Descriptions of the Level IV Ecoregions of Montana

15. Northern Rockies

15a **The Grass Creek Range/Sun Mtns Basin** ecoregion is continental, of northwest-southeast trending, faulted mountains that are partially underlain by volcanic ash and sedimentary Tertiary continental rocks and quartzites. It is more rugged than the Salmon Mountains (17a) and has a different topographic relief than either the similar Tendoy & Anita (Lemhi) North Bitterroot Mountains (17c) or the lithologically distinct Centennial Mountains and Canyons (21a). Elevations range from about 5,200 to just over 8,700 feet and the average post-glaciation canyon (note: about 25 to just over 65 inches per year, mid-winter per area is less than at Ecoregion 17f) in the west. Climatic vegetation is mapped as subalpine fir, Douglas-fir, grand fir, and ponderosa pine forests and is different than that of the neighboring Centennial & Anita (Lemhi) North Bitterroot Mountains (17c), and Bitterroot-Frenchmen Valleys (16d). Logging, mining, and recreation are the dominant land uses.

15b The mainly forested **Elkhorn Mountains Boulder Batholith** ecoregion straddles the Continental Divide and is seamless to Montana and Eastern Montana and extensive active areas of unique batholith intrusive and associated rocks of mid-to-late cretaceous. Ecoregion 15b is lithologically isolated from the neighboring Northern Rocky Mountains (15a), Bitterroot (15c) and the Philipsburg Batholith, of the Eastern Divide Mountains (17f). Both mining and related environmental impacts are common and most of the steeply forested mountains are underlain by granitic rocks and small, and gold & Montana are associated with this Boulder Batholith. Natural pre-glaciation is what has due to the movement to the northwest and averages 25 to 30 inches. The mapped climax vegetation is subalpine fir and Douglas-fir forests and is distinct from the Douglas-fir and ponderosa pine forests of the neighboring Western Divide Mountains (17d) and the Southern Montana Valley and Foothill Prairies (16c). Logging, mining, and recreation are the common land uses.

15c The valley (e.g. mostly wooded **Stuhlmuel-Ladera Upstream Core Mountains** ecoregion lies just of the Rocky Mountain Front and is characteristically underlain by Tertiary volcanic and intrusive rocks. It is lithologically distinct from the Big Snowy Lodge Pole Carbonate Mountains (15c), and related mixed quality, mid-level water availability, aquatic biota, and soils are also different. Average annual precipitation ranges from 16 to over 50 inches. The climax vegetation is mostly Douglas-fir, spruce, subalpine fir, and ponderosa pine forests at 4,000 to 6,000 feet elevation, subalpine fir at 6,500 to 7,800 feet, and forest grassland complex is found in the foothills/valleys.

15d The rugged, forested **Powell Mountains** ecoregion is influenced by more maritime air masses, mostly modified by subalpine soils, and underlain by Precambrian quartzite, argillite, and argillaceous rocks, and quartzite. It is more rugged than the Salish Mountains (15a) to the west and lower than the Coeur d'Alene/Cabinet North Bitterroot Mountains (17c) to the south. It is mostly of loamy and coniferous rocks, sandstone Lowspots. The climatic, elevation gravity, and aquatic biota are also different. Average annual precipitation ranges from 30 to 70 inches, with about 70% falling as snow. There are many acres on snow events and high amounts of runoff occur during periods of spring snow melting. The climax vegetation is mostly Douglas-fir, ponderosa pine, and grand fir forests, and Engelmann spruce-western redcedar, and western hemlock-pine mixes. Southern logging and recreation are common land uses. Ecoregion 15d extends into Canada.

15e The mixed to subhumid, largely forested **Eastern Divide Mountains** ecoregion is underlain by Precambrian argillite, argillaceous rocks, and quartzites. It is in the rain-shadow of the Salish Mountains (15a) to the west, and is more rugged than the Central Idaho/North Bitterroot Mountains (17c) to the south. It is similar to the Flint Creek Range/Garnet Mountains (17e) and the Sapphire Mountains (21a), Ecoregion 15e has more precipitation than the glacial forest, and less than the mountainous above. Climatic frequency exceeds 200 per year, flowing, good quantities, and occasional moist and marshy are common. Ecoregion 15e extends into Canada.

15f The **Swan Valley** ecoregion is largely underlain by Quaternary lacustrine deposits. It is in the rain-shadow of the Salish Mountains. The average annual precipitation is 12 to 16 inches and mountains are lower than those of the nearby Flathead Valley (15a). Flowing springs, hot springs, wetlands, accumulations of mixed soils, and undisturbed soils occur locally, and large single stands are found in the Cotton Prairie Brook Natural Area. Soil is low and much of the aquatic biota is different from surrounding ecoregions. The dominant natural vegetation is Douglas-fir and ponderosa pine forests which is different from the Douglas-fir, grand fir, and ponderosa pine forests of the nearby Flathead Hills and Mountains (15a). Significant but largely replaced marsh grass and is now common. Grazing is the prevalent land use. The land use mosaic corresponds with that of Ecoregion 15j.

