

Field Key to Calveg Alliances

South Sierran - Zone 4

Revised March 3, 2010

Using plant codes from the NRCS Plants Database

I. Key to Lifeforms

1A. If absolute canopy closure (cover) of trees (conifers and/or hardwoods) is $> 10\%$ of plot or area ... 2

1B. If absolute canopy closure (cover) of trees is $< 10\%$ of plot or area ... 4

2A. **Tree Dominated Order:** if conifers have relative canopy cover $> 80\%$ of total tree canopy closure ... **conifer lifeform** and go to **II. Key to Conifers**

2B. **Tree Dominated Order:** if conifers have relative canopy cover $< 80\%$ of total tree canopy closure...3

3A. If hardwoods have relative canopy cover $> 90\%$ of total tree canopy closure ... **hardwood lifeform** and go to **III. Key to Hardwoods**

3B. If hardwoods have relative canopy cover $\geq 20\%$ of total tree canopy closure and conifers have relative canopy cover $\geq 10\%$ of total tree canopy closure ... mixed lifeform and go to **II. Key to Conifers** for conifer component and **III. Key to Hardwoods** for hardwood component

4A. **Shrub Dominated Order:** if absolute cover of shrubs is $\geq 10\%$ of plot or area ... **shrub lifeform** and go to **IV. Key to Shrubs and Subshrubs**

4B. If absolute cover of shrubs is $< 10\%$ of plot or area ... 5

5A. **Herbaceous or Non-Vascular Dominated Order:** if absolute cover of other vascular vegetation excluding agriculture is $\geq 10\%$ of plot or area ... **herbaceous lifeform** and go to **V. Key to Grasses and Forbs**

5B. If land use is agriculture or if absolute cover of other vascular vegetation is $< 10\%$ of plot or area ... **sparsely vegetated or non-vegetated lifeform** and go to **VI. Key to Sparsely Vegetated and Non-Vegetated Types**

II. Key to Conifers

cc = conifer canopy cover

1A. One conifer species (or genus) has $\geq 50\%$ (cc) ... 2

1B. No single conifer species (or genus) has $\geq 50\%$ cc ... 22

2A. Giant Sequoia (**SEGI2**) has $\geq 50\%$ cc ... **Big Tree - BT**

2B. Otherwise ... 3

3A. Knobcone Pine (**PIAT**) has $\geq 75\%$ cc ... **Knobcone Pine - KP**

3B. Otherwise ... 4

4A. Lodgepole Pine (**PICO**) has $\geq 75\%$ cc ... **Lodgepole Pine - LP**

4B. Otherwise ... 5

5A. Ponderosa Pine (**PIPO**) has $\geq 75\%$ cc and Great Basin shrub species [**PSEUDO1**: Bitterbrush (**PUTR2**, **PUGL2**), Rabbitbrush (**CHRYS9**, **CHVI8**, **ERNA10**), Nevada Dalea (**PSPO**), Curlleaf Mountain Mahogany (**CELE3**), Basin Sagebrush (**ARTR2**, **ARTEM** [**SS**,**SH**], **ARART**), Mountain Sagebrush (**ARVA2**, **ARTRV**, **ARTRV2**), Low Sagebrush (**ARAR8**), Black Sagebrush (**ARNO4**), Silver Sagebrush (**ARCA13**), Wyoming Sagebrush (**ARTRW8**, **ARTRW**), Ocean Spray (**HOMI3**, **HOLOD**) or California Juniper Shrub form (**JUCA7**)] in combination have $< 30\%$ sc; eastside Utah and California Junipers [**PSEUDO2**: **JUOS**, **JUUT**, **JUCA7** - tree form] are not present ... **Ponderosa Pine - PP**

5B. Otherwise ... 6

6A. Mountain Hemlock (**TSME**) has $\geq 75\%$ cc ... **Mountain Hemlock - MH**

6B. Otherwise ... 7

7A. Gray Pine (**PISA2**) has $\geq 75\%$... **Gray Pine - PD**

7B. Otherwise ... 8

8A. Red Fir (**ABMA**) has $\geq 75\%$ cc ... **Red Fir - RF**

8B. Otherwise ... 9

9A. Pacific Douglas-Fir (**PSME**) has $\geq 75\%$ cc ... **Douglas-Fir - DF**

9B. Otherwise ... 10

10A. Foxtail Pine (**PIBA**) has $\geq 75\%$ cc ... **Foxtail Pine - FP**

10B. Otherwise ... 11

11A. Limber Pine (**PIFL2**) has $\geq 75\%$ cc ... **Limber Pine - PL**

11B. Otherwise ... 12

12A. Western White Pine (**PIMO3**) has $\geq 75\%$ cc ... **Western White Pine - WW**

