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CONTRIBUTIONS TO CANADIAN BOTANY

I

KEYS TO GOLDENRODS
IN CANADA
AND
NEWFOUNDLAND

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CONTRIBUTIONS TO CANADIAN BOTANY

1. KEYS TO GOLDENRODS IN CANADA AND NEWFOUNDLAND

(Based upon that of Gray's New Manual, seventh edition)

I. INTRODUCTION

This set of keys to Canadian and Newfoundland species of the important genus *Solidago* is compiled for the use of students; therefore explanation as to how to employ it is, probably, unnecessary. It is suggested, however, that there may be some which have little or no experience in the use of botanical keys, to whom an example of tracing to species may be helpful.

The general key has been separated into provincial keys with a view to making the tracing-out easier, especially for elementary students.

Any technical terms, that may not be understood, are explained in the glossaries of the current manuals by Gray, Britton & Brown, Rydberg, etc.

Students must carefully bear in mind that specimens of this difficult and complicated group of plants need to be studied critically and with infinite patience. There are, indeed, few keys considered by all to be without error, and which are capable of dealing with every exceptional form, also hybrids. The most advanced students and highest authorities will admit that they, on occasions, have erred in their determinations and in the construction of keys. Needless to say any constructive suggestions concerning these keys will be most welcome.

A large proportion of the species, dealt with in this work, are represented in the herbarium, and as growing plants at the Central Experimental Farm, Ottawa. These specimens are available, at any time, for study. Donations of either pressed specimens or live plants will be most acceptable, especially, of course, such which may constitute an addition or new record.

Example of the tracing-out of a specimen

- Step 1. Turn to the Ontario key
- Step 2. The rays are fewer than the disc flowers and the heads pedicelled; therefore proceed under the *first* heading marked 1; thus eliminating the species under the second heading marked 1.
- Step 3. The tegules (bracts of the involucre) are without green tips and wholly appressed; therefore proceed under the *second* sub-heading marked 2; thus eliminating the species under the first sub-heading marked 2.
- Step 4. The heads are in a compound corymb; therefore proceed under the *fourth* sub-heading marked 3; thus eliminating the species under the first, second and third sub-headings marked 3.
- Step 5. The leaves are flat, not 3-ribbed, they are ovate and rough on both sides, which keys the specimen to *S. rigida*.
- Step 6. In order to confirm this determination, the specimen must be carefully compared with a detailed description. Therefore turn to the alphabetical list which directs that the description of *S. rigida* may be found in *Gray's New Manual, 7th edition*.

II. KEY TO GOLDENRODS IN CANADA AND NEWFOUNDLAND

1. Rays mostly fewer than the disc flowers; heads more or less pedicelled

2. Tegules of the much imbricated and rigid involucre with abruptly spreading herbaceous tips; heads in clusters or glomerate racemes, disposed in a dense somewhat leafy and interrupted wand-like compound spike 1. *S. SQUARROSA*

2. Tegules without green tips and wholly appressed.

3. Heads small; the involucre 2-5 (rarely 6) mm. high, clustered along the stems in the axils of the feather-veined leaves, or the upper forming a thyrse

Rays yellow or orange-yellow

- Stems glaucous (the bloom easily rubbed off)
 Stem at length much branched or diffuse;
 leaves oblong or oblong-lanceolate 2. *S. CAESIA*
 Stem simple; leaves elongate-lanceolate 3. *S. CAESIA* var. *AXILLARIS*

Stems glabrous:

- Leaves narrowly linear: stem mottled; rays
 15-20; (*Bruce Co., Ont.*) 4. *S. KLUGHII*
 Leaves ovate or oval 5. *S. LATIFOLIA*

Leaves oblanceolate

- Cauline leaves remote, 3-8 below the
 inflorescence; (*Mt. Albert, Que.*) 6. *S. CHLOROLEPIS*
 Cauline leaves more crowded, 7-20 below
 the inflorescence 8. *S. HISPIDA* var. *TONSA*

Stems puberulent

- Tegules oblong-ovate, obtuse (*Newfound-*
land) 9. *S. HISPIDA* var. *ARNOGLOSSA*
 Tegules linear, awl-shaped, very acute 12. *S. PUBERULA*

- Stems white-tomentose, *i.e.*, with densely
 matted hairs. 10. *S. HISPIDA* var. *DISJUNCTA*

- Stems arachnoid-lanate, *i.e.*, with long white
 spider-webby hairs 11. *S. HISPIDA* var. *LANATA*

- Stems hoary or grayish with soft hairs, (rarely
 glabrate) 7. *S. HISPIDA*

- Rays cream-colour, or nearly white 13. *S. BICOLOR*

3. Heads mostly large; the involucre 6 (rarely 5) -12 mm. high, (except No. 16 whose involucre 3-4 (-5) mm. high) many flowered, forming an erect terminal thyrse or corymb; leaves feather-veined. (Nos 53 and 73 might be sought here.)

*Inflorescence corymbiform

- Basal leaves 2-5 cm. long; plant 1-2 dm.
 high 14. *S. CILIOSA*

Basal leaves 5-15 cm. long; plant 1.5-3.5
 dm. high

Inflorescence close, compact

- Tegules 20-30 15. *S. MULTIRADIATA*

- Tegules about 15 16. *S. MULTIRADIATA* var. *PARVICEPS*

Inflorescence open, in rounded corymbose
 clusters 17. *S. SCOPULORUM*

*Inflorescence axillary

Leaves ovate; achenes 3-4 mm. long,
 glabrous; involucre 8-12 mm. high

- Stems 3.5-12 dm. high; involucre 4-7 mm.
 wide 18. *S. MACROPHYLLA*

- Stems lower; involucre 8-20 mm. wide 19. *S. MACROPHYLLA*
 var. *THYRSOIDEA*

- Leaves elliptic, oblanceolate; achenes 1-2
 mm. long, pubescent; involucre 6-8 mm.
 high 20. *S. CALCICOLA*

*Follow asterisks and daggers for headings of equal value.

*Inflorescence thyrsoid

Pedicels distinctly long, (5-20 mm.)

Cauline leaves remote (4-13); basal 8-20 wide

Basal leaves acute; involucre 7-10 mm. high (*Table-Top Mtn., Que.*)21. *S. MENSALIS*

Basal leaves obtuse; involucre 6-8 mm. high

Inflorescence mostly short, congested

22. *S. DECUMBENS*

Inflorescence mostly elongate

23. *S. DECUMBENS var. OREOPHILA*

Cauline leaves crowded (10-30 or more); basal 5-7 mm. wide

Basal leaves 3-12 cm. long.

24. *S. RACEMOSA*

Basal leaves 15-20 cm. long.

25. *S. RACEMOSA var. GILLMANI*

Pedicels shorter, rarely more than 3-5 mm. long

Stem 3-8 dm. high; inflorescence generally lax or an ample panicle

26. *S. RANDII*

Stem 0.8-2.5 dm. high; inflorescence dense

Achenes exceedingly hairy; tegules hoary, (*Anticosti, Que.*)27. *S. VICTORINII*Achenes strigose; tegules glutinous, (*Anticosti, Que.*)28. *S. ANTICOSTENSIS*

3. Heads small or middle-sized, the involucre 2-5 (rarely 6) mm. high (except Nos. 45 and 53) panicled or thyrsoidal; not in a terminal corymbiform cyme. (No. 16 might be sought here.)

A. Leaves commonly veiny, not 3-ribbed, (but sometimes obscurely triple-nerved)

B. Heads in a virgate or thyrsoid panicle

Stem puberulent, tegules very acute

12. *S. PUBERULA*

Stems glabrous, at least below the inflorescence, tegules obtuse

Lower leaves narrowly oblanceolate, the upper linear lanceolate; branches of the inflorescence erect

Axis and branches of the inflorescence glabrous, glutinous, (*B.C. Coast*)29. *S. CONFERTIFLORA*

Axis and branches of the inflorescence pubescent

Cauline leaves sparingly serrulate or entire, acute or acuminate; tegules obtuse, (*Bog species*)30. *S. ULIGINOSA*Cauline leaves serrate, subulate-attenuate; tegules attenuate (*Newfoundland*)31. *S. ULIGINOSA var. PERACUTA*

Lower leaves broadly oblanceolate, the upper broadly lanceolate, elliptic or ovate; branches of the inflorescence ascending spreading

Inflorescence narrow and dense; plant pale

32. *S. PALLIDA*

Inflorescence more open with elongate branches; plant not pale.

33. *S. RIGIDIUSCULA*

B. Heads paniculate, in mostly spreading or recurved ascending secund clusters (except No. 43)

Leaves fleshy; plant maritime

34. *S. SEMPERVIRENS*

Leaves not fleshy; plants not maritime

*Basal leaves long-petioled, conspicuously larger than the 5-30 (-40) remote or sub-remote cauline ones.

