

Cobble bars and low floodplains

Arrowleaf groundsel-great northern aster, SETR-ASMO3	p. 72
Red alder/blue wildrye, ALRU2/ELGL.....	p. 74
Thimbleberry/vanilla leaf, RUPA/ACTR	p. 76
Red alder/piggyback plant-Siberian miner's lettuce, ALRU2/TOME-CLSI2	p. 78
(Red alder-big leaf maple)/stink currant-salmonberry/piggyback plant:, (ALRU2-ACMA3)/RIBR-RUSP/TOME	p. 80
Salmonberry/piggyback plant group-RUSP/TOME GROUP:	p. 83
○ Salmonberry/piggyback plant- <i>shrub phase</i> , RUSP/TOME- <i>shrub phase</i> ...	p. 86
○ Salmonberry/piggyback plant- <i>red alder phase</i> , RUSP/TOME- <i>ALRU2 phase</i>	p. 90
Stink currant-salmonberry/foamflower-oval-leaved mitrewort, RIBR-RUSP/TITR-MIOV	p. 94
Stink currant-salmonberry/sorrel group-RIBR-RUSP/OXALI GROUP	p. 99
○ Stink currant-salmonberry/sorrel- <i>shrub phase</i> , RIBR-RUSP/OXALI- <i>shrub phase</i>	p. 102
○ Stink currant-salmonberry/sorrel- <i>red alder phase</i> , RIBR-RUSP/OXALI- <i>ALRU2 phase</i>	p. 105
Sitka alder, ALVI5	p. 108
Oval leaved huckleberry, VAOV.....	p. 110

Senecio triangularis*-*Aster modestus
Arrowleaf groundsel-great northern aster
SETR-ASMO3

N=9 (MHN 8, WNF 1)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-overstory			
<i>Picea engelmannii</i>	Engelmann's spruce	22	10
Trees-seedlings			
<i>Tsuga heterophylla</i>	Western hemlock	56	2
<i>Picea engelmannii</i>	Engelmann's spruce	44	2
Shrubs			
<i>Spiraea douglasii</i>	Douglas spiraea	67	2
<i>Alnus incana</i>	Mountain alder	56	8
<i>Physocarpus capitatus</i>	Ninebark	56	6
<i>Rubus parviflorus</i>	Thimbleberry	33	6
<i>Rosa gymnocarpa</i>	Baldhip rose	33	3
<i>Vaccinium ovalifolium</i>	Oval-leaf huckleberry	33	3
<i>Ribes lacustre</i>	Black gooseberry	33	2
Herbs			
<i>Senecio triangularis</i>	Arrowleaf groundsel	89	9
<i>Heracleum lanatum</i>	Cow-parsnip	89	4
<i>Aster modestus</i>	Great northern aster	78	8
<i>Aconitum columbianum</i>	Columbian monkshood	78	6
<i>Vancouveria hexandra</i>	Insideout flower	78	4
<i>Stachys cooleyae</i>	Cooley's betony	78	3
<i>Galium triflorum</i>	Sweetscented bedstraw	78	2
<i>Mertensia paniculata</i>	Tall bluebells	78	2
<i>Senecio pseudoaureus</i>	Streambank groundsel	67	10
<i>Trautvetteria caroliniensis</i>	False bugbane	56	5
<i>Athyrium filix-femina</i>	Lady fern	56	5
<i>Achlys triphylla</i>	Vanilla leaf	56	2
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>	Coolwort foamflower	56	1
<i>Valeriana sitchensis</i>	Sitka valerian	56	1
<i>Viola glabella</i>	Stream violet	44	3
<i>Cornus unalaschensis</i>	Dogwood bunchberry	44	1
<i>Delphinium glareosum</i>	Olympic larkspur	33	4
<i>Hypericum perforatum</i>	Common St. John's-wort	33	2
<i>Platanthera stricta</i>	Slender bog-orchid	33	1
<i>Streptopus amplexifolius</i>	Clasping twistedstalk	33	1

Elevations: 3120 to 4810 feet (average 3,360 feet).

Community: Arrowleaf groundsel-great northern aster is an herb-rich community of flat cobbly surfaces in cool, higher elevations. Engelmann spruce can occasionally be found in the overstory. Shrubs are generally present. Douglas spiraea is the most common, but mountain alder and ninebark are generally present. Other shrubs associated with the community include thimbleberry, rose, oval-leaved huckleberry and black gooseberry. The most constant herbs are arrowleaf groundsel and cow-parsnip. Other important herbs include great northern aster, Columbian monkshood, insideout flower, Cooley's betony, sweetscented bedstraw, tall bluebells and streambank groundsel.

Most of the samples came from Stone Creek on the Mt. Hood NF, near Timothy Lake. The Willamette sample came from the Mink Lake Basin in Three Sisters Wilderness. Adjacent upland plant associations ranged from mountain hemlock types, through silver fir associations, to cool western hemlock associations in cold air drainage environments.

Geomorphic environment: Geomorphic surfaces were active floodplains, cobble bars, and inactive channels. Slopes were extremely gentle, from 0 to 7%. Soils were generally shallow silts, sandy silts or mucks over gravels and cobbles. Water tables were generally within 30cm of the surface. The community is typically adjacent to the channel, with plots 0 to 2 feet above the stream.

Wetland rating:

Community meets wetland test	Yes
Plots meeting wetland criteria	88%
Wetland indicators among dominant species	66% (range 40-86%)

Non-natives: Exotic species were minor in this community. Common St. John's-wort was found on 3 plots, one of which also had reed canarygrass at very low cover.

EXOTIC	COMMON NAME	CONSTANCY %	PLOTS	TYPICAL COVER %
<i>Hypericum perforatum</i>	<i>Common St. John's-wort</i>	33	3	2
<i>Phalaris arundinacea</i>	<i>Reed canarygrass</i>	11	1	1

Other studies: This community has previously been described for the Mt. Hood NF in Diaz and Mellen (1996) as the SETR-ASMO Plant Community (Ecoclass FW4228). It is somewhat similar to the Engelmann spruce/Arrowleaf groundsel association described for eastern Oregon in Crowe, Kovalchik, and Kerr (2004).

Alnus rubra/Elymus glaucus
Red alder/blue wildrye
ALRU2/ELGL

N=9 (MH 7, WNF 2)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-overstory			
<i>Alnus rubra</i>	Red alder	100	58
Trees-seedlings			
<i>Pseudotsuga menziesii</i>	Douglas fir	56	4
<i>Acer macrophyllum</i>	Big leaf maple	56	1
<i>Alnus rubra</i>	Red alder	44	36
<i>Thuja plicata</i>	Western redcedar	44	1
Shrubs			
<i>Rubus ursinus</i>	Trailing blackberry	67	6
<i>Rubus spectabilis</i>	Salmonberry	67	3
Herbs			
<i>Elymus glaucus</i>	Blue wildrye	100	29
<i>Polystichum munitum</i>	Sword fern	89	3
<i>Lactuca muralis</i>	Wall-lettuce	78	3
<i>Claytonia sibirica</i>	Siberian miner's lettuce	67	11
<i>Tolmiea menziesii</i>	Piggyback plant	67	5
<i>Athyrium filix-femina</i>	Lady fern	56	1
<i>Equisetum arvense</i>	Common horsetail	44	2
<i>Digitalis purpurea</i>	Common foxglove	44	2
<i>Stachys cooleyae</i>	Cooley's betony	44	1
<i>Galium triflorum</i>	Sweetscented bedstraw	44	1
<i>Maianthemum stellatum</i>	Starry false Solomon's-seal	44	1

Elevations: 1090 feet to 2220 feet (average 1765 feet).

Community: Red alder/blue wildrye is a grassy mid-elevation forested floodplain community of the larger creeks and rivers in Cascades. The tree overstory is red alder, less than 25 years old in the sample. Black cottonwood, Oregon ash, and Douglas fir can also occur. Tree regeneration is often a dense stand of young red alder, but generally includes Douglas fir and big leaf maple, or western redcedar. The shrub layer is sparse, with trailing blackberry and salmonberry generally present. The herb layer is dominated by blue wildrye. Siberian miner's lettuce is also abundant. Sword fern, wall-lettuce, piggyback plant, and lady fern are common associates. Total grass cover in Red alder/blue wildrye is the highest among all streamside communities in this guide.

Geomorphic environment: Geomorphic surfaces are cobbly floodplains or islands 0-6 feet above normal high waterline (average 2.5 feet). Soils are 5 to 45 cm of gravelly sands, very fine sand, or silty sands over gravel and/or cobbles. Plot comments note that litter is often washed away by winter flow, and little organic material accumulates on these sites.

Geomorphic surface, substrate, lack of soil development, and stand ages indicate that this community is frequently flooded, and is reset every few decades.

Wetland rating:

Community meets wetland test	No
Plots meeting wetland criteria	33%
Wetland indicators among dominant species	53% (range 29-75%)

Similar types: Red alder/blue wildrye is similar to red alder/salmonberry, but has lower, less constant salmonberry and fewer ferns. It may occur on drier, coarser substrates, perhaps farther away from the water table during the summer.

Non-natives: Exotics were common. Fourteen species were found, though only wall-lettuce and common foxglove occurred on more than one plot.

EXOTIC	COMMON NAME	CONSTANCY %	PLOTS	TYPICAL COVER %
<i>Lactuca muralis</i>	Wall-lettuce	78	7	3
<i>Digitalis purpurea</i>	Foxglove	44	4	1
<i>Poa palustris</i>	Fowl bluegrass	11	1	2
<i>Holcus lanatus</i>	Common velve-grass	11	1	1
<i>Cytisus scoparius</i>	Scotch broom	11	1	1
<i>Dactylis glomerata</i>	Orchard grass	11	1	1
<i>Mentha spicata</i>	Spearmint	11	1	1
<i>Hypericum perforatum</i>	Common St.John's-wort	11	1	1
<i>Rubus armeniacus</i>	Himalayan blackberry	11	1	1
<i>Rumex crispus</i>	Curled dock	11	1	Tr
<i>Hypochaeris radicata</i>	Hairy cat's ear	11	1	Tr
<i>Rumex obtusifolius</i>	Bitter dock	11	1	Tr
<i>Leucanthemum vulgare</i>	Oxeye daisy	11	1	Tr
<i>Plantago lanceolata</i>	Ribwort	11	1	Tr

Other studies: This community has previously been described for the Mt. Hood NF in Diaz and Mellen (1996) as the ALRU/ELGL plant community (Ecoclass HAF211). The Red alder/Trailing Blackberry/Blue Wildrye Forest Community, described for the Olympic Experimental State Forest, is very similar, though within the coastal Sitka spruce zone (Chappell (1996)).