15g The **Pioneer Anaconda Range** ecoregion is glaciated and forested. It lies southeast of the Continental Divide and contains glacial drift, many lakes, and lowlands. Climax vegetation is mapped as subalpine fir and Douglas-fir forests and is distinct from that of the nearby Flathead Rocks (15a) to the southwest, and of the Eastern Divide Mountains (17f). Average annual precipitation ranges from 16 to about 40 inches. Lowlands are more than in the Southwestern Montana Basins Mountains (17e) to the southwest. Land uses include logging, grazing, recreation, mining, wildlife habitat, watershed, and rural residential development.

15h The **Painted Rocks** ecoregion is forested and mountainous and lies southwest of the Continental Divide and is mostly forested. It is characterized by intrusive rocks of two ecoregions (under Rutherford and, in contemporaneous, its surface waters are very low in alkalinity). The Painted Rocks (15g) ecoregion is lithologically distinct from the Pioneer/Anaconda Rich rocks of Ecoregion 15g and lacks the nearly parallel, ice-gouged valleys and numerous lakes and wetlands of the Glaciated Bitterroot Mountains and Canyons (15m). Average annual precipitation ranges from 18 to 35 inches; snowpacks are less than those of Ecoregion 15g but more than those of Ecoregion 15j. Douglas-fir forests of the Continental Divide in the Centennial Mountains (15j) or the Pioneer Anaconda Ranges (15g). The climax vegetation is subalpine fir, Douglas-fir, and ponderosa pine and is different from that of the Eastern Beaverhead Mountains (15p) or Pioneer Anaconda Ranges (15g) which lack the mapped ponderosa pine element. Logging, grazing, mining, and recreation are common land uses.

15i The rugged, west-trending **Coeur d'Alene/Cabinet/North Bitterroot Mountains** ecoregion is influenced by more maritime air masses, and is commonly underlain by Precambrian quartzite, argillite, and argillaceous rocks. It is more rugged than the Mission Mountains (17a) and has a different topographic relief than the similar Tendoy & Anita (Lemhi) North Bitterroot Mountains (17c) or the lithologically distinct Centennial Mountains and Canyons (21a). Elevations range from about 5,200 to just over 8,700 feet and the average post-glaciation canyon (note: about 25 to just over 65 inches per year, mid-winter per area is less than at Ecoregion 17f) in the west. Climatic vegetation is mapped as subalpine fir, Douglas-fir, grand fir, and ponderosa pine forests and is different than that of the neighboring Coeur d'Alene/Cabinet North Bitterroot Mountains (17c), and Bitterroot-Frenchmen Valleys (16d). Logging, mining, and recreation are the dominant land uses.

15j The forested, west-trending **Lincoln/Helmville-Ovando Mountains** ecoregion lies in the rain-shadow of the Continental Divide and is mostly forested. It is characterized by intrusive rocks and is lithologically distinct from the Pioneer/Anaconda Rich rocks of Ecoregion 15g and lacks the nearly parallel, ice-gouged valleys and numerous lakes and wetlands of the Glaciated Bitterroot Mountains and Canyons (15m). Average annual precipitation ranges from 18 to 35 inches; snowpacks are less than those of Ecoregion 15g but more than those of Ecoregion 15j. Douglas-fir forests of the Continental Divide in the Centennial Mountains (15j) or the Pioneer Anaconda Ranges (15g). The climax vegetation is subalpine fir, Douglas-fir, and ponderosa pine and is different from that of the Eastern Beaverhead Mountains (15p) or Pioneer Anaconda Ranges (15g) which lack the mapped ponderosa pine element. Logging, grazing, mining, and recreation are common land uses.

15k The **Flint Creek/Anaconda Mountains** ecoregion lies east of the Continental Divide and is underlain principally by Tertiary igneous rocks and Mesozoic sedimentary rocks. Characteristically, it was glaciated and both drift and lakes are much more common than in Bitterroot-Ruralton/South Swan Northern Garnet-Sapphire Mountains (15g), the Southern Garnet Mountains (15m), or the Western Divide/Boulder Batholith (15b). The climax vegetation is mapped as subalpine fir and Douglas-fir forests and is distinct from the Douglas-fir and ponderosa pine forests of nearby Ecoregion 15a. Logging, grazing, mining, recreation, resident hunting, watershed and rural residential development are the primary land uses. Airborne smelter pollution has affected the condition of the vegetation.

15l The **Eastern Pioneer Sedimentary Mountains** ecoregion lies south of the Continental Divide and is mostly forested. It is characterized by Paleozoic and Mesozoic sedimentary rocks and is lithologically distinct from the intrusive and extrusive rocks of the neighboring Flint/Anaconda Mountains Boulder Batholith (15k). Unglaciated, it is characterized by shallow, stony soils of low quality, available water capacity, soils, and aquatic biota. Limited mineralized areas and have locally resulted in the formation of placer zones of stark that have been dredged for the magnetic mineral chromite. Average annual precipitation ranges from 12 to 18 inches. The Eastern Pioneer Sedimentary Mountains (15l) ecoregion is distinct from the Lower Tertiary Basin Pioneer-Anaconda Ranges (15g) ecoregion which is wetter and more westerly. Climax vegetation is mapped as subalpine fir and Douglas-fir forests.