†Stems strongly angled; leaves shagreen-scabrous on the upper surface; heads 15-20 flowered

35. *S. PATULA*

†Stems terete or nearly so; leaves smooth or smoothish, (rarely scabrous); heads 6-15 (-20) flowered.

Leaves mostly serrate, the lower and middle-cauline (as well as the basal) rather abruptly narrowed to the petiolar base

36. *S. ARGUTA*

(Extreme forms of No. 46 might be sought here)

Leaves all gradually tapering to the base; the uppermost chiefly entire

Panicle usually as broad as high; rays 8-12

Leaves smooth

Branches recurved 37. *S. JUNCEA*

Branches upright 38. *S. JUNCEA form. RAMOSA*

Leaves scabrous 39. *S. JUNCEA form. SCABRELLA*

Panicle usually much longer than broad; rays 2-8

Plants tall, 3-15 dm.

Stem slender; lower leaves narrowly lanceolate, cauline 5-20 (rarely 30); tegules pale straw-coloured chartaceous; rays 2-5

Branches of the panicle pubescent 40. *S. UNILIGULATA*

Branches of the panicle glabrous or glabrate and glutinous 41. *S. UNILIGULATA var. LEVIPES*

Stem stout; lower leaves ovate-lanceolate, cauline 20-40; tegules subherbaceous; rays 3-8.

42. *S. UNILIGULATA var. NEGLECTA*

Plants lower, somewhat dwarfed (*Newfoundland*) 43. *S. UNILIGULATA var. TERRAE-NOVAE*

*Basal leaves similar to the 30-100 (-200) ordinarily almost uniform or gradually reduced approximate cauline ones

Stems glabrous; leaves oblong-lanceolate to elliptic-ovate

Branches (of the crowded ellipsoid to pyramidal panicle) floriferous nearly throughout, ascending or ascending-spreading

Involucre 4.5 mm. high 44. *S. ELLIOTTII*

Involucre 4.5-6.5 mm. high 45. *S. ELLIOTTII var. ASCENDENS*

Branches (or the longer ones) of the loose panicle chiefly flowerless at the base, strongly recurved, spreading

46. *S. ULMIFOLIA*

Stems pubescent (or glabrous only in No. 49)

49. *S. RUGOSA var. SPHAGNOPHILA*

Leaves rugose; plant soboliferous

Panicle pyramidal; racemes much exceeding the subtending leaves

47. *S. RUGOSA*

Panicle elongate; racemes equalled or surpassed by the subtending leaves

48. *S. RUGOSA var. VILLOSA*

Leaves not rugose; plant not soboliferous

46. *S. ULMIFOLIA*

A. Leaves more or less plainly 3-ribbed, 2 of the lower veins becoming prominent and elongated parallel with the midrib; heads in mostly 1-sided chiefly spreading or recurved racemes, forming an ample panicle; not maritime.

C. Branches of the panicle, stem and leaves glabrous, (leaves commonly with scabrous margins).

- Involucre mostly less than 5 mm. high
- Stem slender
 - Inflorescence usually open and more or less secund; tegules oblong-lanceolate 50. *S. GLABERRIMA*
 - Inflorescence narrow, scarcely secund; tegules linear-lanceolate. 51. *S. MISSOURIENSIS*
- Stem stout; inflorescence small and compact, its clusters short, crowded, seldom recurved or much secund; plant often dwarf 52. *S. MISSOURIENSIS var. MONTANA*
- Involucre 6-7 mm. high; stem stout. 53. *S. CONCINNA*

C. Branches of the panicle, stem and leaves pubescent or mostly so.

- Leaves ashy or whitish with a close puberulence, firm and often rigid
 - Lower leaves usually elongated and many times exceeding the reduced upper ones; tegules thick and rigid
 - Basal leaves broadly oblanceolate or spatulate, 2-4 cm. broad 54. *S. NEMORALIS*
 - Basal leaves narrowly oblanceolate, 1-2 cm. broad 55. *S. NEMORALIS var. DECEMFLORA*
 - Leaves essentially uniform from base to summit of stem
 - Stem pubescent or puberulent
 - Leaves obovate; tegules thick and rigid, ovate 56. *S. MOLLIS*
 - Leaves elliptic-lanceolate to linear-lanceolate; tegules thin
 - Leaves lanceolate to elliptic-lanceolate
 - Leaves scabrous above. 57. *S. DUMETORUM*
 - Leaves softly puberulent on both sides 58. *S. PRUINOSA*
 - Leaves linear-lanceolate
 - Involucre 3.5-4 mm. high; plant green-grey 59. *S. LUNELLII*
 - Involucre 2-3 mm. high; plant yellow-grey. 60. *S. GILVOCANESCENS*
 - Stem densely cinereous-tomentulose, viscid. 70. *S. LEPIDA var. MOLINA*

Leaves green, essentially uniform from base to summit of stem, sparingly pubescent or glabrous, not ashy or whitish, (except No. 70 which has cinereous leaves), thin; tegules thin.

*Panicle high, pyramidal, branches recurved, spreading (except Nos. 62 and 64)

- Involucre 2-3 mm. high (No. 60 might be sought here)
 - Tegules multiseriate; pedicels 2-6 mm. long 61. *S. CANADENSIS*
 - Tegules almost uniseriate; pedicels 7-12 mm. long (*Newfoundland*) 62. *S. BARTRAMIANA*
- Involucre 3.2-5 mm. high
 - †Stem closely and minutely pubescent throughout
 - Branches of the panicle recurving 63. *S. ALTISSIMA*
 - Branches of the panicle strongly ascending 64. *S. ALTISSIMA var. PROCERA*

- †Stem glabrous throughout, (or except in the inflorescence)
 Leaves quite smooth on both sides 65. *S. SEROTINA*
 Leaves slightly pubescent, especially on the nerves 66. *S. SEROTINA* var. *GIGANTEA*
- *Panicle short, dense, almost overtopped by the upper leaves, cauline leaves coarsely serrate; stem puberulent, at least above 67. *S. LEPIDA*
- *Panicle rhomboid, elongate or virgate
 Stem puberulent, at least above
 Leaves subtire or sparingly serrate above the middle 68. *S. LEPIDA* var. *ELONGATA*
 Leaves coarsely and sharply serrate 69. *S. LEPIDA* var. *FALLAX*
 Stem densely cinereous-tomentulose, viscid 70. *S. LEPIDA* var. *MOLINA*

3. Heads in a compound corymb, or corymbose panicle, terminating the simple stem; not at all racemose; leaves mostly with a strong midrib. (No. 43 might be sought here.)

Plants tall, 3-15 dm. high; lowland species

Leaves flat, not 3-nerved

Leaves ovate, oblong or oval, mostly rough on both sides 71. *S. RIGIDA*

Leaves lanceolate, linear, oblong or oblanceolate, glabrous or nearly so 72. *S. OHIOENSIS*

Leaves somewhat folded, entire, the lower slightly 3-nerved

Stem stout; leaves lanceolate, the basal 3-5 dm. long 73. *S. RIDDELLII*

Stem slender; leaves linear, the basal 0.5-1.3 dm. long 74. *S. HOUGHTONII*

Plants low, 1-3.5 dm. high; alpine species

Basal leaves 2-5 cm. long; plant 1-2 dm. high. 14. *S. CILIOSA*

Basal leaves 5-15 cm. long; plants 1.5-3 dm. high

Inflorescence a compact corymbose-cyme

Tegules 20-30 15. *S. MULTIRADIATA*

Tegules about 15 16. *S. MULTIRADIATA* var. *PARVICEPS*

Inflorescence in rounded corymbose clusters 17. *S. SCOPULORUM*

1. Rays more numerous than the disc flowers; heads sessile or subsessile (except No. 79)

Leaves 3-5 ribbed; heads 20-30 flowered

Tegules mostly obtuse; heads usually glomerate, sessile

Stem branched above the middle, forming an ample inflorescence

Branches of the inflorescence glabrous

Leaves long-attenuate; tips sharp 75. *S. GRAMINIFOLIA*

Leaves not attenuate; tips bluntish 76. *S. GRAMINIFOLIA* var. *SEPTENTRIONALIS*

Branches of the inflorescence hirtellous 77. *S. GRAMINIFOLIA* var. *NUTTALLII*

Stem simple to near the summit, forming a very narrow sub-corymbose inflorescence 78. *S. GALETORUM*

Tegules mostly acute; heads usually pedicellate (*Western Species*) 79. *S. OCCIDENTALIS*

Leaves 1-ribbed or obscurely 3-nerved; heads 12-20 (rarely 22)—flowered

Leaves acuminate, linear; outer tegules entire 80. *S. TENUIFOLIA*

Leaves obtuse or acutish; outer tegules with glandular-ciliate margins 81. *S. TENUIFOLIA* var. *PYCNOCEPHALA*

III. KEY TO GOLDENRODS IN NEWFOUNDLAND

1. Rays mostly fewer than the disc flowers; heads more or less pedicelled.

2. Heads small; the involucre 2-5 (rarely 6) mm. high, clustered along the stems in the axils of the feather-veined leaves, or the upper forming a thyrse.

