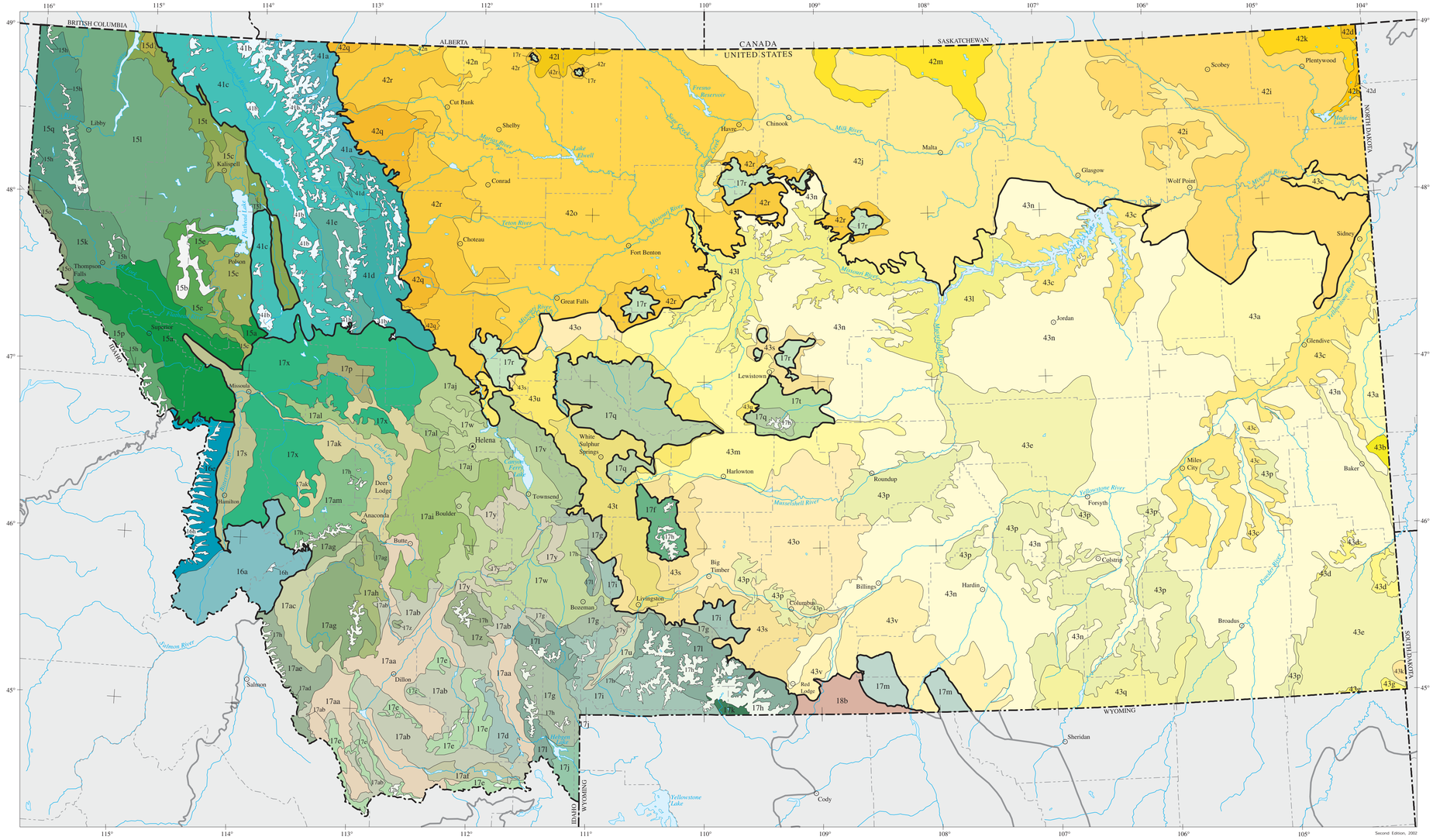
DRAFT 2

Ecoregions of Montana

Second Edition



15 Northern Rockies

- 15a Grave Creek Range-Nine Mile Divide
- 15b Camas Valley
- 15c Flathead Valley
- 15d Tobacco Plains
- 15e Flathead Hills and Mountains
- 15h High Northern Rockies
- 15i Clearwater Mountains and Breaks
- 15k Clark Fork Valley and Mountains
- 15l Salish Mountains
- 15o Coeur d' Alene Metasedimentary Zone
- 15p St. Joe Schist-Gneiss Zone
- 15q Purcell-Cabinet-North Bitterroot Mountains
- 15t Stillwater-Swan Wooded Valley

16 Idaho Batholith

- 16a Eastern Batholith
- 16b Lochsa Uplands
- 16e Glaciated Bitterroot Mountains and Canyons
- 16h High Idaho Batholith

17 Middle Rockies

- 17d Eastern Gravelly Mountains
- 17e Barren Mountains
- 17f Crazy Mountains
- 17g Mid-Elevation Sedimentary Mountains
- 17h Alpine Zone
- 17i Absaroka-Gallatin Volcanic Mountains
- 17j Yellowstone Plateau
- 17k Granitic Subalpine Zone
- 17l Gneissic-Schistose Forested Mountains
- 17m Dry Mid-Elevation Sedimentary Mountains
- 17p Foothill Potholes
- 17q Big Snowy-Little Belt Carbonate Mountains
- 17r Scattered Eastern Igneous-Core Mountains
- 17s Bitterroot-Frenchtown Valley
- 17t Limy Foothill Savanna
- 17u Paradise Valley
- 17v Big Belt Forested Highlands
- 17w Townsend Basin
- 17x Rattlesnake-Blackfoot-South Swan-Northern Garnet-Sapphire Mountains
- 17y Townsend-Horseshoe-London Sedimentary Hills
- 17z Tobacco Root Mountains
- 17aa Dry Intermontane Sagebrush Valleys
- 17ab Dry Gneissic-Schistose-Volcanic Hills
- 17ac Big Hole
