27.961, 43.1469

***Campanula rapunculus*** L., *Sp. Pl.* 164 (1753)

4.194, 26.949, 53.1772, 58.1939

***Feeria angustifolia*** (Schousb.) Buser in *Bull. Herb. Boissier* 2: 518 (1894)

\* 28.1004, 40.1367

***Jasione montana*** L., *Sp. Pl.* 928 (1753)

subsp. *echinata* (Boiss. & Reut.) Nyman, *Consp. Fl. Eur.* 486 (1879)

27.969, 28.1001, 51.1664, 57.1894

***Legousia falcata*** (Ten.) Janchen in *Mitt. Naturwiss. Vereins. Univ. Wien*, ser. 2, 5: 100 (1907)

10.461, 44.1510

***Solenopsis laurentia*** (L.) C. Presl., *Prodr. Monogr. Lobel.* 32 (1836)

43.1459

***Trachelium caeruleum*** L., *Sp. Pl.* 171 (1753)

subsp. *caeruleum*

39.1346, 40.1360, 51.1714

**Rubiaceae**

***Asperula arvensis*** L., *Sp. Pl.* 103 (1753)

32.1097, 43.1497

***Asperula hirsuta*** Desf., *Fl. Atlant.*, 1: 127 (1798)

4.157, 7.332, 12.529, 34.1168, 35.1188, 57.1829, 60.2006, 61.2093, 64. 2216, 65.2278

*Asperula laevigata* L., *Mant. Pl.* 38 (1767)

57.1824

*Callipeltis cucullaris* (L.) Steven in *Mém. Soc. Nat. Mosc.* 7: 275 (1829)

39.1331, 40.1365

*Crucianella angustifolia* L., *Sp. Pl.* 108 (1753)

3.108, 4.187, 27.981, 57.1880

*Crucianella patula* L., *Demonstr. Pl.* 4 (1753)

7.309

Note: This is, presumably, the first record of this species for the High Atlas (see Fennane & Ibn Tattou 2005: 350).

*Cruciata pedemontana* (Bellardi) Ehrend. in *Notes Roy. Bot. Gard. Edinburgh* 22: 396 (1958)

14.585, 29.1308, 29.1311, 30.1062b, 60.2001

*Galium album* Mill., *Gard. Dict.*, ed. 8, n° 7 (1768)

*G. mollugo* subsp. *erectum* Syme in Sm., *Engl. Bot.*, ed. 3 [B], 4: 217 (1865)

7.324, 16.659, 29.1295, 35.1178, 36.1244, cf. 38.1979, cf. 43.1486, 45.1563, 61.2088

Note: Recorded by Fennane & Ibn Tattou (2005: 350) from the Rif and from the Tazekka area in Middle Atlas, gathering 7.324 expands the distribution area of this species to the High Atlas and gathering 16.659 to “moyen Atlas central”.

*Galium aparine* L., *Sp. Pl.* 108 (1753)

subsp. *aparine*

4.218, 9.419, 10.478, 57.1853, 60.1995

*Galium concatenatum* Coss., *Notes Pl. Crit.* 38 (1849)

41.1395

*Galium lucidum* All., *Auct. Syn. Stirp. Taurin.* 5 (1773)

subsp. *lucidum*

10.475, 33.1127, 62.2128

*Galium murale* (L.) All., *Fl. Pedem.* 1: 8 (1785)

25.895, 25.909, 26.932c, 60.1999b

*Galium parisiense* L., *Sp. Pl.* 108 (1753)

subsp. *divaricatum* (Lam.) Rouy & E. G. Camus in Rouy, *Fl. France* 8: 46 (1903)

*G. divaricatum* Lam., *Encycl.* 2: 580 (1788)

4.215, 27.985, 30.1071, 30.1071c, 51.1731, 57.1848, 60.1999, 61.2103b

Note: Known from Jbel Tazekka (Valdés & al. 2002: 606, Fennane & Ibn Tattou 2005: 351) and other areas in Morocco, gathering 4.215 expands the distribution area of this subspecies to “moyen Atlas central”.

subsp. *parisiense*

10.482, 17.712, 43.1499, 57.1873, 61.2103c, 62.2139

***Galium rotundifolium*** L., *Sp. Pl.* 108 (1753)

47.1608

***Galium scabrum*** L., *Sp. Pl.* 108 (1753)

12.537, 27.975, 42.1437, 60.2003, 62.2123

***Galium setaceum*** Lam., *Encycl.* 2: 584 (1788)

2.77

***Galium spurium*** L., *Sp. Pl.* 106 (1753)

8.382, 17.712b, 44.1504, 48.1642

***Galium tricornutum*** Dandy in *Watsonia* 4: 47 (1957)

*G. tricorne* Stokes in With., *Arr. Brit. Pl.*, ed. 2, 1: 153 (1788), nom. illeg.

7.339, 32.1096

***Galium verrucosum*** Huds. in *Philos. Trans.* 56: 251 (1767)

*G. saccharatum* All., *Fl. Pedem.* 1: 39 (1785)

subsp. ***verrucosum***

19.764, 51.1708

***Galium verticillatum*** Danth. in Lam., *Encycl.* 2: 585 (1788)

8.382b, 17.714, 61.2103

***Galium verum*** L., *Sp. Pl.* 107 (1753)

9.422

***Galium viridiflorum*** Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 51 (1852)

62.2136

***Galium viscosum*** Vahl, *Symb. Bot.* 2: 29 (1791)

18.737, 60.2010, 64.2190

Note: Known from the Tazekka (Fennane & Ibn Tattou 2005: 353) and other areas in Morocco, gathering 18.737 expands the distribution area of this species to "moyen Atlas central".

***Putoria calabrica*** (L. f.) DC., *Prodr.* 4: 577 (1830)

35.1197

***Rubia peregrina*** L., *Sp. Pl.* 109 (1753)

40.1351, 60.1997, 61.2073, 63.2152

***Sherardia arvensis*** L., *Sp. Pl.* 103 (1753)

1.24, 10.484

***Valantia hispida*** L., *Syst. Nat.*, ed. 10, 2: 1307 (1759)

59.1986

### ***Caprifoliaceae***

***Lonicera etrusca*** Santi, *Viagg. Montamiata* 1: 113 (1758)

10.472

*Lonicera periclymenum* L., *Sp. Pl.* 173 (1753)

subsp. *hispanica* (Boiss. & Reut.) Nyman, *Consp. Fl. Eur.* 322 (1879)

47.1610

*Sambucus ebulus* L., *Sp. Pl.* 269 (1753)

60.2011

*Viburnum tinus* L., *Sp. Pl.* 268 (1753)

52.1736, 60.2022, 61.2112

### *Valerianaceae*

*Centranthus calcitrapae* (L.) Dufur., *Hist. Nat. Valér.* 39 (1811)

8.367, 17.689, 29.1309b, 60.1994, 64.2273

*Centranthus macrosiphon* Boiss., *Diagn. Pl. Orient.*, ser. 1, 3: 57 (1843)

28.1013, 42.1406, 57.1900

*Centranthus nevadensis* Boiss., *Diagn. P. Orient.*, ser. 2, 2: 120 (1856)

subsp. *nevadensis*

64.2237

*Fedia cornucopiae* (L.) Gaertn., *Fruct. Sem. Pl.* 2: 37 (1790)

12.499

*Fedia pallescens* (Maire) Mathez in *Mem. Soc. Brot.* 27: 168 (1984)

\* 11.494

*Valeriana tuberosa* L., *Sp. Pl.* 33 (1753)

64.2201

*Valerianella coronata* (L.) DC. in Lam. & DC., *Fl. Franç.*, ed. 3, 4: 241 (1805)

64.2271

*Valerianella dentata* (L.) Pollich, *Hist. Pl. Palat.* 1: 30 (1776)

61.2115

*Valerianella discoidea* (L.) Loisel., *Not. Fl. France* 148 (1810)

9.390

*Valerianella locusta* (L.) Laterr., *Fl. Bordel.*, ed. 2: 93 (1821)

subsp. *locusta*

29.1293

Note: These plants, with fertile loculus without a thickened outer wall and bracteoles 2-3,5 m belong to *f. carinata* (Loisel.) Devesa, J. López & R. Gonzalo in *Acta Bot. Malac.* 30: 43 (2005) (*V. carinata* Loisel., *Not. Fl. France* 149, 1810).

*Valerianella microcarpa* Loisel., *Not. Fl. France* 151 (1810)

4.238, 29.1031

**Dipsacaceae**

***Knautia mauritanica*** Pomel in *Bull. Soc. Sci. Phys. Algérie*. 11: 64 (1874)

\*\* 14.614

***Lomelosia simplex*** (Desf.) Raf., *Fl. Tellur.* 4: 95 (1838)

subsp. ***dentata*** (Jordan & Fourr.) Greuter & Burdet in *Willdenowia* 15: 76 (1985)

*Scabiosa simplex* subsp. *dentata* (Jord. & Fourr.) Devesa in *Lagascalía* 12: 204 (1984)

41.1385, 43.1470, 51.1660b

subsp. ***simplex***

61.2081

***Lomelosia stellata*** (L.) Raf., *Fl. Tellur.* 4: 95 (1838)

*Scabiosa stellata* L., *Sp. Pl.* 100 (1753)

4.145, 10.458b, 25.900, 39.1348

***Pycnocomon rutifolium*** (Vahl) Hoffmanns. & Link, *Fl. Portug.* 2: 94 (1820-1824)

1.6

***Scabiosa atropurpurea*** L., *Sp. Pl.* 100 (1753)

*Sixalis atropurpurea* (L.) Greuter & Burdet in *Willdenowia* 15: 76 (1985)

33.1113, 51.1660

***Scabiosa turolensis*** Pau, *Not. Bot. Fl. Españ.* 1: 20 (1887)

subsp. ***grosii*** (Pau) Greuter & Burdet in *Willdenowia* 12: 43 (1982)

*S. turolensis* subsp. *maroccana* (Pau & Font Quer) Romo in *Lagascalía* 18: 336 (1996)

61.2069

**Compositae (Asteraceae)**

***Achillea leptophylla*** M. Bieb., *Fl. Taur.-Caucas.* 2: 335 (1808)

5.268, 6.283, 7.348

***Achillea ligustica*** All., *Auct. Syn. Stirp. Taurin.* 17 (1773)

12.517

***Achillea maura*** Humb. in *Bull. Soc. Hist. Nat. Afrique N.* 18: 150 (1927)

\* 391.1349

***Achillea santoloniodes*** Lag., *Gen. Sp. Pl.* 30 (1816)

19.795

***Anacyclus clavatus*** (Desf.) Pers., *Syn. Pl.* 2: 465 (1807)

4.210, 33.1119

***Anacyclus homogamos*** (Maire) Humphries in *Bull. Brit. Mus. (Nat. Hist.), Bot.* 7(3): 127 (1979)

10.462b, 19.779



*Anacyclus pyrethrum* (L.) Link, *Enum. Hort. Berol. Alt.* 2: 344 (1822)

7.355, 8.369, 16.652

*Anacyclus radiatus* Loisel., *Fl. Gall.* 2: 583 (1807)

subsp. *radiatus*

42.1418

*Andryala cedretorum* Maire in *Mém. Soc. Sci. Nat. Maroc* 15: 45 (1926)

\* 13.568

*Andryala integrifolia* L., *Sp. Pl.* 808 (1753)

1.9, 27.956, 55.1665, 57.1909, 58.1940

*Anthemis arvensis* L., *Sp. Pl.* 894 (1753)

subsp. *incrassata* (Loisel.) Nyman, *Consp. Fl. Eur.* 361 (1879)

48.1640, 63.2169

*Anthemis pedunculata* Desf., *Fl. Atlant.* 2: 288 (1799)

subsp. *pedunculata*

*A. pedunculata* subsp. *tuberculata* (Boiss.) Maire in Jahand. & Maire, *Cat. Pl. Maroc* 3: 762 (1934)

11.497, 12.502, 17.682, 29.1043, 45.1546, 57.1874, 64.2233

Note: Plants of gathering 45.1546 are keyed out as var. *discoidea* (Boiss.) Oberpr. in *Bocconeia* 9: 273, 1998 (type locality). The plants of the other gatherings belong to the typical var. *pedunculata*.