Rubus parviflorus/Achlys triphylla
Thimbleberry/Vanilla-leaf
RUPA/ACTR

N=10 (MHNH 10)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-seedlings			
<i>Taxus brevifolia</i>	Pacific yew	60	17
<i>Tsuga heterophylla</i>	Western hemlock	60	13
<i>Thuja plicata</i>	Western redcedar	50	7
Shrubs			
<i>Rubus parviflorus</i>	Thimbleberry	100	8
<i>Acer glabrum</i> var. <i>douglasii</i>	Douglas maple	70	12
<i>Ribes lacustre</i>	Black gooseberry	60	12
<i>Berberis nervosa</i>	Oregon grape	60	3
<i>Acer circinatum</i>	Vine maple	50	15
<i>Ribes bracteosum</i>	Stink currant	50	10
<i>Rosa pisocarpa</i>	Clustered wild rose	40	5
<i>Paxistima myrsinites</i>	Oregon boxwood	30	3
Herbs			
<i>Achlys triphylla</i>	Vanilla leaf	90	4
<i>Linnaea borealis</i>	Twinflower	50	21
<i>Cornus unalaschkensis</i>	Dogwood bunchberry	50	5
<i>Galium triflorum</i>	Sweetscented bedstraw	50	2
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>	Foamflower	40	3
<i>Trillium ovatum</i>	Western trillium	40	1
<i>Polystichum munitum</i>	Sword fern	30	1
<i>Luzula parviflora</i>	Small-flowered wood-rush	30	1
<i>Epilobium</i>	Willowherb	30	1
<i>Anemone lyallii</i>	Lyall's anemone	30	1
<i>Lactuca muralis</i>	Wall-lettuce	30	1

Elevations: 2400 feet to 3680 feet (average 3150 feet).

Community: Thimbleberry/vanilla-leaf is a shrub community of mid- to higher elevations, sampled in the Mt. Hood NF. Conifer regeneration (Pacific yew, western hemlock, western redcedar) is plentiful (average 27% cover). Few seedlings appear to reach maturity. Mature trees occur on only 20% of plots. The important shrub species include a mix of upland and riparian species: thimbleberry, Douglas maple, black gooseberry, Oregon grape, vine maple, and stink currant. Twinflower is often dominant, and bunchberry dogwood, another dwarf shrub, is frequently present. Vanilla-leaf is the most constant herb species. Sweetscented bedstraw is usually found.

Adjacent upland plant associations were in the western hemlock series; most often Western hemlock/rhododendron/Oregon grape. The most common herb species in the Thimbleberry/vanilla leaf community occur in the Western hemlock/rhododendron/Oregon grape plant association.

Geomorphic environment: Geomorphic surfaces are low terraces or narrow flats, often behind cobbly levees. The surfaces typically are between steep conifer dominated valley walls or toeslopes on one side, and the channel, usually 0 to 3 feet above normal high water line. Little soil development is evident; most plots show shallow silts or sands in a matrix of cobbles. This community is likely subject to disturbances which are mild enough or far enough apart to allow tree regeneration, and the near dominance of upland or facultative upland species. However, the geomorphic surfaces, cobble substrate, and lack of mature trees indicate that these sites are subject to fairly frequent floods of sufficient severity to reset the tree component.

Wetland rating:

Community meets wetland test	No
Plots meeting wetland criteria	20%
Wetland indicators among dominant species	41% (range 14-67%)

Non-natives: Wall-lettuce was the only exotic species recorded in the sample (30% of the plots).

Alnus rubra*/*Tolmiea menziesii*-*Claytonia sibirica
Red alder/piggyback plant-Siberian miner's lettuce
ALRU2/TOME-CLSI2

N=11 (MHN 9, WNF 2)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-overstory			
<i>Alnus rubra</i>	Red alder	100	69
<i>Acer macrophyllum</i>	Big leaf maple	27	28
Trees-seedlings			
<i>Pseudotsuga menziesii</i>	Douglas fir	45	3
<i>Tsuga heterophylla</i>	Western hemlock	45	1
<i>Thuja plicata</i>	Western redcedar	36	21
<i>Acer macrophyllum</i>	Big leaf maple	36	17
Shrubs			
<i>Rubus spectabilis</i>	Salmonberry	64	4
<i>Rubus parviflorus</i>	Thimbleberry	36	28
Herbs			
<i>Claytonia sibirica</i>	Siberian miner's lettuce	100	13
<i>Tolmiea menziesii</i>	Piggyback plant	91	23
<i>Stachys cooleyae</i>	Cooley's betony	82	3
<i>Lactuca muralis</i>	Wall-lettuce	73	3
<i>Petasites frigidus</i>	Coltsfoot	73	2
<i>Galium triflorum</i>	Sweetscented bedstraw	73	2
<i>Oxalis</i>	Sorrel	56	3
<i>Athyrium filix-femina</i>	Lady fern	45	9
<i>Dicentra formosa</i>	Bleeding heart	45	1
<i>Polystichum munitum</i>	Sword fern	36	11
<i>Circaea alpina</i>	Enchanter's-nightshade	36	5
<i>Hydrophyllum tenuipes</i>	Pacific waterleaf	36	Tr
<i>Epilobium glaberrimum</i>	Smooth willowherb	36	Tr

Elevations: 1390 to 2500 feet (average 1960 feet).

Community: Red alder/piggyback plant-Siberian miner's lettuce is an herb-dominated community which occurs under a dense young red alder canopy in moderately low elevations. Big leaf maple sometimes is present. Salmonberry is frequent but not abundant. Thimbleberry occurs on a third of the plots. Piggyback plant and Siberian miner's lettuce are the dominant herb species.

Stands are often sapling and pole size (<9" dbh) red alders. Ages recorded on the plots were <25 years. Seedlings from several tree species are common,

especially western red cedar, Douglas fir, western hemlock, and big leaf maple. The conifers are not found as overstory trees with this community.

Geomorphic environment: Geomorphic surfaces are cobble or boulder bars, active floodplains, banks, and islands.

Soils are thin (2-35cm) layers of sands or gravelly sands over sandy cobbles, gravels, and boulders. Note that one site, dominated by 100 year old big leaf maple, was anomalous, with a deep loamy soil over gravels and sands.

Shallow sands, high ground cover of exposed surface boulders, frequently flooded geomorphic surfaces, and very young red alder stands suggest that this community develops with frequent, fairly high energy flooding. Salmonberry-stink currant communities or similar salmonberry types might develop if these surfaces receive silt deposits and accumulate organic matter in the upper horizons.

Wetland rating:

Community meets wetland test	Yes
Plots meeting wetland criteria	73%
Wetland indicators among dominant species	64% (range 25-80%)

Non-natives: Wall-lettuce is the most common exotic, present in almost three quarters of the plots. Common foxglove and longstalk cranesbill were also found on one plot each.

Other studies: This community has previously been described for the Mt. Hood NF in Diaz and Mellen (1996) as the ALRU/TOME-MOSI Plant Community (Ecoclass HAF225).

(*Alnus rubra*-*Acer macrophyllum*)/*Ribes bracteosum*-*Rubus spectabilis*/*Tolmiea menziesii*
(Red alder-big leaf maple)/stink currant-salmonberry/piggyback plant
(ALRU2-ACMA3)/RIBR-RUSP/TOME

N=14 (MHN 9, WNF 5)

SPECIES	Common name	CONSTANCY %	TYPICAL COVER %
Trees-overstory			
<i>Alnus rubra</i>	Red alder	64	41
<i>Thuja plicata</i>	Western redcedar	29	26
<i>Acer macrophyllum</i>	Big leaf maple	21	52
Trees-seedlings			
<i>Tsuga heterophylla</i>	Western hemlock	43	2
<i>Acer macrophyllum</i>	Big leaf maple	36	4
Shrubs			
<i>Ribes bracteosum</i>	Stink currant	100	24
<i>Rubus spectabilis</i>	Salmonberry	79	17
<i>Acer circinatum</i>	Vine maple	36	16
Herbs			
<i>Tolmiea menziesii</i>	Piggyback plant	100	11
<i>Athyrium filix-femina</i>	Lady fern	79	10
<i>Galium triflorum</i>	Sweetscented bedstraw	79	2
<i>Stachys cooleyae</i>	Cooley's betony	79	2
<i>Claytonia sibirica</i>	Siberian miner's lettuce	79	2
<i>Oxalis</i>	Sorrel	71	2
<i>Polystichum munitum</i>	Sword fern	57	2
<i>Lactuca muralis</i>	Wall-lettuce	43	1
<i>Hydrophyllum tenuipes</i>	Pacific waterleaf	36	7
<i>Circaea alpina</i>	Enchanter's-nightshade	36	6
<i>Montia parvifolia</i>	Streambank springbeauty	36	4
<i>Petasites frigidus</i>	Coltsfoot	36	1

Elevations: 800 to 3000 feet (average 2225 feet).

Community: (Red alder-big leaf maple)/stink currant-salmonberry/piggyback plant is a moderate elevation community. The canopy is most commonly found dominated by red alder, but the same understory occurs under big leaf maple, especially on the Willamette NF. In the North Fork Clackamas drainage, western redcedar can be found in the overstory with the red alder. One plot had no overstory trees. Overall, overstory trees averaged 30% canopy cover. Canopy height averaged 62 feet. This type has slightly lower shrub and herb covers than the other two Cascades stink currant-salmonberry communities. Stink currant

and salmonberry are the dominant shrubs, with stink currant typically more abundant. Vine maple is found on a third of the plots. Piggyback plant and lady fern are the dominant herbs. Other ferns, including sword fern, are minor in this type.



(Red alder-big leaf maple)/stink currant-salmonberry/piggyback plant: exposed cobbles, shallow sandy soil, and young red alder are typical for this type.

Geomorphic environment: Plots were on cobble bars, boulder bars, and active floodplains. Plots averaged 1.6 feet above average high water line and 15 feet away from the water line.

Soils are generally sands to gravelly sands (average 30 cm) over sand in a matrix of cobbles and/or boulders. Note that the similar red alder/stink currant-salmonberry/sorrel community generally has soils with more silt in the top horizons.

Near-channel geomorphic surfaces, coarse soil texture, and low cover of sword fern and sorrel suggest that this community is reset more frequently than the Stink currant-salmonberry/sorrel-red alder phase.

Wetland rating:

Community meets wetland test	Yes
Plots meeting wetland criteria	64%
Wetland indicators among dominant species	65% (range 29-100%)

Non-natives: Wall-lettuce was the only exotic species, and was present on 43% of the plots.

Other studies: This community is similar to two types previously been described for the Mt. Hood NF in Diaz and Mellen (1996): the ALRU/RUSP/TOME Plant Community (Ecoclass HAS113) and the RIBR-RUSP/TOME Plant Association (Ecoclass SW5123).

Click on a creek name in the table below to see the valley cross sections that show where (ALRU2-ACMA3)/RIBR-RUSP/TOME occurs in relation to other plant associations.