- Stems pilose, *i.e.*, with long hairs, not densely matted 7. S. HISPIDA
- Stems tomentose, *i.e.*, with densely matted hairs. . . 10. S. HISPIDA var. DISJUNCTA
- Stems arachnoid-lanate, *i.e.*, with long fine spiderwebby hairs 11. S. HISPIDA var. LANATA
- Stems puberulent
 - Cauline leaves 5-9 below the inflorescence, coriaceous 9. S. HISPIDA var. ARNOGLOSSA
 - Cauline leaves 7-20 below the inflorescence, not coriaceous 8. S. HISPIDA var. TONSA

2. Heads mostly large; the involucre 6 (rarely 5) -12 mm. high, many flowered, forming an erect terminal thyrse or corymb; leaves feather-veined.

- Inflorescence corymbiform, close, compact 15. S. MULTIRADIATA
- Inflorescence axillary
 - Leaves ovate; achenes 3-4 mm. long, glabrous; involucre 8-12 mm. high 18. S. MACROPHYLLA
 - Leaves elliptic, oblanceolate; achenes 1-2 mm. long, pubescent; involucre 6-8 mm. high 20. S. CALCICOLA

2. Heads small or middle-sized, the involucre 2-5 (rarely 6) mm. high; panicled or thyrsoidal; not in a terminal corymbiform cyme.

3. Leaves commonly veiny, not 3-ribbed, (but sometimes obscurely triple-nerved)

- Heads in a slender virgate panicle; racemes much crowded and appressed
 - Cauline leaves sparingly serrulate or entire, acute or acuminate; tegules obtuse; (*Bog Species*) 30. S. ULIGINOSA
 - Cauline leaves serrate, subulate-attenuate; tegules attenuate. 31. S. ULIGINOSA var. PERACUTA
- Heads paniculate, in mostly spreading or recurved ascending secund clusters (Except No. 43)
 - Basal leaves long petioled, conspicuously larger than the 10-30 (-40) remote or sub-remote cauline ones; lower leaves narrowly lanceolate
 - Plant tall, 3-15 dm.. 40. S. UNILIGULATA
 - Plant lower, somewhat dwarfed. 43. S. UNILIGULATA var. TERRAE-NOVAE
 - Basal leaves similar to the 30-100 (-200) ordinarily almost uniform or gradually reduced approximate cauline ones; lower leaves elliptical or ovate-lanceolate
 - Panicle pyramidal; racemes much exceeding the subtending leaves. 47. S. RUGOSA
 - Panicle elongate; racemes equalled or surpassed by the subtending leaves. 48. S. RUGOSA var. VILLOSA

3. Leaves more or less plainly 3-ribbed, 2 of the lower veins becoming prominent and elongated parallel with the midrib.

Involucres 2-3 mm. high

Panicle pyramidal, naked; tegules multiseriate; pedicels 2-6 mm. long

61. *S. CANADENSIS*

Panicle thyriform, leafy; tegules almost uniseriate; pedicels 7-12 mm. long

62. *S. BARTRAMIANA*

Involucres 3-5 mm. high

Panicle short, dense, almost overtopped by the upper leaves, cauline coarsely serrate . . .

67. *S. LEPIDA*

Panicle rhomboid, elongate or virgate

Cauline leaves sub-entire or sparingly serrate above the middle

68. *S. LEPIDA* var. *ELONGATA*

Cauline leaves coarsely and sharply serrate

69. *S. LEPIDA* var. *FALLAX*

1. Rays more numerous than the disc flowers; heads sessile or subsessile.

Inflorescence a flat or round-topped corymb; the lance-linear leaves 3-5 ribbed

Branches of the inflorescence glabrous

76. *S. GRAMINIFOLIA*

var. *SEPTENTRIONALIS*

Branches of the inflorescence hirtellous

77. *S. GRAMINIFOLIA* var. *NUTTALLII*

IV. KEY TO GOLDENRODS IN QUEBEC AND LABRADOR

1. Rays mostly fewer than the disc flowers; heads more or less pedicelled.

2. Tegules of the much imbricated and rigid involucre with abruptly spreading herbaceous tips; heads in clusters or glomerate racemes, disposed in a dense somewhat leafy and interrupted wand-like compound spike 1. *S. SQUARROSA*

2. Tegules without green tips and wholly appressed.

3. Heads small; the involucre 2-5 (rarely 6) mm. high, clustered along the stems in the axils of the feather-veined leaves, or the upper forming a thyrses.

- Rays yellow or orange-yellow
- Stems glaucous (the bloom easily rubbed off)
- Stem of length much branched and diffuse; leaves oblong or oblong-lanceolate. 2. *S. CAESIA*
- Stem simple; leaves elongate-lanceolate 3. *S. CAESIA* var. *AXILLARIS*
- Stems glabrous
- Leaves ovate or oval; stem zigzag, angled. 5. *S. LATIFOLIA*
- Leaves oblanceolate; stem straight, terete (*Mt. Albert, Local*) 6. *S. CHLOROLEPIS*
- Stem puberulent
- Tegules linear, awl-shaped, very acute 12. *S. PUBERULA*
- Tegules oblong-ovate, obtuse
- Stem hoary or greyish with soft hairs, (rarely glabrate) 7. *S. HISPIDA*
- Stem white-tomentose, *i.e.*, with densely matted hairs 10. *S. HISPIDA* var. *DISJUNCTA*
- Stem arachnoid-lanate, *i.e.*, with long white spider-webby hairs. 11. *S. HISPIDA* var. *LANATA*
- Rays cream-colour, or nearly white 13. *S. BICOLOR*

3. Heads mostly large; the involucre 6 (rarely 5) -12 mm. high (except No. 16 whose involucre is 3-4 (-5) mm. high) many flowered forming an erect terminal thyrses or corymb; leaves feather-veined.

- Inflorescence corymbiform, close, compact
- Tegules 20-30. 15. *S. MULTIRADIATA*
- Tegules about 15 16. *S. MULTIRADIATA* var. *PARVICEPS*
- Inflorescence axillary
- Leaves ovate; achenes 3-4 mm. long, glabrous; involucre 8-12 mm. high.
- Stem 3.5-12 dm. high; involucre 4-7 mm. wide 18. *S. MACROPHYLLA*
- Stem lower; involucre 8-20 mm. wide. 19. *S. MACROPHYLLA* var. *THYRSOIDEA*
- Leaves elliptic, oblanceolate; achenes 1-2 mm. long, pubescent; involucre 6-8 mm. high 20. *S. CALCICOLA*
- Inflorescence thyrsoid
- Stem 3-8 dm. high, often glutinous; stem leaves numerous 26. *S. RANDII*
- Stems 0.5-3 dm. high
- Pedicels 5-20 mm. long
- Involucre 6-8 mm. high 22. *S. DECUMBENS*
- Involucre 7-10 mm. high (*Table-Top Mtn., Local*) 21. *S. MENSALIS*
- Pedicels 3-4 mm. long
- Achenes exceedingly hairy; tegules hoary (*Anticosti, Local*) 27. *S. VICTORINII*
- Achenes strigose; tegules glutinous (*Anticosti, Local*) 28. *S. ANTICOSTENSIS*

3. *Heads small or middle-sized, the involucre 2-5 (rarely 6) mm. high* (No. 16 might be sought here) *panicled or thyrsoidal; not in a terminal corymbiform cyme.*

A. *Leaves commonly veiny, not 3-ribbed, (but sometimes obscurely triple-nerved)*

B. *Heads in a slender, virgate or thyrsoid panicle*

- Stem puberulent; tegules linear; awl-shaped, very acute 12. *S. PUBERULA*
 Stem glabrous; tegules linear-oblong, obtuse (*Bog Species*) 30. *S. ULIGINOSA*

B. *Heads paniculate, in mostly spreading or recurved ascending secund clusters*

Leaves fleshy; plant maritime 34. *S. SEMPERVIRENS*

Leaves not fleshy; plants not maritime

Basal leaves long-petioled, conspicuously larger than the 10-30 (-40) remote or sub-remote cauline ones

Panicle usually as broad as high; rays 8-12

- Leaves smooth 37. *S. JUNCEA*
 Leaves scabrous 39. *S. JUNCEA form. SCABRELLA*

Panicle usually much longer than broad; rays 2-8

Stem slender; lower leaves narrowly lanceolate, cauline 15-20 (rarely 30); tegules pale straw-coloured chartaceous; rays 2-5 40. *S. UNILIGULATA*

Stem stout; lower leaves ovate-lanceolate, cauline 20-40; tegules subherbaceous; rays 3-8 42. *S. UNILIGULATA var. NEGLECTA*

Basal leaves similar to the 30-100 (-200) ordinarily almost uniform or gradually reduced approximate cauline ones.