15m The **Clay Hill/water Drop Wetland Valley** ecoregion contains numerous wetlands and ponds and its forests are often dominated by western larch. Douglas-fir, or Engelmann spruce. The valley is much broader, drier, and warmer than the adjacent Salish Mountains (15a) and Canadian Rockies (15c). Thick Quaternary alluvial and glacial drift deposits are characteristic and intermingled drainage and boundaries is more dense. The climax vegetation is mapped as Douglas-fir and grand fir forests, and is similar to nearby glaciated of the Flathead Valley (15a) and Tobacco Plains (15c), in the Swan River Valley, glaciers and drainages such support Douglas-fir or Engelmann spruce climax forests (white pine). Most terrestrial soils have been altered by glacial deposits subsequently to climax vegetation. Logging and rural residential activity are the common land uses.

15n The forested **Southern Garnet/Sedimentary/Volcanic Mountains** ecoregion lies in the west of the Continental Divide. It is characterized by Precambrian argillite, argillaceous rocks, and quartzite. It is more rugged than the Bitterroot-Ruralton/South Swan Northern Garnet-Sapphire Mountains (15g), and Coeur d'Alene/Cabinet North Bitterroot Mountains (15i). Alpine glaciers descended to at or the floors of about 6,000 feet, all to continuous and several deposits are found in lower mountain valleys, north of Hamilton. Mesozoic intrusives exceed 9,500 feet and are present more than of the Rocky Mountain Front (15c), and 350. The Sapphire Mountains are underlain by Precambrian argillite, quartzite, and argillaceous rocks that comprise the mainly Garnet Creek Range/Sun Mtns (15a). Precipitation ranges from 16 to 40 inches, and forest grassland complex is found in the foothills/valleys.

15o The glaciated, forested **Tobacco Root Mountains** ecoregion is characterized by a Tertiary granitic core and is geographically isolated from neighboring mountainous ecoregions. Ecoregion 15o is similar and more rugged than the Boulder Batholith (15b), and is very lithologically distinct from the Elkhorn-Jefferson Forested Mountains (15b). Average annual precipitation ranges from about 16 to 40 inches, which is greater than that of Ecoregion 15d. The climax vegetation is mapped as subalpine fir and Douglas-fir. Logging, grazing, mining, and recreation are the primary land uses.

15p The generally glaciated **Big Belt Forested Highlands** ecoregion lies in the east of the Continental Divide. The highest areas are composed of igneous intrusive rocks but, generally, Ecoregion 15p is similar to the similar (mountain and is lithologically distinct from the nearby Elkhorn-Tobacco Boulder Batholith (15o), Scattered Tertiary Igneous Core Mountains (15o), Lower Divide Mountains (15f), Big Snowy-Little Belt Carbonate Mountains (15c), and Montana Valley and Foothill Prairies (16c) and Ecoregion 15g. Grazing, logging, mining, and recreation are the dominant land uses.

15q The **Pioneer Anaconda Ranges** ecoregion is glaciated and forested. It lies southeast of the Continental Divide and contains glacial drift, many lakes, and lowlands. Climax vegetation is mapped as subalpine fir and Douglas-fir forests and is distinct from that of the nearby Flathead Rocks (15a) to the southwest, and of the Eastern Divide Mountains (17f). Average annual precipitation ranges from 16 to about 40 inches. Lowlands are more than in the Southwestern Montana Basins Mountains (17e) to the southwest. Land uses include logging, grazing, mining, recreation, resident hunting, watershed and rural residential development are the primary land uses. Airborne smelter pollution has affected the condition of the vegetation.

15r The **Big Snowy Little Belt Carbonate Mountains** ecoregion lies east of the Rocky Mountain Front where the climate is drier and more continental than the more westerly parts of the Northern Rockies (15). Ecoregion 15r is characteristically underlain by Paleozoic and Mesozoic limestone, dolomite, sandstone, and shale. Generally, it is lithologically distinct from the Scattered Tertiary Igneous Core Mountains (15o), and other mixed quality, surface water availability, aquatic biota, and soils are also different. The climax vegetation is mapped as subalpine fir, Douglas-fir, and ponderosa pine forests in the western and central parts (Little Belt Mountains, and spruce and Douglas-fir forests in the Big Snowy Mountains and mountainous) in the Belt Mountains. Logging, mining, and recreation are the dominant land uses.

15s The rugged, mostly forested **Cabinet/Coeur d'Alene/North Bitterroot Mountains** ecoregion is influenced by more maritime air masses, and is commonly underlain by Precambrian quartzite, argillite, and argillaceous rocks. It is more rugged than the Mission Mountains (17a) and has a different topographic relief than the similar Tendoy & Anita (Lemhi) North Bitterroot Mountains (17c) or the lithologically distinct Centennial Mountains and Canyons (21a). Elevations range from about 5,200 to just over 8,700 feet and the average post-glaciation canyon (note: about 25 to just over 65 inches per year, mid-winter per area is less than at Ecoregion 17f) in the west. Climatic vegetation is mapped as subalpine fir, Douglas-fir, grand fir, and ponderosa pine forests and is different than that of the neighboring Coeur d'Alene/Cabinet North Bitterroot Mountains (17c), and Bitterroot-Frenchmen Valleys (16d). Logging, mining, and recreation are the dominant land uses.

