Forest Research Laboratory
College of Forestry
Oregon State University
Corvallis, OR 97331-5704

Address Correction Requested

July 1986

Forest Soil Associations of Southwest Oregon

Stephen C. Stearns-Smith
David W. Hann

FOREST RESEARCH LAB
College of Forestry Oregon State University

Soil Characteristics and Physical Properties

This table summarizes typical characteristics and physical properties of each major soil type within the associations shown on the map. These characteristics include environmental settings and accepted ranges of elevation, slope, precipitation, and soil depth to facilitate comparison and identification. The profiles used were established by the SCS within the three-county area as typical for each soil.

Association number	Soil series, soil type, or landtype	Percent occurrence within association	Dominant plant series[1]	Geologic parent materials	Topographic position	Elevation range (ft)	Slope range (percent)	Annual precipitation range (in)	Total soil-depth range (in.)	Typical surface texture	Typical subsoil texture
GENERAL LANDTYPE											
1	Alluvial land		Variable	Variable	Bottoms	Variable	0–15	15–80	—	—	—
SISKIYOU SOILS											
2	Brockman	50	Jeffrey pine	Serpentinitic	Alluvial fans	800–2000	2–20	30–60	60+	Cobbly clay loam	Cobbly clay
	Inclusions	50									
3	Pearsoll	40	Jeffrey pine	Serpentinitic	Mountain sides	750–4000	20–90	30–60	10–20	Stony clay loam	Extremely cobbly clay
	Dubakella	20	Jeffrey pine	Serpentinitic	Mountain sides	1000–4000	7–75	30–70	20–40	Very cobbly clay loam	Extremely cobbly clay
	Eightlar	15	Jeffrey pine	Serpentinitic	Mountains, alluvial fans	1350–4000	5–65	40–70	60+	Extremely stoney clay	Very stoney clay
	Inclusions	25									
4	Cornutt	40	White fir, Douglas-fir	Meta-sed, meta-volc	Mountains, alluvial fans	1000–4000	7–55	30–60	40–60	Cobbly clay loam	Clay
	Dubakella	35	Jeffrey pine	Serpentinitic	Mountain sides	1000–4000	7–75	30–70	20–40	Very cobbly clay loam	Extremely cobbly clay
	Inclusions	25									
5	Tallowbox	55	Douglas-fir, ponderosa pine	Granitics	Mountain sides	800–4000	20–60	25–40	20–40	Gravelly sandy loam	Gravelly sandy loam
	Shefflein	30	Douglas-fir, ponderosa pine	Granitics	Mountains, toeslopes	800–4000	2–35	25–40	40–60	Clay loam	
	Barron	10	Douglas-fir, ponderosa pine	Granitics	Toeslopes, alluvial fans	800–2500	2–12	25–40	60+	Coarse sandy loam	Coarse sandy loam
	Inclusions	5									
6	Tethrick	80	White fir, Douglas-fir	Granitics	Mountain sides	1500–4000	20–70	30–60	40–60	Gravelly sandy loam	Sandy loam
	Lettia	10	White fir, Douglas-fir	Granitics	Toeslopes, alluvial fans	1500–4000	2–35	30–60	40–60	Sandy loam	Sandy clay loam
	Inclusions	10									
7	Rogue	55	White fir	Granitics	Mountain sides	3600–5500	35–70	50–70	40–60	Gravelly coarse sandy loam	Gravelly coarse sandy loam
	Goodwin	25	White fir	Granitics	Mountain sides	3600–5500	5–70	50–70	40–60	Very stoney sandy loam	Very gravelly sandy loam
	Inclusions	20									
8	Vannoy	35	Douglas-fir, ponderosa pine	Meta-sed., meta-volc.	Mountain sides	1000–4000	20–55	25–40	20–40	Silt loam	Clay loam