Panicle pyramidal; racemes much exceeding the subtending leaves . . . 47. *S. RUGOSA*

Panicle elongate; racemes equalled or surpassed by the subtending leaves. . 48. *S. RUGOSA var. VILLOSA*

A. *Leaves more or less plainly 3-ribbed, 2 of the lower veins becoming prominent and elongated parallel with the midrib; heads mostly in 1-sided chiefly spreading or recurved racemes, forming an ample panicle; not maritime.*

Leaves firm and often rigid, the lower usually elongated and many times exceeding the reduced upper ones; ashy or whitish with a close puberulence; tegules thick and rigid. . 54. *S. NEMORALIS*

Leaves thinner; essentially uniform from base to summit of stem; not ashy or whitish (*except No. 70*); tegules thin.

*Panicle high, pyramidal, branches recurved, spreading

Involucre 2-3 mm. high 61. *S. CANADENSIS*

Involucre 3.2-5 mm. high

Stem closely and minutely pubescent throughout. 63. *S. ALTISSIMA*

Stem glabrous, (or except in the inflorescence)

Leaves quite smooth on both sides 65. *S. SEROTINA*

Leaves slightly pubescent, especially on the nerves. 66. *S. SEROTINA var. GIGANTEA*

Panicle rhomboid, branches not recurving,
or scarcely so, or virgate

Stem puberulent, at least above

Leaves sub-entire or sparingly serrate
above the middle

68. *S. LEPIDA* var. *ELONGATA*

Leaves coarsely and sharply serrate

69. *S. LEPIDA* var. *FALLAX*

Stem densely cinereous-tomentulose,
viscid

70. *S. LEPIDA* var. *MOLINA*

1. Rays more numerous than the disc flowers; heads sessile or subsessile

Inflorescence a flat or round-topped corymb; the
lance-linear leaves 3-5 ribbed

Branches of the inflorescence glabrous

Leaves long-attenuate; tips sharp

75. *S. GRAMINIFOLIA*

Leaves not attenuate; tips bluntish

76. *S. GRAMINIFOLIA*
var. *SEPTENTRIONALIS*

Branches of the inflorescence hirtellous

77. *S. GRAMINIFOLIA* var. *NUTTALLII*

V. KEY TO GOLDENRODS IN PRINCE EDWARD ISLAND

1. Rays mostly fewer than the disc flowers; heads more or less pedicelled.

2. Heads small; the involucre 2-5 (rarely 6) mm. high, clustered along the stems in the axils of the feather-veined leaves, or the upper forming a thyrse.

Rays yellow or orange-yellow

Stem puberulent, tegules linear, awl-shaped, very acute 12. *S. PUBERULA*

Stem hoary or greyish with soft hairs (rarely glabrate); tegules obtuse. 7. *S. HISPIDA*

Rays cream colour or nearly white; (otherwise nearly as No. 7) 13. *S. BICOLOR*

2. Heads small or middle-sized; the involucre 2-5 (rarely 6) mm. high, panicled or thyrsoidal, not in a terminal corymbiform cyme.

A. Leaves commonly veiny, not 3-ribbed, (but sometimes obscurely triple-nerved)

B. Heads in a slender virgate or thyrsoid panicle.

Stem puberulent; tegules linear, awl-shaped, very acute 12. *S. PUBERULA*

Stem glabrous, at least below the inflorescence; tegules linear-oblong, obtuse (*Bog species*). 30. *S. ULIGINOSA*

B. Heads paniculate, in mostly spreading or recurved ascending secund clusters.

Leaves fleshy; plant maritime 34. *S. SEMPERVIRENS*

Leaves not fleshy; plants not maritime.

Leaves elliptical or ovate-lanceolate, rugose; plant soboliferous 47. *S. RUGOSA*

A. Leaves more or less plainly 3-ribbed, two of the lower veins becoming prominent and elongated parallel with the midrib; heads mostly in 1-sided chiefly spreading or recurved racemes, forming an ample panicle; not maritime.

Leaves firm and often rigid, the lower usually elongated and many times exceeding the reduced upper ones; ashy or whitish with a close puberulence; tegules thick and rigid; involucre 3-4.5 mm. high 54. *S. NEMORALIS*

Leaves thinner, essentially uniform from base to summit of the stem, not ashy or whitish; tegules thin; involucre 2-3 mm. high 61. *S. CANADENSIS*

1. Rays more numerous than the disc flowers; heads sessile or subsessile.

Inflorescence a flat or round-topped corymb; the lance-linear leaves 3-5 ribbed

Branches of the inflorescence glabrous 75. *S. GRAMINIFOLIA*

Branches of the inflorescence hirtellous 77. *S. GRAMINIFOLIA* var. *NUTTALLII*

VI. KEY TO GOLDENRODS IN NOVA SCOTIA

1. Rays mostly fewer than the disc flowers; heads more or less pedicelled.

2. Heads small; the involucre 2-5 (rarely 6) mm. high, clustered along the stems in the axils of the feather-veined leaves, or the upper forming a thyrse.

Rays yellow or orange-yellow

Stems glaucous (the bloom easily rubbed off)

Stem at length much branched and diffuse;

leaves oblong or oblong-lanceolate

2. *S. CAESIA*

Stem simple; leaves elongate-lanceolate

3. *S. CAESIA* var. *AXILLARIS*

Stem glabrous

Leaves ovate or oval; stem zigzag, angled

5. *S. LATIFOLIA*

Stem puberulent; tegules linear, awl-shaped, very acute

12. *S. PUBERULA*

Stem hoary or greyish with soft hairs (rarely glabrate); tegules obtuse

7. *S. HISPIDA*

Rays cream-colour or nearly white, (otherwise nearly as No. 7)

13. *S. BICOLOR*

2. Heads mostly large; the involucre 6 (rarely 5) -12 mm. high, many flowered, forming an erect terminal thyrse or corymb; leaves feather-veined.

Inflorescence corymbiform, close, compact; leaves spatulate, obtuse; involucre 7-8 mm. high

15. *S. MULTIRADIATA*

Inflorescence axillary; leaves ovate, acute; involucre 8-12 mm. high

18. *S. MACROPHYLLA*

2. Heads small or middle-sized; the involucre 2-5 (rarely 6) mm. high, (except No. 45) paniced or thyrsoidal; not in a terminal corymbiform cyme.

A. Leaves commonly veiny, not 3-ribbed, (but sometimes obscurely triple-nerved)

B. Heads in a slender virgate or thyrsoid panicle

Stem puberulent, tegules linear, awl-shaped, very acute

12. *S. PUBERULA*

Stem glabrous, tegules linear-oblong, obtuse (Bog species)

30. *S. ULIGINOSA*

B. Heads paniculate in mostly spreading or recurved ascending secund clusters.

Leaves fleshy; plant maritime

34. *S. SEMPERVIRENS**

Leaves not fleshy; plants not maritime.

Basal leaves long-petioled, conspicuously larger than the 5-30 (-40) remote or sub-remote cauline ones.

Stem slender; lower leaves narrowly lanceolate, cauline 5-20 (rarely 30); tegules pale straw-coloured, chartaceous; rays 2-5

40. *S. UNILIGULATA*

Stem stout; lower leaves ovate-lanceolate, cauline 20-40; tegules subherbaceous; rays 3-8

42. *S. UNILIGULATA* var. *NEGLECTA*

* *X Solidago asperula* Desf. Found near Halifax, N.S. said to be a hybrid of *S. rugosa* and *S. sempervirens*. *Rhodora* 459:25. 1937, and *Gray Man.* ed. 7.

Basal leaves similar to the 30-100 (-200) ordinarily almost uniform or gradually reduced approximate cauline ones

Stems glabrous; leaves oblong-lanceolate to elliptic-ovate

Branches (of the crowded ellipsoid to pyramidal panicle) floriferous nearly throughout, ascending or ascending-spreading

- Involucre 4.5 mm. high 44. *S. ELLIOTTII*
- Involucre 4.5-6.5 mm. high 45. *S. ELLIOTTII* var. *ASCENDENS*

Branches (or the longer ones) of the loose panicle chiefly flowerless at the base, strongly recurved-spreading . . . 46. *S. ULMIFOLIA*

Stems pubescent (or glabrous only in No. 49) 49. *S. RUGOSA* var. *SPHAGNOPHILA*

Leaves rugose; plant stoloniferous
Panicle pyramidal; racemes much exceeding the subtending leaves . . . 47. *S. RUGOSA**

Panicle elongate; racemes equalled or surpassed by the subtending leaves. . 48. *S. RUGOSA* var. *VILLOSA*

Leaves not rugose; plant not stoloniferous. 46. *S. ULMIFOLIA*

A. Leaves more or less plainly 3-ribbed, two of the lower veins becoming prominent and elongated parallel with the mid-rib; heads mostly in 1-sided chiefly spreading or recurved racemes, forming an ample panicle; not maritime.

