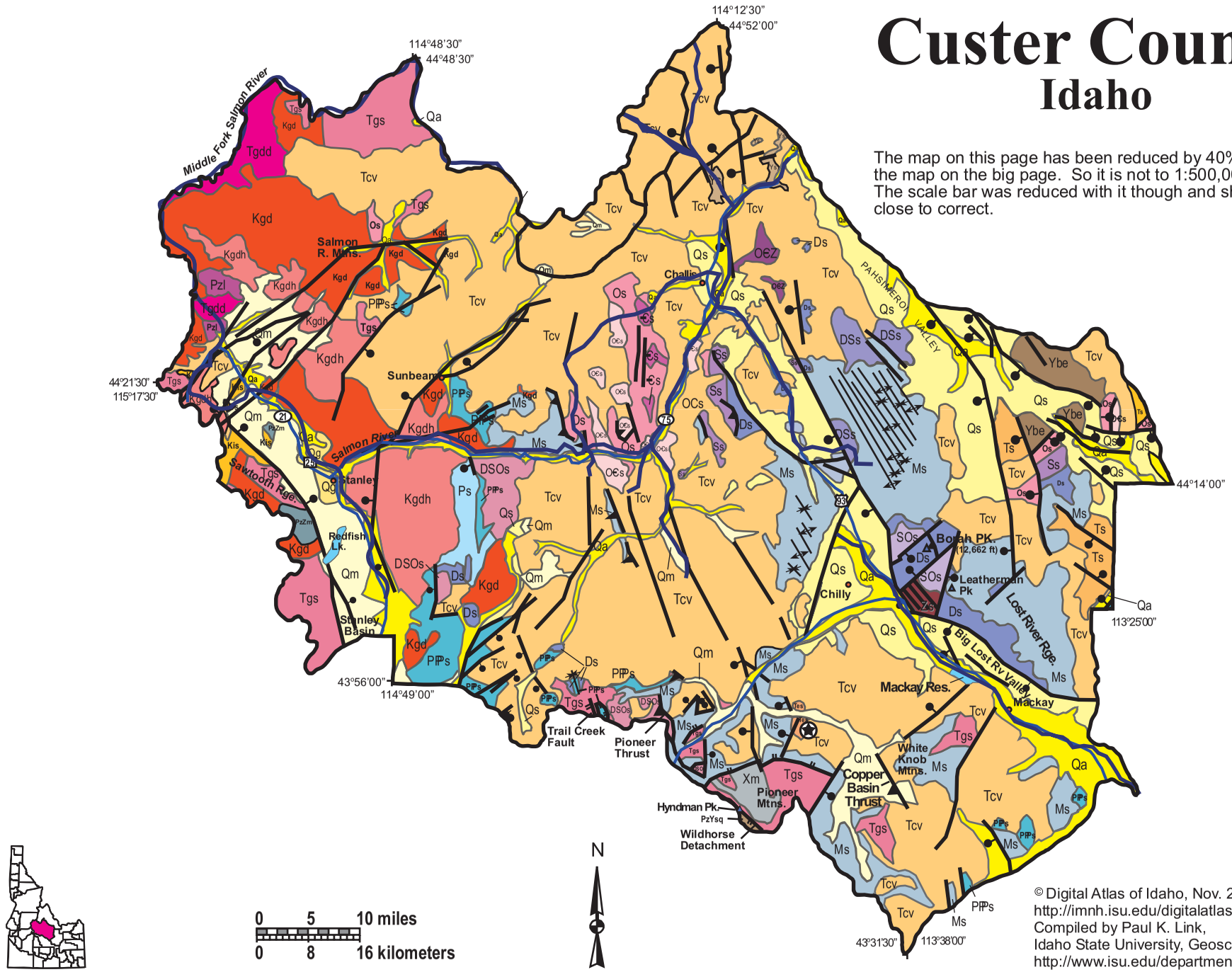
Custer County,
Idaho

The map on this page has been reduced by 40% from the map on the big page. So it is not to 1:500,000 scale. The scale bar was reduced with it though and should be close to correct.



http://imnh.isu.edu/digitalatlas
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Custer County

Custer County lies in the heart of Idaho, and contains as diverse geology as many states and some countries. The county is mainly rugged mountains, with flat habitable terrane only in the Lost River, Pahsimeroi, and Sawtooth Valleys.

The oldest rocks in the county are Paleoproterozoic gneiss in the core of the Pioneer Mountains core complex of the Pioneer Mountains above Copper Basin and Ketchum. Above this gneiss are Proterozoic and Paleozoic metasedimentary rocks, all intruded by an Eocene pluton. The core complex is uplifted on the Wildhorse detachment fault, which forms a domal pattern, and which moved from Eocene until Oligocene time.

In the Pioneer and Boulder mountains north and south of the core complex is the thrust belt of Paleozoic rocks. Ordovician, Silurian and Devonian deep marine strata are found in the hanging wall of the Pioneer thrust fault, faulted below Pennsylvanian and Permian Sun Valley Group. East of the Pioneer thrust is the thick Mississippian Copper Basin Group, which contains the black conglomerates found in the Copper Basin and East Fork Lost River areas.

