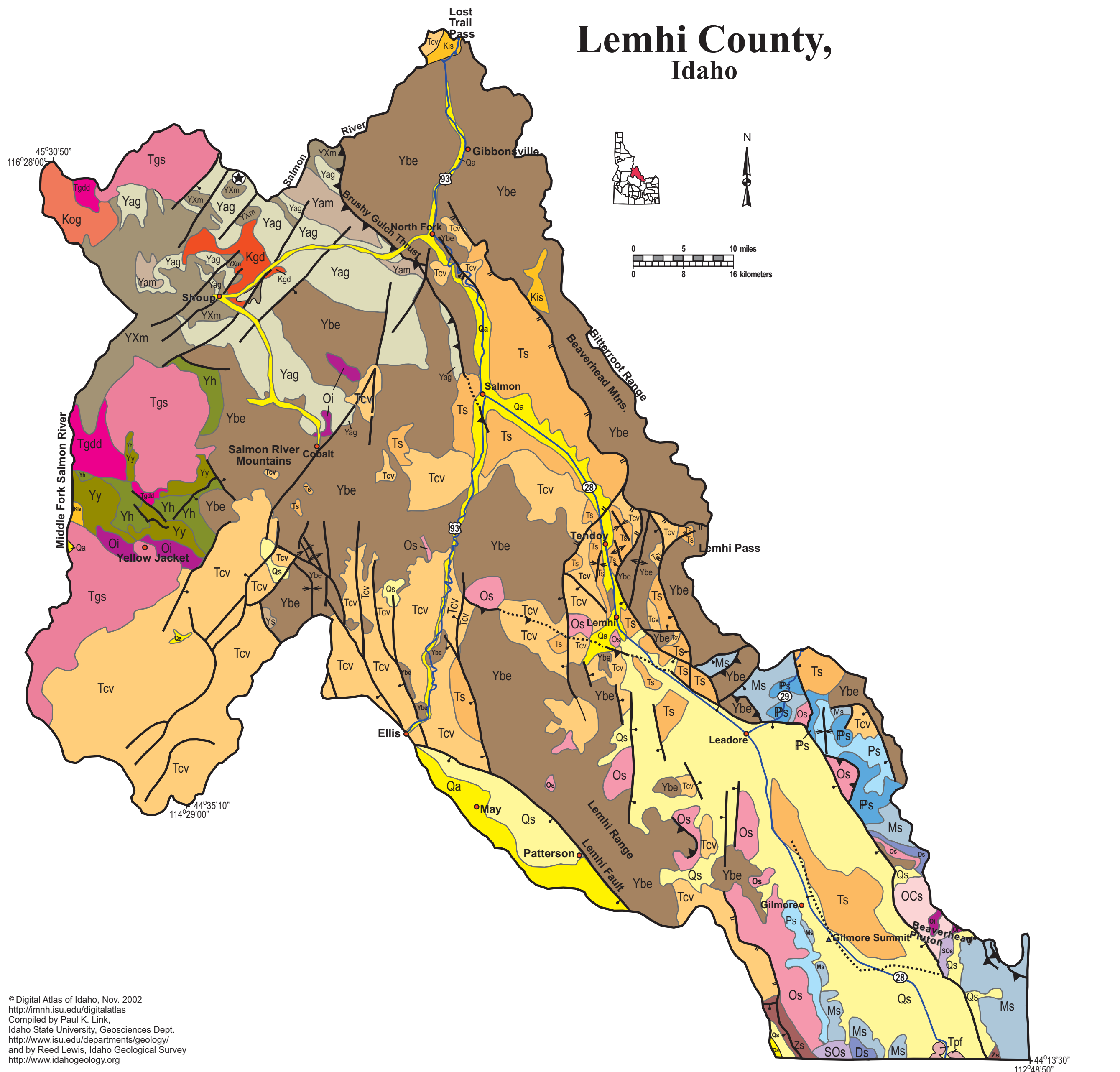


# Lemhi County, Idaho



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## Lemhi County

Lemhi County forms much of eastern Idaho's border with Montana along the Beaverhead Mountains and contains complex geology, rich mineral deposits and tracts of wilderness near the Salmon River. The southern part of the county is within the Basin and Range province with the Beaverhead and Lemhi Ranges and intervening northwest-trending valleys. The Salmon River flowing north from Challis toward Salmon and North Fork, forms the western boundary of the Basin and Range province. The Salmon turns west at North Fork and flows into the River of No Return Wilderness west of Shoup. It joins large tributaries from the south, including Panther Creek and the Middle Fork of the Salmon River, before flowing west into Valley and Idaho Counties.

