

Supplementary Appendix A. List of species, including growth form, overall distribution, occurrence on the different volcanoes, voucher information (including herbarium), and in some cases ecological preference and/or conservation status. The following abbreviations apply to the volcanoes: AJ=El Ajusco, CP=Cofre de Perote, IZ=Iztaccíhuatl, ML=La Malinche, NC=Nevado de Colima, NT=Nevado de Toluca, PO=Pico de Orizaba, PP=Popocatepetl, SN=Sierra Negra, TE=Telapón, TL=Teláloc. The number of genera and species in each family are indicated in parentheses. *=Endemic to alpine flora of Central Mexico; +=introduced. For some species, conservation status categories LC=Least Concern for the IUCN Redlist and A=Threatened, Pr=Protected for the NOM-059 are provided after the distribution. Abbreviations for the collectors are as follows: AM (Alicia Mastretta), AR (A. Ramírez), ARG (Armando Rincón Gutiérrez), AV (A. Vega), BL (B. Leuenberger), BLT (Billie L. Turner), CAP (C.A. Purpus), CD (C. Delgadillo), CG (C. Galván), CGP (Cyrus G. Pringle), CH (C. Hernández), D (Dziekanowski), DF (D. Flores), EM (Eizi Matuda), ESG (E.S. Gibson), FAB (Fred A. Barkley), FML (F.M. Liebmann), GCC (Gonzalo Castillo-Campos), GD (G. Diggs), GLW (Grady L. Webster), GMV (Gustavo Medrano-Valtierra), HEM (H.E. Moore), HHI (Hugh H. Iltis), HN (Héctor Narave), HR (H. Ross), ID (I. Dorantes), IH (I. Hernández), IL (I. Luna), JAP (J.A. Pérez), JC (J. Chavelas), JE (J. Espinosa), J. Daniel Tejero Díez (JDTD), JG (J. García), JHB (John H. Beaman), JHC (J.H. Cota), JIC (J.I. Calzada), JLT (J.L. Tapia), JLV (José Luis Villaseñor), JR (Jerzy Rzedowski), KBH (K. Bernhard Hungerer), LA (Lucía Almeida), LLA (Libertad Arredondo-Amezcu), LB (L. Bello), LEM (L.E. Murry), LMVP (L.M.V. de Puga), LP (L. Paray), MAG (M.A. González), MAH (M.A. Hernández), MC (Miguel Cházaro), MES (Ma.E. Sánchez), MF (M. Fuentes), MG (M. González), MGO (M. Goret), MGZ (M.G. Zola), MN (Michael Nee), P (Pérez), PJ (P. Jacquemin), PJP (P.J. Parroquín), PN (P. Navarro), R (Roe), RA (R. Acosta), RACH (Rodrigo Alejandro Hernández-Cárdenas), RC (R. Cruz), RM (R. Márquez), RW (R. Weber), SDK (Stephen D. Koch), SG (Socorro González), SJD (S.J. Darbyshire), SX (S. Xelhuantzi), SZ (Sergio Zamudio), TR (T. Reeves), TW (Tom Wendt), BV (V. Benhumea), VWS (Victor W. Steinmann), WB (Wolfgang Boege), WPA (W.P. Adams), WPS (W.P. Stoutamire), YR (Y. Reyes), YRA (Yocupitzia Ramírez-Amezcu).

PTERIDOPHYTES

ASPLENIACEAE (1/2)

Asplenium castaneum Schltdl. & Cham. **AJ:** ARG 4011 (IEB). **CP:** RAHC 1526 (IEB). **IZ:** RAHC 944 (IEB).

ML: RAHC 1578 (IEB). **NC:** RAHC 800 (IEB). **NT:** VWS 7627 (IEB). **PO:** RAHC 991 (IEB). **PP:** RAHC 836). **SN:**

RAHC 1014 (IEB). **TL:** RAHC 1150 (IEB). Perennial herb; central Mexico to Bolivia and Peru.

Asplenium fibrillosum Pringle & Davenp. **IZ:** CH 15/78-117 (IEB). Perennial herb; endemic to central Mexico.

DRYOPTERIDACEAE (2/2)

Elaphoglossum mathewsii (Fée) T. Moore **CP:** JHB 2175 (MEXU). **IZ:** JR 23469 (MSC). **SN:** RAHC 1742 (IEB). Perennial herb; central Mexico to Bolivia and Chile.

Polystichum speciosissimum (A. Braun ex Kunze) Copel. **AJ:** ARG 4041 (IEB). **CP:** WPS 2774 (MSC). **IZ:** JR 25398 (MSC). **ML:** RAHC 1114 (IEB). **NT:** JHB 1884 (MSC). **PP:** RAHC 2048 (IEB). **PO:** RAHC 1451 (IEB). **SN:** RAHC 1566 (IEB). Perennial herb; central Mexico to Panama.

POLYPODIACEAE (4/4)

Alansmia spathulata (A.R. Sm.) Moguel & M. Kessler **CP:** HN 823 (MEXU). **IZ:** JHB 2876 (MSC).

Perennial herb; central Mexico to Guatemala.

Melpomene peruviana (Desv.) A.R. Sm. & R.C. Moran **CP:** JHB 2173 (MSC). **IZ:** JHB 3575 (MSC). **TL:**

TW s.n. (ENCB). Perennial herb; central Mexico and disjunct in South America.

Pleopeltis polylepis (Roem. ex Kunze) T. Moore **PP:** RAHC 841 (IEB). Perennial herb; USA to

Guatemala. According to Mickel and Smith (2004), our plants belong to var. *polylepis*.

Polypodium calirhiza S.A. Whitmore & A.R. Sm. **CP:** YRA 2011 (IEB). Perennial herb; western United

States to central Mexico.

PTERIDACEAE (3/3)

Gaga marginata (H.B.K.) F.W. Li & Windham **AJ:** ARG 4072 (UAMIZ). Perennial herb; Mexico to

Bolivia and Argentina.

Myriopteris lendigera (Cav.) J. Sm. **SN:** RAHC 1734 (IEB). Perennial herb; southwestern USA to

Ecuador and the Antilles.

Pellaea ternifolia (Cav.) Link **SN:** RAHC 1733 (IEB). Perennial herb; southwestern USA to Argentina

and Chile and also the Antilles.

WOODSIACEAE (1/1)

Cystopteris fragilis (L.) Bernh. **CP:** VWS 7592 (IEB). **IZ:** HHI 1038a (MSC) **ML:** RAHC 1580 (IEB). **NC:**

RAHC 810 (IEB). **NT:** JDTD (MEXU). **PO:** RAHC 1472 (IEB). **PP:** RAHC 837 (IEB). **SN:** RAHC 1035 (IEB). **TE:**

RAHC 1245 (IEB). **TL:** RAHC 1135 (IEB). Perennial herb; Canada and Greenland to Chile and Argentina, also

widespread in Africa, Asia, and Europe. LC (IUCN).

GYMNOSPERMS

CUPRESSACEAE (1/1)

Juniperus monticola Martínez fo. *compacta* Martínez **AJ:** JHB 2807 (MSC) **CP:** VWS 7585 (IEB). **IZ:** LAA

7 (QMEX). **ML:** AM 73 (MEXU). **NC:** RAHC 1278 (IEB). **NT:** AM 33 (MEXU). **PO:** RAHC 989 (IEB). **PP:** RAHC

1307 (IEB). **SN:** RAHC 1020 (IEB). **TE:** RAHC 1222 (IEB). **TL:** RAHC 1141 (IEB). Shrub; saxicolous; endemic to

northeastern and central Mexico. LC (IUCN), Pr (NOM-059).

PINACEAE (2/2)

Abies religiosa (H.B.K.) Schltdl. & Cham. **SN:** RAHC 1761 (IEB). Tree; northern Mexico to Guatemala. LC (IUCN).

Pinus hartwegii Lindl. **AJ:** observed. **CP:** AM 26 (MEXU). **IZ:** HHI 1031 (MEXU). **ML:** RAHC 1115 (IEB). **NC:** AM 30 (MEXU). **NT:** LMVP 15993 (MEXU). **PO:** AM 49 (MEXU). **PP:** RAHC 1651 (IEB). **SN:** RAHC 1042 (IEB). **TE:** observed. **TL:** AM 71 (IEB). Tree; northern Mexico to Honduras. LC (IUCN).

ANGIOSPERMS

APIACEAE (5/7)

Chaerophyllum orizabae (I.M. Johnst.) K.F. Chung **CP:** VWS 7563 (IEB). **IZ:** JHB L-16 (MSC). **PO:** RAHC 1772 (IEB). **PP:** JHB 2617 (MSC). Perennial herb; alpine vegetation and adjacent coniferous forests of the Sierra Nevada, Cofre de Perote, and Pico de Orizaba.

Chaerophyllum tolucanum (I.M. Johnst.) K.F. Chung **IZ:** RAHC 1196 (IEB). **ML:** RAHC 1870 (IEB). **NT:** VWS 7613 (IEB). **PP:** RAHC 1300 (IEB). **TE:** RAHC 1229 (IEB). Perennial herb; alpine vegetation and adjacent coniferous forests of the Nevado de Toluca, Sierra Nevada, Sierra Fría and La Malinche.