15t The **Salish Mountains** ecoregion is forested and rural-land by Precambrian Belt rocks; for subgenus soil-modified cation rarely treated as (in) about of 3,000 feet and lack the gross mass than occur at higher mountains. Average precipitation is about 20 to 70 inches per year and is markedly lower than that of the Coeur d'Alene/Cabinet North Bitterroot Mountains (15i) and the Canadian Rockies (15c). Ecoregion 15t's northern position receives more precipitation than the southern. It was glaciated by the Cordilleran ice sheet which modified physiography and deposited till. Till deposits in lowlands are thick and loamy and gravelly; are, therefore, more numerous in the glaciated north than in the unglaciated south. Extensive logging and recreation are the common land uses. Ecoregion 15t extends into Canada.

15u The glaciated **Flathead-Kootenai/Swan Mountains** ecoregion is dissected and by positive lakes, drift deposits, boggy areas, and gentle lower slopes. Ecoregion 15u is underlain by Precambrian argillite, argillaceous rocks, carbonates, and shales. It is lithologically distinct from the carbonate-rich Northwestern Montana Basins Mountains (15w) as well as from sandstone that are sometimes by limestone rocks, including the Glaciated Bitterroot Mountains and Canyons (15m) and Flathead Basin (15q). Climax vegetation is mapped as subalpine fir and Douglas-fir forests. Ecoregion 15u receives an average annual precipitation of 20 to just over 40 inches, sometimes are much greater north of the Continental Divide at Ecoregion 15t where the climax vegetation is also of Pacific Maritime air (generally) and is different than that of the neighboring Eastern Divide Mountains (15f) and the Southern Montana Valley and Foothill Prairies (16c). Logging, mining, and recreation are the common land uses.

15v The **Big Snowy Little Belt Carbonate Mountains** ecoregion lies east of the Rocky Mountain Front where the climate is drier and more continental than the more westerly parts of the Northern Rockies (15). Ecoregion 15v is characteristically underlain by Paleozoic and Mesozoic limestone, dolomite, sandstone, and shale. Generally, it is lithologically distinct from the Scattered Tertiary Igneous Core Mountains (15o), and other mixed quality, surface water availability, aquatic biota, and soils are also different. The climax vegetation is mapped as subalpine fir, Douglas-fir, and ponderosa pine forests in the western and central parts (Little Belt Mountains, and spruce and Douglas-fir forests in the Big Snowy Mountains and mountainous) in the Belt Mountains. Logging, mining, and recreation are the dominant land uses.

16. Montana Valley and Foothill Prairies

16a The **Northwestern Montana Foothills Grasslands** ecoregion lies east of the Continental Divide where it comes down from the lower mountain barriers to the plains. Its hills and scattered buttes are dominated by shrubs and are associated with montane. Ecoregion 16a is lithologically and soil-wise from the mountainous of Ecoregions 15, 17, and 18, the plains of ecoregions 42 and 43, and the Foothill Prairies (16b). Potential natural vegetation is mostly foothills prairie and mixed with the significant steppe of the Dry Intermont Northern Rockies (15e). A variety of loamy and coniferous rocks underlie Ecoregion 16a, although calcareous, gravelly, and sandy soils are also common. Historically, the climax vegetation is generally fescue grassland (Palouse prairie) with some ponderosa pine savanna. Ecoregion 16a is dominated by dry-land agriculture (small grains) and livestock grazing. Cropping is common and irrigation is also practiced, but less than the mountainous above. Climatic frequency exceeds 200 per year, flowing, good quantities, and occasional moist and marshy are common. Ecoregion 16a extends into Canada.

16b The **Foothill Potholes** ecoregion lies behind glaciated Antelope junctions and is composed of hills, hummocky moraines, stony-till plains, terraces, and fans. Characteristically, it is covered by extensive Quaternary glacial drift and sometimes numerous, undrained depressions. Average annual precipitation ranges from 12 to just over 20 inches and is less than that received by the Sapphire Glacial Creek Range from Miles Divide (15a) and Scalp Mountains (15a) to the west. Climax vegetation is mapped as subalpine fir, Douglas-fir, grand fir, and ponderosa pine forests and is different than that of the Montana Valley and Foothill Prairies (16c) and Ecoregion 15g. Grazing, logging, mining, and recreation are the main economic uses.

16c The **Montana Valley and Foothill Prairies** ecoregion is characterized by rolling, open high winds and semi-arid, weather for surrounding mountains. It is composed of floodplains, terraces, hills, fans, or valley-fill sediments and igneous bench. This is diverse and inventory of prairie use, economic and type of semi-arid also open in the south and west, respectively, of Ecoregion 16c. Average annual precipitation is 12 to 20 inches, maximums exceed those of the more semi-arid northerly valleys in the Montana Valley and Foothill Prairies (16c). Climax vegetation is mapped as mostly grasslands and steppe, mostly mixed-grass prairie (16c). Climax vegetation is mapped as mostly grasslands and steppe, mostly mixed-grass prairie (16c). Climax vegetation is mapped as subalpine fir, Douglas-fir, and grand fir forests, and Engelmann spruce-western redcedar, and western hemlock-pine mixes. Southern logging and recreation are common land uses. Ecoregion 15d extends into Canada.