Leaves firm and often rigid, the lower usually elongated and many times exceeding the reduced upper ones; ashy or whitish with a close puberulence; tegules thick and rigid; involucre 3-4.5 mm. high 54. *S. NEMORALIS*

Leaves thinner, essentially uniform from base to summit of stem, not ashy or whitish; tegules thin; involucre 2-3 mm. high 61. *S. CANADENSIS*

1. Rays more numerous than the disc flowers; heads sessile or subsessile.

Inflorescence a flat or round-topped corymb.

Leaves 3-5 ribbed; heads 20-30 flowered

Stem branched above the middle forming an ample inflorescence

- Branches of the inflorescence glabrous 75. *S. GRAMINIFOLIA*
- Branches of the inflorescence hirtellous. 77. *S. GRAMINIFOLIA* var. *NUTTALLII*

Stem simple to near the summit, forming a very narrow sub-corymbose inflorescence. 78. *S. GALETORUM*

Leaves 1-ribbed or obscurely 3-nerved; heads 12-20 (rarely 22)-flowered

Leaves acuminate, linear; outer tegules entire. 80. *S. TENUIFOLIA*

Leaves obtuse or acutish; outer tegules with glandular-ciliate margins. 81. *S. TENUIFOLIA*
var. *PYCNOCEPHALA*

VII. KEY TO GOLDENRODS IN NEW BRUNSWICK

1. Rays mostly fewer than the disc flowers; heads more or less pedicelled.

2. Tegules of the much imbricated and rigid involucre with abruptly spreading herbaceous tips; heads in clusters or glomerate racemes, disposed in a dense somewhat leafy and interrupted wand-like compound spike 1. *S. SQUARROSA*

2. Tegules without green tips and wholly appressed.

3. Heads small; the involucre 2-5 (rarely 6) mm. high, clustered along the stems in the axils of the feather-veined leaves, or the upper forming a thyrse.

Rays orange or orange-yellow

Stems glaucous (the bloom easily rubbed off)

Stem at length much branched and diffuse; leaves oblong or oblong-lanceolate 2. *S. CAESIA*

Stem simple; leaves elongate-lanceolate 3. *S. CAESIA* var. *AXILLARIS*

Stems glabrous

Leaves ovate or oval; stem zigzag, angled 5. *S. LATIFOLIA*

Leaves oblanceolate; stem straight, terete 8. *S. HISPIDA* var. *TONSA*

Stem puberulent; tegules linear, awl-shaped, very acute 12. *S. PUBERULA*

Stem hoary or greyish with soft hairs (rarely glabrate); tegules obtuse 7. *S. HISPIDA*

Rays cream-colour or nearly white (otherwise nearly as No. 7) 13. *S. BICOLOR*

3. Heads mostly large; the involucre 6 (rarely 5) -12 mm. high, many flowered, forming an erect terminal thyrse or corymb; leaves feather-veined.

Involucre 8-12 mm. high

Inflorescence axillary; leaves ovate, acute 18. *S. MACROPHYLLA*

Involucre 5-8 mm. high

Inflorescence corymbiform, close, compact; pedicels 2-5 mm. long 15. *S. MULTIRADIATA*

Inflorescence thyrseoid, open; pedicels 5-15 (or rarely 25 mm. long

Largest cauline leaves 0.5-0.8 cm. wide 24. *S. RACEMOSA*

Largest cauline leaves 1-5 cm. wide 25. *S. RACEMOSA* var. *GILLMANI*

3. Heads small or middle-sized, the involucre 2-5 (rarely 6) mm. high; paniced or thyrseoid; not in a terminal corymbiform cyme.

A. Leaves commonly veiny, not 3-ribbed (but sometimes obscurely triple-nerved)

. B. Heads in a slender virgate or thyrseoid panicle

Stem puberulent, tegules linear, awl-shaped, very acute 12. *S. PUBERULA*

Stem glabrous, tegules linear-oblong, obtuse (Bog species) 30. *S. ULIGINOSA*

B. Heads paniculate in mostly spreading or recurved ascending secund clusters.

*Leaves fleshy; plant maritime 34. *S. SEMPERVIRENS*

**Leaves not fleshy; plants not maritime.*

Basal leaves long-petioled, conspicuously larger than the 5-30 (-40) remote or sub-remote cauline ones

Panicle usually as broad as high; rays 8-12

Branches recurved 37. *S. JUNCEA*

Branches upright 38. *S. JUNCEA form. RAMOSA*

Panicle usually much longer than broad; rays 2-8

Stem slender; lower leaves narrowly lanceolate, cauline 5-20 (rarely 30); tegules pale straw-coloured, chartaceous rays 2-5. 40. *S. UNILIGULATA*

Stem stout; lower leaves ovate-lanceolate, cauline 20-40; tegules sub-herbaceous; rays 3-8 42. *S. UNILIGULATA var. NEGLECTA*

Basal leaves similar to the 30-100 (-200) ordinarily almost uniform or gradually reduced approximate cauline ones

Stem pubescent; leaves rugose; plant soboliferous 47. *S. RUGOSA*

A. Leaves more or less plainly 3-ribbed, 2 of the lower veins becoming prominent and elongated parallel with the midrib; heads mostly in 1-sided chiefly spreading or recurved racemes, forming an ample panicle; not maritime.

Leaves firm and often rigid, the lower usually elongated and many times exceeding the reduced upper ones, ashy or whitish with a close puberulence; tegules thick and rigid 54. *S. NEMORALIS*

Leaves thinner; essentially uniform from base to summit of the stem; not ashy or whitish; tegules thin

Panicle high, pyramidal, branches recurved, spreading; heads secund

Involucre 2-3 mm. high; leaves pubescent especially on the nerves 61. *S. CANADENSIS*

Involucre 3.5-5 mm. high; leaves quite smooth on both sides 65. *S. SEROTINA*

Panicle rhomboid, leafy; heads barely secund

Leaves sub-entire or sparingly serrate above the middle 68. *S. LEPIDA var. ELONGATA*

Leaves coarsely and sharply serrate 70. *S. LEPIDA var. FALLAX*

1. Rays more numerous than the disc flowers; heads sessile or subsessile.

Inflorescence a flat or round-topped corymb; the lance-linear leaves 3-5 ribbed 75. *S. GRAMINIFOLIA*

VIII. KEY TO GOLDENRODS IN ONTARIO

1. Rays mostly fewer than the disc flowers; heads more or less pedicelled.

2. Tegules of the much imbricated and rigid involucre with abruptly spreading herbaceous tips; heads in clusters or glomerate racemes, disposed in a dense somewhat leafy and interrupted wand-like compound spike 1. *S. SQUARROSA*

2. Tegules without green tips and wholly appressed.

3. Heads small; the involucre 2-5 (rarely 6) mm. high, clustered along the stems in the axils of the feather-veined leaves, or the upper forming a thyrse.

Rays yellow or orange-yellow

- Stems glaucous (the bloom easily rubbed off)
 Stem at length much branched and diffuse;
 leaves oblong or oblong-lanceolate 2. *S. CAESIA*
 Stem simple; leaves elongate-lanceolate. 3. *S. CAESIA* var. *AXILLARIS*

Stems glabrous

- Leaves narrowly linear; stem mottled (*Bruce Co., Local*) 4. *S. KLUGHII*
 Leaves ovate or oval; stem not mottled, zigzag 5. *S. LATIFOLIA*

Stem hoary or greyish with soft hairs (rarely glabrate); leaves oblanceolate 7. *S. HISPIDA*

Rays cream colour or nearly white (otherwise nearly as No. 7) 13. *S. BICOLOR*

3. Heads mostly large; the involucre 6 (rarely 5) -12 mm. high, many flowered, forming an erect terminal thyrse or corymb; leaves feather-veined.

Inflorescence corymbiform, close compact; leaves spatulate 15. *S. MULTIRADIATA*

Inflorescence axillary, open; leaves ovate 18. *S. MACROPHYLLA*

Inflorescence thyrsoidal; many of the pedicels 5-15 (seldom 25) mm. long

Basal leaves 1.5-9 cm. long; stem remotely leafy, sparsely puberulent 22. *S. DECUMBENS*

Basal leaves 15-30 cm. long; stem very leafy, often glutinous 25. *S. RACEMOSA* var. *GILLMANTII*

3. Heads small or middle-sized; the involucre 2-5 (rarely 6) mm. high; panicled or thyrsoidal; not in a terminal corymbiform cyme.