*Arnoseris minima* (L.) Schweigg. & Koerte, *Fl. Erlang.* 2: 72 (1811)

57.1906

*Artemisia herba-alba* Asso, *Syn. Stirp. Arag.* 117 (1779)

38.1264

Note: Recorded for central Rif, west Rif, Targuist area and Aknoul region in Valdés & al. (2002: 665), the Rif is not included in the distribution area of this species in Ibn Tattou & Fennane (2009: 21).

*Asteriscus aquaticus* (L.) Less., *Syn. Gen. Comp.* 210 (1832)

*Nauplius aquaticus* (L.) Cass. in Cuvier, *Dict. Sci. Nat.* 34: 273 (1761)

3.109, 19.791, 53.1775

*Atractylis cancellata* L., *Sp. Pl.* 830 (1753)

2.74, 3.97, 13.574, 20.806, 41.1386, 51.1718

*Atractylis serratuloides* (Cass.) DC., *Prodr.* 6: 550 (1838)

*A. microcephala* Coss. & Durieu in *Ann. Sci. Nat.*, ser. 4, 1: 240 (1854)

6.274, 19.789, 20.813

*Bellis microcephala* Lange in *Vidensk. Meddel. Dansk Naturhist. Foren Kjøbenhavn*, ser. 2, 3: 66 (1861)

*B. annua* subsp. *microcephala* (Lange) Nyman, *Consp. Fl. Eur.* 390 (1879)

23.844

*Bellis perennis* L., *Sp. Pl.* 886 (1753)

12.520, 45.1542

Note: Recorded for the Rif in Ibn Tattou & Fennane (2009: 26), gathering 12.520 expands to the Middle Atlas the known distribution area of this species in Morocco.

*Bombycilaena discolor* (Pers.) M. Lainz in *Supl. Ci. Bol. Inst. Estud. Asturianos* 16: 194 (1973)

17.703, 32.1091b, 61.2071

*Calendula arvensis* (Vail.) L., *Sp. Pl.*, ed. 2: 1303 (1763)

19.797

*Calendula maroccana* (Ball) B.D. Jacks., *Index Kew.* 1: 383 (1893)

\* 28.1014, 64.2173

*Calendula stellata* Cav., *Icon.* 1: 3 (1791)

3.86

*Carduus chevallieri* L. Chevall. in *Mém. Herb. Boissier* 7: 9 (1900)

\* 7.361

*Carduus nutans* L., *Sp. PL.* 821 (1753)subsp. *subacanthis* J. Arènes in *Mém. Mus. Natl. Hist. Nat.* 24 (4): 217 (1949)*C. ballii* Hook. f. in *J. Bot.* 11: 368 (1873)

\* 4.149

*Carduus pycnocephalus* L., *Sp. Pl.*, ed. 2: 1151 (1763)subsp. *pycnocephalus*

4.221, 48.1635

*Carlina brachylepis* (Batt.) Meusel & Kärnsner in *Feddes Rept.* 88: 403 (1977)*C. involucrata* auct., non Poir., *Voy. Barbarie* 2: 234 (1789)

\*\* 20.808, 22.831, 39.1340, 62.2126

*Carlina lanata* L., *Sp. Pl.* 828 (1753)

22.822

Note: This gathering expands the known distribution area of this species in Morocco to the west to the "basse Moulouya" (see Ibn Tattou & Fennane 2009: 33).

*Carthamus* cf. *attractyloides* (Pomel) Greuter in *Willdenowia* 33: 53 (2003)

\*\* 7.359

*Carthamus caeruleus* L., *Sp. Pl.* 830 (1753)*Carduncellus caeruleus* (L.) C. Presl, *Fl. Sicul.* 30 (1826)

19.792, 41.1390, 51.1682

*Carthamus calvus* (Boiss. & Reut.) Batt., *Fl. Algérie* 1: 510 (1889)*Carduncellus calvus* Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 64 (1852)

## ● 33.1123

*Carthamus lanatus* L., *Sp. Pl.* 830 (1753)

20.810

Note: This gathering expands to the “basse Moulouya” the known distribution area of this species in Morocco (see Ibn Tattou & Fennane 2009: 35).

*Carthamus pinnatus* Desf., *Fl. Atlant.* 2: 258 (1799)

64.2248

*Carthamus pomelianus* (Batt.) Prain, *Ind. Kew.*, Suppl. 3: 37 (1908)*Carduncellus pomelianus* Batt. in *Bull. Soc. Bot. France* 33: 354 (1886)

\*\* 7.349

*Carthamus rhapsodicoides* (Pomel) Greuter in *Willdenowia* 33: 53 (2003)*Carduncellus rhapsodicoides* Pomel, *Nouv. Mat. Fl. Atl.* 266 (1873)

\*\* 18.723

*Carthamus rhiphaeus* Font Quer & Pau in Font Quer, *Iter Maroc.* 1927, n. 711 (1928), nom. in Sched.*Phonus rhiphaeus* (Font Quer & Pau) G. López in *Anales Jard. Bot. Madrid* 47: 27 (1990)

\* 50.1658

*Catanache caerulea* L., *Sp. Pl.* 812 (1753)

4.178, 9.399

*Catananche caespitosa* Desf., *Fl. Atlant.* 2: 238 (1799)

\*\* 18.719

*Centaurea boissieri* DC., *Prodr.* 7: 303 (1838)subsp. *atlantica* (Font Quer) Blanca in *Lagascalía* 10: 53 (1981)

\*\* 7.356

*Centaurea calcitrapa* L., *Sp. Pl.* 917 (1753)

54.1802

*Centaurea eriophora* L., *Sp. Pl.* 916 (1753)

19.798

*Centaurea josiae* Humb. in *Bull. Soc. Hist. Nat. Afrique N.* 15: 211 (1924)

\* 9.421

*Centaurea* cf. *litardieri* Jahand. & Maire in *Bull. Soc. Hist. Nat. Afrique N.* 15: 211 (1924)

\* 9.431

*Centaurea melitensis* L., *Sp. Pl.* 917 (1753)

19.790b, 23.846, 40.1374

*Centaurea monticola* DC., *Prodr.* 7(1): 302 (1838)

61.2074

*Centaurea nana* Desf., *Fl. Atlant.* 2: 296 (1799)

\*\* 4.206, 10.470

*Centaurea pubescens* Willd., *Sp. Pl.* 3: 2332 (1803)

*C. incana* Desf., *Fl. Atlant.* 2: 301 (1799), non Burm. f., *Prodr. Fl. Cap.* 28 (1768)

40.1366

*Centaurea pullata* L., *Sp. Pl.* 911 (1753)

subsp. *pullata*

*C. claryi* Debeaux in *Bull. Soc. Hist. Nat. Toulouse* 23: 29 (1889)

4.202, 7.357, 9.414, 16.634, 16.642, 27.966, 54.1798, 54.1806, 63.2172

*Centaurea sicula* L., *Sp. Pl.* 918 (1753)

*C. nicaeensis* All., *Fl. Pedem.* 1: 162 (1785)

subsp. *sicula*

19.790

*Centaurea sulphurea* Willd., *Enum. Pl.* 930 (1809)

3.95, 13.556, 28.1010, 34.1164, 43.1483

*Chamaemelum fuscatum* (Brot.) Vasc. in *Anais Inst. Vinho Porto* 20: 276 (1967)

19.799, 58.1934

*Cheirolophus tananicus* (Maire) Holub in *Preslia* 45: 143 (1973)

\* 8.365

*Cichorium pumilum* Jacq., *Observ. Bot.* 4: 3 (1771)

19.778

*Cladanthus arabicus* (L.) Cass. in Cuvier, *Dict. Sci. Nat.* 9: 343 (1817)

3.114

*Cladanthus mixtus* (L.) Chevall., *Fl. Gén. Env. Paris* 2: 576 (1827)

*Chamaemelum mixtum* (L.) All., *Fl. Pedem.* 1: 185 (1785)

1.10, 13.572, 42.1412

*Cladanthus scariosus* (Ball) Oberpr. & Vogt in *Willdenowia* 32: 197 (2002)

*Chamaemelum scariosum* (Ball) Benedi in *Candollea* 43: 126 (1988)

\* 7.358

*Crepis albida* Vill., *Prosp. Hist. Pl. Dauphiné* 37 (1779)

subsp. *albida*

64.2251

*Crepis foetida* L., *Sp. Pl.* 807 (1753)

subsp. *foetida*

35.1192, 40.1371, 43.1460

*Crepis pulchra* L., *Sp. Pl.* 806 (1753)

9.433, 16.658

***Crepis vesicaria*** L., *Sp. Pl.* 805 (1753)

subsp. ***taraxacifolia*** (Thuill.) Thell. in Schinz & Keller, *Fl. Schweiz*, ed. 3, 2: 361 (1914)

*C. vesicaria* subsp. ***haenselerii*** (DC.) P.D. Sell in *Bot. J. Linn. Soc.* 71: 254 (1976)

4.186, 57.1888

***Crupina crupinastrum*** (Moris) Vis., *Fl. Dalmat.*, 2: 42 (1847)

61.2066

***Cyanus triumfettii*** (All.) A. Löve & D. Löve in *Bot. Not.* 114: 44 (1961)

*Centaurea triumfettii* All., *Auct. Syn. Stirp. Taurin.*, 16 (1773)

8.370, 9.418, 16.661, 57.1898

Note: These gatherings confirm the presence of this species in Morocco, indicated already in Valdés & al. (2002: 712) and by Dobignard & Chatelain (2011a: 254), but given as doubtful by Greuter (2008: 198) and Ibn Tattou & Fennane (2009: 56).

***Cynara cardunculus*** L., *Sp. Pl.* 827 (1753)

subsp. ***flavescens*** Wiklund in *Bot. J. Linn. Soc.* 109: 120 (1992)

34.1152

***Echinops spinosissimus*** Turra, *Farsetia* 13 (1765)

subsp. ***bovei*** (Boiss.) Greuter in *Willdenowia* 33: 58 (2003)

*E. bovei* Boiss., *Diagn. Pl. Orient.*, ser. 1, 6: 66 (1846)

*E. spinosus* subsp. ***bovei*** (Boiss.) Murb. in *Acta Univ. Lund*, ser. 2, 19(1): 59 (1923)

10.453, 13.563

***Echinops strigosus*** L., *Sp. Pl.* 815 (1753)

19.801, 34.1154

***Filago congesta*** DC., *Prodr.* 6: 248 (1838)

*F. polycephala* (Pomel) Wagenitz in *Ver. Deutsch. Bot. Ges.* 79: 337 (1966)

4.160b

Note: Known from other geographical divisions of Morocco (see Ibn Tattou & Fennane, 2009: 62), this gathering expands the distribution area of this species to the Middle Atlas.

