

A RECENSION OF THE MEXICAN SPECIES OF *ROLDANA* (ASTERACEAE: SENECIONEAE)

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ABSTRACT

A recension of the genus *Roldana* in Mexico is rendered. In the classically conceived *Senecio* (s.l.), *Roldana* belongs to the Sect. *Palmatinervia*, but I intend to recognize the genus in my upcoming treatment of the tribe Senecioneae for Mexico (cf. Turner 1996). In the present account, 58 species are recognized, including two newly described species from Oaxaca: *Roldana juxtlahuacana* B.L. Turner, sp. nov., and *Roldana mazatecana* B.L. Turner, sp. nov.; and four newly transferred taxa from *Senecio* into *Roldana*: *R. floresiorum* (B.L. Turner) B.L. Turner, comb. nov.; *R. sinuata* (H.B.K.) B.L. Turner, comb. nov.; *R. tepopana* (B.L. Turner) B.L. Turner, comb nov.; and *R. tonii* (B.L. Turner) B.L. Turner, comb. nov. A key to the taxa is provided, along with a brief account of their taxonomy and a rather complete synonymy.

KEY WORDS:

Roldana, *Senecio*, Mexico, Asteraceae

An on-going treatment of the Comps of Mexico has stimulated the present account, this started some 10 years ago, in anticipation of a treatment of the genus *Senecio* (s.l.) for Mexico with the late Ted Barkley (1934-2004), a conservative academic son of the late Art Cronquist. Following the death of Cronquist, Ted became suddenly less conservative (thanks to the clamour for a more rigorous phylogenetic nomenclature, and the use of DNA data in their discovery).

In any case, I have had to rework my original treatment of the *Roldana* complex, this requiring a number of new combinations in the

genus, as well as the description of two new species, as noted in the above abstract.

ROLDANA Llave & Lag.

Pericalia Cass.

Senecio sect. *Palmatinervii* Greenm.

Suffruticose perennial herbs, shrublets, or tree-like shrubs 0.5-7.0 m high. Stems mostly terete, rarely angulate, mostly pithy at maturity, rarely hollow. Leaves alternate, simple to deeply lobed, usually not peltate or somewhat subpeltate (the petiole attached close to the margin of the blade, rarely centrally peltate). Heads radiate or not, few to numerous in lax cymes or in rather congested corymbose panicles. Involucres 1-2 seriate, often bounded by bracts (the calyculus) which are sometimes larger than the involucral bracts. Ray florets pistillate, fertile, ligulate or not. Disk florets 6-numerous, the corollas yellow (white in *R. eriophylla*), the lobes usually shorter than the throat. Achenes ca. 10-ribbed, mostly glabrous, rarely pubescent, the pappus of numerous barbellate bristles. Base chromosome number, $x = 30$.

Type species: *Senecio roldana* DC. (= *Roldana lobata*)

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Roldana contains about 55 species, most of the taxa native to Mexico. It is primarily a shrubby group with a base chromosome number of $x = 30$. The genus is a segregate from *Senecio* (s.l.) and clearly relates to the cacalioid species of *Senecio*, as noted by several authors (cf. Jeffrey 1992 for an up-to-date review of the genera concerned). Gibson (1968) provided an unpublished monograph of the group, placing most of the species known to him in Sect. *Palmatinervii* of Greenman. Nearly all of these were accepted by Robinson and Brettell (1975) who transferred them to the resurrected genus *Roldana*, including *Pericalia*. I also accept the inclusion of *Pericalia* in *Roldana*. Pending additional study, I retain *Psacaliopsis* which, except for its subscapose habit and peltate leaves, differs but little from my concept of *Roldana*.

KEY TO THE SPECIES OF ROLDANA IN MEXICO

1. Plants acaulescent or nearly so, 20-75 cm high,
the leaves peltate near center of blade.....genus *Psacaliopsis*
1. Plants not as described in the above.....(2a)

- 2a. Leaves seasonally deciduous, mostly absent at time of flowering.....*R. eriophylla*
- 2a. Leaves not seasonally deciduous, present at time of floweing.....(2b)
- 2b. Pedicels and bases of heads sparsely to densely pubescent; heads with or without rays [typical *Roldana*].....(8)
- 2b. Pedicels and bases of heads glabrous; heads without rays [*Pericalia* group].....(3)
3. Leaf blades peltate, fine venation of leaf not prominent.....*R. subpeltata*
3. Leaf blades not peltate, fine venation of leaf very prominent.....(4)
4. Corollas greenish or white; achenes glabrous.....(6)
4. Corollas yellow; achenes covered with short setae.....(5)
5. Phyllaries 5-8; heads without large subinvolucral bracts.....*R. mexicana*
5. Phyllaries 11-15; heads with many large subinvolucral bracts.....*R. suffulta*
- 6(4). Leaf blades cleft more than halfway to middle; corolla lobes separate nearly to tube.....*R. heteroidea*
6. Leaf blades only shallowly lobed; corolla lobes short.....(7)
7. Heads with 40-50 flowers; lobes of corolla as long as throat; leaf blades broadly ovate or elliptic with margins coarsely toothed or lobulate, lobules broader than long.....*R. sessilifolia*
7. Heads with 25-35 flowers; lobes of corolla less than half as long as throat; leaf blades deltoid or subcircular with 3-7 lobes, lobes longer than broad.....*R. michoacana*

- 8(2). Outer involucral bracts arranged in several imbricate series; herbs to 1 m high; Oax.....*R. mixteca*
8. Outer involucral bracts not as described in the above.....(9)
9. Heads mostly with 5 or 8 phyllaries.....(35)
9. Heads mostly with 10-13 phyllaries.....(10)
10. Stems and petioles glabrous to white-villous or hirsute, not clearly lanate.....(13)
10. Stems and petioles lanate or densely tomentose.....(11)
11. Blades broadly oval, about as long as wide.....*R. lanicaulis*
11. Blades elliptical, 3-6 times as long as wide.....(12)
12. Involucral bracts 7-8 mm long; Dur.....*R. gesnerifolia*
12. Involucral bracts 5-6 mm long.....*R. neogibsonii*
- 13(10). Leaves pinnately dissected.....*R. ehrenbergiana*
13. Leaves variously toothed or lobed, not pinnately dissected.....(14)
14. Leaves ovate to orbicular with truncate or cordate bases.....(17)
14. Leaves lanceolate, elliptic to obovate, with bases cuneate and narrowly tapering.....(15)
15. Blades markedly denticulate; Jal.....*R. guadalajarensis*
15. Blades entire.....(16)
16. Petioles 8-15 mm long; Hid, Pue, Ver.....*R. neogibsonii*
16. Petioles 20-40 mm long; Mex.....*R. hintonii*
- 17(14). Achenes glabrous.....(19)
17. Achenes covered with short hairs.....(18)
18. Heads 6-5 mm high; Pacific slopes.....*R. carlomasonii*
18. Heads 10-12 mm high; Gulf slopes.....*R. marquezii*
- 19(17). Plants 20-25 cm high; Gue.....*R. tlacotepecana*
19. Plants 50-300 mm high.....(20)

20. Leaves broadly ovate to oblong, never peltate;
veins subpalmate to nearly pinnate.....(31)
20. Leaves orbicular to broader than long,
sometimes peltate; veins clearly palmate.....(21)
21. Heads with distinct ray flowers.....(24)
21. Heads without ray flowers.....(22)
22. Outermost corollas pistillate; Cps.....*R. heterogama*
22. Outermost corollas perfect; Hid, Ver.....(23)
23. Plants 45-80 cm high; disk florets 20-30.....*R. metepeca*
23. Plants 100-150 mm high; disk florets 30-50.....*R. grimesii*
- 24(21). Leaves mostly 7-11 lobed.....(26)
24. Leaves mostly 5-lobed.....(25)
25. Stems and phyllaries essentially glabrous;
surface of rays densely papillose with projecting
cells; Mex, Mex.....*R. glinophylla*
25. Stems and phyllaries markedly
glandular-pubescent; Dur.....*R. tepopana*
- 26(24). Low herbaceous plants 1-2 m tall with stems
not deflected at nodes; inflorescence rather
narrow and elongate.....(29)
26. Coarse shrubby plants 1-4 m tall with stems
prominently deflected at nodes; inflorescence a
broad corymbose panicle.....(27)
27. Phyllaries narrow with short, minute, gland-tipped hairs;
tubes of ray flowers puberulous; disk flowers ca. 15;
Gue.....*R. langlassaei*
27. Phyllaries broad with dense, coarse nonglandular hairs;
tubes of ray flowers glabrous; disk flowers 25-40.....(28)