A. Leaves commonly veiny, not 3-ribbed, (but sometimes obscurely triple-nerved)

B. Heads in a slender virgate or thyrsoidal panicle.

Lower leaves narrowly oblanceolate, the upper linear-lanceolate; branches of the inflorescence nearly erect (Bog species) 30. *S. ULIGINOSA*

Lower leaves broadly oblanceolate, the upper broadly lanceolate, elliptic or ovate; branches of the inflorescence ascending, spreading 33. *S. RIGIDIUSCULA*

B. Heads paniculate, in mostly spreading or recurved ascending secund clusters.

*Basal leaves long-petioled, conspicuously larger than the 10-30 (-40) remote or sub-remote cauline ones

†Stems strongly angled; leaves shagreen-scabrous on the upper surface; heads 15-20 flowered 35. *S. PATULA*

†Stems terete or nearly so; leaves smooth or smoothish, (rarely scabrous); heads 6-15 (-20) flowered

Leaves mostly serrate, the lower and middle-cauline (as well as the basal) rather abruptly narrowed to the petiolar base. (Extreme forms of No. 46 might be sought here)

36. *S. ARGUTA*

Leaves all gradually tapering to the base, the uppermost chiefly entire

Panicle usually as broad as high; rays 8-12

Leaves smooth

37. *S. JUNCEA*

Leaves scabrous

39. *S. JUNCEA form. SCABRELLA*

Panicle usually higher than broad; rays 2-8

Stem slender, lower leaves narrowly lanceolate, cauline 15-20 (rarely 30); tegules pale straw-coloured, chartaceous; rays 2-5

Branches of the panicle pubescent

40. *S. UNILIGULATA*

Branches of the panicle glabrous, or glabrate and glutinous.

41. *S. UNILIGULATA var. LEVIPES*

Stem stout; lower leaves ovate-lanceolate, cauline 20-40; tegules subherbaceous; rays 3-8

42. *S. UNILIGULATA var. NEGLECTA*

*Basal leaves similar to the 30-100 (-200) ordinarily almost uniform or gradually reduced approximate cauline ones

Stem glabrous; leaves not rugose; rays 1-6; plant not soboliferous

46. *S. ULMIFOLIA*

Stem pubescent; leaves rugose; rays 6-9; plant soboliferous

47. *S. RUGOSA*

A. Leaves more or less plainly 3-ribbed, 2 of the lower veins becoming prominent and elongated parallel with the midrib; heads mostly in 1-sided chiefly spreading or recurved racemes, forming an ample panicle.

Leaves firm and often rigid, the lower usually elongated and many times exceeding the reduced upper ones, ashy or whitish with a close puberulence; tegules thick and rigid.

Basal leaves broadly oblanceolate or spatulate, 2-4 cm. broad

54. *S. NEMORALIS*

Basal leaves narrowly oblanceolate, 1-2.5 cm. broad

55. *S. NEMORALIS var. DECEMFLORA*

Leaves thinner, essentially uniform from base to summit of stem; not ashy or whitish; tegules thin.

Panicle high, pyramidal, branches recurved, spreading

Involucre 2.3 mm. high

61. *S. CANADENSIS*

Involucre 3.2-5 mm. high

Stem closely and minutely pubescent throughout

Branches of the panicle recurving

63. *S. ALTISSIMA*

Branches of the panicle strongly ascending

64. *S. ALTISSIMA var. PROCERA*

Stem glabrous throughout (or except in the inflorescence); leaves quite smooth on both sides

65. *S. SEROTINA*

Panicle short, dense almost overtopped by the upper leaves which are coarsely serrate; heads barely secund

67. *S. LEPIDA*

Panicle rhomboidal, elongate, leaves coarsely sharp-serrate; heads barely secund

69. *S. LEPIDA var. FALLAX*

3. Heads in a compound corymb, or corymbose panicle, terminating the simple stem; not at all racemose; leaves mostly with a strong midrib.

Leaves flat, not 3-ribbed

Leaves ovate, oblong or oval, mostly rough on both sides 71. *S. RIGIDA*

Leaves lanceolate, linear, oblong or oblanceolate, glabrous or nearly so 72. *S. OHIOENSIS*

Leaves somewhat folded, entire, the lower slightly 3-ribbed

Stem stout; leaves lanceolate, the basal 3-5 dm. long. 73. *S. RIDDELLII*

Stem slender; leaves linear, the basal 0.5-1.3 dm. long. 74. *S. HOUGHTONII*

1. Rays more numerous than the disc flowers; heads sessile or subsessile.

Inflorescence a flat or round-topped corymb; the lance-linear leaves 3-5 ribbed 75. *S. GRAMINIFOLIA*

IX. KEY TO GOLDENRODS IN MANITOBA

1. Rays mostly fewer than the disc flowers; heads more or less pedicelled.

2. *Heads small; the involucre 3-5 (rarely 6) mm. high, clustered along the stems in the axils of the feather-veined leaves, or the upper forming a thyrse; stems hoary or greyish with soft hairs, (rarely glabrate); tegules obtuse.*

- Rays yellow or orange-yellow. 7. *S. HISPIDA*
 Rays cream-colour or nearly white (otherwise
 nearly as No. 7). 13. *S. BICOLOR*

2. *Heads mostly large; the involucre 7-8 mm. high, forming an erect corymbose-cyme; leaves feather-veined.*

- Inflorescence close compact; stem 1-3.5 dm. high
 (alpine species) 15. *S. MULTIRADIATA*

2. *Heads small or middle-sized; the involucre 2-5 (rarely 6) mm. high; paniced or thyrsoidal; not in a terminal corymbiform cyme.*

A. *Leaves commonly veiny, not 3-ribbed, (but sometimes obscurely triple-nerved)*

B. *Heads in a slender virgate panicle.*

- Cauline leaves sparingly serrulate or entire, acute
 or acuminate; tegules obtuse; (Bog species) . . . 30. *S. ULIGINOSA*

B. *Heads paniculate, in mostly spreading or recurved ascending secund clusters.*

- Basal leaves long-petioled, conspicuously larger
 than the 10-30 (-40) remote or sub-remote cauline
 ones, which all gradually taper to the base; upper-
 most chiefly entire. Leaves not rugose; plant
 not stoloniferous 37. *S. JUNCEA*

- Basal leaves similar to the 30-100 (-200) ordin-
 arily almost uniform or gradually reduced ap-
 proximate cauline ones, which are rather abruptly
 narrowed at the base, the uppermost chiefly
 serrate; leaves rugose; plant soboliferous 47. *S. RUGOSA*

A. *Leaves more or less plainly 3-ribbed, 2 of the lower veins becoming prominent and elongated parallel with the midrib; heads mostly in 1-sided chiefly spreading or recurved racemes forming an ample panicle.*

C. *Branches of the panicle, stem and leaves glabrous; (leaves commonly with scabrous margins)*

- Inflorescence usually round or flat-topped, open;
 tegules oblong-lanceolate 50. *S. GLABERRIMA*

C. *Branches of the panicle, stem and leaves pubescent or mostly so.*

*Leaves ashy or whitish with a close puberulence,
 firm and often rigid;

†Lower leaves usually elongated and many
 times exceeding the reduced upper ones; tegules
 thick and rigid

- Basal leaves broadly oblanceolate or spatu-
 late, 2-4 cm. broad 54. *S. NEMORALIS*

- Basal leaves narrowly oblanceolate, 1-2 cm.
 broad 55. *S. NEMORALIS* var. *DECEMFLORA*

†Leaves essentially uniform from base to summit of stem

- Leaves obovate; tegules thick and rigid, ovate 56. *S. MOLLIS*
 Leaves elliptic-lanceolate to linear-lanceolate; plant green-grey; involucre about 4 mm. high 57. *S. DUMETORUM*
 Leaves linear-lanceolate; plant yellow-grey; involucre 2-3 mm. high 60. *S. GILVOCANESCENS*

*Leaves green, essentially uniform from base to summit of stem, sparingly pubescent or glabrous, (not ashy or whitish), thin; tegules thin

Panicle high, pyramidal, branches recurved, spreading

- Involucre 2-3 mm. high; leaves pubescent on the veins beneath 61. *S. CANADENSIS*
 Involucre 3·2-5 mm. high; leaves quite smooth on both sides 65. *S. SEROTINA*
 Panicle rhomboid, leafy; leaves coarsely and sharply serrate 69. *S. LEPIDA* var. *FALLAX*

2. Heads in a compound corymb, or corymbose panicle, terminating the simple stem; not at all racemose; leaves mostly with a strong midrib.