***Filago discolor*** (DC.) Andrés Sánchez & Galbany in *Taxon* 59: 1689 (2010)

*Evacidium discolor* (DC.) Maire in *Bull. Soc. Sci. Nat. Maroc* 11: 101 (1931)

4.164 bis, 4.235, 10.457, 14.603, 60.2005

***Filago pygmaea*** L., *Sp. Pl.* 927 (1753)

*Evax pygmaea* (L.) Brot., *Fl. Lusit.* 1: 363 (1804)

subsp. ***pygmaea***

30.1069c

***Filago pyramidata*** L., *Sp. Pl.* 1199 (1753)

4.160, 25.893, 43.1477, 57.1892

***Galactites tomentosus*** Moench, *Methodus* 558 (1794)

51.1699

*Glebionis coronaria* (L.) Spach, *Hist. Nat. Vég.* 10: 181 (1841)*Chrysanthemum coronarium* L., *Sp. Pl.* 890 (1753)

2.68, 19.793

*Glebionis segetum* (L.) Fourr. in *Ann. Soc. Linn. Lyon*, ser. 2, 17: 90 (1869)*Chrysanthemum segetum* L., *Sp. Pl.* 889 (1753)

42.1417

*Glossopappus macrotus* (Durieu) Briq. & Cavill. in Burnat, *Fl. Alpes Marit.* 6: 77 (1916)subsp. *macrotus*

28.1018, 41.1384, 51.1707

*Hedypnois arenaria* (Schousb.) DC., *Prodr.* 7: 82 (1838)

1.8c

*Hedypnois rhagadioloides* (L.) F.W. Schmidt in *Samml. Phys.-Ökon. Aufsätze* 1: 279 (1795)*H. cretica* (L.) Dum.-Cours., *Bot. Cult.* 2: 339 (1802)

10.459, 23.847, 40.1372, 62.2130

*Hertia maroccana* (Batt.) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 22: 298 (1931)

\* 6.284

*Hyoseris radiata* L., *Sp. Pl.* 808 (1753)

10.466b, 25.885, 29.1035

*Hypochaeris achyrophorus* L., *Sp. Pl.* 810 (1753)

4.226, 37.1258

*Hypochaeris arachnoidea* Poir. in Lam., *Encycl.* 5: 572 (1804)

1.8

*Hypochaeris glabra* L., *Sp. Pl.* 811 (1753)

1.8b

*Hypochaeris laevigata* (L.) Ces., Pass. & Gibelli, *Comp. Fl. Ital.* 465 (1879)

25.883b, 26.927, 26.933, 47.1604

*Hypochaeris leontodontoides* Ball in *J. Bot.* 11: 371 (1873)

\* 8.363

*Hypochaeris radicata* L., *Sp. Pl.* 811 (1753)

4.167, 57.1903

*Inula montana* L., *Sp. Pl.* 884 (1753)

12.510

*Jacobaea* cf. *gigantea* (Desf.) Pelser in *Compositae Newslett.* 44: 6 (2006)*Senecio giganteus* Desf., *Fl. Atlant.* 2: 273 (1799)

● 58.1917

*Jurinea humilis* (Desf.) DC., *Prodr.* 6: 677 (1838)

9.407, 17.693

*Lactuca muralis* (L.) Gaertn., *Fruct. Sem. Pl.* t. 158 (1791)

*Mycelis muralis* (L.) Dumort., *Fl. Belg.* 60 (1827)

47.1633

*Lactuca serriola* L., *Cent. Pl.* 2: 29 (1756)

20.807

*Lactuca tenerrima* Pourr. in *Hist. & Mém. Acad. Roy. Sci. Toulouse* 3: 321 (1788)

16.630, 37.1252

*Laphangium luteoalbum* (L.) Tzvelev in *Bjull. Moskovsk. Obšč. Isp. Prir., Otd. Biol.* 98 (6): 105 (1994)

*Gnaphalium luteoalbum* L., *Sp. Pl.* 851 (1753)

*Pseudognaphalium luteoalbum* (L.) Hilliard & B.L. Burt in *Bot. J. Linn. Soc.* 82: 206 (1981)

39.1348b

*Lapsana communis* L., *Sp. Pl.* 811 (1753)

subsp. *macrocarpa* (Coss.) Nyman, *Consp. Fl. Eur.* 474 (1879)

4.214

*Launaea arborescens* (Batt.) Murb. in *Acta Univ. Lund.*, ser. 2, 19(1): 65 (1923)

49.1644

*Launaea fragilis* (Asso) Pau in *Bol. Soc. Aragonesa Ci. Nat.* 16: 68 (1917)

7.352

*Launaea lanifera* Pau in *Mem. Mus. Ci. Nat. Barcelona, Ser. Bot.* 1(3): 23 (1925)

6.270, 34.1161

*Launaea nudicaulis* (L.) Hooker f., *Fl. Brit. India* 3: 416 (1881)

19.763

*Leontodon saxatilis* Lam., *Fl. Franç.*, 2: 115 (1779)

subsp. *mesorrhynchus* (Maire) Maire in *Jahand. & Maire, Cat. Pl. Maroc* 3: 833 (1934)

*L. taraxacoides* subsp. *mesorrhynchus* (Maire) Valdés in *Lagascalia* 18: 308 (1996)

\* 1.8d

subsp. *rothii* Maire in *Jahand. & Maire, Cat. Pl. Maroc* 3: 833 (1934)

*L. longirostris* (Finch & P.D. Sell) Talavera in Valdés & al., *Herb. Univ. Hispal.* 1: 37 (1983)

25.883

*Leucanthemopsis longipectinata* (Font Quer) Heywood in *Anales Inst. Bot. Cavanilles* 33 (2): 184 (1975)

\* 45.1554

*Logfia gallica* (L.) Coss. & Germ. in *Ann. Sci. Nat., Bot.*, ser. 2, 20: 291 (1843)

*Filago gallica* L., *Sp. Pl.* 1230 (1753)

43.1480, 57.1883

***Logfia minima*** (Sm.) Dumort., *Florula Belg.* 68 (1827)

*Filago minima* (Sm.) Pers., *Syn. Pl.* 2: 422 (1807)

30.1085

***Mantiscalca salmantica*** (L.) Briq. & Cavillier in *Arch. Sci. Phys. Nat.*, ser. 5, 12: 111 (1930)

1.13, 35.1177, 54.1786

***Mauranthemum decipiens*** (Pomel) Vogt & Oberpr. in *Taxon* 44: 377 (1995)

*Leucoglossum decipiens* (Pomel) B.H. Wilcox, Bremer & Humphries in *Bull. Nat. Hist. Mus. (London), Bot.* 23: 142 (1993)

*Leucanthemum decipiens* Pomel in *Bull. Soc. Sci. Phys. Algérie* 11: 59 (1874)

22.830

***Mauranthemum paludosum*** (Poir.) Vogt & Oberpr. in *Taxon* 44: 377 (1995)

*Leucanthemum paludosum* (Poir.) Pomel in *Bull. Soc. Sci. Phys. Algérie* 13: 292 (1875)

*Chrysanthemum paludosum* Poir., *Voy. Barbarie* 2: 241 (1789)

*Leucoglossum paludosum* (Poir.) B.H. Wilcox, Bremer & Humphries in *Bull. Nat. Hist. Mus. (London), Bot.* 23: 142 (1993)

subsp. ***paludosum***

4.143

***Micropus supinus*** L., *Sp. Pl.* 927 (1753)

4.164, 32.1091

***Nivellea nivellei*** (Braun-Blanq. & Maire) B.H. Wilcox, Bremer & Humphries in *Bull. Nat. Hist. Mus. (London), Bot.* 23: 140 (1993)

\* 12.515b

***Notobasis syriaca*** (L.) Cass. in Cuvier, *Dict. Sci. Nat.* 35: 171 (1825)

62.2133

***Onopordum acaulon*** L., *Sp. Pl.*, ed. 2: 1159 (1763)

\*\* 7.345

***Otospermum glabrum*** (Lag.) Willk. in *Bot. Zeitung (Berlin)* 22: 251 (1864)

54.1791

***Pallenis cuspidata*** Pomel in *Bull. Soc. Sci. Phys. Algérie* 11: 38 (1874)

subsp. ***canescens*** (Maire) Greuter in *Fl. Medit.* 7: 47 (1997)

\*\* 7.354

***Pallenis maritima*** (L.) Greuter in *Fl. Medit.* 7: 47 (1997)

*Asteriscus maritimus* (L.) Less., *Syn. Gen. Compos.* 210 (1832)

19.800, 23.845



***Pallenis spinosa*** (L.) Cass. in Cuvier, *Dict. Sci. Nat.* 37: 276 (1825)

subsp. ***aurea*** (Willk.) Nyman, *Consp. Fl. Eur.* 391 (1879)

*Asteriscus spinosus* var. *aureus* Willk. in Willk. & Lange, *Prodr. Fl. Hispan.* 2: 48 (1865)

4.230

subsp. ***maroccana*** (Aurich & Podlech) Greuter in *Fl. Medit.* 7: 47 (1997)

\*\* 3.93

subsp. ***spinosa***

*Asteriscus spinosus* (L.) Sch. Bip. in Webb & Berth., *Hist. Nat. Iles Canaries* 3(2,2): 230 (1844) subsp. *spinosus*

19.796, 53.1776

***Phagnalon calycinum*** (Cav.) DC., *Prodr.* 5: 397 (1836)

subsp. ***caroli-pau*** (Font Quer) Emb. & Maire in *Mém. Soc. Sci. Nat. Maroc* 21-22: 37 (1929)

*P. caroli-pau* Font Quer, *Index Sem. Hort. Mus. Barcin. Sci. Nat.* 1927: 13 (1927)

\* 43.1488, 44.1507

***Phagnalon rupestre*** (L.) DC., *Prodr.* 5: 396 (1836)

53.1768, 53.1773

***Phagnalon saxatile*** (L.) Cass. in *Bull. Sci. Soc. Philom. Paris* 1819: 174 (1819)

2.45, 25.888, 39.1334

***Picris cupuligera*** (Durieu) Walp. in *Ann. Bot. Syst.* 1: 461 (1849)

2.72

***Picris hispanica*** (Willd.) P.D. Sell in *Bot. J. Linn. Soc.* 71: 248 (1976)

5.266, 6.285, 7.360, 9.410, 16.625

***Pilosella pseudopilosella*** (Ten.) Soják in *Folia Geobot. Phytotax.* 6: 217 (1971)

*Hieracium pseudopilosella* Ten, *Fl. Nap.* 1: 71 (1811)

*H. pseudopilosella* subsp. *tininkariense* Zahn in *Mém. Soc. Sci. Nat. Maroc* 4: 14 (1924)

14.608, 30.1081, 45.1559

***Podospermum laciniatum*** (L.) DC. in Lam. & DC., *Fl. Franç.*, ed. 3, 4: 62 (1805)

*Scorzonera laciniata* L., *Sp. Pl.* 791 (1753)

4.174, 7.351

***Ptilostemon dyrricola*** (Maire) Greuter in *Boissiera* 22: 142 (1973)

\* 10.465

***Ptilostemon leptophyllus*** (Pau & Font Quer) Greuter in *Boissiera* 22: 127 (1973)

\* 37.1254

***Pulicaria arabica*** (L.) Cass. in Cuvier, *Dict. Sci. Nat.* 44: 94 (1826)

subsp. **hispanica** (Boiss.) Murb. in *Acta Univ. Lund.*, ser. 2, 19(1): 52 (1923)

*P. paludosa* Link in *Neues J. Bot.* 1(3): 142 (1806)

1.11, 2.54, 42.1401, 51.1719

***Pulicaria odora*** (L.) Rechb., *Fl. Germ. Excurs.* 239 (1831)

51.1701

***Reichardia intermedia*** (Sch. Bip.) Samp. in *Bol. Soc. Brot.* 24: 68 (1909)

2.44, 3.98, 3.100

***Rhagadiolus edulis*** Gaertn., *Fruct. Sem. Pl.* 2: 354 (1791)

10.464b, 63.2147

***Rhagadiolus stellatus*** (L.) Gaertn., *Fruct. Sen. Pl.* 2: 354 (1791)

35.1204b

***Rhaponticum coniferum*** (L.) Greuter in *Willdenowia* 33: 61 (2003)

*Leuzea conifera* (L.) DC. in Lam. & DC., *Fl. Franç.*, ed. 3, 4: 109 (1805)