Eryngium carlinae F. Delaroche **IZ:** RAHC 1216 (IEB). Perennial herb; northern Mexico to Panama.

Eryngium proteiflorum F. Delaroche **AJ:** JHB 2793 (MSC). **CP:** VWS 7594 (IEB). **IZ:** RAHC 1356 (IEB). **ML:** RAHC 1098 (IEB). **NT:** RAHC 897 (IEB). **PO:** RAHC 1780 (IEB). **PP:** RAHC 817 (IEB). **TE:** RAHC 1334 (IEB). **TL:** RAHC 1131 (IEB). Perennial herb; endemic to the Trans-Mexican Volcanic Belt. Pr (NOM-059).

Lilaeopsis schaffneriana (Schltdl.) J.M. Coult. & Rose **IZ:** JR 21575 (MSC). Perennial herb; palustrine; northern Mexico to Ecuador.

Ottoa oenanthoides H.B.K. **CP:** HM 816 (XAL). Perennial herb; central Mexico to Ecuador.

Tauschia alpina (J.M. Coult. & Rose) Mathias **IZ:** RAHC 1909 (IEB). **NT:** RAHC 1817 (IEB). **TE:** RAHC 1328 (IEB). **TL:** RAHC 1636 (IEB). Perennial herb; endemic to the alpine vegetation and adjacent subalpine forest of the Trans-Mexican Volcanic Belt.

ASTERACEAE (25/44)

Achillea millefolium L. **AJ:** ARG 4046 (IEB). **CP:** JHB 2160 (MEXU). **IZ:** RAHC 2052 (IEB). Perennial herb; nearly cosmopolitan in cooler regions of the world. LC (IUCN).

Ageratina prunellifolia (H.B.K.) R.M. King & H. Rob. **CP:** BLT 15345 (MEXU). **IZ:** RAHC 1210 (IEB). **NT:** VWS 7612 (IEB). **PO:** RAHC 1489 (IEB). Perennial herb; central Mexico to Guatemala.

Ageratina vernicosa (Sch. Bip. ex Greenm.) R.M. King & H. Rob. **IZ:** RAHC 2059 (IEB). Shrub; saxicolous; endemic to the high mountains of central Mexico, particular those of the Trans-Mexican Volcanic Belt.

Baccharis conferta H.B.K. **AJ:** ARG 4084 (IEB). **NT:** observed. **PO:** RAHC1465 (IEB). Shrub; endemic to the temperate forests and alpine vegetation of central and southern Mexico.

Barkleyanthus salicifolius (H.B.K.) H. Rob & Brettell **IZ:** iNaturalist #63885773. **SN:** RAHC 1757 (IEB). Shrub; southwestern USA to Honduras.

Bidens anthemoides (DC.) Sherff **IZ:** JG 198 (MEXU). **NT:** EM 29489 (MEXU). **PP:** observed. Perennial herb; endemic to central Mexico and primarily distributed along Trans-Mexican Volcanic Belt.

Bidens triplinervia H.B.K. **AJ:** ARG 4069 (IEB). **IZ:** MAH IXTA-11 (ENCB). **NC:** RAHC 790 (IEB). **NT:** LP 811 (ENCB). Perennial herb; northern Mexico to Argentina.

Chionolaena lavandulifolia (H.B.K.) Benth & Hook. f. ex B.D. Jacks **CP:** VWS 7555 (IEB). **IZ:** RAHC 1203 (IEB). **ML:** RAHC 1576 (IEB). **NT:** VWS 7617 (IEB). **PO:** YRA 2220 (IEB). **PP:** RAHC 831 (IEB). **SN:** RAHC 1700 (IEB). **TE:** RAHC 1239 (IEB). **TL:** RAHC 1149 (IEB). Subshrub; often saxicolous; alpine vegetation of central Mexico and disjunct in the alpine peaks of Guatemala and Costa Rica.

Chionolaena salicifolia (Bertol.) G.L. Nesom **IZ:** WB 933 (MEXU). Subshrub; central Mexico to Guatemala.

Cirsium ehrenbergii Sch. Bip. **AJ:** JHB 2805 (MSC). **CP:** AM 22 (MEXU). **IZ:** PN 136 (ENCB). **NT:** YRA 2171 (IEB). **PP:** JR 36613 (MEXU). Perennial herb; northern and central Mexico.

Cirsium jorullense (H.B.K.) Spreng. **AJ:** RAHC 2133 (UAMIZ). Perennial herb, endemic to high mountains of central and eastern Mexico.

Cirsium nivale (H.B.K.) Sch. Bip. **AJ:** JHB 2791 (MSC). **CP:** RAHC 1541 (IEB). **IZ:** RAHC 1362 (IEB). **ML:** JHB 2246 (MSC). **NT:** JR 21667 (ENCB). **PO:** GD 2753 (XAL). **PP:** RAHC 1301 (IEB). **TE:** RAHC 1261 (IEB). **TL:** JHB 2317 (MSC). Perennial herb; endemic to high mountains of the Trans-Mexican Volcanic Belt.

Conyza coronopifolia H.B.K. **CP:** ARG 2591 (MEXU). Annual herb; northern Mexico to Bolivia and Peru.

Cotula mexicana (DC.) Cabrera **IZ:** RAHC 1368 (IEB). Perennial herb; central Mexico to Argentina and Chile.

Dahlia merckii Lehm. **AJ:** ARG 4065 (IEB). Perennial herb; endemic to Mexico, occurring from Tamaulipas and Nuevo León to Guerrero, Puebla and Veracruz.

Erigeron galeottii (A. Gray) Greene **AJ:** JHB 2769 (MSC). **IZ:** RAHC 968 (IEB). **NT:** RAHC 903 (IEB). **PP:** FAB 2381 (MEXU). **TE:** RAHC 1231 (IEB). **TL:** RAHC 1159 (IEB). Perennial herb; endemic to Mexico.

Gamochaeta americana (Mill.) Wedd. **IZ:** JHB 2537 (MSC). **NT:** RAHC 1620 (IEB). **TL:** RAHC 1630 (IEB). Perennial herb; Canada to Argentina and the Antilles; also naturalized in the Old World.

Gamochaeta purpurea (L.) Cabrera **IZ:** JHB 2537 (MEXU). Perennial herb; Canada to Bolivia and Paraguay; also naturalized in the Old World.

Gamochaeta standleyi (Steyerm.) G.L. Nesom **CP:** VWS 7550 (IEB). **IZ:** HHI 1000a (MSC). **TE:** RAHC 1322 (IEB). **TL:** JHB 2319 (MSC). Perennial herb; alpine vegetation of central Mexico and disjunct in the alpine peaks of Guatemala.

Hymenoxys integrifolia (H.B.K.) Bierner (= *Helenium integrifolium* (H.B.K.) Benth. & Hook. f. ex Hemsl., *Dugaldia integrifolia* (H.B.K.) Cass.) **CP:** MC 959 (MEXU). Perennial herb; central Mexico to Guatemala.

Hieracium mexicanum Less. **AJ:** JHB 2772 (MSC). **IZ:** RAHC 1345 (IEB). **ML:** RAHC 1099 (IEB). **NT:** YRA 2168 (IEB). **TE:** RAHC 1267 (IEB). **PO:** JLV 852 (MSC). Perennial herb; high mountains of the Trans-Mexican Volcanic Belt with one disjunct population in the Tajumulco Volcano of Guatemala.

Laennecia schiedeana (Less.) G.L. Nesom **AJ:** JHB 2778 (MSC). **CP:** VWS 7589 (IEB). **IZ:** RAHC 1373 (IEB). **ML:** RAHC 1577 (IEB). **NT:** YRA 2178 (IEB). **PO:** RAHC 1460 (IEB). **PP:** RAHC 839 (IEB). **SN:** RAHC 1555 (IEB). **TE:** RAHC 1330 (IEB). **TL:** RAHC 1627 (IEB). Annual to perennial herb; western United States to Panama.

Mexerion sarmentosum (Klatt) G.L. Nesom **IZ:** RAHC 1344 (IEB). **NT:** YRA 2180 (IEB). **PO:** JHB 2514 (MSC). **TE:** RAHC 1263 (IEB). **TL:** RAHC 1632 (IEB). Perennial herb; endemic to Trans-Mexican Volcanic Belt.

Osbertia stolonifera (DC.) Greene **IZ:** JHB 3536 (MSC). **TL:** JHB 2302 (MSC). Perennial herb; central Mexico to Guatemala.

Oxylobus arbutifolius (H.B.K.) A. Gray **AJ:** ARG 4004 (IEB). **CP:** VWS 7590 (IEB). **IZ:** RAHC 1346 (IEB). **ML:** RAHC 1882 (IEB). **PO:** RAHC 1469 (IEB). **PP:** RAHC 1303 (IEB). **SN:** RAHC 1695 (IEB). **TE:** RAHC 1244 (IEB). **TL:** RAHC 1143 (IEB). Perennial herb to subshrub; sometimes saxicolous; central Mexico to Guatemala.

Packera bellidifolia (H.B.K.) W.A. Weber & Á. Löve **IZ:** RAHC 978 (IEB). **NT:** RAHC 890 (IEB). **PO:** RAHC 1063 (IEB). **PP:** FAB 2375 (MSC). **SN:** RAHC 1698 (IEB). **TE:** RAHC 1246 (IEB). **TL:** RAHC 1136 (IEB). Perennial herb; endemic to northern and central Mexico.