Valley cross sections showing (ALRU2-ACMA3)/RIBR-RUSP/TOME
Walker creek
E Fork S Fork McKenzie #2

***Rubus spectabilis*/*Tolmiea menziesii* group**
Salmonberry/piggyback plant group
RUSP/TOME group

Group description followed by descriptions of two phases: *Rubus spectabilis*/*Tolmiea menziesii* –shrub phase, and *Rubus spectabilis*/*Tolmiea menziesii*-*Alnus rubra* phase

N=25 (MHN 16, EBLM 5, WNF 2, SBLM 2)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-overstory			
<i>Alnus rubra</i>	Red alder	76	47
<i>Acer macrophyllum</i>	Big leaf maple	28	29
Trees-seedlings			
<i>Acer macrophyllum</i>	Big leaf maple	40	5
<i>Alnus rubra</i>	Red alder	36	12
<i>Tsuga heterophylla</i>	Western hemlock	20	7
<i>Thuja plicata</i>	Western redcedar	20	2
Shrubs			
<i>Rubus spectabilis</i>	Salmonberry	100	24
<i>Rubus parviflorus</i>	Thimbleberry	44	12
Herbs			
<i>Tolmiea menziesii</i>	Piggyback plant	92	13
<i>Galium triflorum</i>	Sweetscented bedstraw	76	4
<i>Claytonia sibirica</i>	Siberian miner's lettuce	68	7
<i>Athyrium filix-femina</i>	Lady fern	64	17
<i>Stachys cooleyae</i>	Cooley's betony	64	7
<i>Oxalis</i>	Sorrel	60	8
<i>Polystichum munitum</i>	Sword fern	56	5
<i>Lactuca muralis</i>	Wall-lettuce	56	3
<i>Petasites frigidus</i>	Coltsfoot	44	27
<i>Circaea alpina</i>	Enchanter's-nightshade	44	9

Elevations: 220 to 4120 feet (average 1875 feet).

Community: The Salmonberry/piggyback plant group is a common community that occurs from low to moderately high elevations. It is found most frequently with stands of young red alder and/or young bigleaf maples. It can occur without trees in the overstory, with very similar composition. Salmonberry is the dominant shrub, but thimbleberry is also common. Herb cover is fairly high, dominated by piggyback plant and lady fern. Sweetscented bedstraw, Siberian miner's lettuce, Cooley's betony, and sorrel are important associated species.

Piggyback plant, Cooley's betony and coltsfoot are common members of active floodplain/stream bank communities, and are often dominants in the most frequently disturbed herb types. Sword fern and sorrel tend to have lower cover where stink currant is dominant, as in the closely related stink currant type: (Red alder-big leaf maple)/stink currant-salmonberry/piggyback plant. Note that sword fern and sorrel cover are lower in this group overall than in the somewhat similar steep bank or terrace Salmonberry/sorrel group. Low sorrel and sword fern covers generally are associated with slightly coarser soil textures or shallower soil depths.

Geomorphic environment: Plots were on cobble bars, banks, islands, and annual floodplains.

Mt. Hood soil data for salmonberry dominated phases show most plots had a thin top layer of sand or silty sand over sands in a gravel/cobble/boulder matrix. Deeper soils seem to be associated with tributary junctions and active alluvial fans.

Soil data from BLM sites show loamy sands in the A horizon (average thickness 8 cm) over B horizons (average thickness 18cm) of sands mixed with gravel or gravel/cobble. C horizons are also sands with gravels or gravels mixed with cobbles and boulders. Half the pits show buried soils which are exploited by roots. Development of O horizon 2 to 3 cm thick, as well as the A horizon suggest that although disturbance may be relatively frequent, there is enough time for some soil building processes.

Plots in the Salmonberry/piggyback plant group averaged 4 feet above average high water line, and 21 feet from the average high water line. The similar (Red alder-big leaf maple)/stink currant-salmonberry/piggyback plant plots averaged only 1.6 feet above average high water line and 6 feet closer to the water line than the group without stink currant.

This community often supports dense stands of red alder that can reestablish in the loamy sands on top of the gravel/cobble substrate. Often the trees can tap into buried O and A layers. The surfaces typical of this community are subject to periodic flooding which can reset the stand.

Wetland rating:

Community meets wetland test	Yes-both phases
Wetland indicators among dominant species	71% (range 38 -100%)

Non-natives: Almost two thirds of the plots (64%) had exotic species. Wall-lettuce was the most common (56% of plots).

EXOTIC	COMMON NAME	PLOTS	CONSTANCY %	TYPICAL COVER %
<i>Lactuca muralis</i>	Wall-lettuce	14	56	3
<i>Digitalis purpurea</i>	Foxglove	4	16	1
<i>Rubus armeniacus</i>	Himalayan blackberry	1	4	10
<i>Glechoma hederacea</i>	Ground-ivy	1	4	6
<i>Veronica officinalis</i>	Common gypsyweed	1	4	1
<i>Poa trivialis</i>	Rough bluegrass	1	4	1
<i>Rumex crispus</i>	Curled dock	1	4	1
<i>Leucanthemum vulgare</i>	Oxeye daisy	1	4	Tr

Click on a creek name in the table below to see the valley cross sections that show where RUSP/TOME occurs in relation to other plant associations.

Valley cross sections showing RUSP/TOME
Starr creek
Nimrod creek

***Rubus spectabilis*/*Tolmiea menziesii*-shrub phase**
Salmonberry/piggyback plant–shrub phase
RUSP/TOME-shrub phase

N=5 (EBLM 2, SBLM 1, MHNH 1, WNF 1)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Shrubs			
<i>Rubus spectabilis</i>	Salmonberry	100	27
<i>Rubus parviflorus</i>	Thimbleberry	60	12
<i>Acer circinatum</i>	Vine maple	40	8
Herbs			
<i>Athyrium filix-femina</i>	Lady fern	100	29
<i>Galium triflorum</i>	Sweetscented bedstraw	100	6
<i>Tiarella trifoliata</i>	Foamflower	80	9
<i>Circaea alpina</i>	Enchanter's-nightshade	60	19
<i>Tolmiea menziesii</i>	Piggyback plant	60	18
<i>Boykinia occidentalis</i>	Coast boykinia	60	16
<i>Petasites frigidus</i>	Coltsfoot	60	12
<i>Bromus sitchensis</i>	Alaska brome	60	7
<i>Lactuca muralis</i>	Wall-lettuce	60	6
<i>Claytonia sibirica</i>	Siberian miner's lettuce	60	5
<i>Bromus vulgaris</i>	Columbia brome	40	9
<i>Oxalis</i>	Sorrel	40	8
<i>Mitella ovalis</i>	Oval-leaved mitrewort	40	7
<i>Adiantum pedatum</i>	Maidenhair fern	40	6
<i>Carex deweyana</i>	Dewey's sedge	40	5
<i>Stellaria crispa</i>	Crisp sandwort	40	3
<i>Equisetum arvense</i>	Common horsetail	40	2
<i>Montia parvifolia</i>	Streambank springbeauty	40	2
<i>Anaphalis margaritacea</i>	Pearly everlasting	40	1

Elevations: 1050 to 4120 feet (average 2,250 feet).

Community: Salmonberry/piggyback plant-shrub phase is an herb-dominated community with a strong salmonberry and thimbleberry component. Lady fern, sweetscented bedstraw, foamflower, enchanter's-nightshade, piggyback plant, coast boykinia and coltsfoot are generally present and abundant. Alaska brome, wall-lettuce, and Siberian miner's lettuce are also important associated species.

Grasses are typically abundant (11% average summed cover and 80% constancy).

Geomorphic environment: Plots are on cobble/boulder bars, islands, and annual floodplains.



Salmonberry/piggyback plant-shrub phase: dense salmonberry over piggyback plant. Note small boulder exposed at lower right.

Soil data from BLM sites show loam or loamy sands in the A horizon (average thickness 5 cm) over B horizons (average thickness 22 cm) of loamy sand or sand mixed with gravel or gravel/cobble. C horizons are also sands with gravels or gravels mixed with cobbles and boulders. Some pits show buried soils which are exploited by roots. Development of O horizon 1 to 4 cm thick, as well as the A horizon suggest that although disturbance may be relatively frequent, there is enough time for some soil building processes.

Salmonberry/piggyback plant-shrub phase has very limited moisture or nutrient holding capacity. It is frequently disturbed. Young alder establishing on these surfaces may mature to move the site into the Salmonberry/piggyback plant red alder phase. It may also be that the red alder phase may move back toward the Salmonberry/piggyback plant-shrub phase after a flood removes the overstory alder.

Sword fern and sorrel, markers of deeper, finer substrates and less frequent disturbance, are minor or absent from most of this community.

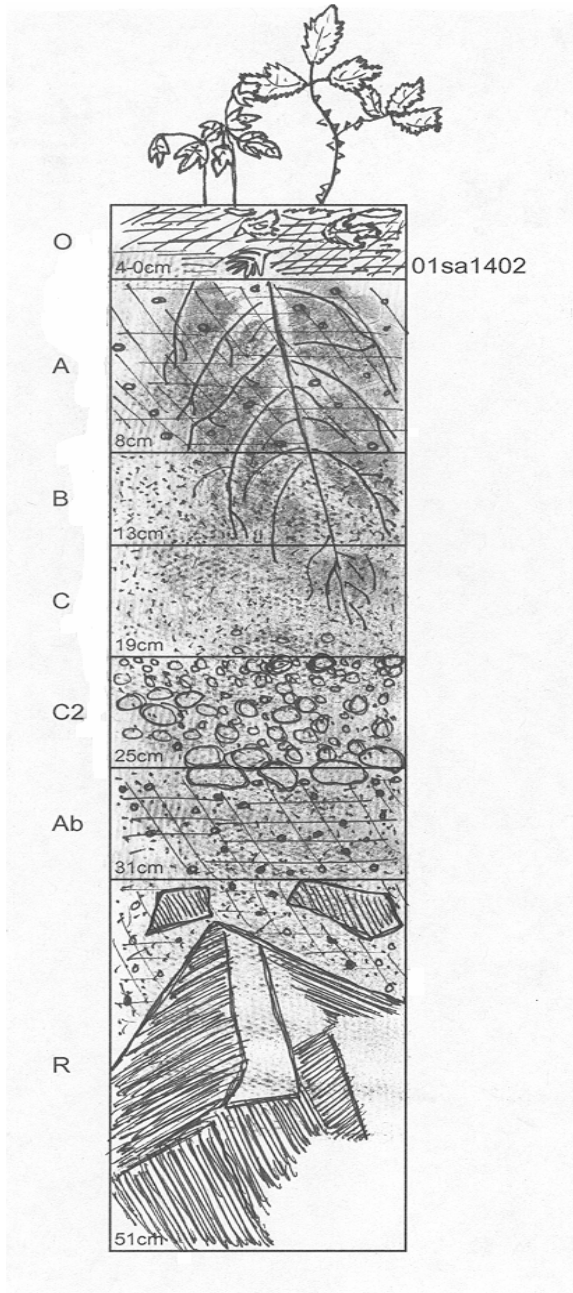
Wetland rating:

Community meets wetland test	Yes
Plots meeting wetland criteria	100%
Wetland indicators among dominant species	82% (range 71-100%)

Non-natives: Wall-lettuce was the only exotic species recorded on three plots (60% constancy).