The White Cloud Peaks, on strike to the northwest, contain similar strata to the Pioneers and Boulders. Here Cretaceous granodiorite, that underlies Castle Peak, highest in the White Clouds, intruded Devonian to Permian sedimentary rocks. Across the Salmon River at the Thompson Creek molybdenum mine, Cretaceous intrusions have produced mineralization still being mined in the 21st century.

This entire area, plus the Smoky Mountains west of Ketchum contain dark-colored organic-rich sedimentary rocks of the central Idaho Black Shale Mineral Belt, Mineral exploration and production in these rocks controlled the early economic development of the area.

The White Knob Mountains, west of Mackay, contain Mississippian limestone intruded by and Eocene granite. Extensive copper mineralization is found on the margins of the granite, and the Empire Mine and associated properties immediately west of Mackay are found in these rocks.

East of the huge Lost River Valley and in the footwall of the west-dipping Lost River fault, are folded Paleozoic limestones and quartzites of the Lost River Range. Borah Peak, highest in Idaho looms above Chilly and the ISU Geoscience Lost River Field Station at its base along the Big Lost River. The northern half of the Lost River Range, north of Willow Creek Summit is the Pahsimeroi Mountains, which contain folded Mississippian strata on the south and unusual breccia at Grouse Peak on the north end immediately east of Challis. East of the Lost River Range, in the northeast corner of the county are Eocene and Oligocene conglomerate and tuff in the Donkey Hills and a western corner of the Lemhi Range underlain by Mesoproterozoic Belt Supergroup.

The Pahsimeroi Valley extends north into the Salmon drainage, and lies on the hanging wall of the Lemhi fault.

The northern third of the county, north of the Salmon River, is underlain mainly by Eocene volcanic rocks of the Challis Volcanic Group, cut by northeast-striking faults of the trans-Challis fault system, which controlled location of vents and hydrothermal systems that controlled mineralization, mainly of gold in the Yankee Fork area.

On the western edge of the co0unty are the spectacular Sawtooth Mountains, looming west of Stanley Basin or Sawtooth Valley. These glaciated peaks are formed of both Cretaceous granodiorite of the Idaho batholith, and Eocene granite associated with the Challis Volcanic Group.

See geology and regional discussions in Rocks, Rails and Trails, plus the Link and Janecke article in Guidebook to the Geology of Eastern Idaho

P.K. Link, 10/02

Description of Units for Custer County, Idaho

Qa	Quaternary alluvial deposits
Qm	Quaternary moraine (unsorted boulders, cobbles and sand) and glaciofluvial outwash (bedded stream deposits formed from streams draining active glacial ice).
Qs	Quaternary surficial cover, including colluvium, fluvial, alluvial fan, lake, and windblown deposits. Included fluveolian cover on Snake River Plain, (Snake River Group).
Tcv	Eocene Challis Volcanic Group, volcanics and volcaniclastics; 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).
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.
Kgd	Cretaceous granitic rocks of the 2 mica suite. Idaho batholith and related plutons; granite and granodiorite that contains both muscovite and biotite. Sodium (Na) rich. Intruded between 80 and 65 Ma.
Kgdh	Cretaceous granitic rocks of the hornblene-biotite suite; granite, granodiorite and megacrystic granodiorite. Potassium (K) rich. Age about 80 to 90 Ma.
Kis	Cretaceous syenitic rocks, northern Idaho; small stocks about 120 Ma.
Pzl	Lower Paleozoic sedimentary rocks (includes roof pendants near Stanley).
PPs	Permian and Pennsylvanian sedimentary rocks.
PPMs	Permian and Carboniferous sedimentary rocks (Snaky Canyon Formation).
Ms	Mississippian sedimentary rocks.
Ss	Silurian sedimentary rocks.
Ds	Devonian sedimentary rocks.
DSs	Devonian and Silurian sedimentary rocks.
DSOs	Devonian, Silurian, and Ordovician sedimentary rocks.
SOs	Silurian and Ordovician sedimentary rocks.
Os	Ordovician sedimentary rocks.
O€s	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.
PzYsq	Paleozoic/Mesoproterozoic schist and quartzite; age uncertain.
PzXm	Paleozoic/Paleoproterozoic metasedimentary rocks (includes metamorphic rocks on Mt. Harrison in Albion Range).
Xm	Paleoproterozoic gneiss in the Centennial Mountains.

Symbols

Geologic unit contacts with unit designation.

Normal fault: certain; dashed where approximately located; dotted where concealed.

Thrust fault: certain; dashed where approximately located; dotted where concealed.

Detachment fault: certain; dashed where approximately located; dotted where concealed.

Anticline: trace of axial plane: large arrow indicates direction of plunge.

Syncline: trace of axial plane: large arrow indicates direction of plunge.

Overturned anticline: trace of axial plane.