61.2085, 64.2244

***Rhodanthemum arundanum*** (Boiss.) B.H. Wilcox, Bremer & Humphries in *Bull. Nat.*

*Hist. Mus. (London), Bot.* 23: 142 (1993)

8.371, 64.2231

***Rhodanthemum catananche*** (Ball) B.H. Wilcox, Bremer & Humphries in *Bull. Nat. Hist.*

*Mus. (London), Bot.* 23: 142 (1993)

\* 8.368, 17.700

***Rhodanthemum gayanum*** (Coss. & Durieu) B.H. Wilcox, Bremer & Humphries in *Bull.*

*Nat. Hist. Mus. (London), Bot.* 23: 124 (1993)

subsp. ***demnatense*** (Murb.) Vogt in *Lagascalia* 18: 304 (1996)

\* 11.496, 12.506, 31.1090, 44.1505, 45.1539, 57.1874b

***Rhodanthemum laouense*** Vogt in *Willdenowia* 24: 91 (1994)

\* 59.1987

***Santolina pectinata*** Lag., *Gen. Sp. Pl.* 25 (1816)

*S. rosmarinifolia* subsp. ***canescens*** auct., non (Lag.) Nyman, *Consp. Fl. Eur.* 369 (1879)

7.344, 9.423, 64.2261

Note: Known in the High Atlas in the areas of Ida-ou-Tanane and Seksaova (Ibn Tattou & Fennane, 2009: 1081), gatherings 7.344 and 9.423 expand its distribution area to the Ayachi.

***Scolymus hispanicus*** L., *Sp. Pl.* 813 (1753)

13.552

***Scolymus maculatus*** L., *Sp. Pl.* 813 (1753)

19.794, 54.1795

***Scorzonera caespitosa*** Pomel, *Nouv. Mat. Fl. Atl.* 266 (1875)

*S. pseudopygmaea* Lipsch., *Fragm. Monogr. Scorzonera* 1: 40 (1935)

\*\* 10.469, 16.656, 60.2000, 64.2242

*Scorzonera undulata* Vahl, *Symb. Bot.* 2: 86 (1791)

4.162

*Senecio glaucus* L., *Sp. Pl.* 868 (1753)

subsp. *coronopifolius* (Maire) C. Alexander in *Notes Roy. Bot. Gard. Edinburgh* 37(3): 412 (1979)

10.460b, 17.695

Note: This gathering expands to the Middle Atlas the known Moroccan distribution area of this taxon (see Ibn Tattou & Fennane 2009: 113).

*Senecio leucanthemifolius* Poir., *Voy. Barbarie* 2: 238 (1789)

31.1089, 35.1183

*Senecio squalidus* L., *Sp. Pl.* 869 (1753)

subsp. *araneosus* (Emb. & Maire) Alexander in *Notes Roy. Bot. Gard. Edinburgh* 37: 398 (1979)

\* 60.1989

*Sonchus asper* (L.) Hill, *Brit. Herb.* 1: 47 (1769)

subsp. *asper*

52.1756

*Sonchus masguindalii* Pau & Font Quer in Font Quer, *Iter Marocc.* 1927, n. 732 (1928), nom. in Sched.

\* 50.1657

Note: This gathering, from near Peñón de Vélez de la Gomera, confirms the presence of this species in the “Rif centro-occidental” (see Ibn Tattou & Fennane 2009: 117).

*Sonchus tenerrimus* L., *Sp. Pl.* 794 (1753)

2.60, 3.90, 35.1184

*Stachelina dubia* L., *Sp. Pl.* 840 (1753)

51.1713, 61.2104

*Taraxacum ochrocarpum* (Soest) J.-M. Tison in *Biocosme Mésogéen* 27: 110 (2010)

*Taraxacum obovatum* subsp. *ochrocarpum* Soest in *Collect. Bot. (Barcelona)* 4: 9 (1954)

9.415, 14.613

*Taraxacum pachypodum* M. Lindb. in *Acta Soc. Sci. Fenn., ser. B, Opera Biol.* 1(2): 173 (1932)

*T. atlanticum* Pomel in *Bull. Soc. Sci. Phys. Algérie* 11: 9 (1874)

● 130.1084

*Tolpis barbata* (L.) Gaertn., *Fruct. Sem. Pl.* 2: 372 (1791)

1.7, 52.1741

*Tolpis memorialis* Font Quer, *Iter Marocc.* 1930, n. 714 (1932), nom. in sched.

58.1946

*Tragopogon crocifolius* L., *Syst. Nat.*, ed. 10: 1191 (1759)

7.347, 16.646

*Tragopogon porrifolius* L., *Sp. Pl.* 789 (1753)

4.183, 7.347b, 16.650

*Urospermum dalechampii* (L.) F.W. Schmidt in *Samml. Phys.-Ökon. Aufsätze* 1: 276 (1795)

4.234

*Urospermum picroides* F.W. Schmidt in *Samml. Phys.-Ökon. Aufsätze* 1: 275 (1795)

42.1402

*Xeranthemum inapertum* (L.) Mill., *Gard. Dict.*, ed. 8, n. 2 (1768)

9.436, 60.2068, 64.2239

## Angiospermae. Monocotyledoneae

### *Alismataceae*

*Baldellia repens* (Lam.) Lawalrée in *Bull. Jard. Bot. État* 29: 7 (1959)

*B. ranunculoides* subsp. *repens* (Lam.) Á. Löve & D. Löve in *Bot. Not.* 114: 49 (1961)

58.1923

Note: Not indicated for Morocco by Dobignard & Chatelain (2010: 60), it had already been recorded by Talavera & al. (2008: 312–313), Ibn Tattou & Fennane (2009: 128) and Mateos & Valdés (2010b: 315) in several localities of the north of the country (Tanger area and Rif mountains).

### *Potamogetonaceae*

*Potamogeton fluitans* Roth, *Tent. Fl. Germ.* 1: 72 (1788)

*P. nodosus* Poir. in Lam., *Encycl., Suppl.* 4: 535 (1816)

52.1759

*Potamogeton polygonifolius* Pourr. in *Hist. & Mém. Acad. Roy. Sci. Toulouse* 3: 325 (1788)

42.1450, 58.1935

*Groenlandia densa* (L.) Fourr. in *Ann. Soc. Linn. Lyon, ser. 2*, 17: 169 (1869)

*Potamogeton densus* L., *Sp. Pl.* 126 (1753)

17.707

### *Arecaceae*

*Chamaerops humilis* L., *Sp. Pl.*, 1187 (1753)

40.1353

*Araceae**Biarum arundanum* Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 110 (1852)*B. tenuifolium* subsp. *arundanum* (Boiss. & Reut.) Nyman, *Consp. Fl. Eur.* 755 (1882)

4.203, 13.570

Note: Both gatherings expand to Middle Atlas the known distribution area in Morocco of this species (see Ibn Tattou & Fennane 2009: 142).

*Juncaceae**Juncus acutiflorus* Hoffm., *Deutschl. Fl.*, 125 (1791)subsp. *acutiflorus*

42.1433

*Juncus articulatus* L., *Sp. Pl.*, 327 (1753)

39.1341, 42.1452, 51.1706, 58.1916

*Juncus bufonius* L., *Sp. Pl.*, 328 (1753)

42.1449, 58.1948

*Juncus effusus* L., *Sp. Pl.*, 326 (1753)

42.1430

*Juncus* cf. *fontanesii* Laharpe in *Mém. Soc. Hist. Nat. Paris* 3: 130 (1827)

47.1624, 42.1433

Note: Inmature material which does not allowes unambiguous identification.

*Juncus heterophyllus* L.M. Dufour in *Ann. Sci. Nat. (Paris)* 5: 88 (1825)

58.1930

*Juncus hybridus* Brot., *Fl. Lusit.* 1: 513 (1804)

34.1173

*Juncus pygmaeus* Rich. in Thuill., *Fl. Env. Paris*, ed. 2, 178 (1799)

58.1960

*Juncus tenageia* L. f., *Suppl. Pl.* 208 (1782)

42.1456, 48.1956, 58.1967

*Luzula forsteri* (Sm.) DC. in Lam. & DC., *Syn. Pl. Fl. Gall.* 150 (1806)

47.1621b, 55.1822, 57.1875, 60.2065

*Luzula multiflora* (Ehrh.) Lej., *Fl. Spa* 1: 169 (1811)subsp. *multiflora**L. campestris* subsp. *multiflora* (Ehrh.) Buchenau in *Bot. Jahrb. Syst.* 7: 176 (1886)

47.1621

*Luzula nodulosa* (Chaub. & Bory) E.H. Mey. in *Linnaea* 22: 410 (1849)

29.1048

Note: Plants of this gathering are keyed out as var. *mauretanica* Maire & Trab. in *Bull. Soc. Hist. Nat. Afrique N.* 22: 319 (1931)

### **Cyperaceae**

***Carex paulo-vargasii*** Luceño & Marín in *Anales Jard. Bot. Madrid* 59: 348 (2002)

\* 43.1471, 47.1609, 51.1711

***Carex distachya*** Desf., *Fl. Atlant.* 2: 336 (1799)

4.211, 10.455b, 12.547, 27.967, 57.1905, 63.2171

***Carex distans*** L., *Syst. Nat.*, ed. 10: 1263 (1759)

51.1720

***Carex divisa*** Hudson, *Fl. Angl.* 348 (1762)

4.185, 12.543, 14.606, 18.734, 26.921, 37.1257

***Carex divulsa*** Stokes in With., *Arr. Brit. Pl.*, ed. 2, 2: 1035 (1787)

52.1751, 54.1797, 55.1823

***Carex flacca*** Schreb., *Spic. Fl. Lips. App.* 178 (1771)

subsp. *serrulata* (Biv.) Greuter in *Boissiera* 13: 167 (1967)

18.736

***Carex hallerana*** Asso, *Syn. Stirp. Arag.* 1: 372 (1779)

40.1362, 62.2135

***Carex hispida*** Willd. in Schkuhr, *Beschr. Riedgräs.* 1: 63 (1801)

18.736b

***Carex hordeistichos*** Vill., *Pl. Dauphiné* 18 (1779)

18.738

***Carex muricata*** L., *Sp. Pl.* 974 (1753)

subsp. *pairaei* (F. Schultz) Čelak in *Kret. Okoli Praz.* 43 (1870)

30.1068

***Carex nigra*** (L.) Reichard, *Fl. Moeno-Francof.* 2: 96 (1778)

26.1434

***Carex pendula*** Huds., *Fl. Angl.* 352 (1762)

42.1434

***Carex viridula*** Michx., *Fl. Bor.-Amer.* 2: 170 (1803)

*C. serotina* Mérat in *Nouv. Fl. Euv. Paris*, ed. 2, 2: 54 (1821)

58.1941

***Cyperus longus*** L., *Sp. Pl.* 45 (1753)

42.1432, 52.1744

***Cyperus fuscus*** L., *Sp. Pl.* 46 (1753)

51.1716

*Eleocharis multicaulis* (Sm.) Desv., *Obs. Pl. Angers* 74 (1818)

58.1914

*Eleocharis quinqueflora* (Hartm.) O. Schwarz in *Mitt. Thüring. Bot. Ges.* 1: 89 (1949)

18.728

*Isolepis cernua* (Vahl) Roem. & Schult., *Syst. Veg.* 2: 106 (1817)