Soil illustration: RUSP/TOME

HORIZON	THICKCM	MUNSELL	TEXTURE	CFRAG	CFRAGPCT	VOIDS	ROOTS
O	4						
A	8	10YR2/2	L	gravel <1cm	15	10	12
B	5	10YR2/2	LS	gravel	0	10	5
C	6	10YR3/1	S	sm gravel / lg gravel >2cm	15 / 20	10	5
C2	6	10YR2/2	S	gravel <.5cm	15	10	5
Ab	6	5YR2.5/2	SL	gravel <.25cm	5	3	5
R			R				



Total Depth: 35cm. Depth Limit: 35cm.

All very dark horizons with textural differences only. Pieces of wood are found throughout. Loamy textured A horizon with minimal concentration of tiny gravel accumulates first sand, then more gravel with depth to end of "recent" alluvial sediments. Below this, the previous organic horizon was washed away and replaced with sand. And below this (29cm+) is a buried A horizon of loam-influenced sand and a C horizon of colluvial origin.

***Rubus spectabilis/Tolmiea menziesii-Alnus rubra* phase**
Salmonberry/piggyback plant-red alder phase
RUSP/TOME-ALRU2 phase

N=20 (MHN 15, EBLM 3, SBLM 1, WNF 1)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-overstory			
<i>Alnus rubra</i>	Red alder	95	51
<i>Acer macrophyllum</i>	Big leaf maple	35	29
Trees-seedlings			
<i>Acer macrophyllum</i>	Big leaf maple	50	6
<i>Alnus rubra</i>	Red alder	40	13
Shrubs			
<i>Rubus spectabilis</i>	Salmonberry	100	25
<i>Rubus parviflorus</i>	Thimbleberry	40	11
<i>Rubus ursinus</i>	Trailing blackberry	35	11
Herbs			
<i>Tolmiea menziesii</i>	Piggyback plant	100	13
<i>Claytonia sibirica</i>	Siberian miner's lettuce	70	8
<i>Galium triflorum</i>	Sweetscented bedstraw	70	3
<i>Oxalis</i>	Sorrel	65	8
<i>Polystichum munitum</i>	Sword fern	65	6
<i>Athyrium filix-femina</i>	Lady fern	55	15
<i>Stachys cooleyae</i>	Cooley's betony	55	4
<i>Lactuca muralis</i>	Wall-lettuce	55	3
<i>Petasites frigidus</i>	Coltsfoot	40	24
<i>Circaea alpina</i>	Enchanter's-nightshade	40	7

Elevations: 220 to 2780 feet (average 1,780 feet).

Community: The Salmonberry/piggyback plant-red alder phase is a low to moderate elevation community of cobble/boulder deposits, islands, and active floodplains. The overstory is dominated by red alder, sometimes with big leaf maple. Seedlings of those species are also common. The shrub layer is dominated by salmonberry. Thimbleberry and trailing blackberry are common associated shrubs. The characteristic herb layer has piggyback plant, Siberian miner's lettuce, sweetscented bedstraw, sorrel, and sword fern. Lady fern, Cooley's betony, and wall-lettuce are also generally present.

Note that sword fern is more constant than lady fern. Lady fern also occurs at lower cover in this phase than in the Salmonberry/piggyback plant-shrub phase.



Salmonberry/piggyback plant-red alder phase: note location in relation to the **Coltsfoot-Cooley's betony** community on the lower cobble surface.

Graminoids (sedges, rushes, woodrush) are common and abundant, occurring on 70% of the plots and averaging 14% summed cover. True grasses occur on 60% of the plots, averaging 24% summed cover.

Geomorphic environment: Geomorphic surfaces include cobble/boulder bars and islands, and active floodplains.

Mt. Hood soil data show most plots had a thin top layer of sand or silty sand over sands in a gravel/cobble/boulder matrix. Deeper soils seem to be associated with tributary junctions and active alluvial fans.

Soil data from BLM sites show loamy sands in the A horizon (average thickness 9 cm) over B horizons (average thickness 17cm) of sands mixed with gravel or gravel/cobble. C horizons are also sands with gravels or gravels mixed with cobbles and boulders. Half the pits show buried soils which are exploited by roots. Development of O horizon 2 to 5 cm thick, as well as the A horizon suggest that although disturbance may be relatively frequent, there is enough time for some soil building processes.

Red alder ages ranged from 12-79 years, averaging around 25 years. One surface had alders 47, 65, and 79 years old. That suggests the disturbance interval for the plot had been less than 20 years.

This community often supports dense stands of red alder that can reestablish in the loamy sands on top of the gravel/cobble substrate. Often the trees can tap into buried O and A layers. The surfaces typical of this community are subject to periodic flooding which can reset the stand. Conifers saplings were not observed in the sample, probably due to substrate limitations and disturbance frequency.

Wetland rating:

Community meets wetland test	Yes
Plots meeting wetland criteria	75%
Wetland indicators among dominant species	68% (range 38-100%)

Non-natives: Exotics are common in this type, occurring on over half the plots. Eight species were found in the sample. Wall-lettuce is the dominant exotic species (55% constancy), and foxglove also occurs on 20% of the plots.

EXOTIC	COMMON NAME	CONSTANCY %	PLOTS	TYPICAL COVER %
<i>Lactuca muralis</i>	<i>Wall-lettuce</i>	55	11	3
<i>Digitalis purpurea</i>	<i>Foxglove</i>	20	4	1
<i>Rubus armeniacus</i>	<i>Himalayan blackberry</i>	5	1	10
<i>Glechoma hederacea</i>	<i>Ground-ivy</i>	5	1	6
<i>Veronica officinalis</i>	<i>Common gypsyweed</i>	5	1	1
<i>Poa trivialis</i>	<i>Rough bluegrass</i>	5	1	1
<i>Rumex crispus</i>	<i>Curled dock</i>	5	1	1
<i>Leucanthemum vulgare</i>	<i>Oxeye daisy</i>	5	1	Tr

Other studies: This community as well as the (Red alder-big leaf maple)/stink currant-salmonberry/piggyback plant community are somewhat similar to the ALRU/RUSP/TOME Plant Community (Ecoclass HAS113), previously been described for the Mt. Hood NF in Diaz and Mellen (1996).

Valley cross sections showing RUSP/TOME-ALRU2 phase

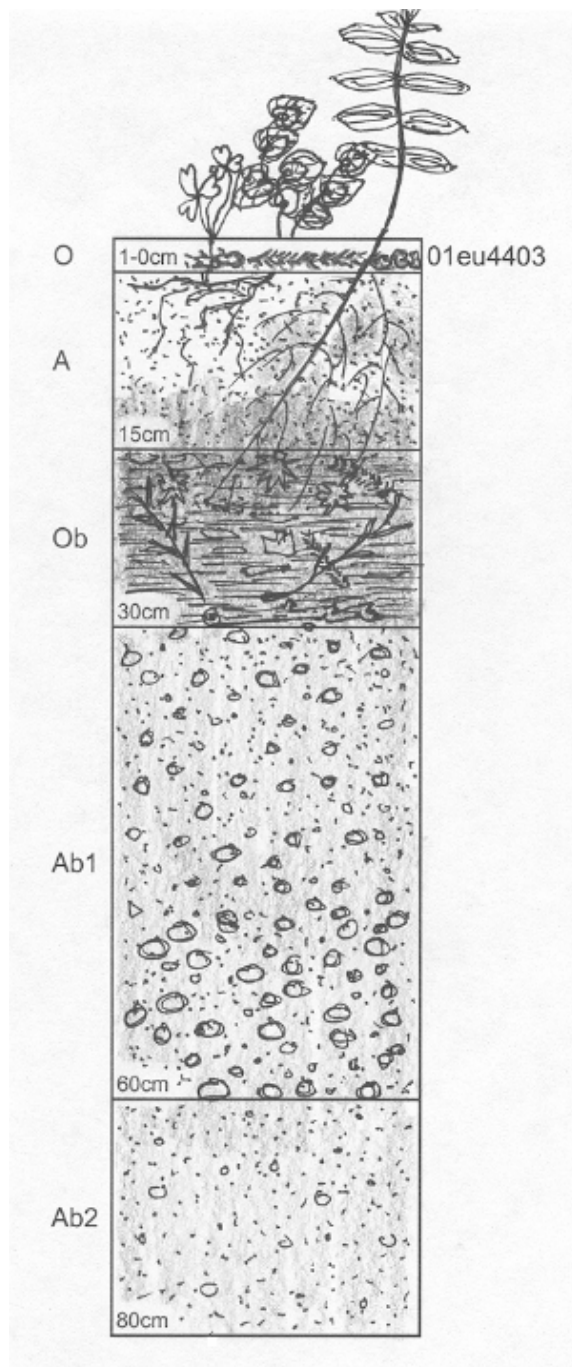
Bear creek
Lost creek S

Click on a creek name in the table to the left to see valley cross sections that show where RUSP/TOME-ALRU2 phase occurs in relation to other plant associations.

Soil illustration: RUSP/TOME-ALRU2 phase

HORIZON	THICKCM	MUNSELL	TEXTURE	CFRAG	CFRAGPCT	VOIDS	ROOTS
O	1					60	
A	15	7.5YR2.5/3	LS	gravel	0	10	8
Ob	15	7.5YR2.5/1		gravel	0	20	5
Ab1	30	7.5YR3/2	S	gravel	25	10	5
Ab2	20	10YR3/2	LS	gravel	8	80	5

Total Depth: 80cm. Depth Limit: 100cm+.



A couple of the plots around here are probably situated on a buried channel, mostly because of depths to stream cobble. The auger went in very deep without hitting cobbles, yet cobble is only a couple feet deep at other spots. A major disturbance may have filled in this channel and gouged another out in a short time.

At this plot, spotty organic matter and early seral-stage vegetation reveal the age of an unformed A horizon. The A has just enough organic texture to qualify as a loamy sand. It turns out most of this texture is illuviating from below: The second horizon is a buried O consisting of leaves, sticks, needles - everything you would expect to find, but underneath 15cm of sand. Water during the '96 floods was diverted over the downstream point of the island, pretty well scouring away the surface horizons of plots 2 and 4, but leaving sand piled up around the high-water mark. Though the litter buried at plot 2 is definitely from the forest, the remainder of the profile below the Ob is strictly alluvial. Deep sands with none too much gravel continue to a depth of 80cm.