Much of Lemhi County is underlain by Mesoproterozoic strata of the Belt Supergroup, deposited between 1470 and 1370 years ago. These rocks include the Yellowjacket Formation, Lemhi Group, Swauger and Gunsight formations, and make up most of the northern Lemhi and Beaverhead Ranges and the Salmon River Mountains. Paleozoic sedimentary rocks are exposed in the central Beaverhead and southern Lemhi Ranges, and are mainly limestones. In the Panther Creek area and to the northwest, Belt Supergroup rocks were buried, metamorphosed and intruded by granitic rocks around 1370 Ma.

The area was also subject to intrusion of granitic rocks in Ordovician time, an anomalous age regionally in the Cordilleran orogenic belt.

The Proterozoic and Paleozoic rocks were folded and thrust faulted in Mesozoic time, as part of the Cordilleran thrust belt. A major thrust fault, the Brushy Gulch thrust is exposed northwest of Salmon, and may continue into the Cabin thrust fault system of the Beaverhead Range in Montana.

Eocene volcanic rocks of the Challis volcanic group are found in the southwest corner of Lemhi County, and are cut by northeast striking faults of the Trans-Challis fault system. They are also intruded by coeval Eocene granitic rocks in the Bighorn Crags and Camas Creek areas.

Complex Eocene to Miocene normal faulting produced north-trending basins near Salmon and in the Summit Creek area of the Lemhi Range. Miocene to Recent Basin and Range faulting uplifted the existing mountains.

For more information see the Link and Janecke and Price et al. articles in the Guidebook to the Geology of Eastern Idaho and sections in Rocks, Rails and Trails.

P.K. Link, 10/02

### Description of Geologic Units for Lemhi County, Idaho

- Qa** Quaternary alluvial deposits
- Qs** Quaternary surficial cover, including colluvium, fluvial, alluvial fan, lake, and windblown deposits. Included fluveolian cover on Snake River Plain, (Snake River Group).
- Tpf** Pliocene and Upper Miocene felsic volcanic rocks, rhyolite flows, tuffs, ignimbrites. (in Owyhee County and Mt. Bennett Hills, this should be Tmf).
- Tgs** Eocene granite, pink granite, syenite, rhyolite dikes, and rhyolitic shallow intrusive; last phase of the Challis magmatic event (46 to 44 Ma). Forms craggy scenic mountain landscape in central and northern Idaho.
- Tgdd** Eocene granodiorite and dacite porphyry intrusive, also includes diorite and, in northern Idaho, minor granitic rock; intermediate phase of Challis magmatic event (50 to 46 Ma). Summit Creek stock.
- Ts** Tertiary sedimentary rocks, undifferentiated. Includes Oligocene and Eocene sedimentary rocks in east-central Idaho (Paleogene basins of Janecke). In northern and western Idaho this unit contains Miocene lake and stream deposits formed adjacent to and above the Columbia River and Weiser basalts, which formed dams in stream canyons.

- Tcv** Eocene Challis Volcanic Group, volcanics and volcanoclastics; Older andesitic lavas, intermediate age dacite lava and tuff and younger rhyolite flows and tuffs; 51 to 44 Ma. (Includes Potato Hill and Kamiah volcanics of northern Idaho).
- Kog** Cretaceous orthogneiss, and foliated granodiorite and granite (includes mylonitic plutonic rocks in western Idaho suture zone); deformed early phases of the Idaho batholith.
- Kis** Cretaceous syenitic rocks, northern Idaho; small stocks about 120 Ma.
- Ps** Permian sedimentary rocks.
- Ps** Pennsylvanian sedimentary rocks.
- Ms** Mississippian sedimentary rocks.
- Ds** Devonian sedimentary rocks.
- SOs** Silurian and Ordovician sedimentary rocks.
- Os** Ordovician sedimentary rocks.
- Oi** Ordovician intrusive rocks (includes Beaverhead pluton).
- OEs** Ordovician and Cambrian sedimentary rocks.
- Zs** Neoproterozoic sedimentary rocks undivided.
- Ybe** Belt Supergroup undivided; contains siltite, argillite, sandstone (quartzite) and minor conglomerate in Lemhi Range and near Salmon; includes Meadow Creek metamorphic sequence east of Elk City in the Clearwater River drainage.
- Yam** Mesoproterozoic amphibolite; metamorphosed mafic intrusive rocks. Near Shoup, along the Main Salmon River these are 1370 Ma.
- Yag** Mesoproterozoic augen gneiss and porphyritic granite; near Shoup on the Main Salmon River age is 1370 Ma.
- Yh** Hoodoo Quartzite (Ravalli Group); light-colored feldspathic sandstone, cross bedded.
- Yy** Yellowjacket Formation in the type area near Yellowjacket Mine, Bighorn Crags, and west to town of Big Creek. Contains siltite, calc-silicate rocks, and fine sandstone.
- YXm** High-grade metamorphic rocks (schist, gneiss, quartzite, calc-silicate rocks); includes Elk City metamorphic sequence and related rocks, Syringa metamorphic sequence, and Priest River metamorphic complex.