12B. Otherwise ... 13

13A. White Fir (**ABCO**) has $\geq 75\%$ cc ... **White Fir - WF**

13B. Otherwise ... 14

14A. Jeffrey Pine (**PIJE**) has $\geq 75\%$ cc and Great Basin shrub species [**PSEUDO1**: Bitterbrush (**PUTR2**, **PUGL2**), Rabbitbrush (**CHRYS9**, **CHVI8**, **ERNA10**), Nevada Dalea (**PSPO**), Curlleaf Mountain Mahogany (**CELE3**), Basin Sagebrush (**ARTR2**, **ARTEM** [**SS**, **SH**], **ARART**), Mountain Sagebrush (**ARVA2**, **ARTRV**, **ARTRV2**), Low Sagebrush (**ARAR8**), Black Sagebrush (**ARNO4**), Silver Sagebrush (**ARCA13**), Wyoming Sagebrush (**ARTRW8**, **ARTRW**), Ocean Spray (**HOMI3**, **HOLOD**) or California Juniper Shrub form (**JUCA7**)] in combination have $< 30\%$ sc; eastside Utah and California Junipers [**PSEUDO2**: **JUOS**, **JUUT**, **JUCA7** - tree form] are not present ... **Jeffrey Pine - JP**

14B. Otherwise ... 15

15A. Jeffrey Pine (**PIJE**) has $\geq 75\%$ cc or combination of Jeffrey and Ponderosa Pines [**PSEUDO46** (**PIPO**, **PIJE**)] has $\geq 75\%$ cc) and either Great Basin shrub species [**PSEUDO1**] have $\geq 30\%$ sc and/or eastside junipers [**PSEUDO2**] are present ... **Eastside Pine - EP**

15B. Otherwise ... 16

16A. Piute Cypress (**CUARN2**) has $\geq 50\%$ cc ... **Piute Cypress - MI**

16B. Otherwise ... 17

17A. Singleleaf Pinyon Pine (**PIMO**) has $\geq 75\%$ cc ... **Pinyon-Juniper - PJ**

17B. Otherwise ... 18

18A. Western Juniper (**JUOC**) has $\geq 75\%$ cc ... **Western Juniper - WJ**

18B. Otherwise ... 19

19A. Tree form California Juniper [**PSEUDO52: JUCA7**] has $\geq 75\%$ cc ... **California Juniper - JT**

19B. Otherwise ... 20

20A. Incense Cedar (**CADE27**) has $\geq 75\%$ cc ... **Incense Cedar - MD**

20A. Otherwise ... 21

21A. Whitebark Pine (**PIAL**) has $\geq 75\%$ cc ... **Whitebark Pine - WB**

21A. Otherwise ... 22

REM: Mixed Conifer Species: No single species has $\geq 75\%$

22A. Red Fir in combination with White Fir [**PSEUDO4: ABMA, ABCO**] has $\geq 75\%$ cc and Red Fir cover is $>$ White Fir ... **Red Fir - RF**

22B. Otherwise ... 23

23A. **White** Fir and/or Red Fir in combination [**PSEUDO4**] have $\geq 75\%$ cc and White Fir cover is $>$ Red Fir ... **White Fir - WF**

23B. Otherwise ... 24

24A. Singleleaf Pinyon Pine and Utah Juniper [**PSEUDO5: PIMO, JUOS, JUUT**] in combination have $\geq 75\%$ cc ... **Pinyon – Juniper - PJ**

24B. Otherwise ... 25

25A. Giant Sequoia (**SEGI2**) is present but has $< 50\%$ cc ... **Mixed Conifer - Giant Sequoia - MB**

25B. Otherwise ... 26

26A. Pacific Douglas-Fir and Ponderosa Pine in combination [**PSEUDO6: PSME, PIPO**] have $\geq 75\%$ cc and White Fir (**ABCO**) has $< 10\%$ cc ... **Douglas-Fir-Pine - DP**

26B. Otherwise ... 27

27A. Ponderosa Pine (**PIPO**) has $> 50\%$ cc and White Fir (**ABCO**) has $\geq 20\%$ cc ... **Ponderosa Pine - White Fir - PW**

27B. Otherwise ... 28

28A. Jeffrey Pine and Western Juniper in combination [**PSEUDO39: PIJE, JUOC**] have $\geq 75\%$ cc and Great Basin shrub species [**PSEUDO1**] have $< 30\%$ cc and/or eastside conifers [**PSEUDO2**] do not occur ... **Jeffrey Pine - JP**

28B. Otherwise ... 29

29A. Jeffrey Pine and Western Juniper in combination [**PSEUDO39: PIJE, JUOC**] have $\geq 75\%$ cc and Great Basin shrub species [**PSEUDO1**] have $\geq 30\%$ cc and/or [**PSEUDO2**] species occur ... **Eastside Pine - EP**