28. Involucral bracts ca. 4 mm long; Oax.....*R. mazatecana*
28. Involucral bracts 6-10 mm long; Gue.....*R. gilgii*
- 29(26). Lower surface of leaves tomentose or
flocculent-tomentose; heads with
20-25 disk flowers; Gue, Oax.....*R. pinetorum*
29. Lower surface of leaves hirsute,
not tomentose; heads with 26-70 disk flowers.....(30)
30. Outer-most involucral bracts similar to the inner
involucral bracts, or smaller.....*R. platanifolia*
30. Outer-most involucral bracts foliaceous,
longer than the inner involucral bracts.....*R. nesomiorum*
- 31(20). Phyllaries usually 7-10 mm long with
mostly flattened dorsal surfaces;
disk florets 16-24.....*R. reticulata*
31. Phyllaries usually 3.5-6.0 mm long,
at least inner phyllaries with a prominent
central keel; disk florets 9-19, usually less than 16.....(32)
32. Stems usually deflexed at nodes, not fistulose.....(34)
32. Stems straight, usually fistulose (hollow), at least in
lower parts.....(33a)
- 33a. Leaf blades clearly palmately veined from
the very base, their margins weakly lobed
if at all; Oax.....*R. juxtlahuacana*
33a. Leaf blades not clearly palmately veined from
the very base, their margins markedly lobed.....(33b)
- 33b. Phyllaries densely pubescent, glabrate with age;
ray flowers often lacking.....*R. lobata*
33b. Phyllaries glabrous to sparsely pubescent;
ray flowers present.....*R. kerberi*

- 34(32). Phyllaries glabrous to sparsely tomentose, their apices lanceolate.....*R. aschenborniana*
34. Phyllaries densely tomentose, their apices short-acute.....*R. barba-johannis*
- 35(9). Leaf blades palmately veined or lobed; blades truncate, cordate, or peltate at base.....(40)
35. Leaf blades pinnately lobed or veined, often elliptical or oblong-elliptical; blades cuneate or decurrent at base.....(36)
36. Achenes glabrous.....(38)
36. Achenes covered with short setae.....(37)
37. Leaves long and narrowly elliptical with only serrate margins.....*R. guadalajarensis*
37. Leaves rather ovate and deeply dissected into irregular broad lobes.....*R. heracleifolia*
- 38(36). Heads with 5 obtuse phyllaries; leaves irregularly serrate; stems woody; Ver, Oax, Cps.....*R. schaffneri*
38. Heads with 8 phyllaries.....(39)
39. Involucres 4-5 mm high.....*R. floresiorum*
39. Involucres 7-8 mm high.....*R. sinuata*
- 40(35). Heads nearly sessile in numerous small glomerules; soft-wooded shrubs.....*R. robinsoniana*
40. Heads on short to long pedicels, not in glomerules.....(41)
41. Leaves ovate or orbicular, denticulate, mostly with 5 or more lobes.....(43a)
41. Leaves mostly triangular with 3 distinct lobes.....(42)

42. Capitulescence with prominent bracts; ligules
7-9 mm long; Oax.....*R. anisophylla*
42. Capitulescence w/o prominent bracts; ligules
6 mm long or less; Mic, Mex.....*R. hederifolia*
- 43a(41). Leaves mostly with 5 major lobes.....*R. jurgensenii*
- 43a. Leaves mostly with 7-11 major lobes.....(43b)
- 43b. Inflorescence with prominent sessile
foliaceous bracts at bases of primary
and sometimes on secondary branches;
phyllaries usually densely pubescent with short,
often glandular, hairs.....(54)
- 43b. Inflorescence with only small bracts, any
larger bracts narrowly petiolate; phyllaries
glabrous or sparsely hirsute.....(44)
44. Lower stems lanose, the vestiture 2-3 mm high; Nue...*R. sundbergii*
44. Lower stems not as described in the above.....(45)
45. Plants herbaceous; inflorescence a flat or
round-topped paniculate cyme with
ascending branches(49)
45. Plants woody; inflorescence pyramdal-paniculate
with spreading branches.....(46)
46. Leaves seasonally deciduous, densely pubescent;
corollas with lobes 4-5 times as long as wide.....genus *Pittocaulon*
46. Leaves not seasonally deciduous, only slightly
pubescent; corolla lobes 2-3 times as long as wide.....(47)
47. Involucre 6-7 mm high.....*R. albonervia*
47. Involucre 5-6 mm high; achenes pubescent.....(48)
48. Involucral bracts 7-9; Jal.....*R. manantlanensis*
48. Involucral bracts 5; Oax.....*R. calzadana*

- 49(45). Heads with 18-20 disk florets.....*R. petasites*
49. Heads with 4-16 disk florets.....(50)
50. Plants 70 cm high or less; leaves mostly basal.....*R. gonzalezi*
50. Plants to 1.5 m high; leaves not mostly basal.....(51)
51. Midstem leaves with petioles mostly 8-15 cm long.....(53)
51. Midstem leaves with petioles mostly 2-8 cm long.....(52)
52. Achenes pubescent.....*R. hartwegii*
52. Achenes glabrous.....*R. pennellii*
- 53(51). Lobes of blade acute; involucral bracts
8-9 mm long.....*R. acutangula*
53. Lobes of blade obtuse; involucral bracts
6-8 mm long*R. subcymosa*
- 54(43b). Stem leaves narrowly cleft to about
halfway to center.....*R. greenmanii*
54. Stem leaves shallowly lobed.....(55)
55. Involucres 5-7 mm high; corollas pubescent; Cps.....*R. tonii*
55. Involucres 7-12 mm high, corollas more or less glandular....(56)
56. Plants from the mountains of central Mexico
and westward; outer phyllaries mostly pubescent
with short, usually glandular, hairs.....(62)
56. Plants from the eastern escarpment of Mexico
and Puebla or Oaxaca and southward;
phyllaries variously pubescent to glabrous,
usually with distinct scarious margins.....(57)
57. Lower leaf surfaces very sparsely pubescent.....*R. jurgensenii*
57. Lower leaf surfaces puberulous to tomentose.....(58)

58. Leaves densely tomentose on lower surface, their lobes regular and often sharp with numerous callus denticulations on margins.....*R. petasitis*
58. Leaves puberulous on lower surfaces, their lobes sometimes irregular or nearly entire.....(59)
59. Heads without rays.....*R. oaxacana*
59. Heads with rays (often reduced).....(60)
60. Phyllaries 7-10 mm long; Ver.....*R. sartorii*
60. Phyllaries 4-7(8) mm long.....(61)
61. Phyllaries 6-7 mm long; leaves mostly without callous denticulations.....*R. cordovensis*
61. Phyllaries 4-6 mm long; leaves with numerous callous denticulations.....*R. oaxacana*
- 62(56). Heads mostly with 15-40 disk flowers; leaves with lobes usually as long as wide with angulate margins; rays reduced or lacking; inflorescence bracts often very foliaceous.....*R. angulifolia*
62. Heads with less than 15 (and usually less than 10) disk flowers; leaves very shallowly lobed; rays absent or prominent; distal bracts of inflorescence not prominent.....(63)
63. Leaf blades not peltate; mature phyllaries 8-9 mm long.....*R. gentryi*
63. Leaf blades peltate; mature phyllaries usually less than 8 mm long.....*R. chapalensis*

ROLDANA ACUTANGULA (Hemsl.) H. Rob. & Brettell, *Phytologia* 27: 415. 1974

Cineraria acutangula Bertel.
Senecio acutangulus Hemsl.

Cps and adjacent Guatemala, montane cloud forests, 2400-2600 m; Dec-Jan.