Ribes bracteosum-Rubus spectabilis/Tiarella trifoliata-Mitella ovalis
Stink currant-salmonberry/foamflower-oval leaved mitrewort
RIBR-RUSP/TITR-MIOV

N=17 (EBLM 8, SBLM 8, WNF 1)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-overstory			
Acer macrophyllum	Big leaf maple	12	24
Trees-seedlings			
Tsuga heterophylla	Western hemlock	18	5
Shrubs			
Ribes bracteosum	Stink currant	100	24
Rubus spectabilis	Salmonberry	88	27
Vaccinium parvifolium	Red huckleberry	47	4
Herbs			
Athyrium filix-femina	Lady fern	100	16
Tiarella trifoliata	Foamflower	94	12
Polystichum munitum	Sword fern	88	19
Mitella ovalis	Oval-leaved mitrewort	88	8
Oxalis	Sorrel	82	29
Tolmiea menziesii	Piggyback plant	76	13
Galium triflorum	Sweetscented bedstraw	76	4
Adiantum pedatum	Maidenhair fern	71	7
Carex deweyana	Dewey's sedge	71	2
Blechnum spicant	Deer fern	59	8
Boykinia occidentalis	Coastal boykinia	53	6
Petasites frigidus	Coltsfoot	53	5
Circaea alpina	Enchanter's-nightshade	47	4
Bromus	Brome	41	4
Stellaria crispa	Crisp sandwort	41	2

Elevations: 920 to 3400 feet (average 1600 feet).

Community: Stink currant-salmonberry/foamflower-oval leaved mitrewort is a shrub-dominated community mainly of the lower elevations in the Cascades or Cascades foothills. Very few overstory trees were recorded in this community (24% of plots). Overstory red alder and western red cedar were present on only one plot each, while big leaf maples >12' were present on 2 plots. Few tree seedlings in this community appear to survive to maturity. Stink currant and salmonberry are codominant shrubs. Red huckleberry occurs most often on nurse logs. Indian plum, vine maple, and thimbleberry also occur on 30% of the plots. The rich herb layer is dominated by ferns and several saxifrages. The herb layer has the highest average cover (81%) among the many Cascades

salmonberry types. Lady fern and sword fern are the most abundant ferns, though maidenhair fern



Stink currant-salmonberry/foamflower-oval leaved mitrewort community: note understory dominated by ferns including lady fern, sword fern, and maidenhair fern.

and deer fern are also present on the majority of plots. The principal saxifrages include foamflower, oval leaved mitrewort, piggyback plant, coast Boykinia, and leafy mitrewort. Sorrel (principally *O. trilliifolia*) is the dominant non-saxifrage forb and Dewey's sedge is the dominant graminoid, occurring on more than 70% of the samples. Grasses are almost always present (94% constancy), summed cover averaging 7%. Graminoids (sedges and wood-rush) occur on 76% of the plots, averaging 13% summed cover.

Geomorphic environment: Plots were on bars, banks, islands, and floodplains.

Soils developed over alluvial deposits, with gravels or gravels with cobbles in the A horizon, gravels/cobbles in the B horizon, over cobbles and boulders (sometime on bedrock). A horizons average 11 cm, and are most commonly loamy sands or sandy loams. C, BC, or R horizons generally were found at 33 cm. A horizon coarse fragment content was variable, but B horizons averaged 38%. Banks, active floodplains, islands, and cobble or boulder bars are the most common geomorphic surfaces for this community.

Substrate and geomorphic surfaces suggest that this community is flooded and reset periodically, generally preventing establishment of large trees. Buried soils were noted in 3 soil pits. Salmonberry, sorrel, and ferns reflect the soil development (organic matter and A horizons) along the sequence of cobble/boulder bar communities.

Note that almost all of the BLM Stink currant-salmonberry group plots are in this community. Diagnostic species for the low elevation Cascades/Cascades foothills include Coast boykinia, oval-leaved mitrewort, and Dewey's sedge. Stink currant generally indicates that the community is cobbly and thin soiled, but the soils have enough fines to support the sorrel. The complement of saxifrages appears to tolerate frequent flooding, as well.

Similar types: This community appears to be a lower-elevation analogue of the Stink currant-salmonberry/sorrel group.

Valley cross sections showing RIBR-RUSP/TITR-MIOV
Bear creek
Lost creek S
Nimrod creek
Rough creek

Click on a creek name in the table to the left to see valley cross sections that show where RIBR-RUSP/TITR-MIOV occurs in relation to other plant associations.

Wetland rating:

Community meets wetland test	Yes
Plots meeting wetland criteria	71%
Wetland indicators among dominant species	58% (range 22-100%)

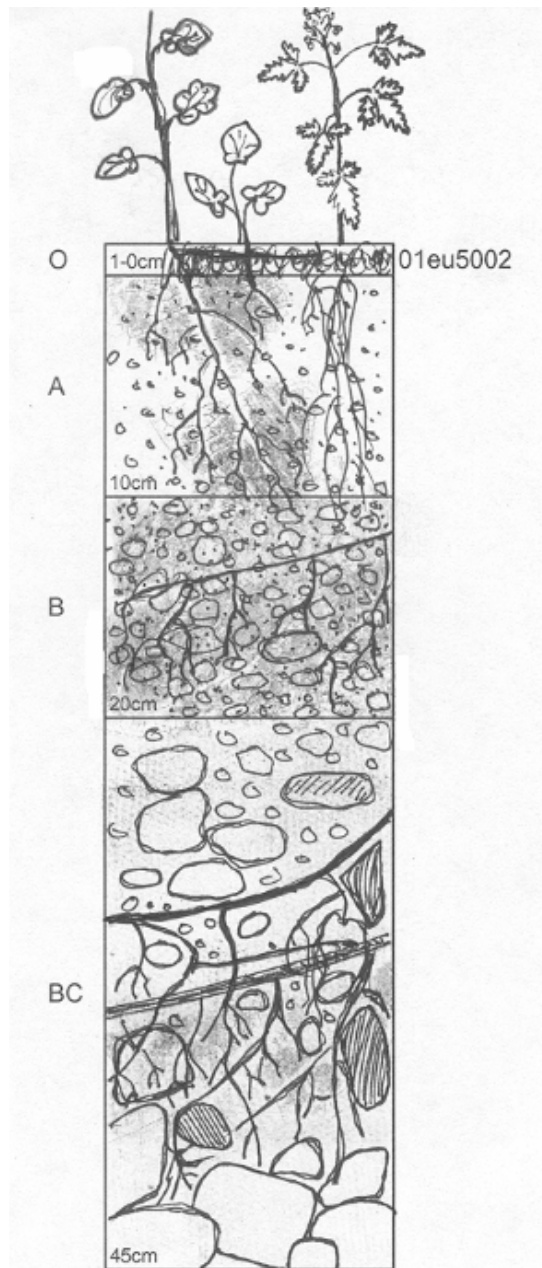
Non-natives: Wall-lettuce is the most common exotic species (29% of plots). Common gypsyweed occurred on 2 plots. Krajina hard fescue was recorded on 1 plot.

EXOTIC	COMMON NAME	CONSTANCY %	PLOTS	TYPICAL COVER %
<i>Lactuca muralis</i>	<i>Wall-lettuce</i>	29	5	2
<i>Veronica officinalis</i>	<i>Common gypsyweed</i>	12	2	2
<i>Festuca trachyphylla</i>	<i>Krajina hard fescue</i>	6	1	1

Soil illustration A: RIBR-RUSP/TITR-MIOV

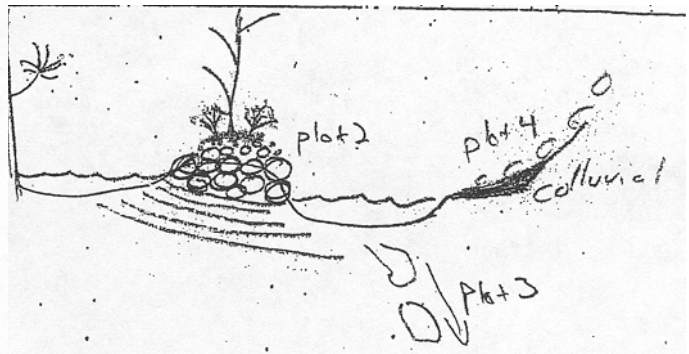
HORIZON	THICKCM	MUNSELL	TEXTURE	CFRAG	CFRAGPCT	VOIDS	ROOTS
O	1					20	5
A	10	7.5YR3/2	SCL	gravel	15	15	15
B	10	7.5YR3/1	LS	gravel / cobble	30 / 20	10	18
BC		7.5YR3/1	SiCL	gravel / cobble	12 / 30	5	25

Total Depth: 25cm. Depth Limit: ~25cm. Water Table: ~100cm to creek.



Topsoil with some good quality is not surprising to find on this island. Trees, forbs, wet and dry shrubs all coexist here in their own space. Currant on dead wood, sword fern presumably higher and drier, and this pit right between the two. The plot is basically a raised boulder bar, with a larger, high-side stream to the southeast, and a low-side stream to the northwest. The island is steeply down-cut on its northwest side. The hyporheic zone goes beneath the island from the higher channel to the lower, but the island itself is rarely submerged. This profile is deeper than the water level in the main channel.

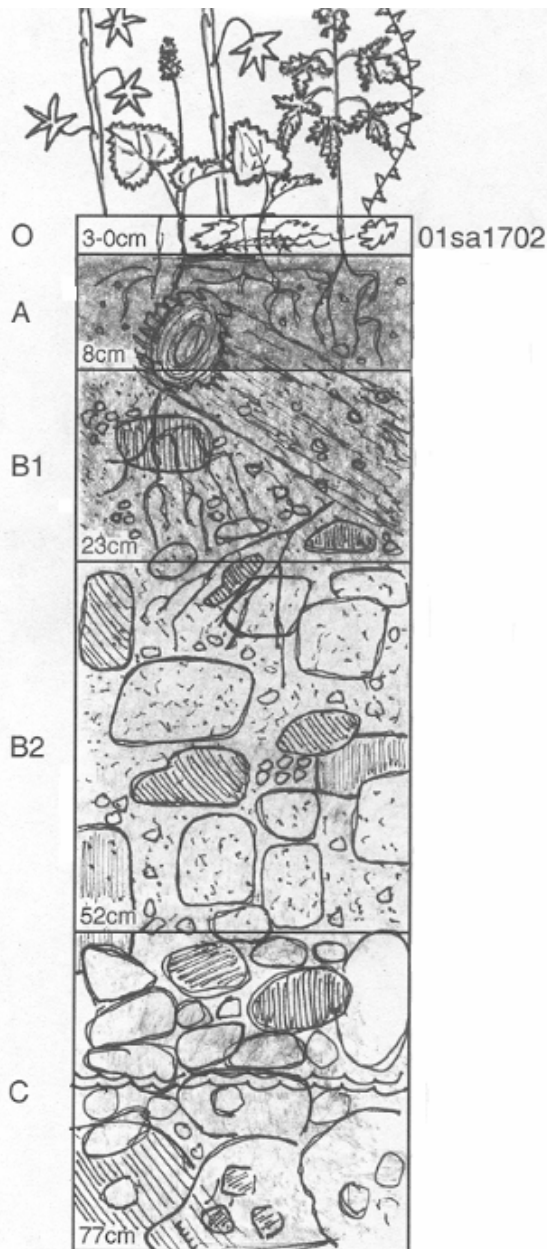
The BC horizon actually appears as though it were an original, buried A. The loamy textures are there, and fines may have illuviated to the B horizon to give it some of its texture and color. The roots at this depth are confined by 50% rock concentration, but they are able to use every cu. inch for nutrients



Soil illustration B: RIBR-RUSP/TITR-MIOV

HORIZON	THICKCM	MUNSELL	TEXTURE	CFRAG	CFRAGPCT	VOIDS	ROOTS
O	3					25	5
A	8	10YR2/2	L	gravel	5	15	15
B1	15	7.5YR2.5/2	SL	gravel / cobble	10 / 20	15	10
B2	29	10YR3/3	SL	cobble	40	10	5
C		10YR3/2	C	cobble / gravel	60 / 10		

Total Depth: 63cm. Depth Limit: 63cm. Stream: 60cm.