- Leaves ovate, oblong or oval, mostly rough on both sides 71. *S. RIGIDA*

1. Rays more numerous than the disc flowers; heads sessile or subsessile.

- Inflorescence a flat or round-topped corymb; the lance-linear leaves 3-5 ribbed. 75. *S. GRAMINIFOLIA*

X. KEY TO GOLDENRODS IN SASKATCHEWAN

1. Rays mostly fewer than the disc flowers; heads more or less pedicelled.

2. Heads small; the involucre 3-5 (rarely 6) mm. high, clustered along the stems in the axils of the feather-veined leaves, or the upper forming a thyrse.

Rays yellow or orange-yellow; stem arachnoid-lanate, *i.e.*, with long white spider-webby hairs 11. *S. HISPIDA* var. *LANATA*

Rays cream-colour or nearly white; stem hoary or greyish with soft hairs, (rarely glabrate) 13. *S. BICOLOR*

2. Heads mostly large; the involucre 6-8 mm. high, forming an erect terminal thyrse or corymb; leaves feather-veined.

Inflorescence corymbiform, close, compact; tegules acute 15. *S. MULTIRADIATA*

Inflorescence thyrsoïd, mostly elongate; tegules obtuse. 23. *S. DECUMBENS* var. *OREOPHILA*

2. Heads small or middle-sized; the involucre 2-5 (rarely 6) mm. high; paniced or thyrsoïdal; not in a terminal corymbiform cyme.

A. Leaves commonly veiny, not 3-ribbed, (but sometimes obscurely triple-nerved)

B. Heads in a narrow thyrse of numerous narrow spike-like clusters.

Leaves almost entire, thick, coriaceous; plant pale 32. *S. PALLIDA*

B. Heads paniculate, in mostly spreading or recurved ascending secund clusters; panicle usually as broad as high.

Basal leaves long petioled, conspicuously larger than the cauline ones 37. *S. JUNCEA*

A. Leaves more or less plainly 3-ribbed, 2 of the lower veins becoming prominent and elongated parallel with the midrib; heads in mostly 1-sided chiefly spreading or recurved racemes, forming an ample panicle.

C. Branches of the panicle, stem and leaves glabrous, (leaves commonly with scabrous margins.)

Inflorescence usually flat or round-topped, open; tegules oblong-lanceolate 50. *S. GLABERRIMA*

Inflorescence pyramidal, narrow; tegules linear-lanceolate 51. *S. MISSOURIENSIS*

C. Branches of the panicle, stem and leaves pubescent or mostly so.

*Leaves ashy or whitish with a close puberulence, firm and often rigid

†Lower leaves usually elongated and many times exceeding the reduced upper ones; tegules thick and rigid

Basal leaves broadly oblanceolate or spatulate, 2-4 cm. broad 54. *S. NEMORALIS*

Basal leaves narrowly oblanceolate 1-2 cm. broad 55. *S. NEMORALIS* var. *DECEMFLORA*

†Leaves essentially uniform from base to summit of stem

- Leaves obovate; tegules thick and rigid, ovate 56. *S. MOLLIS*
 Leaves elliptic-lanceolate to linear-lanceolate; tegules thin
 Leaves lanceolate to elliptic-lanceolate
 Leaves scabrous above 57. *S. DUMETORUM*
 Leaves softly puberulent on both sides 58. *S. PRUINOSA*
 Leaves linear-lanceolate
 Involucre 3·5-4 mm. high; plant green-grey 59. *S. LUNELLII*
 Involucre 2-3 mm. high; plant yellow-grey 60. *S. GILVOCANESCENS*

*Leaves green, essentially uniform from base to summit of stem, sparingly pubescent or glabrous, (not ashy or whitish), thin; tegules thin.

Panicle high, pyramidal, branches recurved, spreading

- Involucre 2-3 mm. high; leaves pubescent on the veins beneath 61. *S. CANADENSIS*
 Involucre 3·2-5 mm. high; leaves quite smooth on both sides 65. *S. SEROTINA*
 Panicle short, dense, almost over-topped by the upper leaves, cauline leaves coarsely serrate 67. *S. LEPIDA*
 Panicle rhomboid, elongate or virgate.
 Leaves subentire or sparingly serrate above the middle 68. *S. LEPIDA var. ELONGATA*
 Leaves coarsely and sharply serrate 69. *S. LEPIDA var. FALLAX*

2. Heads in a compound corymb, or corymbose panicle, terminating the simple stem; not at all racemose; leaves mostly with a strong midrib.

- Leaves ovate, oblong or oval, mostly rough on both sides 71. *S. RIGIDA*

1. Rays more numerous than the disc flowers; heads sessile or subsessile.

- Inflorescence a flat or round-topped corymb; the lance-linear leaves 3-5 ribbed. 75. *S. GRAMINIFOLIA*

XI. KEY TO GOLDENRODS IN ALBERTA

1. Rays mostly fewer than the disc flowers.

2. *Heads mostly large; the involucre 6 (rarely 5) -8 mm. high, many flowered, forming an erect terminal corymb or thyrses; leaves feather-veined.* (No. 53 might be sought here.)

Inflorescence corymbiform

Basal leaves 2-5 cm. long; plant 1-2 dm. high . . . 14. *S. CILIOSA*

Basal leaves 5-15 cm. long; plant 1.5-3.5 dm. high

Inflorescence close, compact 15. *S. MULTIRADIATA*

Inflorescence open in rounded corymbose clusters 17. *S. SCOPULORUM*

Inflorescence thyrsoid

Thyrses with few heads, short, congested 22. *S. DECUMBENS*

Thyrses longer and more racemiform; heads tending to be slightly smaller 23. *S. DECUMBENS* var. *OREOPHILA*

2. *Heads small or middle-sized; the involucre 2-5 (rarely 6) mm. high* (except No. 53) *mostly in one-sided, chiefly spreading or recurved racemes forming an ample panicle* (except Nos. 52 and 53); *leaves more or less plainly 3-ribbed*, (but sometimes obscurely triple-nerved).

A. *Branches of the panicle, stem and leaves glabrous; leaves commonly with scabrous margins.* (No. 65 might be sought here.)

Involucre mostly less than 5 mm. high

Stem slender

Inflorescence usually flat or round-topped, open; tegules oblong-lanceolate 50. *S. GLABERRIMA*

Inflorescence pyramidal, narrow; tegules linear-lanceolate 51. *S. MISSOURIENSIS*

Stem stout; inflorescence small and compact, its clusters short, seldom recurved or secund; plant often dwarf 52. *S. MISSOURIENSIS* var. *MONTANA*

Involucre 6-7 mm. high, stem stout; panicle round-topped, open 53. *S. CONCINNA*

A. *Branches of the panicle, stem and leaves pubescent or mostly so.*

Leaves ashy or whitish with a close puberulence, firm and often rigid; lower leaves usually elongated and many times exceeding the reduced upper ones; tegules thick and rigid 55. *S. NEMORALIS* var. *DECEMFLORA*

Leaves green; essentially uniform from base to summit of stem, sparingly pubescent or glabrous, (not ashy or whitish), thin, tegules thin.

Panicle high, pyramidal, branches recurved, spreading

Involucre 2-3 mm. high; leaves pubescent on the veins beneath 61. *S. CANADENSIS*

Involucre 3.2-5 mm. high; leaves quite smooth on both sides 65. *S. SEROTINA*

Panicle short, dense, almost over-topped by the upper leaves, cauline leaves coarsely serrate 67. *S. LEPIDA*

Panicle rhomboid, elongate or virgate.

Leaves sub-entire or sparingly serrate above the middle 68. *S. LEPIDA* var. *ELONGATA*

Leaves coarsely and sharply serrate 69. *S. LEPIDA* var. *FALLAX*

1. Rays more numerous than the disc flowers.

Inflorescence a flat or round-topped corymb; the linear leaves 3-ribbed 79. *S. OCCIDENTALIS*

XII. KEY TO GOLDENRODS IN BRITISH COLUMBIA

1. Rays mostly fewer than the disc flowers.

2. *Heads mostly large; the involucre 6 (rarely 5) -8 mm. high, many flowered, forming an erect terminal corymb or thyrse; leaves feather-veined.* (No. 53 might be sought here.)

Inflorescence corymbiform

Basal leaves 2-5 cm. long; plant 1-2 dm. high. 14. *S. CILIOSA*

Basal leaves 5-15 cm. long; plant 1.5-3.5 dm. high

Inflorescence close, compact 15. *S. MULTIRADIATA*

Inflorescence in rounded corymbose clusters. 17. *S. SCOPULORUM*

Inflorescence thyrseoid

Stem glutinous, 3-9 dm. high, erect (Coastal). 29. *S. CONFERTIFLORA*

Stem not glutinous, 0.5-4 dm. high, decumbent.