39.1339, 58.1918

*Isolepis setacea* (L.) R. Br., *Prodr. Fl. Nov. Holl.* 222 (1810)

42.1446, 44.1537, 57.1911, 58.1944

*Scirpoides holoschoenus* (L.) Sojak. in *Sborn. Nár. Mus. V. Praze, Řada B. Přír. Vředy* 140(3-4): 127 (1972)

*Scirpus holoschoenus* L., *Sp. Pl.* 49 (1753)

7.336, 35.1215

### *Gramineae (Poaceae)*

*Achnatherum bromoides* (L.) P. Beauv., *Ess. Agrostogr.* 146 (1812)

*Stipa bromoides* (L.) Dörfel. in F. Schultz, *Herb. Norm.* 34: 129 (1897)

51.1703, 52.1749

*Aegilops geniculata* Roth, *Bot. Abh. Beobacht.* 45 (1787)

4.175, 25.911, 34.1170, 35.1210

*Aegilops triuncialis* L., *Sp. Pl.* 1051 (1753)

subsp. *triuncialis*

10.463, 35.1211

*Aegilops ventricosa* Tausch in *Flora* 20: 108 (1837)

10.452b, 17.692

*Agrostis castellana* Boiss. & Reut., *Diagn. Pl. Nov. Hisp.* 26 (1842)

35.1221

*Agrostis stolonifera* L., *Sp. Pl.* 62 (1753)

1.15, 13.554, 30.1063, 36.1243

subsp. *scabrigitum* (Boiss. & Reut.) Maire in *Bull. Soc. Hist. Nat. Afrique N.* 31: 47 (1940)

*A. scabrigitum* Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 125 (1852)

37.1256

*Aira caryophyllea* L., *Sp. Pl.* 66 (1753)

subsp. *caryophyllea*

29.1040

*Aira cupaniana* Guss., *Fl. Sicul. Syn.* 1: 148 (1843)

27.983

*Aira tenorei* Guss., *Fl. Sicul. Prodr.* 1: 62 (1827)

27.973

*Aira uniaristata* Lag. & Rodr. in *Anales Ci. Nat.* 6: 148 (1803)*A. caryophyllea* subsp. *uniaristata* (Lag. & Rodr.) Maire, *Fl. Afrique N.* 2: 350 (1953)

27.983b, 44.1532, 55.1818, 57.1893, 58.1919b

Note: Previously know in Morocco from the Rif and "Maroc atlantique nord" (Maire 1953: 351, Valdés & al. 2002: 828, Ibn Tattou & Fennane 2009: 210), gathering 27.983b from Jbel Tazekka expands it distribution area to the Middle Atlas.

*Alopecurus aequalis* Sobol., *Fl. Petrop.* 16 (1799)

58.1912

*Alopecurus arundinaceus* Poir. in Lam., *Encycl.* 8: 776 (1808)*A. liouvilleanus* Braun-Blanq. in *Vierteljahrschr. Naturforsch. G. Zürich* 15: 351 (1928)

17.685

*Ampelodesmos mauritanicus* (Poir.) T. Durand & Schinz, *Consp. Fl. Afr.* 5: 874 (1894)

62.2124

*Anisantha diandra* (Roth) Tutin in A.R. Clapham, Tutin & E.F. Warb., *Fl. Brit. Isles*, ed. 2: 1149 (1962)

44.1526

*Anisantha fasciculata* (C. Presl) Nevski in *Acta Univ. As. Med., ser. VIIIb, Bot.*, 17: 21 (1934)*Bromus fasciculatus* C. Presl, *Cyper. Gram. Sic.* 39 (1820)

9.412b

*Anisantha madritensis* (L.) Nevski in *Acta Univ. As. Med., ser. VIIIb, Bot.* 17: 21 (1934)*Bromus madritensis* L., *Cent. Pl.* 1: 5 (1755)

4.196, 60.2056, 60.2058

*Anisantha rubens* (L.) Nevski in *Acta Univ. As. Med., ser. VIIIb, Bot* 17: 19 (1934)*Bromus rubens* L., *Cent. Pl.* 1: 5 (1755)

7.342, 19.784

*Anisantha sterilis* (L.) Nevski in *Acta Univ. As. Med., ser. VIIIb, Bot.* 17: 20 (1934)*Bromus sterilis* L., *Sp. Pl.* 77 (1753)

4.152, 10.456, 57.1890, 58.1953

*Anisantha tectorum* (L.) Nevski in *Acta Univ. As. Med., ser. VIIIb, Bot.*, 17: 22 (1934)*Bromus tectorum* L., *Sp. Pl.* 77 (1753)

9.437, 29.1278b, 30.1073, 44.1527

*Anthoxanthum odoratum* L., *Sp. Pl.* 28 (1753)

14.616, 29.1045, 45.1540, 47.1627

*Anthoxanthum ovatum* Lag., *Elench. Pl.* 2 (1816)



1.35

*Aristida adscensionis* L., *Sp. Pl.* 82 (1753)subsp. *coerulescens* (Desf.) Auquier & J. Dubign. in *Soc. Echange Pl. Vasc. Eur. Occid. Bass. Médit., Fasc.* 16: 134 (1976)

2.48, 3.102, 22.823

*Arrhenatherum album* (Vahl) Clayton in *Kew Bull.* 16: 250 (1962)subsp. *album*

4.156, 10.462c, 43.1485, 55.1816

*Arrhenatherum elatius* (L.) J. Presl & C. Presl, *Fl. Čech.* 17 (1819)subsp. *bulbosum* (Willd.) Schübl. & Martens in Schübl., *Fl. Württemberg* 70 (1834)

10.462, 44.1524, 58.1959, 61.2101

*Avena atlantica* B.R. Baum & Fedak in *Cand. J. Bot.* 62: 1057 (1985)

\* 3.81

Note: This rare Moroccan endemic diploid *Avena* was only known in “Maroc atlantique moyen”, SW Morocco (Ibn Tattou & Fennane. 2009: 219), from several localities between Essaovira and Bou-Izakarn (Baum & Fedak 1985). This gathering from dry areas around Oued Beht (Prérif-Moyen Sebou) considerably expands to the north its know distribution area.

C. Romero

*Avena barbata* Link in *J. Bot. (Schrader)* 1799(2): 315 (1800)subsp. *barbata*

9.432, 28.1012, 35.1207

*Avena sterilis* L., *Sp. Pl.*, ed. 2: 118 (1762)

51.1698

*Avenella flexuosa* (L.) Drejer, *Fl. Excurs. Haffn.* 32 (1838)*Deschampsia flexuosa* (L.) Trin. in *Bull. Sci. Acad. Imp. Sci. Saint-Petersbourg* 1: 66 (1836)subsp. *flexuosa*

57.1885

*Brachypodium phoenicoides* (L.) Roem. & Schult., *Syst. Veg.* 2: 740 (1817)

1.18, 35.1219, 65.2137

*Brachypodium retusum* (Pers.) P. Beauv., *Essai Agrostogr.* 101 (1812)

23.865, 25.912

*Brachypodium sylvaticum* (Huds.) P. Beauv., *Essai Agrostogr.* 101, 155 (1812)

42.1429, 51.1691, 52.1740

*Briza maxima* L., *Sp. Pl.* 70 (1753)

27.958

*Briza minor* L., *Sp. Pl.* 70 (1753)

42.1435, 58.1919

*Bromopsis erecta* (Huds.) Fourr. in *Ann. Soc. Linn. Lyon, nov. sér.* 2, 17: 187 (1869)

*Bromus erectus* Huds., *Fl. Angl.* 49 (1762)

17.688

subsp. *microchaeta* (Font Quer) H. Scholz & Valdés in *Willdenowia* 36: 660 (2006)

*Bromus erectus* subsp. *microchaetus* (Font Quer) Maire & Weiller in *Jahand. & Maire, Cat. Pl. Maroc* 3: 866 (1934)

\* 63.2170, 63.2156

subsp. *permixta* (H. Lindb.) H. Scholz & Valdés in *Willdenowia* 36: 660 (2006)

*Bromus erectus* subsp. *permixtus* H. Lindb. in *Acta Soc. Sci. Fenn., ser. B, Opera Biol.*, 1(2): 14 (1932)

\*\* 17.699

Note: As pointed out by Dobignard (2009: 110), the separation of this taxon from subsp. *microchaeta* (Font Quer) H. Scholz & Valdés at subspecific level is not very clear.

*Bromus hordeaceus* L., *Sp. Pl.* 77 (1753)

29.1038b, 57.1884

subsp. *hordeaceus*

14.617, 29.1038b, 30.1069b, 60.2062

subsp. *mediterraneus* (H. Scholz & F. M. Vázquez) F. Scholz in *Kochia* 3: 10 (2008)

4.181, 44.1528

*Bromus lanceolatus* Roth., *Catal. Bot.* 1: 18 (1797)

61.2076

*Bromus squarrosus* L., *Sp. Pl.* 76 (1753)

9.439, 64.2257

*Catapodium demnatense* (Murb.) Maire & Weiller in *Bull. Soc. Hist. Nat. Afrique N.* 33: 96 (1942)

\* 4.182b, 4.188, 4.251

*Catapodium rigidum* (L.) C. E. Hubb. in Dony, *Fl. Bedfordshire* 437 (1953)

*Desmazeria ridiga* (L.) Tutin in A.R. Clapham, Tutin & E.F. Warburg, *Fl. Brit. Isles* 1434 (1952)

4.182, 10.467, 26.935, 36.1247, 58.1970

*Cynodon dactylon* (L.) Pers., *Syn. Pl.* 1: 85 (1805)

1.31, 20.811, 51.1697

*Cynosurus echinatus* L., *Sp. Pl.* 72 (1753)

1.17, 4.159

*Cynosurus effusus* Link in *J. Bot. (Scharader)* 1799(2): 315 (1800)

*C. elegans* auct., non Desf., *Fl. Atlant.* 1: 82 (1798)

4.200, 10.454c, 27.979, 29.1051, 29.1309d, 60.2055

*Dactylis glomerata* L., *Sp. Pl.* 71 (1753)

subsp. *hispanica* (Roth) Nyman, *Consp. Fl. Eur.* 819 (1882)

1.19, 3.96, 6.278, 7.326, 16.641, 23.869

subsp. *juncinella* (Bory) Stebbins & Zohary in *Univ. Calif. Publ. Bot.* 31(1): 13 (1959)

61.2078

*Dasyphyrum hordeaceum* P. Candargy in *Arch. Biol. Vég. (Athènes)* 1: 35, 62 (1901)

*D. breviaristatum* (H. Lindb.) Fred. in *Nordic J. Bot.* 11(2): 140 (1991), nom. illeg.