Robust weak-stemmed suffruticose herbs or shrubs 1-4 m high; stems decidedly 4-6 angulate, loosely arachnoid-pubescent at first, but soon glabrate; mid-stem leaves 12-24 cm long, 6-16 cm wide; petioles 8-18 cm long; blades maple-like in shape, the lobes mostly 5-7 with apices acute, the margins denticulate or subserrate; heads numerous in axillary or subaxillary corymbose panicles, the ultimate peduncles 2-7 mm long; achenes sparsely, pubescent; otherwise much-resembling *R. manantlana* and *R. subcymosa*.

Roldana acutangula is readily distinguished by its angulate (not terete) stems, maple-like leaves and essentially glabrous involucral bracts. *Roldana subcymosa* of Gue is closely related and may not prove specifically distinct, although it appears to be easily separated from *R. acutangula* by its leaves, which have densely puberulent undersurfaces, broader lobes and glabrous achenes.

ROLDANA ALBONERVIA (Greenm.) H. Rob. & Brettell,
Phytologia 27: 415. 1974.

Senecio albonervius Greenm.

Jal, Mic, Mex, Mor, Hid and Pue, pine-oak and fir forests, 2500-3000 m; Feb-Apr.

Shrubs, often tree-like, 3-7 m high; much-resembling *R. aschenbornia* and, except for its larger size (3-7 m vs 1-3 m), distinguished from this by its larger involucres 8-10 mm high (vs 5-8 mm) with fewer inner bracts (8 vs 10-13).

The species has been reported from Hid and Ver but I take these to be the occasional misidentification of *R. aschenborniana*, as that name is currently applied. Gibson (1968) cited a putative hybrid between *R. albonervia* and *R. aschenborniana* (Moore 23261) from Hid, noting that the leaves and general appearance are those of the former, while the heads are those of the latter. I think, however, that the specimen is but a leaf form of *R. aschenborniana*, there being considerable variation in the leaf shape and texture within both species. It is possible that the correct name for what I here call *R. albonervia* is *R. aschenborniana*, as typified by Gibson (1968), since the type of the latter is from Mex (about Toluca).

ROLDANA ANGULIFOLIA (DC.), H. Rob. & Brettell, Phytologia 27: 415. 1974.

Senecio angulifolius DC.

Cacalia berlandieri DC.

Senecio acerifolius K. Koch

Senecio angulifolius DC. var. *ingens* Greenm.

Senecio desertorum Hemsl.

Senecio prainianus Berger

San, Gua, Que, Hid, Jal, Mic, Mex, Mor, Tla, Pue, Ver and Gue, pine-oak or fir forests 1200-3400 m; Oct-Feb.

Sparingly branched shrublets to tree-like shrubs 2-7 m high; mid-stem leaves 10-20 cm long, 15-30 cm wide; petioles 4-15 cm long; blades weakly peltate, if at all, broadly ovate in outline; heads rather numerous in very leafy-bracteate cymose panicles, the ultimate peduncles 1-3 cm long; involucres mostly (9)10-12 mm long, the bracts mostly 8, rarely 9-11, densely pubescent with short glandular-trichomes; ray florets mostly absent, rarely present; disk florets mostly 15-40, the corollas yellow; achenes glabrous, the pappus 7-9 mm long; chromosome number, $n = 30$ pairs.

This is a widespread very variable species, as noted by McVaugh (1984), but readily recognized by its rather large heads which are usually subtended by foliaceous bracts, characters which distinguish it

from the superficially similar and widespread *R. chapalensis* and the more localized *R. sartorii*. Occasional plants have well developed rays. The var. *ingens* may be worthy of recognition since it appears to have larger involucres, occurring at subalpine elevations across the trans-volcanic belt from Jal to Ver; this taxon may also be the same as *Roldana langlassei*, which reportedly has 11-13 involucral bracts.

ROLDANA ANISOPHYLLA, (Klatt) Funston, Novon 11: 305. 2001

Senecio anisophyllus Klatt

Roldana crongquistii H. Rob. & Brettell

Senecio crongquistii (H. Rob. & Brettell) B.L. Turner & T. Barkley

Known only from Oax, ca. 100 km n of Cd. Oaxaca, pine-oak cloud forests, ca. 3000 m; Aug-Dec.

Suffruticose glabrous herbs or shrublets 0.5-2.0 m high; mid-stem leaves 6-10 cm long, 4-6 cm wide; petioles 4-6 cm long; blades triangular-hastate, 3-lobed, or less often merely hastate; heads radiate, numerous in terminal cymose panicles, the ultimate peduncles mostly 2-5 cm long; involucres turbo-campanulate 11-14 mm high, densely glandular-pubescent with short hairs, the bracts 8, abruptly acute apically; ray florets ca 5, the ligules yellow 11-14 mm long; disk florets 15-25, the corollas yellow; achenes glabrous, the pappus 6-8 mm long.

Funston, in his transfer of this taxon to *Roldana*, discussed the nomenclature of this species in much more detail, including his submergence of *R. crongquistii*.

ROLDANA ASCHENBORNIANA (Schauer), H. Rob. & Brettell,
Phytologia 27: 415. 1974.

Senecio aschenbornianus Schauer

Roldana hirsuticaula (Greenm.) Funston

Roldana quezaltica (L. Wms.) H. Rob.

Senecio hirsuticaulus Greenm.

Senecio quezalticus L. Wms.

Senecio schumannianus Nees & Schauer

Mostly Gulf slopes, Nue, Tam, San, Que, Hid, Pue, Ver and Oax, pine-oak and fir forests, 300-2200 m; Nov-Apr.

Shrublet or shrub mostly 1-3 m high; much-resembling *R. barba-johannus* but the involucral bracts glabrous to sparsely tomentose with gradually-tapering, mostly lanceolate, apices; chromosome number, $n = 30$ pairs.

A widespread highly variable species, mostly occurring along the Gulf slopes from Tam to Oax, although collections have been reported from Guatemala. Gibson (1968) contends that hybrids between this species and *R. albonervia* occur (e.g., Moore 2326, GH, UC) and suggests that *R. hirsuticaula* (type: San, Palmer 1114) is a hybrid between *R. aschenborniana* and *R. lanicaulis*, although I think this is an erroneous interpretation. While he applies the name, *R. aschenborniana*, to the populations concerned here, it is possible, however, that the name is improperly applied, for the type of *R. aschenborniana* is from near Tolucca, Mex (GH, lectotype designated by Gibson), a region where recent collections of this Gulf slope taxon have not been made. It is possible that the name, *R. aschenborniana* applies to either *R. barba-johannis*, *R. albonervia*, or *R. lobata*, all of which are well-represented in w Mex. If this proves the case, then the Gulf-slope populations must take the earliest available name, *R. hirsuticaula*.

ROLDANA BARBA-JOHANNIS (DC.) H. Rob. & Brettell,

Phytologia 27: 415. 1974.

Senecio barba-johnannis DC.

Roldana donnell-smithii (Coul.) H. Rob. & Brettell

Senecio donnell-smithii Coul.

Senecio grahamii Benth.

Senecio pullus Klatt

Sin, Nay?, Jal, Mic, Mex, Mor, Hid, Pue, Tla, Ver, Gue, Oax, Cps and Guatemala, pine-oak and fir forests, 2400-3900 m; Oct-Apr.

Shrublets or shrubs 1-4 m high; much-resembling *R. lobata* but occurring at higher elevations, the stems densely shaggy-villous and

straight and hollow at maturity, the leaves thicker, more densely tomentose beneath; heads with involucres persistently but loosely-tomentose, rarely glabrate.

In habit (the stems low, deflexed at the nodes, and pithy at maturity), *R. barba-johannis* resembles *R. aschenborniana* of northeastern Mexico (Ver to Tam) but the latter has mostly glabrous involucral bracts with gradually tapered apices. Material from Cps differ somewhat in having mostly purple-tipped involucral bracts and narrower leaf blades; such plants have been called *R. donnell-smithii*. Robinson and Brettell (1974) recognized the latter as specifically distinct; Gibson (1968) treated these as intergrading varieties, while Williams (1976) did not recognize the taxon, nor do I.

ROLDANA CALZADANA B. L. Turner, *Phytologia* 80: 276. 1996.

n Oax, Mpio. San Martin Perez, pine-oak woodlands; Feb.

Similar to *R. manantlanensis* but the leaves thinner with denticulate lobes (vs. lobes entire).

ROLDANA CARLOMASONII (B.L. Turner & T. Barkley) C. Jeffrey, *Kew Bull.* 47: 54. 1992.