29B. Otherwise ... 30

- 30A. Jeffrey Pine and Singleleaf Pinyon Pine in combination [**PSEUDO47: PIJE, PIMO**] have $\geq 75\%$ cc ... **Eastside Pine - EP**
- 30B. Otherwise ... 31
- 31A. Any combination of two or more of the following conifers: Whitebark Pine, Limber Pine, Foxtail Pine, Mountain Hemlock, Bristlecone Pine, Western White Pine, or Lodgepole Pine have $\geq 50\%$ cc [**PSEUDO7: PIAL, PIFL2, PIBA, TSME, PIARL, PILO, PIMO3, PICO**] ... **Subalpine Conifers - SA**
- 31B. Otherwise ... 32
- 32A. White Fir and/or Red Fir in combination [**PSEUDO4**] have $\geq 30\%$ cc and Jeffrey Pine and/or Lodgepole Pine and/or Western Juniper [**PSEUDO8: PIJE, PICO, JUOC**] occur ... **Mixed Conifer – Fir - MF**
- 32B. Otherwise ... 33
- 33A. Ponderosa Pine, and/or Incense Cedar and/or Sugar Pine in combination [**PSEUDO9: PIPO, CADE27, PILA**] have $\geq 10\%$ cc ... **Mixed Conifer – Pine - MP**
- 33B. Otherwise ... 34
- 34A. Hardwoods have $\geq 20\%$ of total plot cover. Non-native/ornamental conifer mixture has $\geq 50\%$ of conifer canopy cover and non-native hardwood mixture has $\geq 50\%$ of hardwood canopy cover ... **Non-Native/Ornamental Conifer-Hardwood - IM**
- 34B. Otherwise ... 35
35. Conifer type not determined ... **Unknown Conifer - XC**

III. Key to Hardwoods

hc = hardwood canopy cover

- 1A. One single hardwood species has $\geq 50\%$ hc ... 2
- 1B. No single hardwood species has $\geq 50\%$ hc ... 18
- 2A. Canyon Live Oak (**QUCH2**) has $\geq 50\%$ hc ... **Canyon Live Oak - QC**
- 2B. Otherwise ... 3
- 3A. Blue Oak (**QUDO**) has $\geq 50\%$ hc ... **Blue Oak - QD**
- 3B. Otherwise ... 4
- 4A. California Black Oak (**QUKE**) has $\geq 50\%$ hc ... **Black Oak - QK**
- 4B. Otherwise ... 5
- 5A. Tree Willows of any species alone or in combination [**PSEUDO54: SALIX, SASC**] have $\geq 50\%$ hc ... **Willow - QO**
- 5B. Otherwise ... 6
- 6A. Quaking Aspen (**POTR5**) has $\geq 50\%$ hc ... **Aspen - QQ**
- 6B. Otherwise ... 7

7A. Interior Live Oak (**QUWI2**) has $\geq 50\%$ hc ... **Interior Live Oak - QW**

7B. Otherwise ... 8

8A. **Fremont** Cottonwood (**POFR2**) has $\geq 50\%$ hc ... **Fremont Cottonwood - QF**

8B. Otherwise ... 9

9A. White Alder (**ALRH2**) has $\geq 50\%$ hc ... **White Alder - QE**

9B. Otherwise ... 10

10A. Bigleaf Maple (**ACMA3**) has $\geq 50\%$ hc ... **Bigleaf Maple - QM**

10B. Otherwise ... 11

11A. Curleaf Mountain Mahogany, tree form [**PSEUDO56: CELE3**] has $> 50\%$ hc ... **Curleaf Mountain Mahogany - FM**

11B. Otherwise ... 12

12A. Valley Oak (**QULO**) has $\geq 50\%$ hc ... **Valley Oak - QL**

12B. Otherwise ... 13

13A. Black Cottonwood (PSEUDO71: **POTR15**) has $\geq 50\%$ hc ... **Black Cottonwood - QX**

13B. Otherwise ... 14

14A. Joshua Tree (**YUBR**) has $\geq 50\%$ hc ... **Joshua Tree - UJ**

14B. Otherwise ... 15

15A. Water Birch [**PSEUDO57: BEOC2, BETUL**] has $\geq 50\%$ hc ... **Water Birch - FO**

15B. Otherwise ... 16

16A. Dogwoods alone or in combination [**PSEUDO73: CORNU, CONU4**] have $\geq 50\%$ hc ... **Dogwood - WD**

16B. Otherwise ... 17

17A. California Buckeye (**AECA**) has $\geq 50\%$ hc ... **Buckeye - QI**

17B. Otherwise ... 18

18A. California Sycamore (**PLRA**) has $\geq 50\%$ hc ... **California Sycamore - QP**

18B. Otherwise ... 19

19A. Tamarisk (**TAMAR2**) has $\geq 50\%$ hc ... **Tamarisk - UT**

19B. Otherwise ... 20

20A. Smoke Tree (**PSSP3**) has $\geq 50\%$ hc ... **Smoke Tree - UX**

20B. Otherwise ... 21

21A. California Bay (**UMCA**) has $\geq 50\%$ hc ... **California Bay - UB**

21B. Otherwise ... 22

REM: No native hardwood species or genus is dominant

22A. Bigleaf Maple and Dogwood in combination [**PSEUDO10: ACMA3, CONU4, CORNU**] have \geq 50% hc ... **Bigleaf Maple - QM**