Floodplain-fresh A horizon is about 20cm of surprisingly organic (loam) soil. Where this washed in isn't clear, maybe just from the channel banks, but it came from a single event. The channel is downcut enough that a fast current may stay contained during smaller floods. The plants on the floodplain are probably well-rooted enough not to be carried away.

The B and B2 horizons are progressively sandier and more filled with gravel and small cobble. The B2 is the most recent "old" streambed, over which a major flood laid down the foundation of the current floodplain. Smaller floods left their marks as well, adding their sediments more gently, and leaving time and depth for a real nice A horizon. The C horizon is a soaked brown clay with slow percolation. Sand and gravel are surprisingly lacking from this matrix that surrounds the parent cobbles and boulders.

***Ribes bracteosum-Rubus spectabilis/Oxalis* group**
Stink currant-salmonberry/sorrel group
RIBR-RUSP/OXALI group

Group description followed by constancy tables only for two phases: *Ribes bracteosum-Rubus spectabilis/Oxali- shrub phase* and *Ribes bracteosum-Rubus spectabilis/Oxalis-Alnus rubra phase*

N= 35 (MHNH 31, WNF 1, SBLM 2, EBLM 1)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-overstory			
<i>Alnus rubra</i>	Red alder	60	29
<i>Thuja plicata</i>	Western redcedar	26	16
Trees-seedlings			
<i>Alnus rubra</i>	Red alder	40	7
<i>Tsuga heterophylla</i>	Western hemlock	26	2
Shrubs			
<i>Ribes bracteosum</i>	Stink currant	100	23
<i>Rubus spectabilis</i>	Salmonberry	89	21
Herbs			
<i>Oxalis</i>	Sorrel	100	20
<i>Athyrium filix-femina</i>	Lady fern	83	7
<i>Tolmiea menziesii</i>	Piggyback plant	71	5
<i>Polystichum munitum</i>	Sword fern	63	5
<i>Stachys cooleyae</i>	Cooley's betony	54	2
<i>Galium triflorum</i>	Sweetscented bedstraw	49	2
<i>Claytonia sibirica</i>	Siberian miner's lettuce	46	1
<i>Circaea alpina</i>	Enchanter's-nightshade	43	2
unknown grass	Grass	40	3

Elevations: 800-3040 feet (average 2080 feet).

Community: The Stink currant-salmonberry/sorrel group most often occurs as a red alder-dominated community (Stink currant-salmonberry/sorrel-red alder phase). In the North Fork Clackamas drainage, western redcedar also is commonly found in the overstory. Where no mature trees are present (Stink currant-salmonberry/sorrel-shrub phase), high shrub cover remained constant, but low shrub cover doubled, and herb cover increased 130%, though understory species composition is the same. Alder canopy is moderate (average 33% cover; average plot canopy height 46'). The community has the dense shrub layer typical of salmonberry types. Stink currant and salmonberry are codominant shrubs. Vine maple and thimbleberry are also present on about a third of the plots. The herb layer is moderate, with sorrel the most abundant species. Lady

fern, piggy back plant, Cooley's betony, sword fern, and sweetscented bedstraw are also present in more than half the samples.



Stink currant-salmonberry/sorrel group: sorrel and lady fern are shown under a tangle of salmonberry.

Plot notes showed that logs often act as substrate for upland species not typically rooted in the community.

Geomorphic environment: Plots were on bars, banks, islands, and floodplains.

The majority of sites are on poorly developed soils over coarse alluvial deposits. Soils are gravelly, on or in cobbles or boulders. Top horizons are frequently silty sands or sandy silts to about 30cm, over horizons of extremely cobbly or gravelly sand. Some pits had water tables within 35-50cm, but most were at least 1 meter above the water table during summer low flow.

The plot with the highest western redcedar component (40% western redcedar, 40% red alder) was the only plot where a gley layer was found in the first meter of a pit of silt/sandy silt over gleyed clay above bedrock.

Substrate and geomorphic surfaces suggest that this community is flooded and reset periodically, generally preventing establishment of large conifers. This is also supported by the 7 plots with only immature trees as well as 6 plots without any tree regeneration. Presence of trees, salmonberry, sorrel, and sword fern

reflect the soil development (organic matter and silt) along the sequence of cobble/boulder bar communities. Note that this community has much less sword fern and lady fern than the Salmonberry/sorrel group, which has more loams, deeper top horizons, and more organic matter and which often has older, larger trees.

Wetland rating:

Community meets wetland test	Yes-both phases
Wetland indicators among dominant species	65% (range 17-100%)

Non-natives: Exotic species were minor in the sample. The most common non-native is wall-lettuce. Only four other non-natives were found in the community.

EXOTIC	COMMON NAME	CONSTANCY %	PLOTS	TYPICAL COVER %
<i>Lactuca muralis</i>	Wall-lettuce	26	9	3
<i>Cerastium fontanum ssp. vulgare</i>	Big chickweed	3	1	Tr
<i>Luzula multiflora</i>	Many-flowered wood-rush	3	1	1
<i>Rumex crispus</i>	Curled dock	3	1	1
<i>Taraxacum officinale</i>	Common dandelion	3	1	1



Stink currant-salmonberry/sorrel group: sorrel, sword fern, and stink currant dominate lower surface. Note Maidenhair fern on seepy cutbank (center right).

***Ribes bracteosum*-*Rubus spectabilis*/*Oxalis*-shrub phase**
Stink currant-salmonberry/sorrel-shrub phase
RIBR-RUSP/OXALI-shrub phase

N=13 (MHN 11, EBLM 1, SBLM 1)

SPECIES	Common name	CONSTANCY %	TYPICAL COVER %
Shrubs			
<i>Ribes bracteosum</i>	Stink currant	100	30
<i>Rubus spectabilis</i>	Salmonberry	92	26
Herbs			
<i>Oxalis</i>	Sorrel	100	27
<i>Athyrium filix-femina</i>	Lady fern	92	9
<i>Tolmiea menziesii</i>	Piggyback plant	69	4
<i>Stachys cooleyae</i>	Cooley's betony	69	3
<i>Tiarella trifoliata</i>	Foamflower	62	3
<i>Polystichum munitum</i>	Sword fern	54	7
Grass (unknown)	Grass (unknown)	54	5
<i>Galium triflorum</i>	Sweetscented bedstraw	54	3
<i>Corydalis scouleri</i>	Scouler's corydalis	46	10
<i>Adiantum pedatum</i>	Maidenhair fern	46	2
<i>Claytonia sibirica</i>	Siberian miner's lettuce	46	1
<i>Circaea alpina</i>	Enchanter's-nightshade	38	2

Only the constancy table is included for this phase, which is extremely similar in occurrence and composition to the red alder dominated phase of the Stink-currant-salmonberry/sorrel group. It seems likely that red alder phase can develop from the shrub-dominated phase, in intervals between stand-resetting floods.

Wetland rating:

Community meets wetland test	Yes
Plots meeting wetland criteria	77%
Wetland indicators among dominant species	64% (range 43-80%)

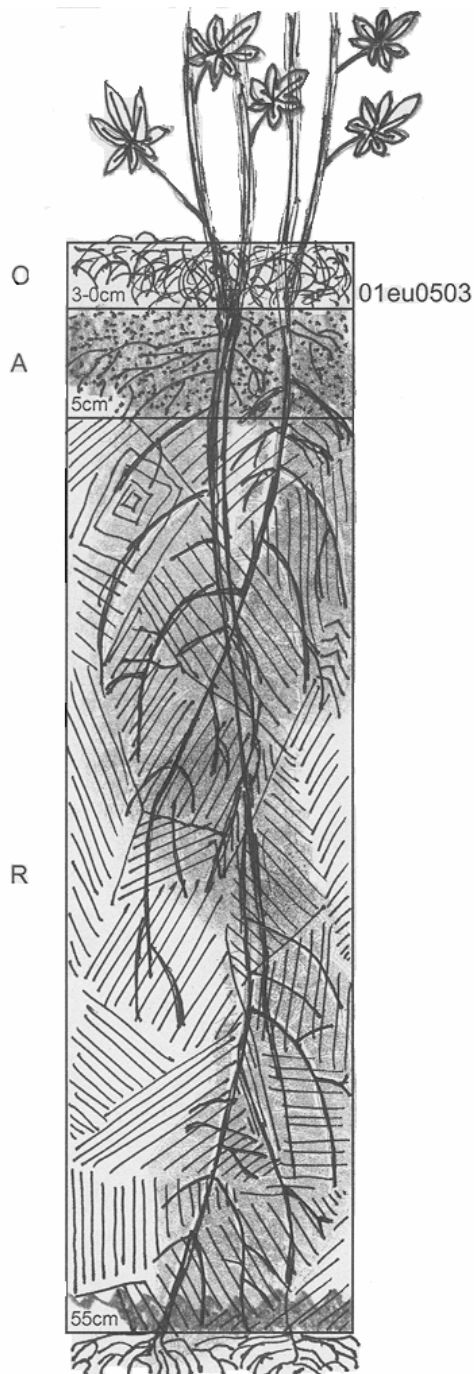
Refer to the Stink currant-salmonberry/sorrel group section (above) for a fuller description of the community.

Other studies: This community as is similar to the RIBR-RUSP/OXALIS Plant Association (Ecoclass SW5121), previously been described for the Mt. Hood NF in Diaz and Mellen (1996).

Soil illustration A: RIBR-RUSP/OXALI

HORIZON	THICKCM	MUNSELL	TEXTURE	CFRAG	CFRAGPCT	VOIDS	ROOTS
O	3					40	20
A	5	10YR2/2	SL	gravel	0	30	15
R	50			boulder	100	0	0

Total Depth: 8cm. Depth Limit: 8cm.