*Triticum hordeaceum* Coss. & Durieu in *Bull. Soc. Bot. France* 2: 312 (1855), non  
(Boiss.) Steud., *Syn. Pl. Glumac.* 1(6): 430 (1854)

4.142, 7.340, 32.1109

*Echinaria capitata* (L.) Desf., *Fl. Atlant.* 2: 385 (1799)

8.383, 9.413, 60.2058, 64.2274

*Elymus marginatus* (H. Lindb.) Á. Löve in *Feddes Repert.* 95(7-8): 453 (1984)

*Roegneria marginata* (H. Lindb.) Dobignard in Dobignard & Chatelain, *Index Syn. Fl. Afrique N.* 1: 430 (2010)

*Agropyron marginatus* H. Lindb. in *Acta Soc. Sci Fenn., ser. B, Opera Biol.* 1(2): 9 (1932)

29.1050, 29.1051, 47.1620, 61.2084, 64.2106, 64.2238

*Elytrigia repens* (L.) Nevski in *Trudy Bot. Inst. Akad. Navk. SSSR, ser. I, Fl. Sist. Vyssh. Rast.* 1: 14 (1933)

subsp. *repens*

7.346, 34.1169, 37.1253

*Festuca circummediterranea* Patzke in *Oesterr. Bot. Z.* 122: 261 (1973)

16.632

*Festuca elegans* Boiss., *Elench. Pl. Nov.* 92 (1838)

57.1897

*Festuca hystrix* Boiss., *Elench. Pl. Nov.* 89 (1838)

17.690, 17.696

*Festuca indigesta* Boiss., *Elench. Pl. Nov.* 91 (1838)

16.627

*Festuca iberica* (Hack.) K. Richt., *Pl. Eur.* 1: 99 (1890)

*F. nevadensis* subsp. *scabrescens* (Trab.) Dobignard & Portal in Dobignard & Chatelain *Index Syn. Fl. Afrique N.* 1: 406 (2010)

29.1041, 61.2089

*Festuca plicata* Hack. in *Oesterr. Bot. Z.* 27: 48 (1877)

64.2269

*Festuca rifana* Litard. & Maire in *Mem. Soc. Sci. Nat. Maroc* 17: 13 (1927)

\* 45.1555, 47.1626, 57.1881, 57.1886, 64.2258

*Gastridium phleoides* (Nees & Meyen) C.E. Hubb. in *Kew Bull.* 9: 375 (1954)

subsp. *phleoides*

13.566, 23.866, 43.1468

Note: Gatherings 13.566 and 23.866 expand to Middle Atlas and "plaines et plateau du Maroc oriental" respectively the known distribution area of this species in Morocco (see Ibn Tattou & Fennane 2009: 251).

*Gastridium ventricosum* (Gouan) Schinz & Thell. in *Vierteljahrsschr. Naturf. Ges, Zürich* 58: 39 (1913)

27.988

*Gaudinia fragilis* (L.) P. Beauv., *Ess. Agrostogr.* 95 (1812)

1.28, 42.1439, 51.1705b

*Glyceria notata* Chevall., *Fl. Gén. Env. Paris* 2(1): 174 (1827)

17.684, 58.1925

*Helictochloa bromoides* (Gouan) Romero Zarco in *Candollea* 66: 102 (2011)

*Helictotrichon bromoides* (Gouan) C.E. Hubb in *Kew Bull.* 139: 101 (1940)

*Avenula bromoides* (Gouan) H. Scholz in *Willdenowia* 7: 420 (1974)

37.1255, 55.1816b

subsp. *pauneroi* (Romero Zarco) Romero Zarco in *Candollea* 66(1): 102 (2011)

33.1117

*Helictochloa gervaisii* (Holub) Romero Zarco in *Candollea* 66: 102 (2011)

*Avenula gervaisii* Holub in *Preslia* 49: 205 (1977)

subsp. *arundana* (Romero Zarco) Romero Zarco in *Candollea* 66: 102 (2011)

*Helictotrichon gervaisii* subsp. *arundanum* (Romero Zarco) Röser in *Dissert. Bot.* 145: 121 (1989)

60.2052

*Helictochloa marginata* (Lowe) Romero Zarco in *Candollea* 66: 102 (2011)

*Helictotrichon marginatum* (Lowe) Röser in *Diss. Bot.* 145: 136 (1989)

*Avenula marginata* (Lowe) Holub in *Preslia* 49: 219 (1977)

27.954, 29.1053, 45.1543, 57.1902

*Helictotrichon filifolium* (Lag.) Henrard in *Blumea* 3: 430 (1940)

18.732

*Holcus lanatus* L., *Sp. Pl.* 1048 (1753)

subsp. *lanatus*

13.569, 54.1817

subsp. *tuberosus* (Trin.) M. Seq. & Castrov. in *Acta Bot. Malac.* 31: 234 (2006)

57.1879, 58.1938

*Hordeum bulbosum* L., *Cent. Pl.* 2: 8 (1756)

subsp. *nodosum* (L.) Baum in *Canad. J. Bot.* 63(4): 742: (1985)

54.1793

*Hordeum murinum* L., *Sp. Pl.* 85 (1753)

subsp. *glaucum* (Steud.) Tzvelev in *Novosti Sist. Vyssh. Rast.* 8: 67 (1971)

*H. glaucum* Steud., *Syn. Pl. Glumac.* 1: 352 (1854)

7.322, 17.772

Note: Gathering 7.322 expands to the High Atlas the known distribution area of this species in Morocco (see Ibn Tattou & Fennane 2009: 259).

subsp. *leporinum* (Link) Arcang, *Comp. Fl. Ital.* 805 (1882)

*H. leporinum* Link in *Linnaea* 9: 133 (1835)

1.36, 4.147

*Hyparrhenia hirta* (L.) Stapf. in Prain, *Fl. Trop. Afr.* 9: 315 (1918)

3.94, 22.824, 28.1008, 51.1693

Note: Gathering 22.824 expands to the “plaines et plateaux du Maroc Oriental” the known distribution area in Morocco of this species (see Ibn Tattou & Fennane 2009: 259).

*Koeleria lobata* (M. Bieb.) Roem. & Schult., *Syst. Veg.* 2: 620 (1817)

*K. splendens* sensu Jahand. & Maire, *Cat. Pl. Maroc* 1: 60 (1931), non Presl., *Cyper. Gramin. Sicul.* 34 (1820)

16.635, 30.1059

*Koeleria vallesiana* (Honck.) Gaudin in *Alpina* 3: 47 (1808)

7.341e, 9.416

*Lagurus ovatus* L., *Sp. Pl.* 81 (1753)

13.561, 26.936

*Lamarckia aurea* (L.) Moench, *Methodus* 201 (1794)

10.451b

*Lolium multiflorum* Lam., *Fl. Franc.* 3: 621 (1779)

44.1517

*Lolium perenne* L., *Sp. Pl.* 83 (1753)

25.910

*Lolium rigidum* Gaudin, *Agrost. Helv.* 1: 334 (1811)

4.166, 4.171, 10.460, 13.564, 20.812, 42.1425, 51.1705, 57.1831b, 58.1931

*Lygeum spartum* L., *Gen. Pl.*, ed. 5: 522 (1754)

7.329, 19.782

*Macrochloa tenacissima* (L.) Kunth, *Révis. Gramin.* 1: 58 (1829)

*Stipa tenacissima* L., *Cent. Pl.* 1: 6 (1755)

23.875

*Melica ciliata* L., *Sp. Pl.* 66 (1753)subsp. *magnoliï* (Gren. & Godr.) K. Richt., *Pl. Eur.* 1: 58 (1890)*M. magnoliï* Gren. & Godr., *Fl. France* 3: 550 (1856)

42.1403

*Melica humilis* Boiss., *Voy. Bot. Espagne* 2: 662 (1839–1845)*M. cupanii* auct., non Guss., *Fl. Sicul. Prodr. Suppl.* 17 (1832)

2.58, 7.338, 23.868, 32.1092, 36.1232, 37.1251, 63.2158, 64.2253

*Melica minuta* L., *Mant. Pl.* 32 (1767)subsp. *latifolia* (Coss.) Valdés & M. A. Mateos in *Lagascalìa* 30: 354 (2010)*M. arrecta* auct., non Kuntze in *Flora* 29: 740 (1846)

62.2122

subsp. *minuta*

26.924, 36.1236, 51.1695

*Melica uniflora* Retz, *Observ. Bot.* 1: 10 (1779)

30.1076

*Narduroides salzmanii* (Boiss.) Rouy, *Fl. France* 14: 301 (1913)

44.1531

*Neoschischkinia pourretii* (Willd.) Valdés & H. Scholz in *Willdenowia* 36: 663 (2006)*Agrostis pourretii* Willd. in *Ges. Naturf. Freunde Berlin Mag. Neuesten Entdeck. Gesamten Naturk.* 2: 290 (1808)

1.21

*Neoschischkinia reuteri* (Boiss.) Valdés & H. Scholz in *Willdenowia* 36: 663 (2006)*Agrostis reuteri* Boiss., *Voy. Bot. Espagne* 2: 645 (1844)

51.1696, 51.1700

*Ochlopoa annua* (L.) H. Scholz in *Ber. Inst. Landschaft-Pflanzenökologie Univ. Hohenheim, Beih.* 16: 58 (2003)*Poa annua* L., *Sp. Pl.* 68 (1753)

44.1536

*Ochlopoa maroccana* (Nannf.) H. Scholz in *Ber. Inst. Lands. Pflanz. Univ. Hohenh. Beih.* 16: 59 (2003)*Poa maroccana* Nannf. in *Svensk Bot. Tidskr.* 32: 296 (1938)

58.1962

Note: This gathering expands to the Rif the known distribution area of this species in Morocco (see Ibn Tattou & Fennane 2009: 271), from where it was not mentioned in Valdés & al. (2002: 781), as *Poa maroccana* Nannf. was considered synonym of *P. annua* L.

*Patzkea paniculata* (L.) G.H. Loos in *Jahrb. Bochum. Bot. Vereins* 1: 126 (2010)

- Festuca paniculata* (L.) Schinz & Thell. in *Vierteljahrsschr. Naturf. Ge. Zürich* 58: 40 (1913)  
 subsp. **baetica** (Hack.) H. Scholz in *Willdenowia* 40: 200 (2010)  
 27.950
- Patzkea patula*** (Desf.) H. Scholz in *Willdenowia* 40: 200 (2010)  
*Festuca patula* Desf., *Fl. Atlant.* 1: 87 (1798)  
*F. triflora* Desf., *Fl. Atlant.* 1: 87 (1798), non J.F. Gmel., *Syst. Nat.*, ed. 12, 2: 187 (1791)  
 10.455, 14.615, 27.960, 29.1052, 30.1057, 61.2107
- Phalaris aquatica*** L., *Cent. Pl.* 1: 4 (1755)  
 7.337
- Phalaris coerulescens*** Desf., *Fl. Atlant.* 1: 56 (1798)  
 51.1702
- Phalaris minor*** Retz, *Observ. Bot.* 3: 8 (1783)  
 2.59
- Phleum nodosum*** L., *Syst. Nat.*, ed. 10, 2: 871 (1759)  
*Ph. pratense* subsp. *bertolonii* (DC.) Bormm. in *Bot. Jahrb. Syst., Beibl.* 140: 157 (1928)  
 64.2265
- Phleum phleoides*** (L.) H. Karst., *Deut. Fl.* 374 (1881)  
 16.655, 61.2117, 64.2254
- Note: The three gatherings belong to var. *blepharodes* (Aschers. & Graebn.) Hal., *Consp. Fl. Graec.* 3: 346, 1904, with glumes with ciliate keel.
- Piptatherum coerulescens*** (Desf.) P. Beauv., *Ess. Agrostogr.* 18 (1812)  
 43.1487
- Piptatherum miliaceum*** (L.) Coss., *Notes Pl. Crit.* 2: 129 (1821)  
 subsp. ***miliaceum***  
 2.47, 23.874
- Piptatherum paradoxum*** (L.) P. Beauv., *Ess. Agrostogr.* 18 (1812)  
 19.769, 63.2166, 64.2249
- Poa bulbosa*** L., *Sp. Pl.* 70 (1753)  
 4.150, 9.420, 9.441, 16.624, 30.1080, 45.1557
- Poa flaccidula*** Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 128 (1852)  
 60.2060, 61.2096, 61.2107b
- Poa ligulata*** Boiss., *Voy. Bot. Espagne*, tab. 178 (1842), 2: 659 (1844)  
 64.2260
- Poa pratensis*** L., *Sp. Pl.* 67 (1753)

4.140

*Poa trivialis* L., *Sp. Pl.* 67 (1753)

48.1638

*Polypogon maritimus* Willd. in *Neue Schriften Ges. Naturf. Freunde Berlin* 3: 442 (1801)

53.1781

*Polypogon monspeliensis* (L.) Desf., *Fl. Atlant.* 1: 67 (1798)

34.1172

*Polypogon viridis* (Gouan) Breistr. in *Bull. Soc. Bot. France* 110 (*Sess. Extr.*): 56 (1966)

36.1241, 41.1427

*Rostraria salzmannii* (Boiss. & Reut.) Holub in *Folia Geobot. Phytotax.* 9: 271 (1974)subsp. *salzmannii*

4.251c, 13.557, 57.1877, 58.1958, 58.1963

*Schedonorus mairei* (St.-Yves) Dobignard in Dobignard & Chatelain, *Index Syn. Fl. Afrique N.* 1: 404 (2010)*Festuca mairei* St.-Yves in *Candollea* 1: 45 (1922)

\*\* 19.767

Note: This gathering expands the known distribution area of this species in Morocco to the "base Moulouya" (see Ibn Tattou &amp; Fennane 2009: 288).