Packera toluccana (DC.) W.A. Weber & Á. Löve (= *Senecio toluccanus* DC.) **AJ:** JHB 2792 (MSC). **CP:** GD 2606 (XAL). **IZ:** JG 1346 (MEXU). **NC:** RAHC 1274 (IEB). **PO:** Balls 5327 (MSC). **TE:** RAHC 1260 (IEB). Perennial herb; northern Mexico to Oaxaca, Puebla and Veracruz.

Pseudognaphalium inornatum (DC.) Anderb. **PO:** RAHC 1728 (IEB). Perennial herb; endemic to Mexico.

Pseudognaphalium liebmannii (Sch. Bip. ex Klatt) Anderb. **AJ:** JHB 2770 (MSC). **CP:** VWS 7586 (IEB). **IZ:** RAHC 1212 (IEB). **ML:** RAHC 1084 (IEB). **NC:** RAHC 785 (IEB). **NT:** YRA 2177 (IEB). **PO:** VWS 7653 (IEB). **PP:** RAHC 1649 (IEB). **SN:** RAHC 1694 (IEB). **TE:** RAHC 1221 (IEB). **TL:** RAHC 1634 (IEB). Annual to perennial herb; endemic to Mexico.

Pseudognaphalium nubicola (I.M. Johnst.) Anderb. **IZ:** JHB 2838 (IEB). **PP:** P. 1075 (ENCB). Perennial herb; high mountains of central Mexico.

Pseudognaphalium oxyphyllum (DC.) Kirp. **CP:** JD 5287 (XAL). **NT:** RAHC 1621 (IEB). **PP:** VB 324 (ENCB). Perennial herb; northern Mexico to Guatemala.

Robinsonecio gerberifolius (Sch. Bip. ex Hemsl.) T.M. Barkley & Janovec **CP:** RAHC 1521 (IEB). **IZ:** RAHC 1337 (IEB). **ML:** RAHC 1885 (IEB). **PO:** YRA 2225 (IEB). **TE:** RAHC 1228 (IEB). **TL:** RAHC 1170 (IEB). Perennial herb; alpine vegetation of the Trans-Mexican Volcanic Belt and disjunct in the alpine peaks of Guatemala.

Roldana angulifolia (DC.) H. Rob. & Brettell **IZ:** JR 23495 (MSC). **NC:** Hernández 17735 (IEB). **PP:** ESG 995a (MEXU). Shrub; endemic to central and south Mexico.

Roldana barba-johannis (DC.) H. Rob. & Brettell **AJ:** ARG 4043 (QMEX). **IZ:** observed. Shrub; central Mexico to Guatemala.

Roldana candicans (Née) Villaseñor, S. Valencia & Coombes (= *Senecio sinuatus* H.B.K. nom. illeg., *Roldana lineolata* (DC.) H. Rob. & Brettell) **ML:** LB FES-ZA 2023 (MEXU). **NT:** EM 26482 (MEXU). Perennial herb; endemic to Mexico.

Roldana reticulata (DC.) H. Rob. & Brettell **AJ:** YR 12 (MEXU). Perennial herb; endemic to central Mexico.

Selloa plantaginea H.B.K. **CP:** JD s.n. (MEXU). **NT:** CGP s.n. (MEXU). Perennial herb; endemic to the high mountains of the Trans-Mexican Volcanic Belt.

Senecio callosus Sch. Bip. **CP:** JLT 1694 (MEXU). **NT:** EM 26481 (MEXU). **PP:** ESG 999 (MEXU).

Perennial herb; central Mexico to Guatemala.

Senecio cinerarioides H.B.K. **CP:** JG 1912 (MEXU). **IZ:** LAA 8 (QMEX). **NT:** RAHC 1864 (IEB). **PP:** RAHC

1895 (IEB). Shrub; endemic to central Mexico.

Senecio mairertianus DC. **AJ:** ARG 4016 (IEB). **CP:** VWS 7551 (IEB). **IZ:** LAA 2 (QMEX). **ML:** RAHC 1571

(IEB). **NT:** VWS 7609 (IEB). **PO:** YRA 2207 (IEB). **PP:** RAHC 1648 (IEB). **SN:** RAHC 1016 (IEB). **TE:** RAHC 1218 (IEB). **TL:** RAHC 1626 (IEB). Shrub; central Mexico to Guatemala.

Senecio procumbens H.B.K. **CP:** VWS 7558 (IEB). **IZ:** RAHC 1927 (IEB). **ML:** JHB 2226 (MEXU). **NT:** YRA

2181 (IEB). **PO:** RAHC 988 (IEB). **PP:** RAHC 1900 (IEB). **SN:** RAHC 1011 (IEB). Perennial herb; endemic to high mountains of Trans-Mexican Volcanic Belt, occurring almost exclusively in the alpine vegetation but extending slightly into the adjacents forest of *Pinus hartwegii*.

Senecio roseus Sch. Bip. **CP:** VWS 7577 (IEB). **IZ:** RAHC 1674 (IEB). **ML:** RAHC 1581 (IEB). **NT:** JHB 2470

(MEXU). **PO:** YRA 2206 (IEB). **PP:** RAHC 1293 (IEB). **SN:** RAHC 1560 (IEB). **TE:** RAHC 1332 (IEB). **TL:** RAHC 1635 (IEB). Perennial herb; endemic to the Trans-Mexican Volcanic Belt from the state of Mexico to Veracruz.

+***Senecio vulgaris*** L. **CP:** JLT 1693 (XAL). Annual herb; native to Eurasia and northern Africa, now widely naturalized throughout the world.

+***Taraxacum officinale*** F.H. Wigg. **CP:** RAHC 1545 (IEB). **IZ:** JR 20173 (IEB). **NT:** RAHC 1588 (IEB). **PO:**

RAHC 1720 (IEB). **TE:** RAHC 1235 (IEB). Perennial herb; native to Eurasia and now widely naturalized throughout the world. LC (IUCN).

BERBERIDACEAE (1/1)

Berberis alpina Zamudio **CP:** AM 24 (MEXU). **IZ:** RAHC 1906 (IEB). **ML:** RAHC 1106 (IEB). **NT:** YRA

2359 (QMEX). **PO:** RAHC 1517 (IEB). **TE:** RAHC 1236 (IEB). **TL:** RAHC 1638 (IEB). Shrub; saxicolous; endemic to high mountains of central Mexico, primarily those of the Trans-Mexican Volcanic Belt.

BORAGINACEAE (3/4)

Hackelia mexicana (Schltdl. & Cham.) I.M. Johnst. **TE:** RAHC 1318 (IEB). Perennial herb; central

Mexico to Bolivia and Peru.

Lithospermum distichum Ortega **IZ:** RAHC 1665 (IEB). **PP:** CG s.n. (MSC). Perennial herb; northern

Mexico to Guatemala.

Phacelia heterophylla Pursh **PO:** RAHC 1466 (IEB). **PP:** RAHC 1311 (IEB). Perennial herb; northwestern United States to central Mexico.

Phacelia platycarpa (Cav.) Spreng. **CP:** JHB 2190 (MEXU). **IZ:** LAA 5 (QMEX). **ML:** RAHC 1872 (IEB). **NT:** RAHC 916 (IEB). **PO:** RAHC 999 (IEB). **PP:** GLW 11426 (MEXU). **SN:** RAHC 1750 (IEB). **TE:** RAHC 1232 (IEB). **TL:** RAHC 1151 (IEB). Perennial herb; northern Mexico to Guatemala.

BRASSICACEAE (7/8)

Barbarea orthoceras Ledeb. **IZ:** VWS 8116 (QMEX). Perennial herb; Canada to central Mexico.

Cardamine obliqua Hochst. ex A. Rich. **IZ:** JHB 3535 (MSC). Perennial herb; mountains of central and southern Mexico and disjunct in the high mountains of east Africa. Our plants have been segregated as var. *stylosa* Rollins.

Descurainia impatiens (Schltd. & Cham.) O.E. Schulz **IZ:** RAHC 1173 (IEB). **NC:** RAHC 805 (IEB). **NT:** iNaturalist #847995. **PO:** RAHC 1062 (IEB). **PP:** RAHC 1656 (IEB). **SN:** RAHC 1756 (IEB). **TL:** JHB 2296 (MEXU). Perennial herb; northern Mexico to Guatemala.

Draba jorullensis H.B.K. **AJ:** JHB 2783 (MSC). **CP:** VWS 7579 (IEB). **IZ:** LAA 10 (QMEX). **ML:** RAHC 1575 (IEB). **NC:** RAHC 783 (IEB). **NT:** YRA 2179 (IEB). **PO:** YRA 2223 (IEB). **PP:** RAHC 1644 (IEB). **SN:** RAHC 1686 (IEB). **TE:** RAHC 1217 (IEB). **TL:** RAHC 1628 (IEB). Perennial herb; high mountains of central Mexico to Guatemala.

Draba nivicola* Rose **CP: VWS 7552 (IEB). **IZ:** LAA 1 (QMEX). **ML:** RAHC 1878 (IEB). **NT:** VWS 7615 (IEB). **PO:** YRA 2215 (IEB). **SN:** RAHC 1692 (IEB). **TE:** RAHC 1251 (IEB). **TL:** RAHC 1157 (IEB). Perennial herb; endemic to the alpine vegetation of the central and eastern portions of Trans-Mexican Volcanic Belt. A (NOM-059).