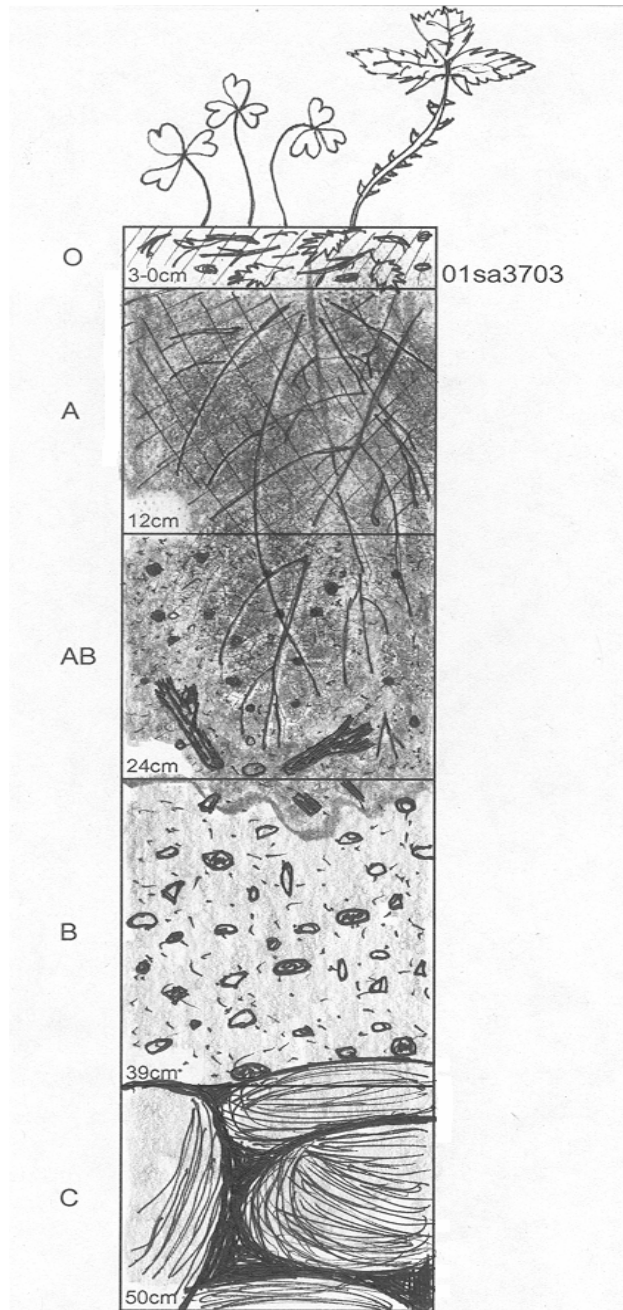


This boulder is one of the few places on the plot that has any measurable soil depth. Mostly, the stink currant which dominates the site simply grows in the saturated mud between cobbles. O horizon is a thin mat of needles, leaves, dead moss and tree twigs in various states of decomposition. Very organic A horizon is formed entirely from OM and the sand from the rock. It is literally held to the surfaces of the boulder by moss and the roots of the stink currant. A trowel easily peeled the entire layer to rock. The rock itself was probably colluvial in origin and underwent a long period of stream action. It is now out of reach of most flood events.

Soil illustration B: RIBR-RUSP/OXALI

HORIZON	THICKCM	MUNSELL	TEXTURE	CFRAG	CFRAGPCT	VOIDS	ROOTS
O	3					20	5
A	12	7.5YR2.5/1	SiCL	gravel <1cm	10	15	20
AB	12	7.5YR3/1	SCL	gravel <1cm	15	10	15
B	15	7.5YR3/2	LS	gravel <2cm	20	10	8
C		7.5YR3/1	SC	gravel <2cm / boulder	20 / 60	3	1

Total Depth: 50cm. Depth Limit: 50cm.



The parent substrate of this plot is several kinds of rock, large boulders and small gravel with sand for the most of it, but with muddy textures in the nooks as well. Above this C horizon is a B horizon of poorly sorted sands and gravel. The initial rough-water alluvial deposition of the B horizon formed a sandy old streambed, but in places where the B horizon mingles with the AB and C strata, we see that successive floods may have mixed things around a bit.

In the AB, we see some intermediate timeline events. Woody debris and charcoal are both here and could have been deposited by a mudflow after a fire. Such would bury the previous bank and could even redirect the stream. The A horizon has a little too much clay to call it a silt loam, but less clay than in the AB horizon. OM is a strong factor, especially under the salmonberry.

***Ribes bracteosum*-*Rubus spectabilis*/*Oxali*-*Alnus rubra* phase**
Stink currant-salmonberry/sorrel-red alder phase
RIBR-RUSP/OXALI-ALRU2 phase

N=22 (MHNF 19, WNF 2, SBLM 1)

SPECIES	Common name	CONSTANCY %	TYPICAL COVER %
Trees-overstory			
<i>Alnus rubra</i>	Red alder	95	29
<i>Thuja plicata</i>	Western redcedar	41	16
Trees-seedlings			
<i>Alnus rubra</i>	Red alder	45	4
Shrubs			
<i>Ribes bracteosum</i>	Stink currant	100	20
<i>Rubus spectabilis</i>	Salmonberry	86	18
<i>Acer circinatum</i>	Vine maple	36	9
Herbs			
<i>Oxalis</i>	Sorrel	100	16
<i>Athyrium filix-femina</i>	Lady fern	77	6
<i>Tolmiea menziesii</i>	Piggyback plant	73	5
<i>Polystichum munitum</i>	Sword fern	68	3
<i>Stachys cooleyae</i>	Cooley's betony	45	2
<i>Hydrophyllum tenuipes</i>	Pacific waterleaf	45	2
<i>Galium triflorum</i>	Sweetscented bedstraw	45	2
<i>Circaea alpina</i>	Enchanter's-nightshade	45	1
<i>Claytonia sibirica</i>	Siberian miner's lettuce	45	1
<i>Petasites frigidus</i>	Coltsfoot	36	5

Only the constancy table is included for this phase, which is extremely similar in occurrence and composition to the shrub-dominated phase of the Stink-currant-salmonberry/sorrel group. It seems likely that red alder phase can develop from the shrub-dominated phase, in intervals between stand-resetting floods.

Wetland rating:

Community meets wetland test	Yes
Plots meeting wetland criteria	82%
Wetland indicators among dominant species	66% (range 17-100%)

Refer to the Stink currant-salmonberry/sorrel group section (above) for a fuller description of the community.

Other studies: This community as well as the Salmonberry/sorrel-red alder phase are somewhat similar to the ALRU/RUSP/OXALIS Plant Community

(Ecoclass HAS112), previously been described for the Mt. Hood NF in Diaz and Mellen (1996).

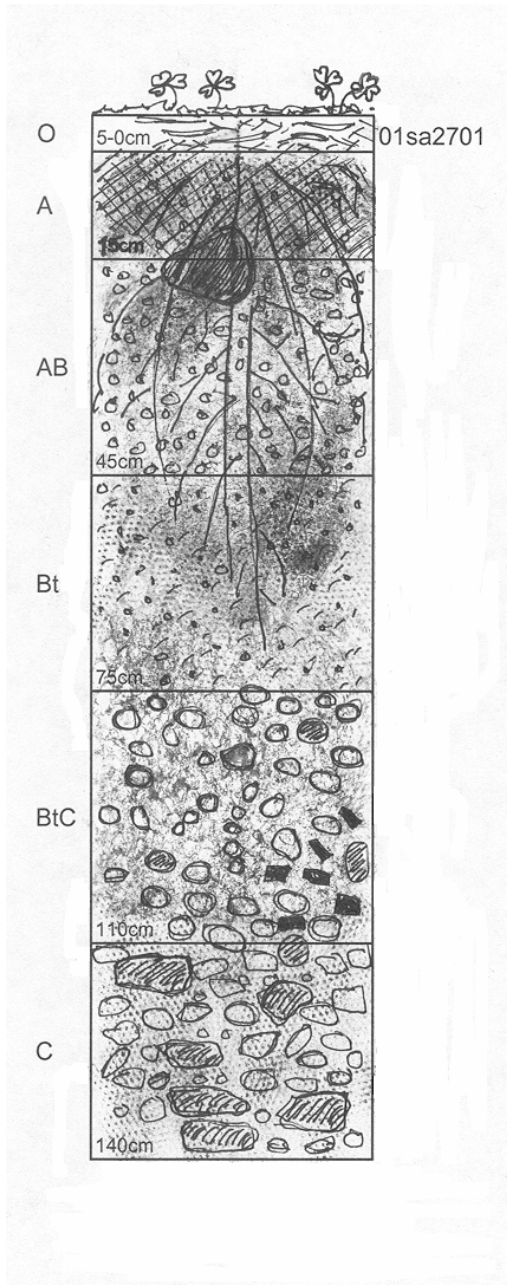
Valley cross sections showing
RIBR-RUSP/OXALI-ALRU2 phase
E Fork S Fork McKenzie #2

Click on a creek name in the table to the left to see valley cross sections that show where RIBR-RUSP/OXALI-ALRU2 phase occurs in

relation to other plant associations.

Soil illustration: RIBR-RUSP/OXALI-ALRU2 phase

HORIZON	THICKCM	MUNSELL	TEXTURE	CFRAG	CFRAGPCT	VOIDS	ROOTS
O	5					20	15
A	15	10YR2/2	SiCL	gravel	20	15	30
AB	30	10YR3/2	SCL	gravel	45	15	25
Bt	30	10YR3/2	SiCL	gravel <1cm	20	12	20
BtC	35	10YR3/3	SiC	gravel <1cm / gravel >4cm	30 / 30	8	15
C	25		SC	gravel / cobble	70		



Total Depth: 130cm. Depth Limit: 150cm+.

Deep, rooty (15cm, 30%) A horizon goes to really deep, really rooty (30cm, 25%) AB horizon with a shift in color and gravel content. The whole profile is weakly structured, but especially the Bt horizon, which is super loose and not rocky and may just collapse. BtC and C horizons are much more solid. Firm would be the word for the 60% rocky, sub-angular blocky BtC. It also has a lot of charcoal. A large mid-1800's fire may have triggered landslides capable of burying the creek and cementing sandy soils. Clays have since illuviated into restrictive horizons, further solidifying the matrix. At places downstream, stratified, cemented, cobble-filled walls of alluvium are exposed up to 30 feet deep.

Alnus viridis
Sitka alder
ALVI5

N=14 (MHN 13, WNF 1)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-seedlings			
<i>Tsuga heterophylla</i>	Western hemlock	43	12
Shrubs			
<i>Alnus viridis</i>	Sitka alder	100	18
<i>Vaccinium ovalifolium</i>	Oval-leaved huckleberry	79	14
<i>Ribes lacustre</i>	Black gooseberry	64	6
<i>Viburnum edule</i>	Highbush-cranberry	57	11
<i>Rubus spectabilis</i>	Salmonberry	57	4
<i>Ribes bracteosum</i>	Stink currant	43	6
<i>Rubus parviflorus</i>	Thimbleberry	43	4
<i>Menziesia ferruginea</i>	Fool's huckleberry	36	6
<i>Gaultheria ovatifolia</i>	Oregon wintergreen	36	2
Herbs			
<i>Achlys triphylla</i>	Vanilla leaf	79	6
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>	Foamflower	71	2
<i>Cornus unalaschensis</i>	Dogwood bunchberry	64	7
<i>Linnaea borealis</i>	Twinflower	57	12
<i>Athyrium filix-femina</i>	Lady fern	57	7
<i>Streptopus amplexifolius</i>	Clasping twistedstalk	43	1
<i>Orthilia secunda</i>	Sidebells pyrola	36	2
<i>Clintonia uniflora</i>	Queencup beadlily	36	2
<i>Mitella breweri</i>	Brewer's mitrewort	36	1
<i>Senecio triangularis</i>	Arrow-leaved groundsel	36	Tr

Elevations: 3270 to 4720 feet (average 3,784 feet).