	Caris	25	Douglas-fir, ponderosa pine	Meta-sed., meta-volc.	Mountain sides	1000–4000	50–80	25–40	20–40	Gravelly loam	Very gravelly loam
	Offenbacher	20	Douglas-fir, ponderosa pine	Meta-sed., meta-volc.	Mountain sides	1000–4000	50–80	25–40	20–40	Gravelly loam	Loam
	Inclusions	20									
9	Caris	40	Douglas-fir, ponderosa pine	Meta-sed., meta volc.	Mountain sides	1000–4000	50–80	25–40	20–40	Gravelly loam	Very gravelly loam
	Offenbacher	30	Douglas-fir, ponderosa pine	Meta-sed., meta-volc.	Mountain sides	1000–4000	50–80	25–40	20–40	Gravelly loam	Loam
	Inclusions	30									
10	Beekman	30	White fir, Douglas-fir	Meta-sed., meta-volc.	Mountain sides	1000–4000	50–100	30–60	20–40	Gravelly loam	Very gravelly loam
	Vermisa	20	White fir, Douglas-fir	Meta-sed., meta-volc.	Mountain sides	1000–4000	60–100	30–60	10–20	Extremely gravelly loam	Very gravelly loam
	Colestine	15	White fir, Douglas-fir	Meta-sed., meta-volc.	Mountain sides	1000–4000	50–80	30–60	20–40	Gravelly loam	Gravelly clay loam
	Inclusions	35									
11	Goolaway	50	White fir, Douglas-fir	Evans Cr. schists	Mountain sides	1500–4000	20–60	40–60	20–40	Silt loam	Silt loam
	Beekman	20	White fir, Douglas-fir	Meta-sed., meta-volc.	Mountain sides	1500–4000	50–100	30–60	20–40	Gravelly loam	Very gravelly loam
	Inclusions	30									
12	Josephine	60	White fir	Meta-sed., meta-volc.	Mountain sides	1000–4000	20–55	30–60	40–60	Gravelly loam	Gravelly clay loam
	Speaker	20	White fir	Meta-sed., meta-volc.	Mountain sides	1000–4000	35–55	30–60	20–40	Gravelly loam	Gravelly clay loam
	Pollard	10	White fir, Douglas-fir	Meta-sed., meta-volc.	Hillsides, benches	1000–4000	2–50	30–60	60+	Loam	Clay
	Inclusions	10									
13	Kanid High Ppt	40	White fir, tanoak, western hemlock	Meta-sed., meta-volc.	Mountain sides	1000–4000	12–70	55–100	40–60	Very gravelly loam	Very gravelly clay loam
	Beekman High Ppt	25	White fir, tanoak, western hemlock	Meta-sed., meta-volc.	Mountain sides	1000–4000	50–100	55–100	20–40	Gravelly loam	Very gravelly loam
	Josephine High Ppt	15	White fir, tanoak, western hemlock	Meta-sed., meta-volc.	Mountain sides	1000–4000	20–55	55–100	40–60	Gravelly loam	Gravelly clay loam
	Inclusions	20									
14	Jayar	55	White fir	Meta-sed., meta-volc.	Mountain sides	3600–5500	20–70	40–70	20–40	Very gravelly loam	Very gravelly loam
	Althouse	20	White fir	Meta-sed., meta-volc.	Mountain sides	3600–5500	35–75	40–70	40–60	Very gravelly silt loam	Extremely gravelly silt loam
	Inclusions	25									
CASCADE SOILS											
15	Langel	45	Douglas-fir, ponderosa pine	Sandstones	Hillsides	1200–2500	1–40	18–30	20–40	Loam	Clay
	Brader	30	Ponderosa pine	Sandstones	Hillsides	1200–2500	1–40	18–30	12–20	Loam	Loam
	Debenger	10	Ponderosa pine	Sandstones	Hillsides, alluvial fans	1000–2500	1–40	18–30	20–40	Loam	Clay loam
	Inclusions	15									
16	Carney	60	White oak	Tuffs, andesites	Hillsides, alluvial fans	1200–4000	1–35	18–35	20–40	Clay	Clay
	Coker	20	White oak	Tuffs, andesites	Alluvial fans, basins	1200–4000	0–12	18–30	60+	Clay	Clay
	Inclusions	20									
17	Medco	40	White oak, ponderosa pine	Tuffs, andesites	Hillsides	1500–4000	1–35	20–35	20–40	Cobbly clay loam	Clay