*Schedonorus arundinaceus* (Schreb.) Dumort., *Observ. Gramin. Belg.*: 106 (1824)subsp. *fenas* (Lag.) H. Scholz in *Ber. Inst. Lands. Pflanz. Univ. Hohenh. Beih.* 16: 74 (2003)*Festuca arundinacea* subsp. *fenas* (Lag.) Arcang., *Comp. Fl. Ital.*, ed. 2: 61 (1845)

7.333, 17.702

Note: Gathering 17.702 expands the known distribution of this species in Morocco to Middle Atlas (see Ibn Tattou &amp; Fennane 2009: 287).

*Schismus barbatus* (L.) Thell. in *J. Bot. (Morot)* 8: 289 (1894)

7.343, 19.775

*Secale strictum* (C. Presl) C. Presl, *Fl. Sicul. XLVI* (1826)*S. montanum* Guss., *Index Sem. Hort. Bocc.* 11 (1825)

17.686

*Sesleria autumnalis* (Scop.) F.W. Schultz, *Arch. Fl.* 296 (1861)*S. argentea* (Savi) Savi, *Bot. Etrusc.* 1: 66 (1808)

64.2245

*Sorghum halepense* (L.) Pers., *Syn. Pl.* 1: 101 (1805)

51.1692

*Stipa barbata* Desf., *Fl. Atlant.* 1: 97, t. 27 (1798)

16.651

*Stipa capensis* Thunb., *Prodr. Fl. Cap.* 19 (1794)



2.56, 3.89, 19.770, 22.819

*Stipa lagascae* Roem. & Schult., *Syst. Veg.* 2: 333 (1817)

9.427

*Stipa parviflora* Desf., *Fl. Atlant.* 1: 98, t. 29 (1798)

6.277, 19.273, 20.805, 34.1175

*Trachynia distachya* (L.) Link, *Hort. Berol.* 1: 43 (1827)

*Brachypodium distachyon* (L.) P. Beauv., *Ess. Agrostogr.* 101, 155 (1812)

3.85, 12.541, 27.982, 35.1213, 43.1479, 62.2125

*Trisetaria panicea* (Lam.) Paunero in *Anales Jard. Bot. Madrid* 9: 524 (1950)

1.16, 51.1704

*Trisetum flavescens* (L.) P. Beauv., *Ess. Agrostogr.* 88, 180 (1812)

subsp. *africanum* (H. Lindb.) Dobignard in *J. Bot. Soc. France* 28: 44 (2004)

• 12.544, 32.1093, 33.1122, 64.2250

*Vulpia alopecurus* (Schousb.) Dumort., *Observ. Gramin. Belg.* 100 (1824)

1.22, 1.25

*Vulpia bromoides* (L.) F.S. Gray, *Nat. Arr. Brit. Pl.* 2: 124 (1821)

*V. myuros* subsp. *sciuroides* (Roth.) Rouy, *Fl. France* 14: 256 (1913)

27.971, 29.1038, 44.1535

*Vulpia geniculata* (L.) Link, *Hort. Berol.* 1: 148 (1827)

4.191, 10.454b, 26.926, 44.1530, 57.1882

*Vulpia myuros* (L.) C.G. Gmel., *Fl. Bad.* 1: 8 (1805)

30.1070, 44.1530b

*Vulpia sicula* (Presl.) Link, *Hort. Berol.* 2: 272 (1833)

28.1008b, 30.1058

Note: This gathering expands eastwards to Jbel Tazekka the known distribution area of this species in Morocco (see Ibn Tattou & Fennane 2009: 303).

*Vulpia unilateralis* (L.) Stace in *Bot. J. Linn. Soc.* 76: 350 (1978)

9.412, 26.934, 60.2064, 64.2262

### *Sparganiaceae*

*Sparganium erectum* L., *Sp. Pl.* 971 (1753)

58.1947

### *Liliaceae*

*Gagea cossoniana* Pascher in *Lotos* 52: 120 (1904)

*G. algeriensis* (Chabert) Stroh in *Beih. Bot. Centralbl.* 57B: 488 (1937)

29.1036, 45.1564

*Tulipa sylvestris* L., *Sp. Pl.* 305 (1753)

subsp. *australis* (Link) Pamp. in *Boll. Soc. Bot. Ital.* 1914: 114 (1914)

45.1569, 57.1899, 64.2272

### *Colchicaceae*

*Colchium lusitanicum* Brot., *Phytogr. Lusit. Select.* 2: 211 (1827)

*C. autumnale* subsp. *algeriense* Trab. in Batt. & Trab., *Fl. Algérie* 2: 76 (1895)

58.1926

### *Hyacinthaceae*

*Ornithogalum baeticum* Boiss., *Elench. Pl. Nov.* 84 (1838)

subsp. *algeriense* (Jord. & Fourr.) Valdés in *Bocconeia* xx:xx (2013)

*O. algeriense* Jord. & Fourr., *Brev. Pl. Nov.* 1: 52 (1866) subsp. *algeriense*

8.377, 16.639, 29.1032, 45.1567, 47.1614, 57.1901

Note: Morphological studies on *Ornithogalum* L. subgen. *Ornithogalum* (= sugen. *Helocharnos* Baker) by Moret & Galland (1992) and Martínez Azorín & al. (2010) clearly show that *O. baeticum* Boiss., *Elench. Pl. Nov.* 84 (1838) and *O. algeriense* Jord. & Fourr., *Brev. Pl. Nov.* 1: 52 (1866) constitute a same species to which the oldest name, *O. baeticum* Boiss., has to be applied. Consequently, the following combinations are proposed for the two subspecies accepted for Morocco under *O. algeriense* by Valdés & al. (2002: 862), Ibn Tattou & Fennane (2009: 170) and Dobignard & Chatelain (2010: 138): ***O. baeticum*** subsp. ***algeriense*** (Jord. & Fourr.) Valdés, **comb. nova** (basionym: *O. algeriense*, *Brev. Pl. Nov.* 1: 52, 1866), and ***O. baeticum*** subsp. ***atlanticum*** (Moret) Valdés, **comb. nova** (basionym: *Ornithogalum algeriense* subsp. *atlanticum* Moret in *Canad. J. Bot.* 66: 2185, non *O. comosum* var. *atlanticum* Ball *J. Linn. Soc., Bot.* 16: 688 (1878).

*Ornithogalum narbonense* L., *Cent. Pl.* 2: 15 (1756)

*Loncomelos narbonense* Raf., *Fl. Tellur.* 2: 24 (1837)

62.2131

*Muscari atlanticum* Boiss. & Reut., *Pugill. Pl. Afr. Bor. Hispan.* 114 (1852)

45.1561

Note: Following Maire (1958: 203), and as adopted by Davis & Stuart (1980: 48), Ibn Tattou & Fennane (2009: 169) and Dobignard & Chatelain (2010: 135) consider *M. atlanticum* Boiss. & Reut. as synonym of *M. neglectum* Ten. (*M. racemosum* (L.) Lam. & DC.). But *M. atlanticum* has the bulb with black or dark brown tunics and lacks multiplication bulbils or only has one or two, while *M. neglectum* has the bulbs with paler tunics and usually many multiplication bulbils. Besides, in *M. atlanticum* sterile flowers are blue in color and the fertile flowers are subcylindrical, of 4'5–7 mm, with wide opening, while in *M. neglectum* sterile flowers are pale violet and the fertile flowers are obovoid, of 4'5–6'5 mm, with narrow opening. *M. atlanticum* is a rupicolous species, which grows in primary habitats while *M. neglectum* has a wide ecological spectrum and usually grows in arable lands and other secondary habitats.

*Muscari comosum* (L.) Mill., *Gard. Dict.*, ed. 8, n. 2 (1768)

*Leopoldia comosa* (L.) Parl. in *Giorn. Bot. ital.* 2 (2): 160 (1847)

9.424, 35.1217, 60.2032

*Dipcadi serotinum* (L.) Medicus in *Acta Acad. Theod.-Palat.* 6: 431 (1790)

subsp. *serotinum*

23.876

### *Alliaceae*

*Allium ampeloprasum* L., *Sp. Pl.* 294 (1753)

3.103

*Allium baeticum* Boiss., *Diagn. Pl. Orient.*, ser. 1, 7: 113 (1846)

43.1478, 62.2140

*Allium cupani* Raf., *Caratt.* 86 (1810)

subsp. *cupani*

23.873

*Allium flavum* L., *Sp. Pl.* 298 (1753)

subsp. *ionochlorum* Maire in *Bull. Soc. Hist. Nat. Afrique N.* 7: 277 (1916)

\*\* 23.872

*Allium massaessylum* Batt. & Trab. in *Bull. Soc. Bot. France* 39: 74, tab. 3 (1892)

30.1079, 47.1633b, 57.1878

*Allium neapolitanum* Cirillo, *Pl. Rar. Neap.* 1: 13, I. 4. (1788)

44.1522

*Allium nigrum* L., *Sp. Pl.*, ed. 2: 430 (1762)

54.1788

*Allium pallens* L., *Sp. Pl.*, ed. 2, 1: 427 (1762)

*A. coppolerii* Tineo, *Cat. Pl. Hort. Panorm.* 1827: 18, 275 (1827)

subsp. *pallens*

2.50, 3.83, 19.802b, 23.873b, 26.941, 39.1322, 40.1373, 54.1789, 55.1820, 57.1896, 61.2095, 65.2282

Note: Dobignard & Chatelain (2010: 63) adopted the name *A. coppolerii* Tineo for the Moroccan plants known so far as *A. pallens* L. (see Valdés & al. 2002: 868, Ibn Tattou & Fennane 2009: 131). This derives most probably from the lectotypification of *A. pallens* L. by Wilde-Duifjes (1973: 74) who proposed as lectotype the specimen of sheet S 139.9 of the Linnean Herbarium in Stockholm, apparently collected in Middle East according the indication added by Willkstrom (Wilde-Duyfjes l.c.), but that sheet must be a duplicate of sheet LINN 419.18 (Stearn 1978: 162) sent to Linnaeus from Spain by Loeffling. As the supposed origin of sheet S 139.9 is not in accordance with the distribution given by Linnaeus for *Allium pallens* in *Sp. Pl.*, ed. 2: 428, 1762 “Italia, Hispania, Monspelii, Pannonia”, Brullo & al. (2003: 558, 562) rejected the type chosen by Wild-Duifjes and designated as lectotype the specimen on sheet LINN 419.20 of the Linnean Herbarium in London, a typification accepted by Jarvis (2007: 277).