22B. Otherwise ... 23

23A. Combination of tree-form riparian species [**PSEUDO14: California Sycamore (PLRA), Dogwood (CONU4, CORNU), White Alder (ALRH2), Bigleaf Maple (ACMA3), Box Elder (ACNEC2), Fremont Cottonwood (POFR2), Black Cottonwood (POTR15), Aspen (POTR5), Valley Oak (QULO) and/or Water Birch (BETUL, BEOC2)**] have \geq 50% hc ... **Mixed Riparian Hardwood - NR**

23B. Otherwise ... 24

24A. Combination of lower elevation, interior, native hardwoods [**PSEUDO15: California Bay (UMCA), California Buckeye (AECA), Canyon Live Oak (QUCH2), Blue Oak (QUDO), and/or Interior Live Oak (QUWI2)**] have \geq 50% hc; no single species has \geq 50% hc ... **Interior Mixed Hardwood - NX**

24B. Otherwise ... 25

25A. Combination of montane, native hardwoods [**PSEUDO16: Madrone (ARME), Tanoak (LIDE3), California Black Oak (QUKE), and/or Bigleaf Maple (ACMA3)**] have \geq 50% hc; no single species has \geq 50% hc; trees in Interior Mixed Hardwoods mixture ... **Montane Mixed Hardwood - TX**

25B. Otherwise ... 26

26A. Agricultural lands have \geq 50% hc ... **Orchard Agriculture – A4**

26B. Otherwise ... 27

27A. Non-native hardwood species alone or in mixture have \geq 50% hc ... **Non-Native/Ornamental Hardwood - IH**

27B. Otherwise ... 28

28. Hardwood type not determined ... **Unknown Hardwood - XH**

IV. Key to Shrubs and Subshrubs

sc = shrub and subshrub canopy cover

1A. Alpine and subalpine areas with indicator shrubs and dwarf shrubs singly or in combination [**PSEUDO17: Rothrock Sagebrush (ARRO4), Shrubby Cinquefoil (POFR4), Sierran Beardtongue (PEHE2), Mountain Pride (PENE3), Arctic Willow (SAAR27), Sierra Willows (SAEA, SAOR), Snow Willow (SARE2), Geyer's Willow (SAGE2), White Heather (CAME7), Mountain Heather (PHBR4), Alpine Prickly Currant (RIMO2), Dwarf Bilberry (VAAR2), and/or Cascade Bilberry (VANI3)**] have \geq 50% sc ... **Mixed Alpine Scrub-AX**

1B. Otherwise ... 2

2A. One species or genus has \geq 50% shrub canopy cover (sc) ... 3

2B. No single species or genus has \geq 50% shrub cover ... 43

3A. Shrub form California Juniper [**PSEUDO53: JUCA7**] has \geq 75% cc ... **California Juniper - JC**

3B. Otherwise ... 4

4A. Rabbitbrush [**PSEUDO18: CHRYS9, ERNA10, CHPA13, CHVI8**] has \geq 50% sc ... **Rabbitbrush - BR**

4B. Otherwise ... 5

5A. Bush Chinquapin [**PSEUDO19: CHSE11, CASE8, CHRYS15**] has $\geq 50\%$ sc ... **Bush Chinquapin - CP**

5B. Otherwise ... 6

6A. Chamise (**ADFA**) has $\geq 50\%$ sc ... **Chamise - CA**

6B. Otherwise ... 7

7A. Huckleberry Oak (**QUVA**) has $\geq 50\%$ sc ... **Huckleberry Oak - CH**

7B. Otherwise ... 8

8A. Greenleaf Manzanita (**ARPA6**) has $\geq 50\%$ sc ... **Greenleaf Manzanita - CG**

8B. Otherwise ... 9

9A. Whiteleaf Manzanita (**ARVI4**) has $\geq 50\%$ sc ... **Whiteleaf Manzanita - CW**

9B. Otherwise ... 10

10A. Bitterbrush [**PSEUDO21: PUTR2, PUGL2**] has $\geq 50\%$ sc ... **Bitterbrush - BB**

10B. Otherwise ... 11

11A. Shrub form of Curlleaf Mountain Mahogany [**PSEUDO55: CELE3**] has $\geq 50\%$ sc ... **Curlleaf Mountain Mahogany - BM**

11B. Otherwise ... 12

12A. Shadscale (**ATCO**) has $\geq 50\%$ sc ... **Shadscale - DS**

12B. Otherwise ... 13

13A. Any species of Saltbush alone or in combination [**PSEUDO22: ATRIP, ATCA2, ATCO, ATPO**] has $\geq 50\%$ sc ... **Saltbush - BC**

13B. Otherwise ... 14

14A. Creosote Bush (**LATR2**) has $\geq 50\%$ sc ... **Creosote Bush - DL**

14B. Otherwise ... 15

15A. Mormon Tea [**PSEUDO23: EPHED, EPNE, EPVI**] has $\geq 50\%$ sc ... **Ephedra - FD**

15B. Otherwise ... 16

16A. Low Sagebrush (**PSEUDO70: ARAR8**) has $\geq 50\%$ shrub cover ... **Low Sagebrush - BL**