	McMullin	30	White oak, ponderosa pine	Tuffs, andesites	Ridges	400–4200	2–60	20–40	12–20	Gravelly loam	Gravelly clay loam
	McNull	15	Douglas-fir, ponderosa pine	Tuffs, andesites	Mountain sides	1500–4000	12–60	20–40	20–40	Loam	Cobbly clay
	Inclusions	15									
18	McNull	55	Douglas-fir, ponderosa pine	Tuffs, andesites	Mountain sides	1500–4000	12–60	20–40	20–40	Loam	Cobbly clay
	Medco High Ppt	25	Douglas-fir, ponderosa pine	Tuffs, andesites	Mountain sides	1500–4000	12–35	35–40	20–40	Cobbly clay loam	Clay
	Inclusions	20									
19	Straight	50	Douglas-fir, white fir	Tuffs, andesites	Mountain sides	1500–4000	12–70	35–55	20–40	Very gravelly loam	Very gravelly loam
	Freezener	30	White fir, Douglas-fir	Tuffs, andesites	Mountain sides	1500–4000	1–60	30–60	60+	Gravelly loam	Clay
	Inclusions	20									
20	Freezener	50	White fir, Douglas-fir	Andesites, tuffs	Mountain sides	1500–4000	1–60	30–60	60+	Gravelly loam	Clay
	Geppert	40	White fir, Douglas-fir	Andesites, tuffs	Mountain sides	1500–4000	1–70	25–55	20–40	Very cobbly loam	Extremely cobbly clay loam
	Inclusions	10									
21	Hukill	65	White fir, Douglas-fir	Andesitic mudflows	Plateaus	2000–3000	1–12	25–45	40–60	Gravelly clay loam	Gravelly clay
	Geppert	25	White fir, Douglas-fir	Andesites, tuffs	Mountain sides	1500–4000	1–70	25–55	20–40	Very cobbly loam	Extremely cobbly clay loam
	Inclusions	10									
22	Dumont	50	White fir, western hemlock	Andesites	Mountain sides	1500–4000	1–60	35–60	60+	Gravelly loam	Clay
	Coyata	40	White fir, western hemlock	Andesites	Mountain sides	1500–4000	1–60	35–60	20–40	Gravelly loam	Very cobbly clay loam
	Inclusions	10									
23	Tatouche	60	White fir	Tuffs, andesites	Mountain sides	3600–5800	12–65	30–50	60+	Gravelly loam	Clay
	Bybee	30	White fir	Tuffs, andesites	Mountain sides	3600–5500	1–35	30–50	60+	Loam	Clay
	Inclusions	10									
24	Farva	60	White fir	Andesites	Mountain sides	3600–5500	3–70	30–55	20–40	Very cobbly loam	Extremely cobbly loam
	Pinehurst	15	White fir	Andesites	Mountain sides	4000–6000	1–50	30–55	60+	Loam	Clay loam
	Inclusions	25									
25	Rustlerpeak	45	White fir, Shasta red fir	Andesites	Mountain sides	4000–5500[2]	3–70	40–60	20–40	Very cobbly loam	Extremely cobbly loam
	Farva	40	White fir, western hemlock	Andesites	Mountain sides	3600–5000[3]	3–70	40–60	20–40	Very cobbly loam	Extremely cobbly loam
	Inclusions	15									
26	Crater Lake	45	White fir, western hemlock	Ash, pumice	Flats, escarpments	2500–4500	0–60	40–60	60+	Gravelly sandy loam	Gravelly sandy loam
	Alcot	30	White fir, western hemlock	Ash, pumice	Flats, escarpments	2500–4500	0–60	40–60	60+	Gravelly sandy loam	Extremely cobbly sandy loam
	Barr	20	White fir, western hemlock	Sandy outwash	Terraces	2500–4500	0–3	40–60	60+	Gravelly loamy sand	Gravelly sand
	Inclusions	5									
27	Cryic soils of the Cascades		Shasta red fir, mountain hemlock	Andesites, ash	Mountain sides	5000+	5–70	50–70	—	—	—
	Cryic soils of the Siskiyous		Shasta red fir, mountain hemlock	Meta-sed., granitics	Mountain sides	5000+	5–90	45–70	—	—	—