Erysimum capitatum (Douglas ex Hook.) Greene **CP:** VWS 7578 (IEB). **NT:** RAHC 900 (IEB). Perennial herb; western United States to southern Mexico.

Lepidium schaffneri Thell. **IZ:** RAHC 1200 (IEB). Perennial herb; endemic to central Mexico.

Romanschulzia arabiformis (DC.) Rollins **CP:** RAHC 1540 (IEB). Perennial herb; endemic to central Mexico.

CAMPANULACEAE (1/1)

Lobelia nana H.B.K. **PO:** GMV 335 (IEB). Perennial herb; high peaks of the Trans-Mexican Volcanic belt and disjunct in the high mountains of Chiapas and Guatemala; also reported from Venezuela.

CARYOPHYLLACEAE (7/21)

Arenaria bourgaei Hemsl. **IZ:** RAHC 1664 (IEB). Perennial herb; northern Mexico to Ecuador.

Arenaria bryoides Willd. ex Schltldl. **CP:** MC 4717 (MEXU). **IZ:** RAHC 1924 (IEB). **ML:** RAHC 1859 (IEB). **NC:** RAHC 1279 (IEB). **NT:** YRA 2193 (IEB). **PO:** YRA 2217 (IEB). **PP:** RAHC 1903 (IEB). **SN:** RAHC 1010 (IEB). **TL:** RAHC 1169 (IEB). Perennial herb; alpine vegetation of the Trans-Mexican Volcanic Belt and disjunct in the alpine vegetation of Chiapas (Tacaná Volcano) and Guatemala. Pr (NOM-059).

Arenaria lanuginosa (Michx.) Rohrb. **PP:** JHB 2618 (MSC). **TL:** RAHC 1134 (IEB). Perennial herb; widespread from the United States to Bolivia and Brazil, also in the Antilles.

Arenaria lycopodioides Willd. ex Schltldl. **AJ:** ARG 4068 (IEB). Perennial herb; northern Mexico to Guatemala.

Arenaria oresbia Greenm. **AJ:** JHB 2777 (MSC). **CP:** VWS 7553 (IEB). **IZ:** RAHC 925 (IEB). **NC:** RAHC 796 (IEB). **PP:** JR 19815 (MEXU). **TE:** RAHC 1220 (IEB). **TL:** RAHC 1154 (IEB). Perennial herb; endemic to northeastern and central Mexico.

Arenaria parvifolia Benth. **CP:** JHB 2146 (MEXU). **IZ:** JHB 2012 (MEXU). **ML:** JHB 2256 (MEXU). **NC:** JHB 2383 (MEXU). **NT:** RAHC 1845 (IEB). **PO:** JHB 2488 (MSC). **PP:** FAB 2379 (MEXU). **TL:** JHB 2327 (MEXU). Perennial herb; high mountains of Trans-Mexican Volcanic Belt and disjunct in the Andes from Colombia to Bolivia. LC (IUCN).

Arenaria reptans Hemsl. **AJ:** ARG 4050 (QMEX). **CP:** VWS 7554 (IEB). **IZ:** RAHC 1183 (IEB). **ML:** RAHC 1866 (IEB). **NT:** YRA 2174 (IEB). **PO:** VWS 7658 (IEB). **PP:** RAHC 1295 (IEB). **SN:** RAHC 1037 (IEB). **TL:** RAHC 1128 (IEB). Perennial herb; central Mexico to Ecuador.

Cerastium brachypodum (Engelm. ex A. Gray) B.L. Rob. **IZ:** LEM 47 (MSC). Perennial herb; Canada to central Mexico.

+*Cerastium glomeratum* Thuill. **NT:** RAHC 1617 (IEB). Perennial herb; native to Europe and now widely naturalized throughout the globe.

Cerastium nutans Raf. **NT:** IL 588 (FCME). **PP:** SDK 7467 (MEXU). Perennial herb; Canada to Guatemala.

Cerastium orithales Schltldl. **CP:** CD 3077 (MEXU). **IZ:** HHI 1019a (MEXU). **ML:** RAHC 1080 (IEB). **NT:** JHB 1878 (MEXU). **PO:** RAHC 1771 (IEB). **PP:** RAHC 826 (IEB). **TE:** RAHC 1240 (IEB). Perennial herb; endemic to

alpine vegetation and adjacent coniferous forests on the following peaks of the Trans-Mexican Volcanic Belt: Sierra Negra, Pico de Orizaba, Iztaccíhuatl, and the Cofre de Perote.

Cerastium purpusii* Greenm. (= *C. molle* Bartl.) **IZ: RAHC 849 (IEB). **NT:** VWS 7618 (IEB). Perennial herb; endemic to the alpine vegetation of Iztaccíhuatl and the Nevado de Toluca.

Cerastium ramigerum Bartl. (= *C. lithophilum* Greenm.) **CP:** VWS 7557 (IEB). **IZ:** RAHC 1204 (IEB). **ML:** RAHC 1871 (IEB). **NT:** RAHC 893 (IEB). **PO:** YRA 2221 (IEB). **PP:** RAHC 1898 (IEB). **SN:** RAHC 1691 (IEB). **TL:** RAHC 1160 (IEB). Perennial herb; endemic to the alpine vegetation and adjacent coniferous forests of the Trans-Mexican Volcanic Belt.

Cerastium tolucense D.A. Good **AJ:** JHB 2773 (MSC). **IZ:** JR 21790 (ENCB). **NT:** YRA 2194 (IEB). **TE:** RAHC 1327 (IEB). **TL:** RAHC 1132 (IEB). Perennial herb; endemic to the alpine vegetation and adjacent coniferous forests of the Trans-Mexican Volcanic Belt.

Cerastium vulcanicum Schltdl. **IZ:** RAHC 1349 (IEB). **ML:** RAHC 1861 (IEB). **NT:** YRA 2200 (IEB). **PO:** RAHC 1729 (IEB). **PP:** GLW 11421 (MEXU). **SN:** RAHC 1688 (IEB). **TE:** RAHC 1435 (IEB). Perennial herb; mountains of the Trans-Mexican Volcanic Belt and disjunct in the high mountains of Guatemala.

Colobanthus quitensis (H.B.K.) Bartl. **CP:** JHB 2167 (MSC). **IZ:** RAHC 1194 (IEB). Perennial herb; palustrine; high peaks of the eastern portion of the Trans-Mexican Volcanic Belt (Cofre de Perote, Pico de Orizaba and Iztaccíhuatl) and disjunct in the Andes of South America.

Drymaria effusa A. Gray var. *depressa* (Greene) J.A. Duke **IZ:** RAHC 1370 (IEB). **PP:** JR 23313 (ENCB). **NC:** RAHC 1433 (IEB). **NT:** LA TOL40B-27 (IEB). **TL:** RAHC 1633 (IEB). Annual herb; southwestern United States (Arizona) to central Mexico.

Sagina saginoides (L.) H. Karst. **IZ:** RAHC 2050 (IEB). **PO:** YRA 2229 (IEB). Perennial herb; circumboreal, in the Americas from Canada and Greenland to central Mexico.

+*Scleranthus annuus* L. **CP:** RAHC 1539 (IEB). Annual herb; native to Eurasia and northern Africa, now widely naturalized throughout the earth.

+*Stellaria media* (L.) Vill. **IZ:** RAHC 1177 (IEB). Annual or perennial herb; native to Eurasia and now widely naturalized. LC (IUCN).

Stellaria umbellata Turcz. **IZ:** JHB 2530 (MEXU). Perennial herb; known in Mexico from only Iztaccíhuatl, otherwise occurring in western North America and Asia.

Weldenia candida Schult. f. **TL:** RAHC 1171 (IEB). Perennial herb; central Mexico to Guatemala.

CRASSULACEAE (3/8)

Echeveria mucronata Schltdl. **SN:** RAHC 1737 (IEB). Perennial herb; northern Mexico to Oaxaca and Veracruz.

Echeveria secunda Booth ex Lindl. **AJ:** JHB 2808 (MSC). **CP:** VWS 7542 (IEB). **IZ:** RAHC 922 (IEB). **NT:** IL 583 (IEB). **PP:** JR 22844 (ENCB). **TE:** RAHC 1266 (IEB). **TL:** RAHC 1147 (IEB). Perennial herb, saxicolous; endemic to central Mexico.

Echeveria subalpina Rose & Purpus **PO:** JHB 1769 (MSC). **SN:** RAHC 1736 (IEB). Perennial herb; endemic to eastern portion of the Trans-Mexican Volcanic Belt in the states of the Puebla, Tlaxcala and Veracruz.

Sedum clavifolium Rose **IZ:** CAP 1681 (US). Perennial herb; endemic to the Trans-Mexican Volcanic Belt where it is known only from the upper slopes of Iztaccíhuatl and the Pico de Tancítaro in Michoacán.