Thyrse with few heads, short, congested 22. *S. DECUMBENS*

Thyrse longer and more racemiform; heads
tending to be slightly smaller. 23. *S. DECUMBENS* var. *OREOPHILA*

2. *Heads small or middle-sized; the involucre 2-5 (rarely 6) mm. high (except No. 53) mostly in one-sided, chiefly spreading or recurved racemes forming an ample panicle (except Nos. 52 and 53); more or less plainly 3-ribbed (but sometimes obscurely triple-nerved.)*

A. *Branches of the panicle, stem and leaves glabrous, (leaves commonly with scabrous margins.) No. 65 might be sought here.*

Involucre mostly less than 5 mm. high

Stem slender; inflorescence pyramidal, narrow, elongate. 51. *S. MISSOURIENSIS*

Stem stout; inflorescence small and compact, its clusters short, crowded; seldom recurved or secund; plant often dwarf

52. *S. MISSOURIENSIS* var. *MONTANA*

Involucre 6-7 mm. high; stem stout; panicle round-topped, open

53. *S. CONCINNA*

A. *Branches of the panicle, stem and leaves pubescent or mostly so.*

Panicle high, pyramidal, branches recurved, spreading

Involucre 2-3 mm. high; leaves pubescent on the veins beneath 61. *S. CANADENSIS*

Involucre 3.2-5 mm. high; leaves quite smooth on both sides 65. *S. SEROTINA*

Panicle short, dense, almost overtopped by the upper leaves, cauline leaves coarsely serrate. 67. *S. LEPIDA*

Panicle rhomboid, elongate or virgate

Leaves subentire or sparingly serrate above the middle 68. *S. LEPIDA* var. *ELONGATA*

Leaves coarsely and sharply serrate 69. *S. LEPIDA* var. *FALLAX*

1. Rays more numerous than the disc flowers.

Inflorescence a flat or round-topped corymb; the

linear leaves 3-ribbed 79. *S. OCCIDENTALIS*

XIII. ALPHABETICAL LIST OF SPECIES WITH REFERENCES TO DESCRIPTIONS

SOLIDAGO

- ALTISSIMA L. Gray Man. ed. 7. *Var: procera* (Ait.) Fernald. Gray Man. ed. 7.
 ANTICOSTENSIS Fernald. *Rhodora*, 29: 141-144. 1926.
 ARGUTA Ait. Gray Man. ed. 7.
 BARTRAMIANA Fernald. *Rhodora*, 17: 1-20. 1915.
 BICOLOR L. Gray Man. ed. 7.
 CAESIA L. Gray Man. ed. 7. *Var: axillaris* (Pursh.) Gray. Gray Man. ed. 7.
 CALCICOLA Fernald. Gray Man. ed. 7.
 CANADENSIS L. Gray Man. ed. 7.
 CHLOROLEPIS Fernald. *Rhodora*, 17: 3. 1915.
 CILIOSA Greene. Rydberg Fl. Rocky Mtns. ed. 2.
 CONCINNA A. Nels. Rydberg Fl. Rocky Mtns. ed. 2.
 CONFERTIFLORA DC. = *S. glutinosa* Nutt. Henry Fl. Southern British Columbia.
 DECUMBENS Greene. Gray Man. ed. 7. *Var: oreophila* (Rydb.) Fernald. *Rhodora*, 450: 202. 1936., = *S. oreophila* Rydb. Rydb. Fl. Rocky Mtns. ed. 2.
 DUMETORUM Lunell. Rydb. Fl. Rocky Mtns. ed. 2.
 ELLIOTTII T. & G. Gray Man. ed. 7., *Var: ascendens* Fernald. *Rhodora*, 450: 215. 1936.
 GALETORUM (Greene) Friesner. Friesner, Genus *Solidago* in Northeastern N. Amer.
 GILVOCANESCENS (Rydb.) Smyth. Rydb. Fl. Rocky Mtns. ed. 2.
 GLABERRIMA Martens. Rydb. Fl. Rocky Mtns. ed. 2.
 GRAMINIFOLIA (L.) Salisb. Gray Man. ed. 7. *Var: Nuttallii* (Greene) Fernald., Gray Man. ed., 7. *Var: septentrionalis* Fernald., *Rhodora*, 17: 12. 1915.
 HISPIDA Muhl. Gray Man. ed. 7. *Var: arnoglossa* Fernald., *Rhodora*, 17: 2. 1915. *Var: disjuncta* Fernald., *Rhodora* 17: 2. 1915. *Var: lanata* (Hook.) Fernald. *Rhodora* 10: 87. 1908. *Var: tonsa* Fernald. *Rhodora* 17: 2. 1915.
 HOUGHTONII T. & G. Gray Man. ed. 7.
 JUNCEA Ait. Gray Man. ed. 7. *Forma ramosa* (Porter & Britton) Fernald. *Rhodora*, 450: 208. 1936 = *Var. ramosa*. *Forma scabrella* (T. & G.) Fernald. *Rhodora*, 450: 208. 1936 = *Var. scabrella*.
 KLUGHII Fernald. *Rhodora* 17: 5. 1915.
 LATIFOLIA L. Gray Man. ed. 7.
 LEPIDA DC. *Rhodora* 17: 9. 1915. *Var: elongata* (Nutt.) Fernald. *Rhodora* 17: 9. 1915. *Var: fallax* Fernald. *Rhodora* 17: 9. 1915. *Var: molina* Fernald. *Rhodora* 17: 9. 1915.
 Not Rydb., contr. U.S. Natl. Herb., 3: 162. 1895.
 LUNELLII Rydb. Rydb. Fl. Prairies and Plns.
 MACROPHYLLA Pursh. Gray Man. ed. 7. *Var: thyrsoides* (Mey.) Fernald. Gray Man. ed. 7.
 MENSALIS Fernald. *Rhodora* 17: 4-5. 1915.
 MISSOURIENSIS Nutt. Rydb. Fl. Rocky Mtns. ed. 2. *Var: montana* Gray. Gray Synop. Fl. Nth. Amer.: ii: 155.
 MOLLIS Bartl. Gray Man. ed. 7.
 MULTIRADIATA Ait. Britton & Brown Ill. Fl. iii ed. 2. *Var: parviceps* Fernald. *Rhodora* 450: 202. 1936.
 NEMORALIS Ait. Gray Man. ed. 7. *Var: decemflora* (DC.) Fernald. *Rhodora*, 450: 226. 1936 = *S. pulcherrima* Nels.
 Rydb. Fl. Rocky Mtns. ed. 2.
 OCCIDENTALIS Nutt. = *Euthamia occidentalis*. Rydb. Fl. Rocky Mtns. ed. 2.
 OHIOENSIS Riddell. Gray Man. ed. 7.
 PALLIDA (Porter:) Rydb. Rydb. Fl. Rocky Mtns. ed. 2.
 PATULA Muhl. Gray Man. ed. 7.
 PRUINOSA Greene. Rydb. Fl. Rocky Mtns. ed. 2.
 PUBERULA Nutt. Gray Man. ed. 7.
 RACEMOSA Greene. Gray Man. ed. 7. *Var: Gillmani* (Gray) Fernald. Gray Man. ed. 7.



- RANDII (Porter:) Britton. Gray Man. ed. 7.
 RIDDELLII Frank. Gray Man. ed. 7.
 RIGIDA L. Gray Man. ed. 7.
 RIGIDIUSCULA (T. & G.) Porter = *S. speciosa* Var. *angustata* T. & G. Gray Man. ed. 7.
 RUGOSA Mill. Gray Man. ed. 7. Var. *sphagnophila* Graves. Gray Man. ed. 7, and Rhodora 450:222. 1936.
 Var. *villosa* (Pursh.) Fernald. Gray Man. ed. 7, and Rhodora 450:222. 1936.
 SCOPULORUM (A. Gray.) Nels. Rydb. Fl. Rocky Mtns. ed. 2.
 SEMPERVIRENS L. Gray Man. ed. 7.
 SEROTINA Ait. Gray Man. ed. 7. Var. *gigantea* (Ait.) Gray. Gray Man. ed. 7.
 SQUARROSA Muhl. Gray Man. ed. 7.
 TENUIFOLIA Pursh. Gray Man. ed. 7. Var. *pycnocephala* Fernald. Rhodora 23:293. 1923.
 ULIGINOSA Nutt. Gray Man. ed. 7, and Rhodora 17:6-7. 1915. Var. *peracuta* (Fernald) Friesner. Friesner, Genus *Solidago* in Northeastern N. Amer.
 ULMIFOLIA Muhl. Gray Man. ed. 7.
 UNILIGULATA (DC.) Porter. Gray Man. ed. 7. Var. *levipes* Fernald. Rhodora, 17:1-20. 1915. Var. *neglecta* (T. & G.) Fernald. Rhodora 23:292. 1921 = *S. neglecta* T. & G. Gray Man. ed. 7. Var. *terraenovae* (T. & G.) Fernald. Rhodora 23:292. 1921 = *S. terrae-novae* T. & G. Gray Synop. Fl. Nth. Amer. ii:154.
 VICTORINII Fernald. Rhodora 29:143. 1927.