[1] A plant series as referenced here is an aggregation of ecological plant associations with the same climax dominant species. Plant series referred to in this publication are those defined by Atzet et al. (1983) and Atzet and Wheeler (1984).

[2] North aspects.

[3] South aspects.

Introduction

Interior southwest Oregon is a region of geologic, topographic, vegetative, and climatic diversity, a diversity that is directly reflected in the distribution and characteristics of its soil types. Geologically, the region's eastern half (Cascade Geologic Province) is composed entirely of the recent pyroclastic and extrusive volcanic rocks of the Cascades, whose predominantly gentle topography is punctuated by volcanic peaks. In contrast, the Siskiyou Mountains in the western half of the region (Siskiyou Geologic Province) are made up of older, metamorphosed volcanic and sedimentary rocks (often referred to as meta-volcanics and meta-sediments) interspersed with granitic and serpentinitic intrusions, and the topography is steep and dissected.

Blockage of marine air by the higher Siskiyou section of the Coast Range mountains results in an overall regional climate that is hotter and drier than that of the rest of western Oregon. Floristically, the region represents the transition zone from the mixed-conifer forests of northern California to the western hemlock/Douglas-fir forests common in the interior valleys of western Oregon and western Washington.

This map provides an updated and unified overview of the general soil associations within the interior southwest Oregon region. It is intended for use in general education about regional soils and landscapes and in broad-scale planning.

Compiling This Map

A number of soil surveys exist for various portions of this region, but these surveys tend to differ in scale, intensity, and mapping concept because they were originally intended for a variety of uses. These differences have made it difficult to obtain a unified overview of the soil associations of the region. Soil mapping concepts currently used by the USDA Soil Conservation Service (SCS) were chosen for this map in order to standardize and update various sources and to cross-correlate dissimilar sources (such as USDA Forest Service Soil Resource Inventories).

SCS soil association maps already existed for all of Josephine County and most of Jackson County, and these were modified to reflect updated concepts and incorporated in the present map. Mapping of areas not covered by SCS maps combined a variety of other sources including secondary soil maps, geology maps, personal communications with regional soil scientists, and soils data collected in conjunction with the OSU-FIR Southwest Oregon Growth and Yield Project. Although mapping concepts and boundaries are sure to change as more intensive surveys progress into outlying areas, this map represents the best effort with currently available information.

What is a Soil Association?

Each of the 27 soil associations listed in the legend consists of one or more major soil series or types that occur together in a distinctive pattern on the landscape. The additional, minor soil types that always exist within each association are known as inclusions, and these generally consist of soils from neighboring associations. The accompanying table provides estimated relative proportions of major soil types and inclusions within each association.

The soils of each association reflect a unique combination of geology, topography, climate, and vegetation. Although individual soils within an association may be quite different from each other, each occupies a specific spot within the association's unique landscape pattern.

A soil association map can help in visualization of general soil-type distribution, and thus can provide a quick introduction to and overview of a large area. It can also provide a broad-scale planning base for various soil-related interpretations, and an indication of the range of soil characteristics that might be encountered in a given area. However, because the map's scale is small and variability is high within each association, a soil association map cannot be used to predict exact soil properties at a specific location.

Source Material

Climate

FROEHLICH, H.A., D.H. McNABB, and F. GAWEDA. 1982. Average annual precipitation, 1960–1980, in southwest Oregon. Oregon State University Extension Service, Corvallis. EM 82:020.