- 17ad Western Beaverhead Mountains
- 17ae Forested Beaverhead Mountains
- 17af Centennial Basin
- 17ag Pioneer-Anaconda Ranges
- 17ah Eastern Pioneer Sedimentary Mountains
- 17ai Elkhorn Mountains-Boulder Batholith
- 17aj Eastern Divide Mountains
- 17ak Deer Lodge-Philipsburg-Avon Grassy Intermontane Hills and Valleys
- 17al Southern Garnet Sedimentary-Volcanic Mountains
- 17am Flint Creek-Anaconda Mountains

18 Wyoming Basin

- 18b Bighorn Basin

41 Canadian Rockies

- 41a Northern Front
- 41b Crestal Alpine-Subalpine Zone
- 41c Western Canadian Rockies
- 41d Southern Carbonate Front
- 41e Flathead Thrust Faulted Carbonate-Rich Mountains

42 Northwestern Glaciated Plains

- 42b Collapsed Glacial Outwash
- 42d Northern Missouri Coteau
- 42i Glaciated Dark Brown Prairie
- 42j Glaciated Northern Grasslands
- 42k Coteau Lakes Upland
- 42l Sweetgrass Uplands
- 42m Cherry Patch Moraines
- 42n Milk River Pothole Upland
- 42o North Central Brown Glaciated Plains
- 42q Rocky Mountain Front Foothill Potholes
- 42r Foothill Grassland

43 Northwestern Great Plains

- 43a Missouri Plateau
- 43b Little Missouri Badlands
- 43c River Breaks
- 43d Forested Buttes
- 43e Sagebrush Steppe
- 43g Semiarid Pierre Shale Plains
- 43k Dense Clay Prairie
- 43l Missouri Breaks Woodland-Scrubland
- 43m Judith Basin Grassland
- 43n Montana Central Grasslands
- 43o Unglaciated Montana High Plains
- 43p Pine Scoria Hills
- 43q Mesic Dissected Plains
- 43s Non-calcareous Foothill Grassland
- 43t Shield-Smith Valleys
- 43u Limy Foothill Grassland
- 43v Pryor-Big Horn Foothills