16B. Otherwise ... 17

17A. Mountain Sagebrush [**PSEUDO40: ARTRV, ARTRV2, ARVA2**] has $\geq 50\%$ shrub cover ... **Mountain Sagebrush - TV**

17B. Otherwise ... 18

18A. Big Basin Sagebrush (**ARTRT**) has $\geq 50\%$ shrub cover ... **Big Basin Sagebrush - TT**

18B. Otherwise ... 19

19A. Black Sagebrush (**ARNO4**) has $\geq 50\%$ shrub cover ... **Black Sagebrush - TN**

19B. Otherwise ... 20

- 20A. Basin Sagebrush [**PSEUDO20: ARTR2, ARTEM** (shrub or subshrub)] has \geq 50% sc ... **Basin Sagebrush - BS**
20B. Otherwise ... 21
- 21A. Blackbush (**CORA**) has \geq 50% sc ... **Blackbush - DA**
21B. Otherwise ... 22
- 22A. Deerbrush (**CEIN3**) has $>$ 50% sc ... **Deerbrush - CI**
22B. Otherwise ... 23
- 23A. Wedgeleaf Ceanothus (**CECU**) has $>$ 50% sc ... **Wedgeleaf Ceanothus - CL**
23B. Otherwise ... 24
- 24A. Mountain Whitethorn (**CECO**) has $>$ 50% sc ... **Mountain Whitethorn - CY**
24B. Otherwise ... 25
- 25A. Snowbrush (**CEVE**) has $>$ 50% sc ... **Snowbrush - CV**
25B. Otherwise ... 26
- 26A. Mountain Alder (**ALTE2**) has $>$ 50% sc ... **Mountain Alder - TA**
26B. Otherwise ... 27
- 27A. Birchleaf Mountain Mahogany (**CEBE3**) has $>$ 50% sc ... **Birchleaf Mountain Mahogany - WM**
27B. Otherwise ... 28
- 28A. White Bursage (Burweed) (**AMDU2**) has \geq 50% sc ... **White Bursage - AD**
28B. Otherwise ... 29
- 29A. Chaparral Yucca (**YUWH**) has \geq 50% sc ... **Chaparral Yucca - SY**
29B. Otherwise ... 30
- 30A. Snowberry species alone or in combination [**PSEUDO43: SYMPH, SYVA, SYORO, SYOR2, SYMO, SYAC, SYAL**] have \geq 50% sc ... **Snowberry - TS**
30B. Otherwise ... 31
- 31A. Brewer Oak (**QUGAB**) has $>$ 50% sc ... **Brewer Oak - CJ**
31B. Otherwise ... 32
- 32A. Tucker Oak [**PSEUDO59: QUTU2, QUJO**] has $>$ 50% sc ... **Tucker Oak - CT**
32B. Otherwise ... 33
- 33A. Westside shrub forms of Oaks in any combination other than dominant Brewer Oak [**PSEUDO26: QUCHN, QUWIF, QUVA, QUKE, QUGAB, QUERC**] have $>$ 50% sc ... **Scrub Oak - CS**
33B. Otherwise ... 34
- 34A. Pinemat Manzanita (**ARNE**) has \geq 50% sc ... **Pinemat Manzanita - CN**
34B. Otherwise ... 35
- 35A. Shrub Willow of any species alone or in combination [**PSEUDO44: SASC, SALIX, SAGE2, SALE**] has \geq 50% sc ... **Shrub Willow - WL**
35B. Otherwise ... 36

36A. Rothrock Sagebrush (**ARRO4**) has $\geq 50\%$ sc ... **Rothrock Sagebrush - TR**

36B. Otherwise ... 37

37A. Scalebroom (**LESQ**) has $\geq 50\%$ sc ... **Scalebroom - LS**

37B. Otherwise ... 38

38A. Riparian or moist-site Baccharis alone or in combination [**PSEUDO60: BASA4, BASE, BADO**] have $\geq 50\%$ sc ... **Baccharis (Riparian) - ML**

38B. Otherwise ... 39

39A. Brittlebush or California Encelia alone or in combination [**PSEUDO50: ENFA, ENCA**] have $\geq 50\%$ sc ... **Encelia - SE**

39B. Otherwise ... 40

40A. California Buckwheat or other shrub form Buckwheats alone or in combination [**PSEUDO61: ERFA2, ERIOG** (shrub or subshrub)] have $\geq 50\%$ sc ... **Buckwheat - SB**

40B. Otherwise ... 41

41A. Cheesebush (also called Burrobush) of any species alone or in combination [**PSEUDO25: HYSA, HYMO**] have $\geq 50\%$ sc ... **Cheesebush - HS**

41B. Otherwise ... 42

42A. Manzanitas (including non-dominant Greenleaf or non-dominant Whiteleaf) alone or in combination [**PSEUDO27: Greenleaf (ARPA6), Whiteleaf (ARVI4), Common (ARMA), Pinemat (ARNE), Eldorado (ARNI), Indian (ARME3), Bearberry (ARUV), Generic (ARCTO3)**] have $\geq 50\%$ sc ... **Manzanita Chaparral - SD**