Sedum goldmanii (Rose) Moran **AJ:** ARG 4020 (QMEX). **IZ:** RAHC 1660 (IEB). **ML:** RAHC 1096 (IEB). **NT:** YRA 2358 (QMEX). **PP:** SX 5133 (MEXU). **SN:** RAHC 1040 (IEB). **TL:** RAHC 1148 (IEB). Perennial herb; saxicolous; endemic to central Mexico.

Sedum minimum Rose **CP:** VWS 7538 (IEB). **IZ:** RAHC 1371 (IEB). **NT:** JHB 1925 (MEXU). **PO:** RAHC 1075 (IEB). **TE:** RAHC 1249 (IEB). **TL:** RAHC 1127 (IEB). Perennial herb; saxicolous; endemic to the Trans-Mexican Volcanic Belt from the state of México to Veracruz.

Sedum obcordatum R.T. Clausen **CP:** YRA 2016 (IEB). **PO:** RAHC 1727 (IEB). **SN:** RAHC 1740 (IEB). Perennial herb; endemic to eastern part of Trans-Mexican Volcanic Belt in the states of Puebla and Veracruz.

Tillaea saginoides Maxim. **IZ:** RAHC 1669 (IEB). **NT:** RAHC 1622 (IEB). **TL:** RAHC 1640 (IEB). Annual herb; palustrine to aquatic; Alaska to southern Mexico in the Americas and also in Asia.

CYPERACEAE (2/7)

Carex curviculmis Reznicek **IZ:** JR 36654a (ENCB). **NT:** R 1475 (ENCB). **TL:** JG 1936 (IEB). Perennial herb; palustrine; endemic to Mexico, where it is known from the high peaks of the Trans-Mexican Volcanic Belt and the Tacaná Volcano in Chiapas.

Carex echinata Murray **IZ:** JR 20160 (MSC). Perennial herb; palustrine to terrestrial; widespread throughout the northern hemisphere; in the Americas from Canada to Guatemala. LC (IUCN).

Carex geophila Mack. **NT:** YRA 2356 (QMEX). Perennial herb; southern United States to Guatemala; in Mexico restricted to the Trans-Mexican Volcanic Belt in the states of Puebla, Veracruz and México.

Carex hermannii Cochrane **IZ:** JR 21579 (MSC). Perennial herb; palustrine to terrestrial; endemic to the Sierra Nevada along the portions belonging to the Valley of Mexico.

Carex orizabae Liebm. **CP:** JHB 2177 (MSC). **IZ:** RAHC 854 (IEB). **PO:** SG 7247 (IEB). Perennial herb; palustrine; central Mexico to Guatemala.

Carex peucophila Holm. **IZ:** RAHC 1671 (IEB). **NT:** RAHC 1602 (IEB). **TE:** RAHC 1325 (IEB). **TL:** RAHC 1643 (IEB). Perennial herb; central Mexico to Guatemala.

Eleocharis acicularis (L.) Roem. & Schult. **NT:** RAHC 1828 (IEB). Perennial herb; palustrine to aquatic; widespread throughout the northern hemisphere, in the Americas from Greenland and Canada to Ecuador. LC (IUCN).

ELATINACEAE (1/1)

Elatine brachysperma A. Gray **NT:** JR 22839 (MSC). Annual to perennial herb; aquatic; USA to southern Mexico. LC (IUCN).

ERICACEAE (4/4)

Comarostaphylis discolor (Hook.) Diggs **AJ:** ARG 4083 (QMEX). Shrub; central Mexico to Guatemala. LC (IUCN), Pr (NOM-059).

Monotropa hypopitys L. **IZ:** JHB 1965 (MEXU). Perennial herb; saprophytic; Alaska to Guatemala, also in Europe and Asia. Pr (NOM-059).

Gaultheria myrsinoides H.B.K. (= *Pernettya prostrata* (Cav.) DC.) **AJ:** JHB 2811 (MSC). **CP:** JHB 2376 (MEXU). **IZ:** RAHC 865 (IEB). **ML:** RAHC 1105 (IEB). **NC:** RAHC 791 (IEB). **PO:** RAHC 1708 (IEB). **SN:** RAHC 1735 (IEB). Shrub to subshrub; northern Mexico to South America.

Vaccinium cespitosum Michx. **AJ:** JHB 2781 (MSC). **CP:** VWS 7548 (IEB). **IZ:** RAHC 927 (IEB). **ML:** RAHC 1104 (IEB). **NC:** LMVP 3051 (IEB). **NT:** YRA 2359 (QMEX). **PO:** RAHC 1000 (IEB). **SN:** RAHC 1690 (IEB). **TE:** RAHC 1262 (IEB). Shrub to subshrub; Alaska and Canada to Guatemala.

FABACEAE (3/5)

Astragalus hintonii Barneby **CP:** MGZ 48 (XAL). Perennial herb; endemic to the Trans-Mexican Volcanic Belt.

Astragalus tolucanus B.L. Rob. & Seaton **NT**: RAHC 1641 (IEB). Perennial herb; high mountains of the Trans-Mexican Volcanic Belt and disjunct in Guatemala.

Lupinus aschenbornii S. Schauer **AJ**: JHB 2813 (MSC). **IZ**: RAHC 1211 (IEB). **ML**: RAHC 1081 (IEB). **NT**: YRA 2188 (IEB). **PP**: FAB 2370 (MEXU). **TL**: RAHC 1153 (IEB). Perennial herb; endemic to the high mountains of Trans-Mexican Volcanic Belt.

Lupinus montanus H.B.K. **AJ**: JHB 2792 (MSC). **CP**: HN 826 (MEXU). **IZ**: RAHC 879 (IEB). **ML**: observed. **NC**: RAHC 801 (IEB). **NT**: VWS 7610 (IEB). **PO**: YRA 2062 (IEB). **PP**: RAHC 819 (IEB). **SN**: RAHC 1696 (IEB). **TE**: RAHC 1237 (IEB). **TL**: DF 291 (ENCB). Perennial herb; northern Mexico to Guatemala.

Trifolium amabile H.B.K. **IZ**: RW 356 (ENCB). Perennial herb; northern Mexico to Costa Rica. LC (IUCN).

GENTIANACEAE (2/5)

Gentiana ovatiloba Kusn. **IZ**: VWS 8080 (QMEX). **TL**: JHB 2301 (MSC). Perennial herb; palustrine; high mountains of central Mexico to Guatemala.

Gentiana perpusilla Brandegees **CP**: JHB 2197 (MSC). **IZ**: JR 25681 (MSC). Annual herb; palustrine; alpine zone and adjacent *Pinus hartwegii* forests of the Cofre de Perote and Iztaccíhuatl.

Halenia brevicornis (H.B.K.) G. Don **NT**: EM 26195 (MEX). Annual herb; widely distributed from Mexico to northern South America.

Halenia plantaginea (H.B.K.) G. Don **AJ**: ARG 4081 (IEB). **IZ**: KBH 98/22 (MEXU). **NT**: D 1923 (ENCB). **PO**: RAHC 1773 (IEB). Perennial herb; mountains from northeastern to southern Mexico.

Halenia pringlei B.L. Rob. & Seaton **AJ**: JHB2776 (MSC). **CP**: JHB 2184 (MSC). **IZ**: RAHC 929 (IEB). **ML**: RAHC 1107 (IEB). **NT**: RAHC 1823 (IEB). **PP**: MES s.n. (ENCB). **TE**: RAHC 1253 (IEB). Perennial herb; endemic to the high mountains of the Trans-Mexican Volcanic Belt.

GERANIACEAE (2/5)

+*Erodium cicutarium* (L.) L'Hér. ex Aiton **CP**: RAHC 1533 (IEB). Perennial herb; native to Europe and now widely naturalized throughout the world.

Geranium cruceroense R. Knuth **IZ**: RAHC 1197 (IEB). Perennial herb; endemic to central Mexico.

Geranium latum Small **IZ**: JE 32 (MSC). **PP**: FAB 2402 (MEXU). Perennial herb; endemic to central Mexico.

Geranium potentillifolium DC. **AJ:** ARG 4062 (IEB). **IZ:** HEM 1253 (MSC). Perennial herb; endemic to central Mexico.

Geranium seemannii Peyr. **IZ:** RAHC 2062 (IEB). Perennial herb; northern Mexico to northern South America.

GROSSULARIACEAE (1/1)

Ribes ciliatum Humb. & Bonpl. ex Roem. & Schult. **AJ:** ARG 4053 (IEB). **CP:** YRA 2020 (IEB). **IZ:** JHB 2015 (MSC). **ML:** JHB 2249 (MEXU). **PO:** RAHC 1468 (IEB). **PP:** RAHC 815 (IEB). **SN:** RAHC 1041 (IEB). **TE:** RAHC 1243 (IEB). Shrub; central Mexico to Costa Rica.

IRIDACEAE (1/2)

Sisyrinchium quadrangulatum Klatt **IZ:** RAHC 928 (IEB). **ML:** RAHC 1108 (IEB). **NC:** JHB 2382 (MSC). **NT:** MAG 436 (MEXU). **PO:** MN 24832-A (XAL). **TE:** RAHC 1230 (IEB). **TL:** RAHC 1139 (IEB). Perennial herb; endemic to Trans-Mexican Volcanic Belt.

Sisyrinchium tenuifolium Humb. & Bonpl. ex Willd. **IZ:** JHB 2879 (MSC). **PP:** HEM 35 (MEXU). Perennial herb; endemic to Mexico from Chihuahua and Coahuila to Chiapas.