McNABB, D.H., H.A. FROEHLICH, and F. GAWEDA. 1982. Average dry-season precipitation in southwest Oregon, May through September. Oregon State University Extension Service, Corvallis. EM 82:026.

Geology

BEAULIEU, J., and P.W. HUGHES. 1977. Land use geology of central Jackson County, Oregon. State of Oregon, Department of Geology and Mineral Industries, Salem. Bulletin 94.

RAMP, L. 1972. Geology and mineral resources of Douglas County, Oregon. State of Oregon, Department of Geology and Mineral Industries, Salem. Bulletin 75.

RAMP, L., and N.V. PETERSON. 1979. Geology and mineral resources of Josephine County, Oregon. State of Oregon, Department of Geology and Mineral Industries, Salem. Bulletin 100.

SMITH, J.G., N.J. PAGE, M.G. JOHNSON, B.C. MORING, and F. GRAY. 1982. Geologic map of the Medford 1° x 2° Quadrangle, Oregon and California. United States Department of the Interior, Denver, Colorado. Geological Survey, Open-File Report 82-955.

WELLS, F.G. 1956. Geology of the Medford Quadrangle, Oregon-California. United States Department of the Interior, Denver, Colorado. Geological Survey, Map GQ-89.

WELLS, F.G., and D.L. PECK. 1961. Geologic map of Oregon west of the 121st meridian. United States Department of the Interior, Denver, Colorado. Geological Survey, Map I-325.

Soils

BADURA, G.J., and P.N. JAHN. 1977. Soil resource inventory for the Rogue River National Forest. USDA Forest Service, Pacific Northwest Region, Portland, Oregon.

BORINE, R. 1983. Soil survey of Josephine County, Oregon. USDA Soil Conservation Service in cooperation with the USDA Forest Service, USDI Bureau of Land Management, and Oregon Agricultural Experiment Station, Portland, Oregon.

DeMOULIN, L.A., J.A. POMERENING, and B.R. THOMAS. 1975. Soil inventory of the Medford BLM District. USDI Bureau of Land Management, Oregon State Office, Portland, Oregon.

HOLLORAN, D.M. 1982. Galesville Dam watershed soil survey. Douglas County Commissioners, Roseburg, Oregon. Unpublished.

USDA SOIL CONSERVATION SERVICE. Soil survey of Jackson County area, Oregon. USDA Soil Conservation Service in cooperation with the USDI Bureau of Land Management and Oregon Agricultural Experiment Station, Portland, Oregon. In progress.

USDA SOIL CONSERVATION SERVICE. Soil survey of Douglas County, Oregon. USDA Soil Conservation Service in cooperation with the USDI Bureau of Land Management and Oregon Agricultural Experiment Station, Portland, Oregon. In progress.

MEYER, L.C., and M.D. AMARANTHUS. 1979. Soil resource inventory for the Siskiyou National Forest. USDA Forest Service, Pacific Northwest Region, Portland, Oregon.

Vegetation

ATZET, T., and D. WHEELER. 1984. Preliminary plant associations of the Siskiyou Mountain Province. USDA Forest Service, Pacific Northwest Region, Area 5 Ecological Program, Portland, Oregon. Unpublished report.

ATZET, T., D. WHEELER, J. FRANKLIN, and B. SMITH. 1983. Vegetation classification in southwest Oregon: A preliminary report. Oregon State University, Corvallis. FIR Report 4(4):6–8.

Acknowledgments

This map was produced in conjunction with the Forestry Intensified Research (FIR) Program's Southwest Oregon Growth and Yield Project, a cooperative effort among Oregon State University, the USDA Forest Service, and the USDI Bureau of Land Management (BLM), with special assistance from Boise-Cascade Corporation and Medford Corporation. The authors thank the many local soil scientists associated with the BLM, the Forest Service, and the USDA Soil Conservation Service for their input, especially Roger Borine, David Johnson, and Duane Setness.

The Authors

Stephen C. Stearns-Smith is Senior Research Assistant and David W. Hann is Associate Professor, Department of Forest Management, Oregon State University.