42B. Not as above ... 43

43A. Ceanothus species, including non-dominant Deerbrush, Wedgeleaf, Snowbrush and Mountain Whitethorn, have $\geq 50\%$ sc [**PSEUDO48: CEANO, CED12, CEPI, CETO, CEPR, CEIN3, CECU, CEVE, CECO**] ... **Ceanothus Chaparral - CC**

43B. Otherwise ... 44

44A. Indigo Bush species (**PSEUDO24: PSORO, PSAR4, PSPO, PSSC5**) alone or in combination have $\geq 50\%$ sc ... **Indigo Bush - DI**

44B. Otherwise ... 45

45A. Cottonthorn or Horsebrush species alone or in combination (**PSEUDO58: TETRA3, TEAR, TEAX, TECA2, TECO2, TEDI, TEGL, TEST2**) have $\geq 50\%$ sc ... **Horsebrush - TM**

45B. Not as above ... 46

46A. Quaking Aspen, shrub form (**POTR5**) has $> 50\%$ sc ... **Quaking Aspen - KQ**

46B. Otherwise ... 47

REM: Following have no dominant shrub species

47A. Mountain Misery (**CHFO**) and/or Fern Bush (**CHMI2**) alone or in combination [**PSEUDO62: CHFO, CHMI2**] have $\geq 50\%$ sc ... **Mountain Misery - CE**

47B. Otherwise ... 48

48A. Bitterbrush is present with Artemisia species, the combination having $\geq 50\%$ sc: [**PSEUDO35**: Low Sagebrush (**ARAR8**), Mountain Sagebrush (**ARTRV**, **ARTRV2**, **ARVA2**), Big Basin Sagebrush (**ARTRT**), Wyoming Sagebrush (**ARTRW8**, **ARTRW**), Black Sagebrush (**ARNO4**), Silver Sagebrush (**ARCA13**), Sagebrush (**ARTEM** - shrub or subshrub, **ARTR2**), Bitterbrush (**PUTR2**, **PUGL2**)] ...

Bitterbrush – Sagebrush - TB

48B. Otherwise ... 49

49A. High Desert species [**PSEUDO49**: Ephedra (**EPHED**, **EPNE**, **EPVI**), Spiny Menodora (**MESP2**), Green Rabbitbrush (**CHVI8**), Blackbush (**CORA**)] in combination have $\geq 50\%$ shrub cover. Cacti [**PSEUDO63**: **OPER**, **OPPA2**, **OPPU**, **OPUNT**, **SCJO**], White Bursage (**AMDU2**) and/or Creosote (**LATR2**) have $< 10\%$ sc. Other Mojave Desert species may be present ... **High Desert Mixed Scrub - NQ**

49B. Otherwise ... 50

50A. Cacti species [**PSEUDO30**: Opuntia species (**OPUNT**, **OPPA2**, **OPER**, **OPPU**), and/or Devils-claw (**SCJO**)] have $\geq 10\%$ of shrub cover. Mojave Desert species [**PSEUDO31**: Creosote Bush (**LATR2**), Ephedra (**EPHED**, **EPNE**, **EPVI**), Blackbush (**CORA**), Saltbush (**ATCA2**, **ATCO**, **ATPO**, **ATRIP**), White Bursage (**AMDU2**), Spiny Menodora (**MESP2**), Spiny Hopsage (**GRSP**), Horsebrush (**HYMO**, **HYSA**) and/or Tucker Oak (**QUTU2**)] in combination have $\geq 40\%$ shrub cover but none are dominant ... **Mixed Desert Shrub - DX**

50B. Otherwise ... 51

51A. Great Basin species [**PSEUDO1**] singly or in combination have $\geq 50\%$ shrub cover; Mojave species [**PSEUDO31**] have $< 20\%$ sc. Certain species of Currant or Gooseberry, Snowberry or Rose [**PSEUDO36**: **SYMPH**, **SYOR2**, **SYORO**, **SYVA**, **SYAC**, **SYMO**, **RIBES**, **RIVE**, **RIIN3**, **RINE**, **ROCA2**, **ROSA5**] are often present ... **Great Basin Mixed Scrub - BQ**

51B. Otherwise ... 52

52A. Cacti species [**PSEUDO30**] have $< 10\%$ shrub cover. Any combinations of the following shrubs [**PSEUDO45**] have $\geq 50\%$ shrub cover: [Non-dominant Atriplex species (**ATCA2**, **ATCO**, **ATPO**, **ATRIP**) and/or Greasewood (**SAVE4**) and/or Indigo Bush (**PSORO**, **PSPO**, **PSSC5**, **PSFR**, **PSAR4**) and/or Horsebrush (**TETRA3**, **TEAR**, **TEAX**, **TECA2**, **TECO2**, **TEDI**, **TEGL**, **TEST2**) and/or Hopsage (**GRSP**)] ... **Alkaline Mixed Scrub - NA**