Senecio carlomasonii B.L. Turner & T. Barkley

Son, Chi, Sin, Nay and adjacent U.S.A., pine-oak woodlands, 1300-2100 m; Sep-Nov.

Suffruticose perennial herbs, shrublets or shrubs 1.0-2.5 m high; leaves mostly 10-20 cm, 6-12 cm wide; petioles 2-8 cm long; blades broadly oval to elliptic-ovate, sparingly pubescent beneath to glabrate; much-resembling *R. hartwegii* but the involucral bracts 10-13 in number (vs 5-8), the stems not arachnoid tomentose, and the leaves not densely and persistently puberulent beneath; chromosome number, $n = 30$ pairs.

Collections of this species have long gone under the name *R. hartwegii* Benth., but the taxa are readily distinguished as noted in the key. *Roldana carlomasonii* might also be confused with the more eastern, *R. pennellii*, which can be distinguished by its glabrous achenes, both *R. carlomasonii* and *R. hartwegii* having pubescent achenes.

ROLDANA CHAPALENSIS (S. Wats.), H. Rob. & Brettell,
Phytologia 27: 416.1974.

Senecio chapalensis S. Wats.

Senecio adenolepis Greenm.

Senecio brachyanthus Greenm.

Senecio chapalensis var. *areolatus* Greenm.

Senecio chrismarii Greenm.

s Zac, Agu, Jal, Col, Mic, Mex, Mor, Gue and Oax, pine-oak and fir forests, 1500-2700 m; Nov-Feb.

Shrublets to tree-like shrubs 1-6 m high; mid-stem leaves asymmetrically peltate, rarely not, otherwise much-resembling *R. angulifolia* but the capitulescence with fewer leafy-bracts and the involucral bracts mostly 5-7 mm long (vs 8-12 mm), the latter not subtended by a conspicuous calyxulus; ray florets present or absent; chromosome number, $n = 30$ pairs.

This is a highly variable species, especially as regards ray florets, these either absent or present and the ligules well-developed or much-reduced; eradiate populational forms have been given the name var. *areolatus*. Other than the absence of ray florets these appear to differ but little from typical populations of the species. Individuals referred to as *Senecio brachyanthus* appear to be forms of the species from Gue without short glandular-pubescent hairs on the involucre, these being replaced by totally eglandular multicellular trichomes (Mexia 9055, LL) with a mixture of both eglandular and long-glandular trichomes (Hinton et al. 11320, LL); the former collection was cited as var. *chapalensis* and the latter as var. *areolatus* by Gibson (1968). Both are said to have white flowers by the collectors concerned, whilst *R.*

chapalensis has bright yellow flowers. Such plants might ultimately prove to be specifically distinct. Gibson also refers to several collections of this species from northwestern Mexico (Chi and Sin) which appeared to differ from typical *R. chapalensis*. These were subsequently given the name *R. gentryi* by Robinson and Brettell and I follow them in this surmize. Future workers may wish to treat these as only varietally distinct.

ROLDANA EHREMBERGIANA (Klatt) H. Rob. & Brettell.

Phytologia 27: 418. 1974.

Senecio ehrenbergianus Klatt

Senecio canicidus Sesse & Moc.

Senecio semperamatae T. Barkley

Mex, Mor and adjacent Pue, tropical deciduous forests, 1300-1600 m; May-Jun.

Stiffly erect, mostly unbranched herbs 0.5-1.0 m high; leaves 8-10 cm long, 4-7 cm wide; petioles 1-3 cm long; blades ovate in outline, 1-2 times as long as wide, deeply pinnately incised with 5 principal lobes, the latter often with shallow lobes; heads campanulate, 1-7 in loose cymes, the ultimate peduncles 3-20 cm long (including scale-like bracts); involucres (6)10-15 mm high, the inner bracts 11-13, the outer bracts (calyx) filiform; ray florets 8, the ligules yellow, 2.0-3.5 cm long; disk florets numerous, the corollas yellow; achenes 6-7 mm long, glabrous, the pappus of numerous white bristles 8-10 mm long.

Roldana ehrenbergiana is a very distinct species, having vegetational features of the genus *Digitacalia*, but features of the capitulum characteristic of *Roldana* and/or *Psacaliopsis*. *Senecio semperamatae* appears to be a form of *R. ehrenberiana* with somewhat larger heads (involucre 12-15 mm high vs 6-10 mm). The type of *R. ehrenbergiana* is from the city of Puebla; that of *S. semperamatae* from near Cuautla, Mor, this amounting to a distance of some 100 km. Except for the reported difference in head size, there is little to distinguish between them.

ROLDANA ERIOPHYLLA (Greenm.) H. Rob. & Brettell,
Phytologia 27: 418. 1974.
Senecio eriophyllus Greenm.
Pittocaulon calzadanum B.L. Turner

ne Oax, rocky ravines and along barrancas in oak-juniper woodlands, 1000-1600 m; Mar-May

Shrubs to 2 m high, leafless at anthesis; leaves 10-20 cm long, 3-7 cm wide; petioles 3-5 cm long; blades ovate, tomentose on both surfaces, the margins irregularly lobed; heads eradiate, the florets white; achenes glabrous.

Because of its habit, a very distinct species, and perhaps deserving of generic status, as noted by Turner in his cavalier, description of the taxon as a new species of *Pittocaulon*. My misnomer was not treated in the account of *Pittocaulon* by Clark (1996), although she called attention to its erection in her appendix (p. 194). Regardless, it would seemingly key to *Pittocaulon* in her account of the Sect. *Terminales* of *Senecio*. With additional reflection on its generic position, total characters of the taxon concerned seem more those of *Roldana* than *Pittocaulon*, hence its retention here.

ROLDANA FLORESIORUM (B.L. Turner) B.L. Turner, **comb. nov.**
Senecio floresiorum B.L. Turner, *Phytologia* 74: 367. 1993.

Vegetatively similar to *R. gesnerifolia* but having much smaller heads (involucres 4-5 mm high vs. 7-8) with fewer inner involucral bracts (ca. 8 vs. 11-13), and shorter ligules (2-4 mm vs. 7-8).

ROLDANA GENTRYI H. Rob. & Brettell, *Phytologia* 27: 418. 1974.
Senecio gentryi (H. Rob. & Brettell) B.L. Turner & T. Barkley

s Son, Chi?, Sin and Dur, pine-oak forests, 1900-2700 m; Nov-Mar.

Shrubs 2-3 m high; much-resembling *R. angulifolia* but the involucres without subtending foliaceous bracts, the rays well-developed and the leaves often markedly peltate (albeit off-center).

This rather isolated taxon stands somewhat between *R. angulifolia* and *R. chapalensis*, possessing the large involucres of the former, but the habit and leaves of the latter.

ROLDANA GESNERIFOLIA C. Jeffrey, Kew Bull. 47: 54. 1992.

Senecio gesnerifolius B.L. Turner, not *S. gesnerifolius* Cuatr.

Roldana mesquitlanensis (B.L. Turner) Funston, nom. superf.

Known only from Dur (Mpio. Mezquital), pine-oak forests, 2600-2700 m; Mar.

Suffruticose herbs or shrublets to ca. 2 m high; resembling *R. neogibsonii* but the leaves thicker, more venose, serrulate, and the heads larger with longer rays.

A very distinctive species, not readily confused with another and only remotely related to *R. neogibsonii*, with which it is compared in the above account.

ROLDANA GILGII (Greenm.), H. Rob. & Brettell, Phytologia 27: 419. 1974.

Senecio gilgii Greenm.

Cps and adjacent Guatemala, montane rain forests, 2000-2500 m; Jan-Mar.

Suffruticose robust herbs, shrublets or shrubs 1-4 m high; leaves nonpeltate, thick, palmately veined, subcircular in outline, the margins with 12-20 shallow denticulate lobes; petioles 10-22 cm long, densely pubescent; heads numerous in corymbose panicles, the branches not especially bracteate; involucres campanulate, 9-13 mm high, the bracts 11-13 in number; ray florets 8-9, the ligules yellow, 3-9 mm long; achenes glabrous, the pappus 7-9 mm long.

ROLDANA GLINOPHYLLA H. Rob. & Brettell, *Phytologia* 27: 419. 1974.