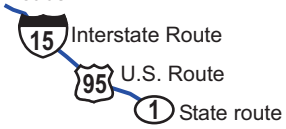
Overturnedsyncline: trace of axial plane.

Location of ISU Rockwalk rock from each county.

Cities

Feature location

Roads



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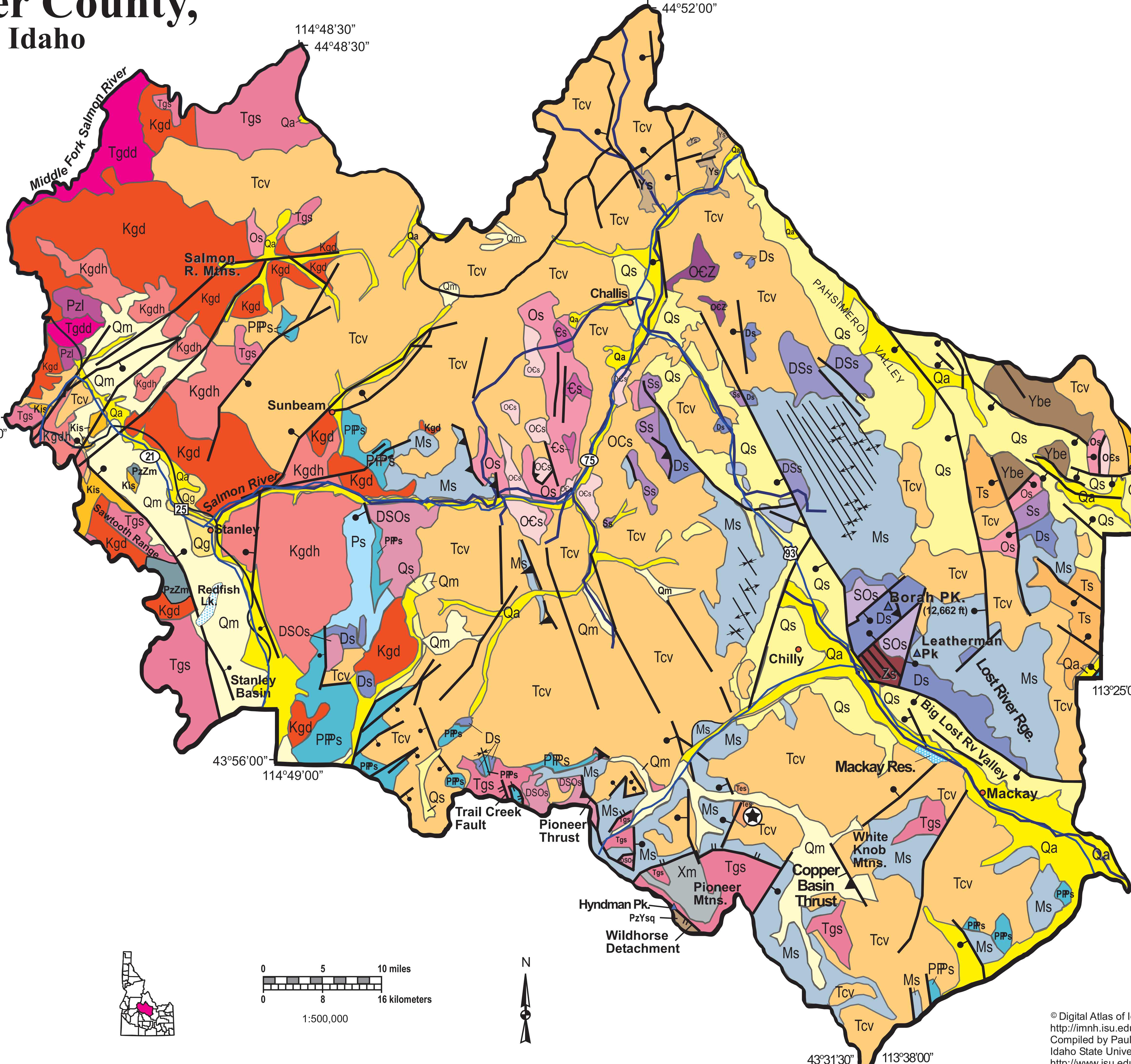

Middle Fork Salmon River
Salmon R. Mtns.
Sunbeam
Salmon River
Stanley
Sawtooth Range
Redfish Lk.
Stanley Basin
Challis
Pahsimeroi Valley
Chilly
Borah PK. (12,662 ft)
Leatherman Pk
Lost River Rge.
Big Lost Rv Valley
Mackay Res.
Mackay
White Knob Mtns.
Copper Basin Thrust
Pioneer Mtns.
Hyndman Pk.
Wildhorse Detachment
Pioneer Thrust
Trail Creek Fault
114°12'30"
44°52'00"
114°48'30"
44°48'30"
44°21'30"
115°17'30"
43°56'00"
114°49'00"
44°14'00"
113°25'00"
43°31'30"
113°38'00"

0 5 10 miles
0 8 16 kilometers
1:500,000

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