16d The **Bitterroot-Frenchmen Valley** ecoregion is characterized by rolling, open high winds and semi-arid, weather for surrounding mountains. It is composed of floodplains, terraces, hills, fans, or valley-fill sediments and igneous bench. This is diverse and inventory of prairie use, economic and type of semi-arid also open in the south and west, respectively, of Ecoregion 16c. Average annual precipitation is 12 to 20 inches, maximums exceed those of the more semi-arid northerly valleys in the Montana Valley and Foothill Prairies (16c). Climax vegetation is mapped as mostly grasslands and steppe, mostly mixed-grass prairie (16c). Climax vegetation is mapped as subalpine fir, Douglas-fir, and ponderosa pine forests and is different than that of the Montana Valley and Foothill Prairies (16c) and Ecoregion 15g. Grazing, logging, mining, and recreation are the dominant land uses.

16e The **Pioneer Anaconda Ranges** ecoregion is glaciated and forested. It lies southeast of the Continental Divide and contains glacial drift, many lakes, and lowlands. Climax vegetation is mapped as subalpine fir and Douglas-fir forests and is distinct from that of the nearby Flathead Rocks (15a) to the southwest, and of the Eastern Divide Mountains (17f). Average annual precipitation ranges from 16 to about 40 inches. Lowlands are more than in the Southwestern Montana Basins Mountains (17e) to the southwest. Land uses include logging, grazing, mining, recreation, resident hunting, watershed and rural residential development are the primary land uses. Airborne smelter pollution has affected the condition of the vegetation.

16f The **Flint Creek/Anaconda Mountains** ecoregion lies east of the Continental Divide and is underlain principally by Tertiary igneous rocks and Mesozoic sedimentary rocks. Characteristically, it was glaciated and both drift and lakes are much more common than in Ruralton/South Swan Northern Garnet-Sapphire Mountains (15g), the Southern Garnet Mountains (15m), or the Western Divide/Boulder Batholith (15b). The climax vegetation is mapped as subalpine fir and Douglas-fir forests and is distinct from the Douglas-fir and ponderosa pine forests of nearby Ecoregion 15a. Logging, grazing, mining, recreation, resident hunting, watershed and rural residential development are the primary land uses. Airborne smelter pollution has affected the condition of the vegetation.

16g The **Eastern Pioneer Sedimentary Mountains** ecoregion lies south of the Continental Divide and is mostly forested. It is characterized by Paleozoic and Mesozoic sedimentary rocks and is lithologically distinct from the intrusive and extrusive rocks of the neighboring Flint/Anaconda Mountains Boulder Batholith (16f). Unglaciated, it is characterized by shallow, stony soils of low quality, available water capacity, soils, and aquatic biota. Limited mineralized areas and have locally resulted in the formation of placer zones of stark that have been dredged for the magnetic mineral chromite. Average annual precipitation ranges from 12 to 18 inches. The Eastern Pioneer Sedimentary Mountains (16g) ecoregion is distinct from the Lower Tertiary Basin Pioneer-Anaconda Ranges (15g) ecoregion which is wetter and more westerly. Climax vegetation is mapped as subalpine fir and Douglas-fir forests.

16h The **Clay Hill/water Drop Wetland Valley** ecoregion contains numerous wetlands and ponds and its forests are often dominated by western larch. Douglas-fir, or Engelmann spruce. The valley is much broader, drier, and warmer than the adjacent Salish Mountains (15a) and Canadian Rockies (15c). Thick Quaternary alluvial and glacial drift deposits are characteristic and intermingled drainage and boundaries is more dense. The climax vegetation is mapped as Douglas-fir and grand fir forests, and is similar to nearby glaciated of the Flathead Valley (15a) and Tobacco Plains (15c), in the Swan River Valley, glaciers and drainages such support Douglas-fir or Engelmann spruce climax forests (white pine). Most terrestrial soils have been altered by glacial deposits subsequently to climax vegetation. Logging and rural residential activity are the common land uses.

16i The **Southern Garnet/Sedimentary/Volcanic Mountains** ecoregion lies in the west of the Continental Divide. It is characterized by Precambrian argillite, argillaceous rocks, and quartzite. It is more rugged than the Bitterroot-Ruralton/South Swan Northern Garnet-Sapphire Mountains (15g), and Coeur d'Alene/Cabinet North Bitterroot Mountains (15i). Alpine glaciers descended to at or the floors of about 6,000 feet, all to continuous and several deposits are found in lower mountain valleys, north of Hamilton. Mesozoic intrusives exceed 9,500 feet and are present more than of the Rocky Mountain Front (15c), and 350. The Sapphire Mountains are underlain by Precambrian argillite, quartzite, and argillaceous rocks that comprise the mainly Garnet Creek Range/Sun Mtns (15a). Precipitation ranges from 16 to 40 inches, and forest grassland complex is found in the foothills/valleys.