Level III ecoregion
Level IV ecoregion
County boundary
State boundary
International boundary

SCALE 1:1 500 000

15 10 5 0 30 60 mi
30 20 10 0 60 120 km

Albers equal area projection
Standard parallels 46° N and 48° N

Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources; they are designed to serve as a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components. By recognizing the spatial differences in the capacities and potentials of ecosystems, ecoregions stratify the environment by its probable response to disturbance (Bryce and others, 1999). These general purpose regions are critical for structuring and implementing ecosystem management strategies across federal agencies, state agencies, and nongovernment organizations that are responsible for different types of resources within the same geographical areas (Omernik and others, 2000).

The approach used to compile this map is based on the premise that ecological regions can be identified through the analysis of the spatial patterns and the composition of biotic and abiotic phenomena that affect or reflect differences in ecosystem quality and integrity (Wiken, 1986; Omernik, 1987, 1995). These phenomena include geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology.

The relative importance of each characteristic varies from one ecological region to another regardless of the hierarchical level. A Roman numeral hierarchical scheme has been adopted for different levels of ecological regions. Level I is the coarsest level, dividing North America into 15 ecological regions. Level II divides the continent into 52 regions (Commission for Environmental Cooperation Working Group, 1997). At level III, the continental United States contains 104 ecoregions and the conterminous United States has 84 ecoregions (United States Environmental Protection Agency (USEPA), 2000). Level IV is a further subdivision of level III ecoregions. Explanations of the methods used to define the USEPA's ecoregions are given in Omernik (1995), Omernik and others (2000), and Griffith and others (1989, 1994).

The second edition of "Ecoregions of Montana" revises many ecoregion polygon assignments that appeared in the first edition (Woods and others, 1999). These changes were made after research in Idaho (McGrath and others, 2002) recognized the Idaho Batholith as a separate level III ecoregion (Ecoregion 16), limited the Northern Rockies (15) to strongly marine-influenced areas, and transferred the Montana Valley and Foothill Prairies (formerly Ecoregion 16) to another level III ecoregion, the Middle Rockies (17). The second edition also modifies a few level IV ecoregion lines along Montana's western border so that ecoregions shared by Montana and Idaho will edge match. In addition, it updates ecoregion names so that they are consistent with the most recent ecoregion work in area (Chapman and others, 2003). However, it is important to note that although many polygon assignments and a few ecoregion names have changed between the first and second editions, nearly all level IV ecoregion line positions are identical on the two editions.

The level III and IV ecoregion map on this poster was compiled at a scale of 1:250,000 and depicts revisions and subdivisions of earlier level III ecoregions that were originally compiled at a smaller scale (USEPA, 2000; Omernik, 1987). This poster is part of a collaborative project primarily between USEPA Region VIII, USEPA National Health and Environmental Effects Research Laboratory (Corvallis, Oregon), Montana Department of Environmental Quality (MDEQ), United States Department of Agriculture-Forest Service, United States Department of Agriculture-Natural Resources Conservation Service (formerly Soil Conservation Service), United States Department of the Interior-Bureau of Land Management, and United States Department of the Interior-U.S. Geological Survey-Earth Resources Observation Systems (EROS) Data Center.

The project is associated with an interagency effort to develop a common framework of ecological regions. Reaching that objective requires recognition of the differences in the conceptual approaches and mapping methodologies applied to develop the most common ecoregion-type frameworks, including those developed by the U.S. Forest Service (Bailey and others, 1994), the USEPA (Omernik, 1987, 1995), and the Natural Resources Conservation Service (U.S. Department of Agriculture–Soil Conservation Service, 1981). As each of these frameworks is further refined, their differences are becoming less discernible. Regional collaborative projects such as this one in Montana, where agreement has been reached among multiple resource management agencies, are a step toward attaining consensus and consistency in ecoregion frameworks for the entire nation.

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