52B. Otherwise ... 53

53A. Desert wash shrub species in combination [**PSEUDO64**: Burrobrush (**HYSA**), Mojave Cottonthorn (**TEST2**) and/or Saltbush (**ATCA2**, **ATCO**, **ATPO**, **ATRIP**)] have $\geq 50\%$ shrub cover ... **Desert Mixed Wash Scrub - NB**

53B. Otherwise ... 54

54A. Upper montane hard chaparral species [**PSEUDO29**] singly or in combination have $\geq 25\%$ shrub cover, none dominant and Great Basin species [**PSEUDO1**] have $\geq 25\%$ shrub cover ... **Great Basin – Mixed Chaparral Transition - BX**

54B. Otherwise ... 55

55A. Mixture of Great Basin and Mojave Desert shrubs (commonly BS plus NQ, or BS plus DX). Great Basin species [**PSEUDO1**] are $\geq 25\%$ of the shrub cover. Mojave Desert species [**PSEUDO31**] singly or in combination are $\geq 25\%$ of the shrub cover ... **Great Basin – Desert Mixed Scrub - BZ**

55B. Otherwise ... 56

56A. Riparian shrub species singly or in combination have $\geq 50\%$ sc, including species of Currant or Gooseberry, Rose, Mountain Alder, Shrub Willows, Elderberry, Red Osier Dogwood, Western Azalea, California Hazel, California Wild Grape, Dwarf Bilberry, Western Blueberry, and/or Vine Maple [PSEUDO37: RIBES, RILA, ROSA5, ALTE2, SALIX, SAMBU, SAMI15, COST4, RHOC, COCOC, VITIS, VICA5, VACA13, VAUL, VAOC, ACCI] ... **Riparian Mixed Shrub - NM**
56B. Otherwise ... 57

57A. Mixture of Lower Montane Mixed Chaparral shrub species [PSEUDO28 - see below in CQ] having $> 50\%$ sc with any combination of Mixed Desert Scrub [PSEUDO31] and/or Basin Mixed Scrub [PSEUDO1] species: [PSEUDO65: combination of PSEUDO31 and PSEUDO1] having $\geq 25\%$ of the shrub cover ... **Semi-Desert Chaparral - CZ**
57B. Otherwise ... 58

58A. Any of the following three or more species in combination have $\geq 50\%$ sc: [PSEUDO28: Chamise (ADFA), Whiteleaf Manzanita (ARVI4), Common Manzanita (ARMA), Chaparral Whitethorn (CELE2), Wedgeleaf Ceanothus (CECU), Lemmon Ceanothus (CELE), Birchleaf Mountain Mahogany (CEBE3), Toyon (HEAR5), Redbud (CEOCO), Yerba Santa (ERCA6, ERIOD), Foothill Ash (FRDI2), Creambush (HODI), Shrub Interior Live Oak (QUWIF), Hollyleaf Redberry (RHIL, RHCRI2), Cascara (RHPU), Flannelbush (FRCA6), Yucca species (YUCCA), Poison Oak (TODI), California Bay (UMCA), Deerweed (LOSC2), Chaparral Yucca (YUWH), Mountain Misery (CHFO), Hoary Coffeberry (RHTO6)] ... **Lower Montane Mixed Chaparral - CQ**
58B. Otherwise ... 59

59A. Elevation ≥ 5000 ft (1525 m) and any of following alone or in combination have $\geq 50\%$ sc: Bush Chinquapin, Shrub Tanoak, Pinemat Manzanita, Huckleberry Oak, Bitter Cherry, Western Chokecherry [PSEUDO66: ARNE, CASE8, LIDEE, PREM, PRVI, PRVID, QUVA] ... **Upper Montane Mixed Shrub - CM**
59B. Otherwise ... 60

60A. Any of the following three or more species in combination have $\geq 50\%$ sc: [PSEUDO29: Snowbrush (CEVE), Deerbrush (CEIN3), Utah and Western Serviceberry (AMUT, AMAL2), Serviceberry (AMELA) Klamath Plum (PRSU2), Greenleaf Manzanita (ARPA6), Mountain Whitethorn (CECO), Shrub Canyon Live Oak (QUCHN), Bush Chinquapin (CHSE11, CASE8, CHRYS15), Fremont or Interior Silktassel (GAFR, GACO9), Snowberry (SYMPH), Sharp-leaf Snowberry (SYAC), Mountain Misery (CHFO), Fern Bush (CHMI2), Mountain Maple (ACGL), Purpleflower Honeysuckle (LOCO5), Huckleberry Oak (QUVA), Sierra Coffeeberry (RHRU), Thimbleberry (RUPA), Golden and Wax Currants (RICE, RIAU), Pinemat Manzanita (ARNE), Shrub Black Oak (QUKE), Creeping Snowberry (SYMO), Brewer Oak (QUGAB), Sierra Gooseberry (RIRO), Kern Ceanothus (CEPI), Chokecherry (PRVI, PRVID)] ... **Upper Montane Mixed Chaparral - CX**
60B. Otherwise ... 61