The Linnean protologue of *A. pallens* L. (Linnaeus 1762: 427-428) includes in fact elements which correspond both to *A. pallens* s.s. with stamens shorter than or as long as perianth segments, and to *A. coppolerii*, with stamens longer than perianth segments, the only clear character to separate both entities together with perianth shape after ripening. The fact that both kind of plants could be considered as belonging to a same or to separate species, as considered by different authors, is irrelevant for the correct application of the name *A. pallens* L. The indication in the Linnean phrase-name and in the description "... staminibus simplicibus corollam aequantibus..." and "... stamina simplicia, longitudine petalorum..." respectively, and the references to "Hispania, Monspeliis" must come from the specimens on sheets LINN 419.18 (and most probably also S 139.9) sent to Linnaeus by Loeffling and the specimen on sheet LINN 419.20, sent to Linnaeus by Gouan. But two of the synonyms: "Allium montanum bicorne, flore pallido odoro. Bauh. pin 75" and "Gethioides sylvestre. Colum. ecphr. 2, p. 6. t. 7, f. 2" and the references to "Pannonia" and "Italia" respectively refer to plants with exerted stamens (see Bauhin 1623: 75, an indirect reference to Clusius 1601: 194, and Colonna 1616: 6,7). Both, Wilde-Duifjes (l.c.) and Brullo & al. (l.c.) lectotypified *A. pallens* in one plant with stamens shorter than perianth segments and consequently the name *A. pallens* L. is link to this kind of plants.

The plants from the Iberian Peninsula, at least those in SEV (several hundred specimens on 57 sheets from C and mainly S Spain) and the plants collected in Morocco during *Iter V* fully agree with the specimens on sheets LINN 419.18 and 419.20, and with the Linnean phrase-name and description, but not with the sentence "... staminibus simplicibus corolla longioribus..." of the description of *A. coppolerii* by Tineo (1827: 275). Their stamens are about as long as or shorter than perianth segments and not clearly longer as in *A. coppolerii* so accurately drawn in fig. 4 by Jauzein & al. (2002: 311) and shown by Jauzein & Tison (2001, photographs 32 and 33) and Fraga (2002, photograph on pag. 99).

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*Allium paniculatum* L., *Syst. Nat.*, ed. 10, 2: 978 (1759)

subsp. *paniculatum*

51.1721

Note: Within *Allium* sect. *Codonoprasum* Rchb. *A. paniculatum* L. has sometimes been considered as synonym of *A. pallens* L. But both species can be clearly separated by perianth shape, campanulate and becoming somewhat closed and ellipsoid to abovoid after anthesis in *A. paniculatum* and campanulate or cyliandric remaining open after anthesis in *A. pallens*. Besides, tepals have their dorsal vein diffuse or imperceptible in the former, while it is well marked in the latter.

J. Pastor

*Allium subvillosum* Schult. & Schult. f., *Syst. Veg.* 7: 1104 (1830)

36.1238, 60.2028

### *Asparagaceae*

*Asparagus acutifolius* L., *Sp. Pl.* 314 (1753)

36.1250, 63.2151

*Asparagus albus* L., *Sp. Pl.* 314 (1753)

3.87, 21.815

*Asparagus aphyllus* L., *Sp. Pl.* 314 (1753)

1.14, 52.1763

### *Ruscaceae*

*Ruscus aculeatus* L., *Sp. Pl.* 1041 (1753)

10.454

*Ruscus hypophyllum* L., *Sp. Pl.* 1041 (1753)

53.1780

### *Asphodelaceae*

*Asphodelus acaulis* Desf., *Fl. Atlant.* 1: 302, tab. 89 (1798)

• 7.350, 9.425

*Asphodelus fistulosus* L., *Sp. Pl.* 309 (1753)

22.816

*Asphodelus macrocarpus* Parl., *Fl. Ital.* 2: 604 (1852)

subsp. *rubescens* Z. Díaz & Valdés in *Boissiera* 52: 129 (1996)

4.252, 12.545, 15.621, 27.951, 29.1033, 30.1054, 44.1516, 47.1606, 57.1895, 60.2042

*Asphodelus ramosus* L., *Sp. Pl.* 310 (1753)

subsp. *distalis* Z. Díaz & Valdés in *Boissiera* 52: 61 (1996)

54.1787

subsp. *ramosus*

2.52, 3.80, 22.820

Note: Plants of gatherings 2.52 and 3.80 are keyed out as var. *africanus* (Jondan) Z. Díaz & Valdés in *Boissiera* 52: 56 (1996); those of gathering 22.820 belong to the typical var. *ramosus*.

*Asphodelus tenuifolius* Cav. in *Anales Ci. Nat.* 3: 46, tab. 27, fig. 2 (1801)

22.821, 49.1650

### *Anthericaceae*

*Anthericum liliago* L., *Sp. Pl.* 310 (1753)

subsp. *algeriense* (Boiss. & Reut.) Maire & Weiller in Maire, *Fl. Afrique N.* 5: 49 (1958)

• 12.536, 26.940, 27.948, 29.1029

Note: *Anthericum liliago* subsp. *algeriense*, widely spread in Morocco, clearly differs from *A. baeticum* (Boiss.) Boiss., present in Morocco in the Rif mountains. In the former tuberous roots are brownish and cylindrical, pedicel is jointed to peduncle usually over 2 mm from the inflorescence axis, stamens reach up to 1/3 of the length of tepals, and capsules are ovoid-oblongoid, with the apex clearly mucronated. In *A. baeticum* tuberous roots are whitish and fusiform, pedicel seems not to be jointed as the peduncle is usually less than 1

mm, stamens are almost as long the tepals, and capsules are obtuse. The plants of gathering 29.1029 collected in Tazekka region are somewhat intermediate between both taxa, as they have roots and capsules as in *A. liliago* subsp. *algeriense*, but they share with *A. baeticum* the way in which pedicel is jointed, very near to the inflorescence axis, and the ratio between stamens and tepals. Intermediate plants between both taxa were indicated by Maire (1931: 317, 1958: 51) for the Rif and Djurdjura Mountains (Algeria) and by Galland (1988: 25) for the Middle Atlas. Dobignard (2009: 122) discussed the wide variability of *Anthericum* taxa in N Africa and only recognized one species: *A. baeticum*.

Z. Díaz Lifante

### *Aphyllanthaceae*

*Aphyllanthes monspeliensis* L., *Sp. Pl.* 294 (1753)

4.208, 18.740

### *Amaryllidaceae*

*Lapiedra martinezii* Lag., *Gen. Sp. Pl.* 14 (1816)

49.1647

*Leucojum autumnale* L., *Sp. Pl.* 289 (1753)

58.1922

Note: Although this is an Autumn flowering plant, it is not rare to find it in flower in July, and sometimes in Spring at least in W Andalucia (S Spain). According Maire (1959: 18) it may flower in June-August in humid stations.

### *Iridaceae*

*Gladiolus communis* L., *Sp. Pl.* 36 (1753)

12.549

*Gladiolus italicus* Mill., *Gard. Dict.*, ed. 8, n. 2 (1768)

*G. segetum* Ker–Gaul., *Bot. Mag.*, tab. 719 (1804)

30.1078, 41.1389

Note: Gathering 30.1078 expands the known distribution area of this species to Tazekka area (see Ibn Tattou & Fennane 2009: 175).

### *Smilacaceae*

*Smilax aspera* L., *Sp. Pl.* 1028 (1753)

40.1357, 51.1688

Note: Plants of both gatherings are rather spiny and have narrow leaves with marginal spines; they are keyed out as var. *aspera*.

### *Dioscoreaceae*

*Dioscorea communis* (L.) Caddick & Wiklin in *Taxon* 51 (1): 112 (2002)

*Tamus communis* L., *Sp. Pl.* 1028 (1753)

34.1157, 44.1506

**Orchidaceae**

***Anacamptis coriophora*** (L.) R.M. Bateman, Pridgeon & M.W. Chase in *Lindleyana* 12(3): 120 (1997)

*Orchis coriophora* L., *Sp. Pl.* 940 (1753)

14.610

***Cephalanthera rubra*** (L.) L.C.M. Richard, *De Orchid. Eur.* 38 (1817)

14.605, 30.1067, 60.2040

***Dactylorhiza maculata*** (L.) Soó, *Nom. Nov. Gen. Dactylorhiza* 7 (1962)

subsp. ***maurusia*** (Emb. & Maire) Soó, *Nom. Nov. Gen. Dactylorhiza* 7 (1972)

*D. maurusia* (Emb. & Maire) Holub in *Folia Geobot. Phytotax.* 8(2): 176 (1973)

\* 18.729, 47.1625, 58.1976

***Epipactis tremolsii*** Pau in *Bol. Soc. Aragonesa Ci. Nat.* 13: 42 (1914)

*E. helleborine* auct., non (L.) Crantz, *Stirp. Austr. Fasc.*, ed. 2, 2: 462 (1769)

*E. helleborine* subsp. *tremolsii* (Pau) E. Klein in *Orchidee (Hambourg)* 30: 49 (1979)

35.1198, 47.1629

***Limodorum abortivum*** (L.) Schwatz in *Nova Acta Regiae Soc. Sci. Upsal.* 6: 80 (1799)

4.161, 57.1841

***Plantanthera algeriensis*** Batt. & Trab. in *Bull. Soc. Bot. France* 39: 75 (1892)

\*\* 27.970

***Orchis mascula*** L., *Fl. Suec.*, ed. 2: 310 (1755)

16.674

***Orchis morio*** L., *Sp. Pl.* 940 (1753)

*O. champagneuxii* Barnéoud in *Ann. Sci. Nat., Bot.*, sér. 2, 20: 380 (1843)

*Anacamptis morio* (L.) R.M. Bateman, Pridgeon & M.W. Chase in *Lindleyana* 12(3): 120 (1997)

47.1623

**Results and discussion**

The 2366 gatherings belong to 112 families and 1418 species and subspecies. Of these, 22 belong to Pteridophyta, 10 to Gymnospermae, 1170 to Dicotyledones and 215 to Monocotyledones. The current vascular flora of Morocco includes 3.913 species plus 872 additional subspecies, this is, 4.785 taxa (Fennane & Ibn Tattou 2012). This means that during *Iter Mediterraneum V* 29'6% of the vascular plants which occur in Morocco were collected. *Compositae*, with a total of 149 species plus two additional subspecies, *Papilionaceae*, with 130 species plus six additional subspecies and *Gramineae*, with 123 species and six additional subspecies are the families best represented in the material collected. *Cruciferae*, with 59 species and four additional subspecies and *Caryophyllaceae* with 59 species and four additional subspecies, followed by *Labiatae* with 56 species, *Umbelliferae* with 45

species plus two additional subspecies and *Scrophulariaceae* with 37 species plus two additional subspecies. Out of the collected taxa 118 are endemic to Morocco, 56 to Morocco and Algeria and 14 to NW Africa (Morocco, Algeria and Tunisia).

*Iter Mediterraneum V* has clearly contributed to the chorological knowledge of the Moroccan vascular flora. One species: *Epilobium lanceolatum* Sebast. & Mauri is new for Morocco and several are presumably new records for one or two of the geographical areas in which Fennane & al. (1999, 2007), Fennane & Ibn Tattou (2005) and Ibn Tattou & Fennane (2009) divide the country to indicate the distribution of species and subspecies (see Fig. 1). Of these, 18 are new records for Middle Atlas, plus seven already recorded in Jbel Tazekka but not in "central Middle Atlas" and one known in "central Middle Atlas" but new to Jbel Tazekka. Nine are new records for the "plaines et plateaux du Maroc oriental" plus three for "base Moulouya". Four are new for "Maroc atlantique nord", three for the High Atlas and three for the Rif Mountains.

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