Community: The Sitka alder community is a shrubby mid- to upper-elevation community. It occurs in the upper range of the western hemlock zone, in the silver fir zone, and into the mountain hemlock zone. Cold air drainage effects can be seen in this community. For example, mountain hemlock seedlings are found where silver fir associations form the adjacent upland associations. Sitka alder is the dominant species in the shrub layer. Other important shrubs include oval-leaved huckleberry, black gooseberry, highbush cranberry, and salmonberry. The herb layer typically has vanilla leaf, foamflower, dogwood bunchberry, twin flower, and lady fern. Mature conifers are seldom present, but western hemlock and silver fir occurred on 14% of the plots. Mature hardwood trees were not recorded in the sample, though red alder seedlings occurred on 28% of the plots.



Sitka alder

Geomorphic environment: Geomorphic surfaces are flat to very gently sloping cobble bars, cobbly islands, or active floodplains. Soils are shallow layers (generally <20cm) of silt, sand, or silty sand over cobbles or within a cobble matrix. Two plots with deeper (36-52 cm) soils added rhododendron to the shrub layer.

Geomorphic surfaces, poorly developed soils, cobble substrate, and lack of mature trees indicate that these sites are subject to fairly frequent floods of sufficient severity to reset the tree component. The flood regime also limits deposition and accumulation of fine sediments and organic matter.

Wetland rating:

Community meets wetland test	No
Plots meeting wetland criteria	29%
Wetland indicators among dominant species	39% (range 10-67%)

Similar types: Note that the Oval-leaved huckleberry community is very similar in composition and distribution to the Sitka alder type and could be considered a phase of the same basic community. The Oval-leaved huckleberry community can occur on a wider range of geomorphic surfaces, and occasionally on deeper, poorly drained soils. The Sitka alder community is more restricted to cobble bars and islands very close to or within the normal high water line.

Non-natives: No exotic species were recorded in the sample.

Other studies: This community has previously been described for the Mt. Hood NF in Diaz and Mellen (1996) as the ALSI Plant Association (Ecoclass SW2132).

Vaccinium ovalifolium
Oval-leaved huckleberry
VAOV

N=18 (MHNH 14, WNF 2, SBLM 2)

SPECIES	COMMON NAME	CONSTANCY %	TYPICAL COVER %
Trees-seedlings			
<i>Tsuga heterophylla</i>	Western hemlock	56	7
<i>Abies amabilis</i>	Silver fir	39	7
<i>Taxus brevifolia</i>	Pacific yew	33	8
Shrubs			
<i>Vaccinium ovalifolium</i> /V. <i>alaskaense</i>	Oval-Leaved Huckleberry/Alaska huckleberry	100	18
<i>Ribes lacustre</i>	Black gooseberry	72	3
<i>Rubus spectabilis</i>	Salmonberry	67	11
<i>Menziesia ferruginea</i>	Fool's huckleberry	39	10
<i>Sorbus sitchensis</i>	Sitka mountain-ash	39	4
<i>Ribes bracteosum</i>	Stink currant	33	5
<i>Viburnum edule</i>	Highbush-cranberry	33	3
Herbs			
<i>Achlys triphylla</i>	Vanilla leaf	94	6
<i>Cornus unalaschensis</i>	Dogwood bunchberry	89	7
<i>Linnaea borealis</i>	Twinflower	56	6
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>	Foamflower	56	5
<i>Clintonia uniflora</i>	Queencup beadiily	56	4
<i>Streptopus amplexifolius</i>	Clasping twistedstalk	44	1
<i>Athyrium filix-femina</i>	Lady fern	33	9
<i>Boykinia major</i>	Large boykinia	33	6
<i>Gymnocarpium dryopteris</i>	Oak fern	33	5
<i>Streptopus lanceolatus</i> var. <i>curvipes</i>	Rosy twistedstalk	33	2

Elevations: 3000 to 4340 feet (average 3,705 feet).

Community: The Oval-leaved huckleberry community occurs at higher elevations than similar salmonberry dominated types. It is generally found in the silver fir zone, but is also found in the upper western hemlock zone. The distribution extends into the mountain hemlock zone. Cold air drainage effects are often evident in this community where silver fir seedlings are present though western hemlock plant associations form the upland context, or mountain hemlock seedlings are found where silver fir associations form the adjacent upland associations. It is a shrub-dominated community, with a moderate herb layer. Tree regeneration is plentiful (average 14% cover). Few tree seedlings

appear to reach maturity, although a mature western hemlock and a silver fir occurred on one plot each. Oval-leaved huckleberry is the most common and abundant shrub, though black gooseberry and salmonberry are also typically present. Fools huckleberry and mountain ash are found in more than 40% of the samples. The most common herb species include vanilla leaf, dogwood bunchberry, foamflower, twinflower, and large boykinia.



Oval leaved huckleberry community: dense oval leaved huckleberry dominates shrub layer under the western hemlock overstory. Note minor salmonberry (center, bottom).

Geomorphic environment: Plots are on active floodplains, banks, and cobble bars. Most plots had relatively shallow top horizons of silts or silty sands (average 24 cm) in a matrix of cobbles. Exposed bedrock or large boulders were also noted. This community also occurs on deep (>80cm) but poorly drained soils, with silt or silts over sands, and mottling at 25 cm. The latter sites may be related to the somewhat similar Silver fir/Oval-leaved huckleberry community, where mature trees are found on well-drained microsites provided by hummocks.

This community may be disturbed mildly enough or far enough apart to allow tree regeneration, and the near dominance of upland or facultative upland species. However, the geomorphic surfaces, cobble substrate, and lack of mature trees indicate that these sites are subject to fairly frequent floods of sufficient severity to reset the tree component. This community seems to be the higher elevation analogue for the salmonberry/sorrel types, considering soils, geomorphic surfaces, and stand structure.

Similar types: Note that the Sitka alder community is very similar in composition and distribution to the Oval-leaved huckleberry type, and could be considered a phase of the same basic community. The Sitka alder type occurs exclusively adjacent to the channel on shallow silty sands or sands on cobble bars, cobbly floodplains or islands. It does not occur with deeper poorly drained soils.

One Salem BLM coastal plot from Warnicke Creek in the Valley of the Giants area represents a coastal variant of the Oval-leaved huckleberry community. It was not included in the description of the Cascadian community. This same cluster of plots also provided a coastal member of the Cascadian type, Coastal boykina-oval-leaved mitrewort.

Valley cross sections showing VAOV

Lamb creek

Click on a creek name in the table left to see valley cross sections that show where VAOV occurs in relation to other plant associations.

Wetland rating:

Community meets wetland test	No
Plots meeting wetland criteria	6%
Wetland indicators among dominant species	32% (13-57%)

Non-natives: No exotics were recorded in the sample.

Other studies: This community is somewhat similar to the VAAL-VAOV Plant Association (Ecoclass SW4132), previously been described for the Mt. Hood NF in Diaz and Mellen (1996).

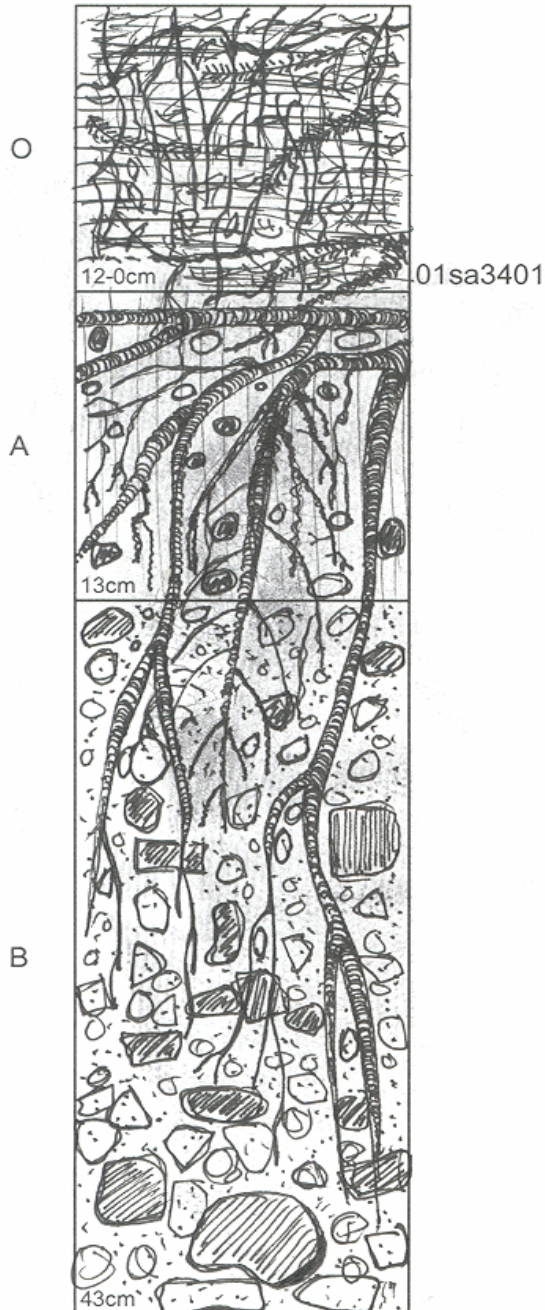


Oval-leaved huckleberry community with typical herb layer: vanilla leaf, foamflower, dogwood buncherry, large boykinia, and ferns.

Soil illustration: VAOV

HORIZON	THICKCM	MUNSELL	TEXTURE	CFRAG	CFRAGPCT	VOIDS	ROOTS
O	12					15	25
A	13	7.5YR2.5/2	SiL	gravel	8	10	25
B	40	7.5YR3/1	SCL	gravel	20	8	15

Total Depth: 55cm. Depth Limit: ? cobble, roots impede.



Another great 12cm, rooty O horizon. There is so much competition for root space in this A horizon it's crazy. Dense, large roots begin just below the O horizon and continue into the B until its gets especially rocky. Judging from an exposed upstream cut bank (see picture), the B horizon may go down several meters changing only slightly. From this pit, it is about ten feet to creek level. Some of these rocks seem colluvial, but they have all probably been affected by water at some time. Although there is a rise in topography here, with upland vegetation, it is a little hard to believe this could be the last remnant of a spur ridge for example.