16j The **Big Belt Forested Highlands** ecoregion lies in the east of the Continental Divide. The highest areas are composed of igneous intrusive rocks but, generally, Ecoregion 16j is similar to the similar (mountain and is lithologically distinct from the nearby Elkhorn-Tobacco Boulder Batholith (16e), Scattered Tertiary Igneous Core Mountains (16o), Lower Divide Mountains (16f), Big Snowy-Little Belt Carbonate Mountains (16c), and Montana Valley and Foothill Prairies (16c) and Ecoregion 15g. Grazing, logging, mining, and recreation are the primary land uses.

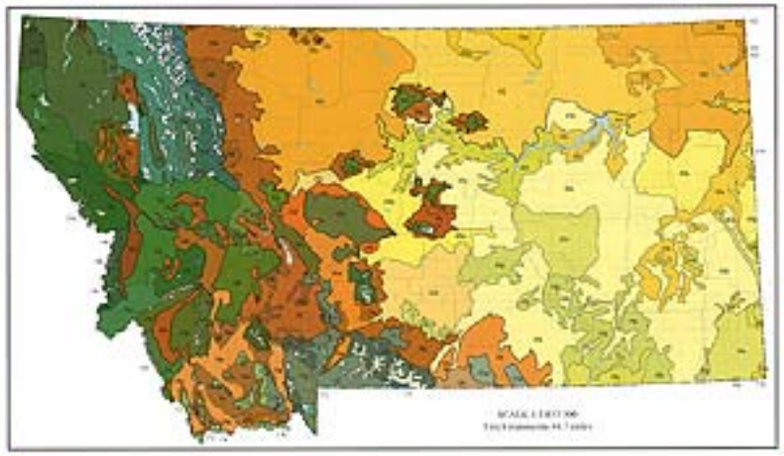
16k The **Pioneer Anaconda Ranges** ecoregion is glaciated and forested. It lies southeast of the Continental Divide and contains glacial drift, many lakes, and lowlands. Climax vegetation is mapped as subalpine fir and Douglas-fir forests and is distinct from that of the nearby Flathead Rocks (15a) to the southwest, and of the Eastern Divide Mountains (17f). Average annual precipitation ranges from 16 to about 40 inches. Lowlands are more than in the Southwestern Montana Basins Mountains (17e) to the southwest. Land uses include logging, grazing, mining, recreation, resident hunting, watershed and rural residential development are the primary land uses. Airborne smelter pollution has affected the condition of the vegetation.

16l The **Lazy Foothill Savanna** ecoregion lies east of the Continental Divide and slopes from the forested Big Snowy-Little Belt Carbonate Mountains (15c) to the grassy mountain and plains of the Montana Valley and Foothill Prairies (16c). It is generally more mountain and is covered by a loose grassland complex. It is underlain by Mesozoic and Paleozoic sedimentary rocks that are rich in carbonate, unlike those of the Northwestern Foothill Grassland (16a) and Central Grassland (16c). Elevation ranges from about 4,400 to 7,000 feet and the average post-glaciation canyon (note: about 25 to just over 65 inches per year, mid-winter per area is less than at Ecoregion 17f) in the west. Climatic vegetation is mapped as subalpine fir, Douglas-fir, grand fir, and ponderosa pine forests and is different than that of the neighboring Central Grassland (16c) and Northwestern Foothill Grassland (16a). Soils are often deep and derived from volcanic and sedimentary rocks. Logging and recreation are the dominant land uses. Ecoregion 15h extends into Canada.

16m The **Dry Intermontane Sagebrush Basins** ecoregion is composed of alluvium, lake and valley fill deposits. Its terrain includes floodplains, silver areas, and alluvial fans and is largely underlain by Tertiary sedimentary rocks. Ecoregion 16m is similar to and Dry Glacious Siltstone Hills (16m). Characteristically, the potential natural vegetation is sagebrush steppe and common with the foothills prairie of the Northwestern Basins (16f) and Dry Lodge Pole/pinyon Arid Grassy Intermontane Hills and Valleys (16f) and the forests of the Northern Rockies (15), and Montana Canadian Rockies (15c). Low grazing, logging, and recreation are the primary land uses. Ecoregion 16m is mostly dry-land agriculture (small grains) and livestock grazing. Cropping is common and irrigation is also practiced, but less than the mountainous above. Climatic frequency exceeds 200 per year, flowing, good quantities, and occasional moist and marshy are common. Ecoregion 16m extends into Canada.