Senecio acerifolius Hemsl., not *S. acerifolius* Koch

Mic and Mex, tropical deciduous forests, 1000-1500 m; Sep-Oct.

Suffruticose herbs or shrublets to 1 m high; much-resembling *R. acutangula* but the involucres with 8 involucral bracts (vs. 11-13) and the stems terete (vs angular).

A poorly collected taxon, readily recognized by its Pericalia-type (albeit radiate) heads and nearly glabrous stems and foliage. McVaugh (1984) has noted that the type of this species is probably from near Uruapan, Mic and not Oax as indicated in the type description (based upon *Senecio acerifolius* Hemsl., a Ghiesbreght collection).

ROLDANA GONZALEZI (B.L. Turner) Funston, *Novon* 11: 304. 2001.

Senecio gonzalezae [sic] B.L. Turner

Known only from s Dur, pine-oak woodlands, ca 2000 m; Sep-Oct.

Suffruticose herbs 40-80 cm high, the stems simple, unbranched, arising from woolly "corms"; leaves not peltate, broadly oval to kidney-shaped in outline, the petioles with long crisped multiseptate hairs; heads numerous, borne on very elongate naked primary peduncles, the ultimate peduncles mostly 5-25 mm long; involucral bracts 8, 5-6 mm high; ray florets ca. 8, the ligules yellow; disk florets 12-20, the corollas yellow; achenes glabrous, the pappus bristles 4-5 mm long.

A very distinct, but apparently common, species in the drier pine-oak woodlands of s Dur, and probably adjacent Jal and Zac.

ROLDANA GREENMANII H. Rob. & Brettell, *Phytologia* 27: 419.
1974.

Senecio greenmanii (H. Rob. & Brettell) L. Wms.

Known only from Cps and adjacent Guatemala, montane evergreen cloud forests, 1800-2300 m; Feb-Apr.

Robust herbs, shrubs or small trees to 8 m high; mid-stem leaves very large, up to 40 cm long; petioles hirsutulous, 20-30 cm long, blades thin, 15-30 cm long, 25-45 cm broad, the margins with 7-11 denticulate lobes; heads numerous in large terminal cymose panicles, the ultimate peduncles mostly 2-3 cm long; involucres cylindroturbinate, 10-12 mm long, 4-6 mm wide, the bracts 8, hirsutulous to glabrate; pistillate florets 5-8 eradiate; disk florets 12-18, the corollas yellow with moderately puberulent tubes; achenes glabrous, the pappus ca 8 mm long.

As noted by Williams (1976), a very distinct species, often tree-like and up to 8 m high.

ROLDANA GRIMESII (B.L. Turner) C. Jeffrey, *Kew Bull.* 47: 55.
1992.

Senecio grimesii B.L. Turner

Known only from montane regions ca. 80 km n of Zimapán, Hid; Mar.

Shrublets or shrubs to 1.5 m high; stems leafy throughout with large non-peltate leaves; blades broadly oval or subcircular in outline, ca. 18 cm long, 22 cm wide; heads 20-30, eradiate, campanulate arranged in bracteate cymose panicles; involucres 10-12 mm high, the inner bracts ca. 11, minutely glandular pubescent, these subtended by 5-8 large foliaceous ciliate bracts (the calyxulus); disk florets 30-50, the corollas yellow; achenes glabrous, the pappus of 40-50 white fragile bristles 8-10 mm long.

The species closely resembles the occasional eradiate form of the more southern *R. marquezii*; the latter can be distinguished by its pubescent achenes and eglandular involucral bracts.

ROLDANA GUADALAJARENSIS (B. L. Rob.) H. Rob. & Brettell,

Phytologia 27: 420. 1974.

Senecio guadalajarensis B. L. Rob.

Nay, Jal, Gua and Mic, oak woodlands, 1000-2200 m; Jul-Oct.

Robust suffruticose herbs or shrublets 1.0-2.5 m high; resembling *R. hintonii* but the stems and foliage glabrous or nearly so, the blades linear-lanceolate with markedly serrate margins and the heads larger with longer rays and more numerous disk florets, the achenes glabrous or sparsely pubescent.

The long, pinnately-veined, glabrous leaves of this species are quite distinctive, not easily confused with another.

ROLDANA HARTWEGII (Benth.) H. Rob. & Brettell, *Phytologia* 27: 420. 1974.

Senecio hartwegii Benth.

Cacalia tepicana M. E. Jones

Senecio seemannii Sch.-Bip.

Dur, Sin, s Zac, Nay and Jal, pine-oak forests, 1500-2700 m; Aug-Nov.

Shrublets or shrubs mostly 1-3 m high; stems leafy throughout, terete to angulate, purplish to maculate, densely puberulent or arachnoid-puberulent to glabrate; mid-stem leaves mostly 8-14 cm long, 8-16 cm wide; petioles 3-7 cm long; blades broadly ovate in outline, persistently white-pubescent beneath, the margins with 7-13 shallow obtuse lobes about as wide as long; heads numerous in rounded terminal cymose panicles, the ultimate peduncles mostly 3-10 mm long; involucral bracts 8-10

As indicated above, this taxon is superficially similar to *R. pennellii*, the latter having smaller glabrate leaves and glabrous achenes. *Roldana hartwegii* might also be compared with *R. carlomasonii*, the latter also having glabrous achenes.

ROLDANA HEDERIFOLIA (Hemsl.) H. Rob. & Brettell, *Phytologia* 27: 420. 1974.

Senecio hederifolius Hemsl.

Senecio alienus H. Rob. & Seaton

Senecio chrismarii Greenm.

Mic, Mex, pine-oak forests, mostly along streams, ca. 1800 m; Dec-Jan

Suffruticose herbs reportedly to 1 m high; leaves with 3 major lobes, triangular in outline, thick and fleshy, marginally peltate; petioles 6-12 cm long; blades nearly glabrous (sparsely pubescent when very young), palmately nerved from the point of petiolar attachment, the margins denticulate; heads arranged 20 or more to a branch, the uppermost flowering first; involucres cylindro-turbinate, ca. 1 cm high, the bracts 8, glandular-pubescent, at least in part, the peduncles decidedly glandular; ray florets small or reportedly absent; disk florets 12-15, the corollas yellow; stamens reportedly orange, the anthers sagittate; achenes 10-ribbed, glabrous.

Much-resembling the more southern *R. anisophylla* in having marginally peltate, 3-lobed leaves, but said to differ from the latter in having more prominent bracts in the capitulecence and beneath the capitula, with longer ray florets (Funston 2001). Long known only by type material, recent collections of *R. hederifolia* have been made along Rio del Salto, Avadero, Valle de Bravo, Mex.

ROLDANA HERACLEIFOLIA (Hemsl.) H. Rob. & Brettell, *Phytologia* 27: 420. 1974.

Senecio heracleifolius Hemsl.

Zac, Agu, Gua, Que, Jal, Mic and Mex, oak forests and open disturbed woodlands, 1600-2100 m; Sep-Nov.

Robust suffruticose herbs or shrublets 1-3 m high, the stems densely pubescent, arising from stout rhizomes; leaves 15-30 cm long, 15-20 cm wide, deeply and irregularly incised pinnate, the sinuses often extending to near the midribs; heads numerous in terminal rounded cymose panicles, the ultimate petioles 3-15 mm long; involucres campanulate, 8-10 mm high, the bracts 8, glabrous; ray florets 5 the ligules 5-10 mm long; disk florets 15-25, the corollas yellow; achenes 3-4 mm long, pubescent, the pappus 5-6 mm long.

As noted by McVaugh (1984), an attractive common roadside plant in ne Jal and elsewhere.

ROLDANA HETEROGAMA (Hemsl.) H. Rob. & Brettell,
Phytologia 27: 420. 1974.
Senecio heterogamus Hemsl.

Cps and Guatemala southwards to Panama, pine-oak forests, 3000-4100 m, mostly on upper volcanic slopes, Dec-Apr.