61A. Non-native, invasive or ornamental cultivated shrubs have $\geq 50\%$ sc ... **Non-Native/Ornamental Shrub - IS**
61B. Otherwise ... 62

62A. Agricultural lands have $\geq 50\%$ sc ... **Vineyard – Shrub Agriculture - A2**
62B. Unknown shrub type ... **Unknown Shrub - XS**

V. Key to Grasses and Forbs

hg = herbaceous/grass canopy cover

1A. Exposed alpine and subalpine areas with various herbaceous plants and graminoids in the High Sierras; indicators are [PSEUDO33: Alpine Hulsea (HUAL), Alpine Saxifrage (SATO2), Mountain Sorrel (OXDI3), Jacob's Ladder (POPU3), Tufted and Dwarf Phlox (PHDO3, PHCO11); Sierra and Rocky Mountain Pussytoes (ANPU8, ANME2), Sierra Primrose (PRSU), Alpine Buttercup (RAES), Alpine Aster (ASAL2), Pygmy Daisy (ERPY) Prostrate Sibbaldia (SIPR); various Buckwheats (ERIOG), various Rockcresses (DRIN8, DRDE, DRLE, DRBR2), Sierra Podistera (PONE4), Rockfringe (EPOB), Sedges (CAREX), Rushes (JUNCU), Shorthair Reedgrass (CABR), Squirreltail (ELEL5), and Smallflower Fescue (FEMI3)] ... **Alpine Grasses and Forbs - AC**

1B. Otherwise ... 2

2A. Annual grasses mixed with annual and/or perennial forbs which generally have limited surface or subsurface moisture in midsummer having $\geq 50\%$ hg ... **Annual Grasses and Forbs - HG**

2B. Otherwise ... 3

3A. Hydrophytic grasses and grass-like species [Sedges (CAREX), Nutsedges (CYPER); Rushes (JUNCU); Spikerushes or Bulrushes (ELEOC); in mixture with hydrophytic herbaceous species [PSEUDO34: False Hellebore (VECA2, VECAC2) Western Blue Flag (IRMI), Shooting Star (DOAL, DOJE, DORE, DOSU), and/or Gentians [Swertia (SWERT); Gentiana (GENTI); Gentiella (GENTI2); Gentianopsis (GENIT3)] growing mainly in organic soil have $\geq 50\%$ hg ... **Wet Meadows - HJ**

3B. Otherwise ... 4

4A. Unmanaged or natural areas containing mixtures of grasses and/or forbs that retain some moisture in midsummer, such as those in middle or higher elevations having $\geq 50\%$ hg ... **Perennial Grasses and Forbs - HM**

4B. Otherwise ... 5

5A. Marshes adjacent to perennial fresh water sources containing mixtures of Tule (SCAC) or other Bulrushes (SCIRP) and Cattails (TYPHA) rooting below the water's surface have $> 50\%$ hg ... **Tule – Cattail - HT**

5B. Otherwise ... 6

6A. Salt or alkaline marshes containing mixtures of Pickleweed (SASU), Alkali Cordgrass (SPGR2) and/or Saltgrass (DISP) in any combination having $\geq 50\%$ hg... **Pickleweed-Cordgrass - HC**

6B. Otherwise ... 7

7A. Non-native cultivated grasses and herbaceous cover in mixture have $\geq 50\%$ hg ... **Non-Native/Ornamental Grasses - IG**

7B. Otherwise ... 8

8A. Agricultural lands have $\geq 50\%$ hg in row crops and are not usually flooded ... **Pastures and Crop Agriculture – A6**

8B. Otherwise ... 9

9. Unknown herbaceous or grassland type ... **Unknown Dry Grassland - XG** or **Unknown Wet Grassland - XJ**

VI. Key to Sparsely Vegetated and Non-Vegetated Types

nvc = non-vegetated cover

(later editions will exclude agriculture from this key)

1A. Agricultural uses comprise $\geq 50\%$ nvc ... **Agriculture - AG**

1B. Otherwise ...2

2A. Snow or ice fields at the highest elevations comprise $\geq 50\%$ nvc ... **Snow/Ice - SN**

2B. Otherwise ...3

3A. Urban or otherwise developed landscapes (highways, etc.) occupy $\geq 50\%$ nvc ... **Urban or Developed - UB**

3B. Otherwise ...4

4A. Open water or confined water courses occupy $\geq 50\%$ nvc ... **Water - WA**

4B. Otherwise ...5

5A. Otherwise naturally barren landscapes (cliffs, bedrock, etc.) occupy $\geq 50\%$ nvc ... **Barren - BA**

5B. Otherwise ...6

6A. Dry urbanized or developed lands have $\geq 50\%$ nvc ... **Urban-related Bare Soil - IB**

6B. Otherwise ... 7

7A. Wet urbanized or developed lands have $\geq 50\%$ nvc ... **Developed Water Features - IW**

7B. Otherwise ... Unknown non-vegetated type ... XZ