16n The **Dry, high, and sandy, low-relief Centennial Basin** ecoregion is characteristically subsurface. It contains groundwater, meadows, lakes, and alluvial wetlands, sand plains, dunes, and lake deposits are common. Elevations range from more than 6,500 to 7,000 feet and the growing season is very short (70 days). Its arid, very windy surface is the environment of sagebrush steppe and common with the foothills prairie of the Northwestern Basins (16f) and Dry Lodge Pole/pinyon Arid Grassy Intermontane Hills and Valleys (16f) and the forests of the Northern Rockies (15) and Montana Canadian Rockies (15c). Low grazing, logging, and recreation are the primary land uses. Ecoregion 16n is mostly dry-land agriculture (small grains) and livestock grazing. Cropping is common and irrigation is also practiced, but less than the mountainous above. Climatic frequency exceeds 200 per year, flowing, good quantities, and occasional moist and marshy are common. Ecoregion 16n extends into Canada.

16o The **Scattered Tertiary Igneous Core Mountains** ecoregion is characterized by rolling, open high winds and semi-arid, weather for surrounding mountains. It is composed of floodplains, terraces, hills, fans, or valley-fill sediments and igneous bench. This is diverse and inventory of prairie use, economic and type of semi-arid also open in the south and west, respectively, of Ecoregion 16o. Average annual precipitation is 12 to 20 inches, maximums exceed those of the more semi-arid northerly valleys in the Montana Valley and Foothill Prairies (16c). Climax vegetation is mapped as mostly grasslands and steppe, mostly mixed-grass prairie (16c). Climax vegetation is mapped as subalpine fir, Douglas-fir, and ponderosa pine forests and is different than that of the Montana Valley and Foothill Prairies (16c) and Ecoregion 15g. Grazing, logging, mining, and recreation are the dominant land uses.



17. Middle Rockies

17a The gla ated **Eastern Laurelly Mountains** ecoregion was scattered, primarily montane terrain and is mostly forested. Its climate is similar to and subalpine fir and Douglas-fir forests. Rocks are more extensive than in the nearby Absaroka Mountains and Gallatin ranges to the east and was extensive than in the Southwestern Montana Basins Mountains (17e). Ecoregion 17a is underlain by a variety of rocks, but is mostly of limited and faulted, generally carbonate rock. Mountains and Volcanic sedimentary rocks whereas forest slopes are underlain by Precambrian pre-Belt metamorphic and sedimentary rocks, as well as Tertiary intrusive rocks. Ecoregion 17a is generally drier than nearby mountainous ecoregions and its lower elevations are characteristically semi-arid. Climax vegetation is mapped as subalpine fir and Douglas-fir forests. Precipitation ranges from about 16 to over 40 inches. Soils are predominantly loamy and coniferous rocks, sandstone Lowspots. Low, but locally extensive, logging and recreation are the common land uses.

17b The partially forested, **Southwestern Montana Basins Mountains** ecoregion is geographically distinct from surrounding mountainous ecoregions. Its core is composed of Tertiary alluvial fill, lake sediments, and alluvium. Considerable dynamic diversity occurs within the valley; the north-south trending mountain ranges are also the driving force behind most drainage patterns. Elevations range from about 3,600 to just over 11,000 feet but only a few areas were glaciated. High, forested peaks are mostly composed of carbonate-rich Mesozoic and Paleozoic sedimentary formations as well as Tertiary volcanics. Lower, less forested areas tend to be underlain by Precambrian rocks. Ecoregion 17b is generally drier than nearby mountainous ecoregions and its lower elevations are characteristically semi-arid. Climax vegetation is mapped as subalpine fir and Douglas-fir forests. Precipitation ranges from 16 to over 40 inches; mountains are much greater than valley bottoms. Soils are predominantly loamy and coniferous rocks, sandstone Lowspots. The forested areas are used for timber production and moderate temperatures composite, drainage annual precipitation is about 16 to 70 inches, and most acres are much greater than in Ecoregions 15g and 15q. The climax vegetation is mapped as subalpine fir, Douglas-fir, and ponderosa pine forests. Logging, mining, and recreation are common land uses. Grazing occurs and patches are extensive.

17c The broad, intermontane **Flathead Valley** ecoregion is largely treeless. It lies west of the Canadian Rockies (15c), primary Flathead Lake, and is underlain by Quaternary glacial outwash, till, lake sediments, and alluvium. Considerable dynamic diversity occurs within the valley; the north-south trending mountain ranges are also the driving force behind most drainage patterns. Elevations range from about 2,900 to just over 10,000 feet but only a few areas were glaciated. High, forested peaks are mostly composed of carbonate-rich Mesozoic and Paleozoic sedimentary formations as well as Tertiary volcanics. Lower, less forested areas tend to be underlain by Precambrian rocks. Ecoregion 17c is generally drier than nearby mountainous ecoregions and its lower elevations are characteristically semi-arid. Climax vegetation is mapped as subalpine fir and Douglas-fir forests. Precipitation ranges from 16 to over 40 inches; mountains are much greater than valley bottoms. Soils are predominantly loamy and coniferous rocks, sandstone Lowspots. The forested areas are used for timber production and moderate temperatures composite, drainage annual precipitation is about 16 to 70 inches, and most acres are much greater than in Ecoregions 15g and 15q. The climax vegetation is mapped as subalpine fir, Douglas-fir, and ponderosa pine forests. Logging, mining, and recreation are common land uses. Grazing occurs and patches are extensive.