JUNCACEAE (2/5)

Juncus balticus Willd. var. *mexicanus* (Willd. ex Schult. & Schult. f.) Snogerup **IZ:** RAHC 875 (IEB). Perennial herb; palustrine to terrestrial; widely distributed across the northern hemisphere and in the Americas from Canada and Greenland to Argentina. LC (IUCN).

Luzula caricina E. Mey. **IZ:** RAHC 855 (IEB). Perennial herb; palustrine; northern Mexico to Guatemala.

Luzula denticulata Liebm. **AJ:** ARG 4057 (IEB). Perennial herb; palustrine; northern Mexico to Panama.

Luzula racemosa Desv. **AJ:** JHB 2786 (MSC). **CP:** VWS 7595 (IEB). **IZ:** RAHC 866 (IEB). **ML:** RAHC 1095 (IEB). **NC:** RAHC 784 (IEB). **NT:** YRA 2182 (IEB). **PO:** VWS 7666 (IEB). **PP:** RAHC 832 (IEB). **SN:** RAHC 1027 (IEB). **TE:** RAHC 1238 (IEB). **TL:** RAHC 1168 (IEB). Perennial herb; high mountains from central Mexico to Guatemala and disjunct in South America (Venezuela and Colombia to Argentina and Chile).

Luzula vulcanica Liebm. **CP:** ID 338 (F). **IZ:** VWS 8115 (QMEX). **PO:** FML s.n. (C). Perennial herb; palustrine; alpine vegetation of central Mexico and disjunct in the Andes of South America.

LAMIACEAE (3/3)

+*Prunella vulgaris* L. **IZ:** VWS 8114 (QMEX). Perennial to biennial herb; native to Old World and now widely naturalized throughout the globe. LC (IUCN).

Salvia prunelloides H.B.K. **AJ:** ARG 4074 (IEB). Perennial herb; endemic to central and southern Mexico.

Stachys eriantha Benth. **AJ:** ARG 4085 (IEB). **IZ:** RAHC 843 (IEB). **ML:** RAHC 1082 (IEB). **PO:** RAHC 1002 (IEB). **PP:** JR 15758 (MEXU). **TE:** RAHC 1224 (IEB). **TL:** RAHC 1166 (IEB). Perennial herb; northern and central Mexico and disjunct in the Andes of South America (Venezuela, Colombia, and Ecuador).

MELANTHIACEAE (1/1)

Anticlea frigida (Schltdl. & Cham.) Zomlefer & Jodd. (= *Stenanthium frigidum* (Schltdl. & Cham.) Kunth **AJ:** AR 4008 (IEB). **TE:** RAHC 1265 (IEB). Perennial herb; endemic to central Mexico.

MONTIACEAE (3/4)

Calandrinia acaulis H.B.K. (= *Calandrinia megarhiza* Hemsl.) **AJ:** JHB 2784 (MSC). **CP:** RAHC 1546 (IEB). **IZ:** RAHC 959 (IEB). **ML:** RAHC 1852 (IEB). **NT:** RAHC 1805 (IEB). **PO:** RAHC 1005 (IEB). **PP:** FAB 2369 (MSC). **TE:** RAHC 1252 (IEB). **TL:** RAHC 1146 (IEB). Perennial herb; high mountains of central Mexico to Argentina and Chile. LC (IUCN).

Claytonia perfoliata Donn ex Willd. **IZ:** RAHC 2054 (IEB). Perennial herb; western United States to Guatemala. LC (IUCN).

Montia chamissoi (Ledeb. ex Spreng.) Greene **IZ:** JR 23496 (MSC). Annual to perennial herb; palustrine to terrestrial; Alaska to the western continental United States and disjunct in central Mexico.

Montia fontana L. **IZ:** JR 21596 (MSC). Annual herb; temperate zones of the world.

ONAGRACEAE (1/1)

Epilobium ciliatum Raf. **IZ:** RAHC 872 (IEB). **PP:** FAB 2386 (MEXU). Perennial herb; palustrine to terrestrial; widely distributed throughout the Americas from Canada to Chile and Argentina, also naturalized in the Old World. LC (IUCN).

OROBANCHACEAE (2/6)

Castilleja moranensis H.B.K. **IZ:** RAHC 964 (IEB). **PP:** FAB 2373 (MEXU). Perennial herb; endemic to Trans-Mexican Volcanic Belt.

Castilleja pectinata M. Martens & Galeotti **PO:** GMV 428 (IEB). **PP:** JR 37115 (MEXU). Perennial herb; high mountains of eastern portion of Trans-Mexican Volcanic Belt to Guatemala.

Castilleja scorzonifolia H.B.K. **AJ:** ARG 4010 (QMEX). **CP:** VWS 7543 (IEB). **ML:** RAHC 1093 (IEB). **NC:** RAHC 804 (IEB). **NT:** RAHC 1603 (IEB). **PO:** VWS 7657 (IEB). **SN:** RAHC 1039 (IEB). Perennial herb; northern to central Mexico.

Castilleja tenuifolia M. Martens & Galeotti **AJ:** ARG 4071 (QMEX). Perennial herb; endemic to Mexico.

Castilleja tolucensis* H.B.K. **CP: VWS 7593 (IEB). **IZ:** RAHC 1920 (IEB). **ML:** RAHC 1120 (IEB). **NT:** YRA 2196 (IEB). **PO:** YRA 2053 (IEB). **PP:** SDK 7469 (MEXU). **TL:** RAHC 1155 (IEB). Perennial herb; endemic to alpine vegetation of the Trans-Mexican Volcanic Belt. A (NOM-059).

Pedicularis orizabae Schltdl. & Cham. **AJ:** ARG 4077 (IEB). Perennial herb; central Mexico to Guatemala.

OXALIDACEAE (1/1)

Oxalis alpina (Rose) Rose ex R. Knuth **IZ:** JE 3 (MSC). **NT:** RAHC 1810 (IEB). **TL:** RAHC 1152 (IEB). Perennial herb; southwestern United States to Guatemala.

PHRYMACEAE (1/1)

Erythranthe glabrata (H.B.K.) G.L. Nesom **IZ:** RAHC 1195 (IEB). Perennial herb; palustrine to terrestrial; Canada to Argentina and Chile.

PIPERACEAE (1/1)

Peperomia basiradicans G. Mathieu **AJ:** ARG 4001 (IEB). **NT:** VWS 8097 (QMEX). Perennial herb; endemic to Trans-Mexican Volcanic Belt.

PLANTAGINACEAE (4/8)

Callitriche heterophylla Pursh **IZ:** JR 20182 (MEXU). **TL:** RAHC 1592 (IEB). Perennial herb; palustrine to aquatic; widely distributed from Greenland and Canada to Argentina.

Penstemon gentianoides (H.B.K.) Poir. **AJ:** ARG 4015 (IEB). **CP:** YRA 2169 (IEB). **IZ:** RAHC 965 (IEB). **ML:** RAHC 1088 (IEB). **NT:** VWS 7608 (IEB). **PO:** RAHC 1477 (IEB). **PP:** RAHC 818 (IEB). **SN:** RAHC 1043 (IEB). **TE:** JC ES=3979 (MEXU). **TL:** RAHC 1140 (IEB). Perennial herb; central Mexico to Guatemala.

Penstemon roseus (Cerv. ex Sweet) G. Don **AJ:** ARG 4039 (IEB). **NC:** RAHC 803 (IEB). **PP:** FAB 2397 (MEXU). Perennial herb; endemic to Mexico from Chihuahua to Oaxaca.

Plantago australis Lam. **IZ:** RAHC 857 (IEB). Perennial herb; sometimes palustrine; United States to Chile and Argentina.

Plantago nivea H.B.K. **IZ:** JHB 1999 (MSC). Perennial herb; northwestern Mexico to Guatemala.

****Plantago tolucensis*** Pilg. **IZ:** RAHC 846 (IEB). **ML:** RAHC 1094 (IEB). **NT:** YRA 1900 (IEB). **PP:** RAHC 829 (IEB). **TE:** RAHC 1250 (IEB). **TL:** RAHC 1125 (IEB). Perennial herb; endemic to alpine vegetation of the Trans-Mexican Volcanic Belt.

Plantago tubulosa Decne. **IZ:** JHB 2559 (MSC). Perennial herb; palustrine; in Mexico known only from the alpine vegetation of Iztaccíhuatl, disjunct in Guatemala and the Andes of South America.

Veronica serpyllifolia L. **CP:** JHB 2165 (MSC). **IZ:** RAHC 873 (IEB). Perennial herb; widespread throughout the northern hemisphere, in the Americas from Canada and Greenland to Chile and Argentina.

POACEAE (14/42)

Agrostis bourgaei E. Fourn. **AJ:** JHB 2794 (MSC). **IZ:** RAHC 1890 (IEB). **ML:** JHB 2260 (MSC). **NT:** JHB 1707 (MSC). Perennial herb; endemic to Trans-Mexican Volcanic Belt.

Agrostis calderoniae Acosta Cast. **IZ:** JR 20161 (ENCB). Perennial herb; endemic to the alpine vegetation and adjacent coniferous forests of Iztaccíhuatl.