Suffruticose herbs or shrublets or shrubs mostly 1-5 m high; mid-stem leaves mostly peltate (rarely not); petioles 8-16 cm long; blades circular or subcircular in outline, 8-20 cm across, the margins with 5-15 relatively shallow lobes, the sinuses scarcely extending to 1/4 of the radius; heads with pistillate eradiate peripheral florets, numerous in corymbose panicles, the ultimate peduncles glandular, mostly 1-3 cm long (including the lanceolate bracts); disk florets 30-40, the corollas yellow; achenes glabrous, the pappus of fragile, sparsely barbellate, bristles 8-10 mm long

A variable species, perhaps divisible into 2 or more regional taxa.

ROLDANA HETEROIDEA (Klatt) H. Rob. & Brettell, *Phytologia* 27: 420. 1974.

Senecio heteroideus Klatt

Cacalia longipetiolata Rob. & Greenm.

Digitacalia heteroidea (Klatt) Pippen

Known only from central Oax, pine-oak forests, 2400-2700 m; Oct-Dec.

Suffruticose leafy herbs 1-2 m high; vegetatively resembling *R. sessilifolia* but the leaves with 5 deep lobes, the sinuses extending to about 1/2 the radius of the blade; heads eradiate, the peduncles and involucres glabrous; involucres 13-15 mm high, the involucral bracts 8 in number; florets 30-40 per head, the corollas seemingly pale yellow, but this not clear from dried materials; achenes glabrous, the pappus of numerous very delicate, sparsely barbellate bristles 7-8 mm long.

A poorly known species, most of the collections having been obtained on Sierra de San Felipe, n of Cd. Oaxaca. Pippen (1968) positioned this species in *Digitacalia* but like Robinson and Brettell (1974) I believe it belongs within the sect. *Palmatinervi*, sensu Barkley (1985).

ROLDANA HINTONII H. Rob. & Brettell, *Phytologia* 27: 420. 1974.

Senecio hintonii (H. Rob. & Brettell) J. Pruski & T. Barkley

Known only from the vicinity of Temascaltepec, Mex, where it is seemingly common in pine-fir forests, Feb-Mar; 2800-3000 m.

Suffruticose herbs or shrublets 1-2 m high; leaves 15-20 cm long, 3-6 cm wide; petioles 2-4 cm long; blades thin, ovate-elliptical to oblanceolate-elliptical, pinnately veined, loosely arachnoid beneath, glabrate with age, the margins entire, or nearly so; heads numerous in rounded terminal cymes, the ultimate peduncles arachnoid-pubescent, mostly 3-6 mm long; involucres 6-8 mm high, the bracts 10-11, glabrous; ray florets 5-8, the ligules yellow, 6-8 mm long; disk florets 10-15, the corollas yellow, the lobes 1 mm long or less; achenes glabrous, the pappus 5-6 mm long.

ROLDANA JURGENSENII (Hemsl.) H. Rob. & Brettell, *Phytologia* 27: 421. 1974.

Senecio jurgensenii Hemsl

Roldana breedlovei H. Rob. & Brettell

Senecio anisophyllus Klatt

Oax, Cps and Guatemala, montane evergreen cloud forests, mostly 1000-3000 m; Dec-Feb.

Suffruticose herbs, shrublets, or shrubs 1-3 m high; much-resembling *R. oaxacanus* but distinguished by its mostly larger involucres (7-10 mm high vs 4-7 mm) and relatively broad subpalmately lobed glabrous leaf blades.

A variable species, both in vegetative characters and characters of the head. Both rayed and rayless populational forms occur and occasional forms have moderately pubescent leaf blades, suggesting hybridization with *R. oaxacanus*. Since the two species are sympatric over a large area, the occasional hybrid might be anticipated. For the most part, however, *R. jurgensenii* can be distinguished from *R. oaxacanus* but is somewhat larger heads and subpalmately veined glabrous leaves. The two taxa are in need of detailed study in the field and these might ultimately be combined into a single variable species.

ROLDANA JUXTLAHUACANA B.L. Turner, sp. nov.

Roldanae kerberi H. Rob. & Brettell similis sed differt foliis laminis ovatis valde palmati-nervatis (vs. subpalmatis et marginibus leniter lobatis (vs. valde lobatis).

Shrub up to 2 m high. Stems straight and fistulose, sparsely pubescent to glabrate. Leaves 15-25 cm long; petioles 5-10 cm long; blades decidedly ovate, 8-14 cm long, 5-8 cm wide, markedly palmately veined, glabrous above, moderately puberulous below, mainly along the veins, their margins weakly lobate to nearly entire. Involucres 4.5-5.0 mm high, the bracts ca. 11, glabrous, or nearly so; calyculum of 3-6 short narrow bractlets. Receptacle plane to somewhat

convex, ca. 3 mm across. Ray florets absent. Disk florets ca. 20, yellow; corollas ca. 6 mm long, glabrous; tubes ca. 2.5 mm long; lobes 5, ca. 0.75 mm long. Achenes narrowly ovoid, glabrous, ca. 3 mm long, 1 mm wide, weakly 8-ribbed at maturity; pappus of numerous decidedly fragile white bristles ca. 6 mm long.

TYPE: MEXICO. OAXACA: Mpio. Santiago Juxtlahuaca, 6-7 km from El Manzana along road to Infiernillo ($17^{\circ} 12' N$, $98^{\circ} 04' W$), pine-oak forests, locally abundant, 13 Feb 1996, J.I. Calzada 20776 (Holotype: TEX).

Roldana juxtlahuacana is closely related to *R. kerberi* and *R. lobata* of the Pacific slopes of Mexico, all being robust shrubby herbs with fistulose or hollow stems. It appears closest to *R. kerberi* in possessing nearly glabrous stems and involucres, but differs markedly from the latter in leaf shape, as noted in the above diagnosis.

The novelty is named for the locality where collected (and perhaps endemic to). Its only collector, J.T. Calzada suggested the appellation, negating my desire to name it for her.

ROLDANA KERBERI (Greenm.) H. Rob. & Brettell, *Phytologia* 27: 421. 1974.

Roldana galiciana (McVaugh) H. Rob. & Brettell

Senecio galicianus McVaugh

Senecio kerberi Greenm.

w Jal, Col, pine-oak or pine-fir forests, 1800-2300 m; Oct-Mar.

Robust suffruticose herbs, shrublets or shrubs with stiffly erect hollow (fistulose) stems 2-4 m high; mid-stem leaves 15-30 cm long, 12-17 cm wide, but much reduced upwards; petioles 10-15 cm long; blades broadly oval in outline, sparsely pubescent to glabrate beneath, the margins with 5-9 acute lobes; heads radiate, numerous in rounded terminal cymose panicles, the ultimate peduncles mostly 5-10 mm long; involucres mostly 4-5 mm high, the inner bracts 10-13; ray florets 5, the ligules 3-5 mm long, yellow; disk florets 9-14, yellow to yellow-

orange; achenes glabrous, the pappus 5-6 mm long; chromosome number, $n = 30$ pairs

I cannot distinguish *R. galiciana* from *R. kerberi*; McVaugh (1984), who provided an excellent illustration, also notes that *R. galiciana* might prove synonymous with the latter, the type locality of both occurring in the same general region.

ROLDANA LANGLASSEI (Greenm.) H. Rob. & Brettell, *Phytologia* 27: 421. 1974.

Senecio langlassei Greenm.

Gue, Pacific slopes, pine-oak forests, 1600-2300 m; Apr- May.

Shrubs 3-4 m high, the leaves not peltate; much-resembling *R. petasitis* but the heads mostly smaller with reportedly more numerous involucral bracts (10-11) and smaller florets.

A poorly known species, originally collected in Gue, but Robinson & Brettell (1974) report another collection from Mex (Cerro de Mamatla, 2000-2300 m) by Matuda (30560, US). *Roldana langlassei* is possibly but a form of *R. angulifolia* with more numerous involucral bracts.

ROLDANA LANICAULIS (Greenm.) H. Rob. & Brettell, *Phytologia* 27: 421. 1974.

Senecio lanicaulis Greenm.

Tam, San, Ver, Oax, Cps and Guatemala, montane cloud forests, 1000-2000 m; Nov-Mar.

Leafy-stemmed shrubs 1-3 m high; much-resembling *R. aschenborniana* but the stems and petioles shaggy-lanose, the blades larger, 10-20 cm long, 10-25 cm wide, subcircular in outline, the margins with 10-15 shallow lobes.