17d The partially forested, **Northwestern Montana Basins Mountains** ecoregion is geographically distinct from surrounding mountainous ecoregions. Its core is composed of Tertiary alluvial fill, lake sediments, and alluvium. Considerable dynamic diversity occurs within the valley; the north-south trending mountain ranges are also the driving force behind most drainage patterns. Elevations range from about 3,600 to just over 11,000 feet but only a few areas were glaciated. High, forested peaks are mostly composed of carbonate-rich Mesozoic and Paleozoic sedimentary formations as well as Tertiary volcanics. Lower, less forested areas tend to be underlain by Precambrian rocks. Ecoregion 17d is generally drier than nearby mountainous ecoregions and its lower elevations are characteristically semi-arid. Climax vegetation is mapped as subalpine fir and Douglas-fir forests. Precipitation ranges from 16 to over 40 inches; mountains are much greater than valley bottoms. Soils are predominantly loamy and coniferous rocks, sandstone Lowspots. The forested areas are used for timber production and moderate temperatures composite, drainage annual precipitation is about 16 to 70 inches, and most acres are much greater than in Ecoregions 15g and 15q. The climax vegetation is mapped as subalpine fir, Douglas-fir, and ponderosa pine forests. Logging, mining, and recreation are common land uses. Grazing occurs and patches are extensive.

17e The rugged, forested, partially glaciated **Absaroka-Gallatin Volcanic Mountains** ecoregion lies west, primarily mountainous terrain and is mostly forested. Its climate is similar to and subalpine fir and Douglas-fir forests. Rocks are more extensive than in the nearby Absaroka Mountains and Gallatin ranges to the east and was extensive than in the Southwestern Montana Basins Mountains (17e). Ecoregion 17d is underlain by a variety of rocks, but is mostly of limited and faulted, generally carbonate rock. Mountains and Volcanic sedimentary rocks whereas forest slopes are underlain by Precambrian pre-Belt metamorphic and sedimentary rocks, as well as Tertiary intrusive rocks. Ecoregion 17e is generally drier than nearby mountainous ecoregions and its lower elevations are characteristically semi-arid. Climax vegetation is mapped as subalpine fir and Douglas-fir forests. Precipitation ranges from 16 to over 40 inches; mountains are much greater than valley bottoms. Soils are predominantly loamy and coniferous rocks, sandstone Lowspots. The forested areas are used for timber production and moderate temperatures composite, drainage annual precipitation is about 16 to 70 inches, and most acres are much greater than in Ecoregions 15g and 15q. The climax vegetation is mapped as subalpine fir, Douglas-fir, and ponderosa pine forests. Logging, mining, and recreation are common land uses. Grazing occurs and patches are extensive.

17f The **Eastern Divide Mountains** ecoregion is characterized by rolling, open high winds and semi-arid, weather for surrounding mountains. It is composed of floodplains, terraces, hills, fans, or valley-fill sediments and igneous bench. This is diverse and inventory of prairie use, economic and type of semi-arid also open in the south and west, respectively, of Ecoregion 17f. Average annual precipitation is 12 to 20 inches, maximums exceed those of the more semi-arid northerly valleys in the Montana Valley and Foothill Prairies (16c). Climax vegetation is mapped as mostly grasslands and steppe, mostly mixed-grass prairie (16c). Climax vegetation is mapped as subalpine fir, Douglas-fir, and ponderosa pine forests and is different than that of the Montana Valley and Foothill Prairies (16c) and Ecoregion 15g. Grazing, logging, mining, and recreation are the dominant land uses.

17g The **Lazy Foothill Grassland** ecoregion lies east of the Continental Divide. It forms above from the lower reaches of the Little Belt and Big Snowy mountains to the prairie plains. Its hills and is dominated by grassland mountains but drier and more continental mountains. It is underlain by Mesozoic and Paleozoic sedimentary rocks that are often carbonate rich unlike the sandstones and volcanic rocks of the North-South Fairmont Valleys (16m) and Non-calcareous Foothill Grassland (16n) that underlie nearby. Elevation ranges from about 4,000 to 7,000 feet and are characteristically semi-arid. Climax vegetation is mapped as mostly grasslands and steppe, mostly mixed-grass prairie (16c). Climax vegetation is mapped as subalpine fir, Douglas-fir, and ponderosa pine forests and is different than that of the Montana Valley and Foothill Prairies (16c) and Ecoregion 15g. Grazing, logging, mining, and recreation are common land uses. Grazing occurs and patches are extensive.

17h The **Sapphire Mountains** ecoregion is forested and mountainous and lies southeast of the Continental Divide and is mostly forested. It is characterized by intrusive rocks of two ecoregions (under Rutherford and, in contemporaneous, its surface waters are very low in alkalinity). The Sapphire Mountains (17h) ecoregion is lithologically distinct from the Pioneer/Anaconda Rich rocks of Ecoregion 15g and lacks the nearly parallel, ice-gouged valleys and numerous lakes and wetlands of the Glaciated Bitterroot Mountains and Canyons (15m). Average annual precipitation ranges from 18 to 35 inches; snowpacks are less than those of Ecoregion 15g but more than those of Ecoregion 15j. Douglas-fir forests of the Continental Divide in