Agrostis perennans (Walter) Tuck. **NT:** AR 769 (MEXU). Perennial herb; Canada to Guatemala. LC (IUCN).

Agrostis subpatens Hitchc. **IZ:** RAHC 867 (IEB). **ML:** RAHC 1123 (IEB). **PO:** GMV 471 (IEB). **PP:** RAHC 828 (IEB). Perennial herb; central Mexico to Costa Rica.

Agrostis tolucensis H.B.K. **AJ:** ARG 4060 (IEB). **CP:** YRA 2170 (IEB). **IZ:** RAHC 942 (IEB). **ML:** RAHC 1111 (IEB). **NC:** RAHC 813 (IEB). **NT:** VWS 7200 (IEB). **PO:** YRA 2218 (IEB). **PP:** RAHC 1652 (IEB). **SN:** RAHC 1703 (IEB). **TE:** RAHC 1225 (IEB). **TL:** RAHC 1164 (IEB). Perennial herb; central Mexico to Argentina and Chile.

Bromus carinatus Hook. & Arn. **CP:** VWS 7580 (IEB). **PO:** RAHC 1458 (IEB). Perennial herb; western United States to Costa Rica.

+*Bromus diandrus* Roth. **PO:** TR 5817 (ASU). Perennial herb; native to Europe and widely naturalized in the New World.

Bromus exaltatus Bernh. **CP:** YRA 2013 (IEB). **NT:** AV 2 (MEXU). Perennial herb; central Mexico to Panama.

Calamagrostis eriantha (H.B.K.) Steud. (= *Calamagrostis schiedeana* (Rupr. ex Fourn.) Hitchc. **CP:** VWS 7547 (IEB). **PO:** YRA 2058 (IEB). **SN:** RAHC 1009 (IEB). Perennial herb; endemic to Mexico. A (NOM-059).

Calamagrostis orizabae (Rupr. ex Fourn.) Beal **CP:** HHI 906 (XAL). **IZ:** JR 21788 (ENCB). **NC:** MF 739 (IEB). **NT:** CGP 4243 (MEXU). Perennial herb; endemic to the high mountains of central to southern Mexico.

Calamagrostis rigescens (J. Presl) Scribn. **CP:** PJP 92 (XAL). **IZ:** CAP 229 (POM). Perennial herb; in Mexico restricted to alpine regions of the Cofre de Perote and Iztaccíhuatl, and disjunct in the Andes of South America, where it is widespread.

Calamagrostis tolucensis (H.B.K.) Trin. ex Steud. **AJ:** JHB 2789 (MSC). **IZ:** RAHC 1663 (IEB). **ML:** RAHC 1087 (IEB). **NC:** RAHC 797 (IEB). **NT:** YRA 2175 (IEB). **PP:** RAHC 820 (IEB). **TE:** RAHC 1227 (IEB). **TL:** RAHC 1142 (IEB). Perennial herb; central Mexico to Honduras.

Cinna poiformis (H.B.K.) Scribn. & Merr. **IZ:** JR 36016 (ENCB). **ML:** RA 2453 (MEXU). **PP:** RAHC 840 (IEB). **TL:** TW 3432 (ENCB). Perennial herb; central Mexico to Bolivia and Peru.

Deschampsia liebmanniana (E. Fourn.) Hitchc. **CP:** VWS 7581 (IEB). **IZ:** RAHC 945 (IEB). **NT:** RAHC 1610 (IEB). **PO:** YRA 2228 (IEB). Perennial herb; endemic to Trans-Mexican Volcanic Belt.

Festuca hephaestophila Nees **CP:** JHB 2180 (MEXU). **IZ:** RAHC 958 (IEB). **ML:** RAHC 1122 (IEB). **NT:** VWS 7614 (IEB). **PO:** YRA 2064 (IEB). **PP:** JR 15761 (IEB). **SN:** RAHC 1022 (IEB). **TE:** RAHC 1257 (IEB). **TL:** RAHC 1163 (IEB). Perennial herb; central Mexico to Guatemala.

Festuca jaliscana E.B. Alexeev. **NC:** SZ 4254 (IEB). Perennial herb; endemic to Trans-Mexican Volcanic Belt in the state Jalisco.

Festuca livida (H.B.K.) Willd. ex Spreng. **CP:** VWS 7583 (IEB). **IZ:** RAHC 1917 (IEB). **ML:** RAHC 1876 (IEB). **NT:** YRA 2195 (IEB). **PO:** YRA 2065 (IEB). **PP:** RAHC 1901 (IEB). **SN:** RAHC 1704 (IEB). Perennial herb; alpine vegetation in the Trans-Mexican Volcanic Belt and disjunct in the alpine vegetation of Chiapas and Guatemala.

Festuca orizabensis E.B. Alexeev. **IZ:** RAHC 2056 (IEB). Perennial herb; endemic to Mexico.

Festuca tolucensis H.B.K. **AJ:** JHB 2790 (MSC). **CP:** VWS 7546 (IEB). **IZ:** RAHC 851 (IEB). **ML:** RAHC 1582 (IEB). **NC:** RAHC 787 (IEB). **NT:** YRA 2173 (IEB). **PO:** RAHC 1498 (IEB). **PP:** RAHC 823 (IEB). **SN:** RAHC 1044 (IEB). **TL:** JHB 2341 (MEXU). Perennial herb; central Mexico through Guatemala to Colombia and Venezuela.

Muhlenbergia macroura (H.B.K.) Hitch. **IZ:** JP 1325 (ENCB). Perennial herb; northern Mexico to Costa Rica.

Muhlenbergia nigra Hitchc. **AJ:** ARG 4079 (QMEX). **IZ:** RAHC 858 (IEB). **ML:** RA 2465 (IEB). **NT:** JHB 2471 (MEXU). **PP:** JR 19814 (ENCB). Perennial herb; central Mexico to Guatemala.

Muhlenbergia orophila Swallen **IZ:** RAHC 874 (IEB). Perennial herb; palustrine; central Mexico, mostly in the Valley of Mexico and disjunct in Guatemala.

Muhlenbergia peruviana (P. Beauv.) Steud. **IZ:** RAHC 1667 (IEB). **PP:** RAHC 2049 (IEB). **TL:** MG 149 (IEB). Perennial herb; southwestern United States to Guatemala and disjunct in South America from Ecuador to Chile and Argentina.

Muhlenbergia quadridentata (H.B.K.) Trin. **IZ:** RAHC 844 (IEB). **NC:** RAHC 811 (IEB). **NT:** EM 27251 (MEXU). **PP:** JHC 134 (ENCB). Perennial herb; northern Mexico to Guatemala.

Muhlenbergia ramulosa (H.B.K.) Swallen **NC:** JAP 1195 (IBUG). **NT:** JHB 1709 (MSC). Perennial herb; southwestern United States to Costa Rica and disjunct in Argentina.

Muhlenbergia tricholepis (Torr.) Columbus (= *Blepharoneuron tricholepis* (Torr.) Nash) **IZ:** SDK 76256 (IBUG). **NT:** MGO 10 (MEXU). Perennial herb; western United States to central Mexico.

Muhlenbergia utilis (Torr.) Hitchc. **IZ:** VWS 8120 (QMEX). Perennial herb; southwestern United States to southern Mexico.

Nassella mexicana (Hitchc.) R.W. Pohl **IZ:** RAHC 2053 (IEB). **NT:** EM 27245 (MEXU). Perennial herb; central Mexico to Argentina.

Peyritschia koelerioides (Peyr.) E. Fourn. **CP:** IH 118 (XAL). **IZ:** JHB 2608 (MSC). **PP:** JR 23314 (MSC). Perennial herb; high mountains of central and southern Mexico and Guatemala.

Phleum alpinum L. **CP:** JHB 2178 (MSC). **IZ:** JR 20175 (ENCB). Perennial herb; circumboreal, in the Americas from Canada and Greenland to Guatemala and disjunct in Chile and Argentina. LC (IUCN).

+*Poa annua* L. **CP:** RAHC 1534 (IEB). **IZ:** RAHC 1190 (IEB). **ML:** RA 4020 (MEXU). **NT:** RAHC 1612 (IEB). **PO:** RAHC 1506 (IEB). **PP:** RAHC 1899 (IEB). **TE:** RAHC 1319 (IEB). Perennial herb; native to Eurasia and now widely naturalized throughout the world. LC (IUCN).

Poa calycina (Ball) Refulio var. ***mathewsii*** (Ball) Refulio (= *Dissanthelium mathewsii* (Ball) R.C. Foster & L.B. Sm.) **CP:** SJD 4806 (US). **IZ:** RAHC 1193 (IEB). **ML:** RAHC 1883 (IEB). **NT:** VWS 7198 (IEB). **PP:** JHB 1732 (US). **TL:** TW 3950 (ENCB). Perennial herb; in Mexico known only from the alpine vegetation of the Trans-Mexican Volcanic Belt, disjunct in Peru and Bolivia.

Poa chamaeclinis Pilg. **IZ:** JHB 2555 (MEXU). Perennial herb; in Mexico known only from the alpine vegetation of Iztaccíhuatl, disjunct in Peru and Bolivia.

Poa gymnantha Pilg. **TL:** JHB 2342 (US). Perennial herb; in Mexico known only from the alpine vegetation of the Cerro Tlálloc, disjunct in South America (Peru, Bolivia, Chile, Argentina).