The species is closely related to *S. aschenborniana*, their heads being almost identical, but having much larger subcircular leaves and markedly lanose petioles and stems. *Roldana lanicaulis* might also be confused with *R. sundbergii*, but the latter is a low shrublet with mostly basal leaves and has heads with only 8 involucral bracts.

ROLDANA LOBATA Llave, in Llave & Lex, Nov. Veg. Descr. 2: 10. 1825.

Senecio jaliscanus S. Wats.

Senecio roldana DC.

Senecio rotundifolius Sesse & Moc.

Senecio schumannianus Nees & Schauer

Jal, Gua, Mic, Mex, Tla, Mor, Gue, and Oax, pine-oak and tropical deciduous forests, 1200-2500 m; Nov-Jan.

Erect often robust herbs with stiffly erect terete hollow stems, these scarcely deflexed at the nodes, mostly 1-4 m high; leaves mostly ovate in outline, often markedly bicolored, the lower surfaces persistently tomentose; heads small, ligulate or not, arranged in corymbose panicles, the ultimate peduncles mostly 1-3 mm long; involucres mostly 4.5-6.5 mm high, usually persistently white-tomentose throughout; ray florets absent or present, when present the ligules yellow, 3-6 mm long; disk florets 13-20, the ligules yellow or yellow-orange; achenes glabrous, the pappus bristles 5-7 mm long with enlarged apices.

A variable but very distinct species, easily recognized by its tightly imbricate, relatively small, densely tomentose involucres. Occasional plants of *R. lobata* appear to approach *R. barba-johannis* in characters of the head, suggesting that hybridization may occasionally occur between these taxa.

Both Gibson (1968) and McVaugh (1984) placed *Senecio jaliscanus* within the fabric of *Roldana lobata*. Typical forms of the latter occur at higher elevations and have numerous radiate heads borne on ascending branches which form a terminal rounded corymbose

panicle, the ultimate peduncles 3-10 mm long. *Senecio jaliscanus* has smaller, often eradiate, heads on ultimate peduncles 1-3 mm long which are arranged in divaricately branched, terminal or axillary, corymbs. The taxa might ultimately be given formal recognition, but additional field work will be needed to vouchesafe such treatment.

ROLDANA MANANTLANENSIS (R.R. Kowal) B.L. Turner,
Phytologia 80: 277. 1996.

Senecio galicianus var. *manantlanensis* R.R. Kowal

Jal, Sierra de Manantlan, along lumber roads, pine-oak forests in wet places, 2000-3000 m; Oct-Mar.

Kowal, in his original description, gives an exhaustive account of this taxon and its relationship to *Senecio galicianus* (= *Roldana kerberi* in the present treatment). *Roldana manantlanensis* differs from *R. kerberi* in having longer involucral bracts (4.5-6.5 mm vs. 3.0-4.5) and fewer florets to a head (7-13 vs. 14-21), among other characters.

ROLDANA MARQUEZII (B.L. Turner) C. Jeffrey, *Kew Bull.* 47: 55. 1992.

Senecio marquezii B.L. Turner

Hid, and central Ver, pine-oak forests, 1300-2500 m; Feb-Apr.

Shrublets or shrubs 1.0-1.5 m high; much-resembling *R. grimesii* but the achenes pubescent and the involucral bracts not densely short glandular-pubescent.

When originally described, the species was known only by radiate forms (thus readily distinguishing it from the eradiate *R. grimesii*). Recent collections of *R. marquezii* from near Tenango de Doria, Hid (Garcia 1750 TEX), reveal the species to also possess eradiate individuals. At least these can scarcely be distinguished from the typically radiate forms of the species. See additional comments under *P. grimesii*.

ROLDANA MAZATECANA B.L. Turner, sp. nov.

Roldanae calzadanae B. L. Turner similis sed differt laminas foliorum latioribus quam longioribus marginis vix denticulatis (vs. valde denticulatis), bracteis involucri 11 (vs 8), ca. 4 mm longis (vs 5-6 mm), et flosculis disci minoribus numerosioribus (10-15-15 vs. 5).

Shrubs 2-3 m high. Upper stems somewhat fractiflex, densely tomentose. Leaves 15-20 cm long, 10-14 cm wide; petioles 5-10 cm long; blades palmately nerved with 5-7 ribs; 8-12 cm long, 9-15 cm wide, the margins with 11-14 obtuse lobes, sparsely crinkly-pubescent below, especially along the major veins. Capitulecence terminal, 15-20 cm across, composed of 100 or more congested heads, the ultimate peduncles 2-6 mm long. Involucres ca. 4 mm high, the outer bracts 1-2 mm long, the inner bracts 11, ca. 4 mm long. Receptacles ca. 1 mm across, endowed with short hyaline scales. Ray florets 8; ligules yellow, 4-nervate, 4-5 mm long, ca. 2 mm wide. Disk florets 15-25; corollas ca. 3 mm long, 5-lobed, glabrous. Achenes (immature) ca. 2 mm long, glabrous; pappus of numerous white bristles.

TYPE: MEXICO. OAXACA: Sierra Mazateca , “Aprox. 400 m del Puerto de la Soledad, por la carretera de Huautla a Teotitlan de Flores Magon (Mex 182),” ca. 2320 m, 13 Feb 2002, *Munn-Estrada & Mendoza 1947* (Holotype: TEX; isotype MEXU).

ADDITIONAL SPECIMENS EXAMINED: Sierra Mazateca, “1 km del Puerto de la Soledad, por la carretera de Teotitlan de Flores Magon a Huatla de Jimenez (Mex 182),” ca. 2335 m, 11 Feb 2002, Munn-Estrada & Mendoza 1907 (MEXU, TEX).

Among the shrubby Roldanas of Mexico with relatively broad palmately veined leaves, *R. mazatecana* is noteworthy for its small heads and glabrous involucral bracts. It clearly relates to the Oaxacan species, *R. calzadana*, as noted in the above diagnosis.

The species is named for the Sierra Mazateca, to which it is seemingly endemic.

ROLDANA METEPECA (B.L. Turner) C. Jeffrey, Kew Bull. 47: 55. 1992.*Senecio metepecus* B.L. Turner

Known only central Hid and adjacent Ver, Pinus-Alnus forests, 2000-2200 m; Aug-Oct.

Low stoloniferous herbs 40-60 cm high; leaves not peltate, mostly clustered near the base of the stem; petioles 5-6 cm long; blades 5-6 cm long, 6-8 cm wide, the margins with 5-7 lobes about as long as wide; heads eradiate, 10-20 in stiffly-branched cymes, the ultimate peduncles glandular-pubescent, mostly 3-5 cm long; involucres turbo-campanulate 10-12 mm high, the bracts 8-13 in number, densely pubescent with purple hairs; disk florets 20-30, the corollas yellow; achenes 3-4 mm long, glabrous, the pappus of numerous delicate bristles 9-10 mm long.

A very distinct taxon, with a low habit, relatively few leaves and slender rhizomes. It superficially resembles *R. platanifolia* but the latter is a larger plant with leafier stems, and radiate heads.

ROLDANA MEXICANA (McVaugh) H. Rob. & Brettell, Phytologia 27: 421. 1974.*Senecio mexicana* McVaugh

Jal, Mic, Mex and Gue, pine-oak forests, 1500-2600 m; Oct-Dec.

Vegetatively much-resembling *R. suffulta* but the heads cylindrical, smaller, with fewer florets (9-15 vs 60+) and the calyculum of reduced subulate bracts.

This taxon was treated as a variety of *R. suffulta* by Gibson (1968) but McVaugh correctly notes the many characters that distinguish it from that species. Gibson noted the occasional intermediate (e.g. King 5062, 18 mi e Morelia) between the two species and it is possible that

hybrids occur, especially in Mic where their distributions overlap. McVaugh (1984) provides an excellent illustration.

ROLDANA MICOACANA (B.L. Rob.) H. Rob. & Brettell,

Phytologia 27: 421. 1974.

Cacalia michoacana B. L. Rob.

Cacalia trigonophylla Blake

Pericalia michoacana (B. L. Rob.) Rydb.

Senecio michoacanus (B. L. Rob.) B.L. Turner & T. Barkley

Jal, Mic and Mex, Pacific slopes, pine-oak and fir forests, 1500-2500 m; Nov-Jan.

