

Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the [interactive fault map](#).

Beaverhead fault, Lemhi section (Class A) No. 603a

Last Review Date: 2010-11-09

Compiled in cooperation with the Idaho Geological Survey

citation for this record: Haller, K.M., Wheeler, R.L., and Adema, G.W., compilers, 2010, Fault number 603a, Beaverhead fault, Lemhi section, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, <https://earthquakes.usgs.gov/hazards/qfaults>, accessed 12/14/2020 03:02 PM.

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| Synopsis | <p>General: Detailed mapping and reconnaissance studies of scarp morphology are the sole source of data for this fault; a segmentation model has been proposed based on these data. No detailed site studies, such as trenching, have been conducted.</p> <p>Sections: This fault has 6 sections. Haller (1988 #27) defined six segments of Beaverhead fault; however, because of reconnaissance nature of this study, the same boundaries are used in this compilation to define the extent of our sections.</p> |
| Name | <p>General: Although Beaverhead fault was mapped and discussed</p> |

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| comments | <p>by numerous authors as early as 1928 (Shenon, 1928 #77), Skipp (1985 #291) may be one of the earliest to name this structure. The fault extends from east of town of Tendoy, Idaho, on the north end where range front steps to east southward to northern margin of Snake River Plain.</p> <p>Section: Defined as Lemhi segment by Haller (1988 #27). This section extends from northern end of fault east of Tendoy, Idaho, southward to north of Peterson Creek.</p> <p>Fault ID: Refers to number 112 ("unnamed fault") in Witkind (1975 #320).</p> |
| County(s) and State(s) | LEMHI COUNTY, IDAHO |
| Physiographic province(s) | NORTHERN ROCKY MOUNTAINS |
| Reliability of location | <p>Poor Compiled at 1:250,000 scale.</p> <p><i>Comments:</i> Location of the scarps is based on 1:250,000-scale maps of Haller (1988 #27; original mapping at 1:24,000 or 1:62,500 scale), further constrained by satellite imagery and topography at scale of 1:250,000. Reference satellite imagery is ESRI_Imagery_World_2D with a minimum viewing distance of 1 km (1,000 m).</p> |
| Geologic setting | <p>This part of east-central Idaho and southwest Montana is made of Precambrian and Paleozoic rocks that were shortened by folding and faulting and was thrust northeastward during the late Mesozoic. Mid- to late Cenozoic extension broke the thrust complex into northwest-trending basins and ranges and continues today. The Beaverhead fault is a high-angle, down-to-the-southwest, range-front, normal fault that separates the Beaverhead Mountains to the northeast from the Lemhi River and Birch Creek valleys on the southwest. Densmore and others (2005 #7016) suggest that maximum throw across the Beaverhead fault is 4-6 km.</p> |
| Length (km) | This section is 18 km of a total fault length of 121 km. |
| Average strike | N27°W (for section) versus N39°W (for whole fault) |
| Sense of | |

| | |
|--|--|
| movement | Normal |
| Dip Direction | SW |
| Paleoseismology studies | |
| Geomorphic expression | This section of fault characterized by discontinuous poorly preserved scarps (Haller, 1988 #27). |
| Age of faulted surficial deposits | |
| Historic earthquake | |
| Most recent prehistoric deformation | middle and late Quaternary (<750 ka) <i>Comments:</i> Faulting history of this section is poorly understood; however, reconnaissance studies show no evidence of scarps on latest Quaternary deposits (Haller, 1988 #27). Scarps are present on middle? Quaternary deposits (Crone and Haller, 1991 #186), but recurrent movement may not have occurred in past 100 k.y. based on range-front morphology (Haller, 1988 #27). |
| Recurrence interval | |
| Slip-rate category | Less than 0.2 mm/yr <i>Comments:</i> Long-term slip rate for section is probably one of the lowest for the Beaverhead fault as reflected in low topographic relief, maximum 1.19 km (Haller, 1988 #27). |
| Date and Compiler(s) | 2010 Kathleen M. Haller, U.S. Geological Survey Russell L. Wheeler, U.S. Geological Survey, Emeritus Guy W. Adema, Idaho Geological Survey |
| References | #186 Crone, A.J., and Haller, K.M., 1991, Segmentation and the coseismic behavior of Basin and Range normal faults—Examples from east-central Idaho and southwestern Montana, <i>in</i> Hancock, P.L., Yeats, R.S., and Sanderson, D.J., eds., Characteristics of active faults: Journal of Structural Geology, v. 13, p. 151-164. #7016 Densmore, A.L., Dawers, N.H., Gupta, S., and Guidon, R., 2005, What sets topographic relief in extensional footwalls?: |

Geology, v. 33, no. 6, p. 453-456.

#27 Haller, K.M., 1988, Segmentation of the Lemhi and Beaverhead faults, east-central Idaho, and Red Rock fault, southwest Montana, during the late Quaternary: Boulder, University of Colorado, unpublished M.S. thesis, 141 p., 10 pls.

#77 Shenon, P.J., 1928, Geology and ore deposits of the Birch Creek district, Idaho: Idaho Bureau of Mines and Geology Pamphlet 27, 25 p.

#291 Skipp, B., 1985, Contraction and extension faults in the southern Beaverhead Mountains, Idaho and Montana: U.S. Geological Survey Open-File Report 85-545, 170 p.

#320 Witkind, I.J., 1975, Preliminary map showing known and suspected active faults in Idaho: U.S. Geological Survey Open-File Report 75-278, 71 p. pamphlet, 1 sheet, scale 1:500,000.

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