Poa orizabensis Hitchc. **IZ:** RC 1148 (ENCB) **PO:** YRA 2063 (IEB). **SN:** RAHC 1034 (IEB). Perennial herb; high mountains of the Trans-Mexican Volcanic Belt and disjunct in Guatemala.

+*Poa pratensis* L. **TE:** RAHC 1034 (IEB). Perennial herb; wide spread in temperate zones and the mountains of tropical regions. According to Soreng & Peterson (2012) [61], our plants belong to subsp. *pratensis*, which is introduced in the region. LC (IUCN).

Poa scaberula Hook. f. (= *Poa conglomerata* Rupr. ex Peyr.) **CP:** VWS 7582 (IEB). **IZ:** RAHC 956 (IEB). **PO:** YRA 2067 (IEB). **PP:** JR 16299 (ENCB). **SN:** RAHC 1038 (IEB). Perennial herb; central Mexico to Argentina and Chile.

Stipa ichu (Ruiz & Pav.) Kunth **IZ:** RAHC 2051 (IEB). **NT:** RAHC 1584 (IEB). **PP:** RM s.n. (ENCB). Perennial herb; central Mexico to Argentina and Chile.

Trisetum ligulatum Finot & Zuloaga **PO:** MN 33192 (MEXU). Perennial herb; endemic to the alpine vegetation and subalpine forests on the Pico de Orizaba (Veracruz), Nevado de Colima (Jalisco), and Cerro Potosí (Nuevo León).

Trisetum rosei Scribn. & Merr. **IZ:** SDK 76231 (MEXU). **PO:** JHB 1778a (MSC). **PP:** JHB 1729a (MSC). Perennial herb; restricted to the high mountains of central Mexico and Guatemala.

Trisetum spicatum (L.) K. Richt. **AJ:** JHB 2788 (MSC). **CP:** JHB 2135 (MEXU). **IZ:** CAP 1617 (US). **ML:** JHB 2222 (MEXU). **NC:** RAHC 786 (IEB). **NT:** VWS 7620 (IEB). **PO:** HR 1270 (US). **PP:** HR 1418a (US). **SN:** RAHC 1023 (IEB). **TE:** RAHC 1242 (IEB). **TL:** JHB 2340 (US). Perennial herb; common in high mountains throughout the world.

+*Vulpia myuros* (L.) C.C. Gmel. **PO:** RAHC 1473 (IEB). Perennial herb; native to Eurasia and widely naturalized throughout the globe.

POLEMONIACEAE (1/1)

Polemonium grandiflorum Benth. **PO:** GMV 233 (IEB). Perennial herb; endemic to Mexico, from Chihuahua to Veracruz.

POLYGONACEAE (1/1)

+*Rumex acetosella* L. **CP:** VWS 7587 (IEB). **PO:** YRA 2059 (IEB). Perennial herb; native to Eurasia and extensively naturalized in the neotropics. LC (IUCN).

RANUNCULACEAE (1/4)

Ranunculus donianus Pritz. ex Walp. **AJ:** JHB 2812 (MSC). **IZ:** RAHC 930 (IEB). **ML:** RAHC 1110 (IEB). **NT:** FAB 52 (MEXU). **PO:** RAHC 1004 (IEB). **PP:** HEM 4512 (MEXU). **TE:** RAHC 1254 (IEB). **TL:** JHB 2322 (MEXU). Perennial herb; central Mexico to Guatemala.

Ranunculus multicaulis D. Don ex G. Don **CP:** JHB 2126 (MEXU). **IZ:** RAHC 1208 (IEB). **NT:** JR 22849 (ENCB). **TE:** RAHC 1247 (IEB). **TL:** RAHC 1162 (IEB). Perennial herb; central Mexico to Costa Rica.

Ranunculus peruvianus Pers. **CP:** JD 1626 (MEXU). Perennial herb; northeastern Mexico to Peru.

Ranunculus praemorsus H.B.K. ex DC. **TL:** DF 279 (MEXU). Perennial herb; central Mexico to Argentina and Chile.

ROSACEAE (4/10)

Acaena elongata L. **AJ:** ARG 4047 (IEB). **IZ:** RAHC 2061 (IEB). **TL:** RAHC 1639 (IEB). Terrestrial shrub; central Mexico to Peru.

Alchemilla aphanoides Mutis ex L. f. **CP:** GCC 16279 (XAL). **IZ:** JHB 3538 (MSC). Perennial herb; northeastern Mexico to Costa Rica.

Alchemilla pinnata Ruiz & Pav. **IZ:** JR 20130 (MEXU). **NT:** VWS 7626 (IEB). Perennial herb; alpine vegetation of central and southern Mexico and Guatemala, then disjunct and South America.

Alchemilla pringlei (Rydb.) Fedde **CP:** JD 1565 (XAL). **IZ:** RAHC 1181 (IEB). **TE:** RAHC 1219 (IEB). **TL:** observed. Perennial herb; central Mexico to Guatemala.

Alchemilla procumbens Rose **CP:** ARG 2589 (MEXU). **IZ:** JR 19153 (ENCB). **ML:** RAHC 1100 (IEB). **NT:** BL 2798 (MEXU). **PP:** RAHC 1297 (IEB). **TE:** RAHC 1326 (IEB). **TL:** RAHC 1167 (IEB). Perennial herb; northern Mexico to Bolivia and Peru.

Alchemilla vulcanica Schltdl. & Cham. **AJ:** JHB 2771 (MSC). **CP:** YRA 2012 (IEB). **IZ:** RAHC 926 (IEB). **ML:** RAHC 1090 (IEB). **NC:** RAHC 792 (IEB). **NT:** VWS 7195 (IEB). **PO:** JHB 1755 (ENCB). **PP:** RAHC 825 (IEB). **SN:** RAHC 1321 (IEB). **TE:** RAHC 1226 (IEB). **TL:** RAHC 1629 (IEB). Perennial herb; northern Mexico to Peru.

Potentilla candicans Humb. & Bonpl. ex Nestl. **IZ:** JHB 2870 (MSC). Perennial herb; endemic to the high mountains of Trans-Mexican Volcanic Belt.

Potentilla ranunculoides H.B.K. **AJ:** JHB 2775 (MSC). **CP:** HN 905 (MEXU). **IZ:** RAHC 975 (IEB). **ML:** RAHC 1083 (IEB). **NT:** YRA 2360 (QMEX). **TE:** RAHC 1223 (IEB). **TL:** RAHC 1133 (IEB). Perennial herb; high mountains of central Mexico primarily in the Trans-Mexican Volcanic Belt.

Potentilla richardii Lehm. **AJ:** ARG 4021 (IEB). **CP:** HN 806 (MEXU). **IZ:** LAA 4 (QMEX). **ML:** RAHC 1109 (IEB). **NC:** JHB 2354 (MEXU). **NT:** YRA 2184 (IEB). **PO:** YRA 2056 (IEB). **PP:** GLW 11423 (MSC). **TL:** RAHC 1161 (IEB). Perennial herb; restricted to the alpine vegetation and adjacent coniferous forests of the Trans-Mexican Volcanic Belt.

Sibbaldia procumbens L. **IZ:** JHB 2527 (MSC). **ML:** RAHC 1121 (IEB). **NT:** RAHC 1822 (IEB). **TE:** RAHC 1255 (IEB). Perennial herb; circumpolar in the northern hemisphere, in the Americas from Alaska, Canada, and Greenland to the western continental United States and disjunct in the alpine vegetation of central Mexico.

RUBIACEAE (1/1)

Crusea longiflora (Roem. & Schult.) W.R. Anderson **IZ:** EM 29037 (MEXU). Annual herb; northern Mexico to Panama.

SALICACEAE (1/1)

Salix paradoxa H.B.K. **AJ:** ARG 4040 (QMEX). Tree or shrub; endemic to Mexico.

SCROPHULARIACEAE (1/1)

Limosella aquatica L. **IZ:** RAHC 1670 (IEB). **NT:** JR 22847 (MEXU). **TL:** RAHC 1642 (IEB). Annual herb; palustrine to aquatic; Greenland and Canada to South America, also in Asia, Africa, and Europe. LC (IUCN).

SOLANACEAE (1/1)

Solanum demissum Lindl. **AJ:** ARG 4030 (IEB). **IZ:** RAHC 966 (IEB). **PP:** RAHC 1298 (IEB). Perennial herb; central Mexico to Guatemala. LC (IUCN).

URTICACEAE (1/1)

Urtica orizabae Liebm. **IZ:** CAP 192 (POM). Perennial herb; endemic to eastern portion of the Trans-Mexican Volcanic Belt.

VERBENACEAE (1/1)

Glandularia teucrifolia (M. Martens & Galeotti) Umber. **CP:** IC 8683 (XAL). **PO:** AR 2655 (XAL). Perennial herb; central Mexico to Guatemala.

VIOLACEAE (1/2)

Viola beamanii Calderón **IZ:** JHB 1998 (MSC). **NT:** JHB 1935 (MSC). Perennial herb; high mountains of Trans-Mexican Volcanic Belt in State of Mexico and Mexico City.

Viola hemsleyana Calderón **IZ:** JHB 1958 (MSC). Perennial herb; endemic to central and southern Mexico.