Mostly suffruticose herbs 0.5-1.5 m high, the stems arising from small tubers; much-resembling *R. sessilifolia* but distinguished by its smaller heads with fewer florets and smaller leaves, the blades with mostly 3-5 lobes; chromosome number, $n = 30$ pairs.

A poorly marked species but readily identified by its hastate leaves and pubescent stems, as noted by McVaugh (1984). It is closely related to *R. sessilifolia*, the latter having glabrous stems and leaves cordate or reniform (in outline). McVaugh, following Pippen (1968), treated this species within the genus *Pericalia*, whereas Robinson and Brettell (1974) include these within their concept of *Roldana*. *Cacalia trigonophylla* is a form having 3-lobed leaves instead of the usual 5, superficially resembling *R. hederifolia*.

ROLDANA MIXTECANA Panero & Villasenor, *Brittonia* 48: 83. 1996.

Known only from nw Oax (Dist. Juxtlahuaca) in pine-oak forests, ca. 2000 m in the Mixteca region, hence its name; Oct-Nov.

Perennial herbs 0.5-1.0 m high; involucral bracts in several tightly imbricate series. A very distinct species having triangular, weakly 5-lobed leaves. The authors provided an excellent illustration with their original description.

ROLDANA NEOGIBSONII (B.L. Turner), Funstan, Novon 11: 304. 2001.*Senecio neogibsonii* B.L. Turner

Hid, Pue and adjacent Ver, oak forests, 180-2000 m; Oct-Jan.

Herbaceous subshrub 2-5 dm tall; herbage velvety or felted-tomentose but glabrous or nearly so on the upper sides of the leaves; leaves petiolate, the blades narrowly elliptic to elliptic lanceolate, 10-15 cm long and 1.5-1.5 cm wide, ca. 5 times longer than wide, indistinctly trinerved with the main lateral nerves diverging from the midrib 1-2 cm from the base, margin entire or with a few minute callose denticles; inflorescence a terminal corymbiform or weakly paniculiform cyme of 20-50 heads; principal involucral bracts ca. 13, 4-5 mm long; calyculate bracts 4-8, 0.5-2.0 mm long; ray florets ca. 8, the ligules 4-5 mm long; achenes glabrous, ca. 2.5 mm long.

Vegetatively this species much resembles *R. gesnerifolia* of s Dur.

ROLDANA NESOMIORUM (B.L. Turner) C. Jeffrey, Kew Bull. 47: 55. 1992.*Senecio nesomiorum* B.L. Turner

s Nue and adjacent s Tam, oak woodlands 2600-2700 m; Sep.

Suffruticose perennial herbs or shrublets 1-2 m high; leaves not peltate, palmately nerved, gradually reduced upwards into flabelliform bracts which enter the capitulecence; heads radiate, the involucre surrounded by a well-developed leafy calyxulus as long as or longer than the principal bracts; ray florets 8-11, the ligules yellow, 11-13 mm long; achenes glabrous, the pappus of white barbellate bristles 7-8 mm long.

The species is closely related to *R. marquezii* but has glabrous achenes. It might also be confused with *R. grimesii*, but the latter is eradiate.

ROLDANA OAXACANA (Hemsl.) H. Rob. & Brettell, *Phytologia* 27: 422. 1974.

Senecio oaxacanus Hemsl.

Roldana chiapensis H. Rob. & Brettell

Roldana cordovensis (Hemsl.) H. Rob. & Brettell

Roldana cristobalensis (Greenm.) H. Rob. & Brettell

Roldana hederoides (Greenm.) H. Rob. & Brettell

Roldana petasioides (Greenm.) H. Rob.

Senecio cordovensis Hemsl.

Senecio cristobalensis Greenm.

Senecio hederoides Greenm.

Senecio hypomalacus Greenm.

Senecio macrobotrys Hemsl.

Senecio petasioides Greenm.

Ver, n Oax, Cps and Guatemala southwards, montane cloud forests, 1500-2700 m; Oct-Feb.

Suffruticose herbs, shrublets or shrubs 1-3 m high; leaves much-resembling those of *R. chapalensis* but the leaves mostly nonpeltate, or if subpeltate the petioles arising within 1 cm or less of the margin; undersurfaces of blades moderately to densely pubescent; involucres mostly 5-7 mm high, densely pubescent with very short glandular hairs; ray florets absent or present, the ligules mostly reduced (1-5 mm long when present); chromosome number, $n = 30$ pairs.

This is an extremely variable species, as might be suspected from the synonymy listed. Typical forms of *R. oaxacana* possess rays; rayless forms have been called *R. cristobalensis*; forms with rather densely pubescent leaves and rayless heads have been called *R. petasioides*. *Roldana oaxacana* is closely related to *R. chapalensis*, a species of western Mexico along the Pacific ranges from Jal to Gue. It is also closely related to *R. jurgensenii*, but the latter has mostly thicker glabrous leaves, somewhat larger heads and often well-developed rays. The entire complex is in need of detailed field study but I believe the treatment presented here correctly reflects relationships among the several taxa concerned.

ROLDANA PENNELLII H. Rob. & Brettell, *Phytologia* 27: 422.
1974.

Senecio pennellii H. Rob. & Brettell; not *S. pennellii* Greenm.

Senecio octobracteatus B.L. Turner & T. Barkley

As noted by Robinson & Brettell in their original description, this species has long been placed within the fabric of *R. hartwegii*, the latter being distinguished by its more persistently pubescent, larger leaves.

They recognized two regional varieties under the taxon, as follows:

1. Involucral bracts 8; Chi, Coa, Nue, n Dur.....var. *pennellii*
1. Involucral bracts 5; Dur.....var. *durangensis*

var. *pennellii*

Chi, Coa, Nue and n Dur, pine-oak and fir forests, 2100-3100 m;
Aug-Oct.

Suffruticose herbs or shrubs 1-2 m high; much-resembling *R. hartwegii* and *R. carlomasonii* but differing from both in having involucres with ca. 8 involucral bracts (vs 10-13).

McVaugh (in his Flora Novo-Galiciano), Gibson (1968), and Funston (2001) placed *R. pennellii* under the broad fabric of *R. hartwegii*, the latter having somewhat broader more pubescent leaves. Additional field studies will be necessary to resolve its relationship to *R. pennellii*.

var. *durangensis* H. Rob. & Brettell

Senecio *Roldana octobracteatus* var. *durangensis* (H. Rob. & Brettell)
B.L. Turner & T. Barkley

w Dur, sw of Cd. Durango, pine forests, 2800-3000 m; Aug-Nov.

Suffruticose herbs or shrubs 1-2 m high; differing from var. *pennellii* in having involucres with only 5, sparsely pubescent, involucral bracts; chromosome number, $n = 30$ pairs.

ROLDANA PETASITIS (Sims) H. Rob. & Brettell, Phytologia 27: 423. 1974.

Cineraria petasitis Sims

Cineraria platanifolia Schrank

Roldana reglensis (Greenm.) H. Rob. & Brettell

Roldana sartorii (Hemsl.) H. Rob. & Brettell

Senecio petasitis (Sims) DC.

Senecio reglensis Greenm.

Senecio sartorii Hemsl.

Known only from Ver and adjacent Hid, montane cloud forests, 1300-1800 m; Dec-Feb.

Suffruticose herbs or shrublets 0.5-1.5 m high; much-resembling *R. angulifolia* but the rays consistently present and well-developed and the involucral bracts purplish and not surrounded by a leafy calyxulus.

This species might also be confused with the widespread, more southern *R. oaxacana* but the latter has smaller involucres (5-7 mm long vs 9-10) with fewer involucral bracts (8 vs 9-11) and rays absent, or poorly developed when present (1-6 mm long vs 7-10 mm).

I have included *R. reglensis* in synonymy here, not having seen herbarium material (the type from Ver, "Regla," Ehrenberg 454 (GH)).

ROLDANA PINETORUM (Hemsl.) H. Rob. & Brettell, Phytologia 27:423. 1974.

Senecio pinetorum Hemsl.

Gue and Oax, pine-oak and fir forests, 2600-3500 m; Nov-Jan.

Small subsuffruticose rhizomatous herbs 20-50 cm high; much-resembling *R. platanifolia* and said to differ by its leaves with

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