Jump to Navigation

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, Baldy Mountain section (Class A) No. 603d

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 603d, Beaverhead fault, Baldy Mountain 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.**

Synopsis	**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. **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.

Name comments	**General:** Although Beaverhead fault was mapped and discussed 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. **Section:** Defined as Baldy Mountain segment by Haller (1988 #27) that extends from near Eighteenmile Creek southward to west of Eighteenmile Peak, near Gilmore Summit. It includes Dry Canyon segment in the Montana Bureau of Mines and Geology digital database (Stickney, written commun., 1992). **Fault ID:** Refers to number 112 ("unnamed fault") in Witkind (1975 #320).
County(s) and State(s)	LEMHI COUNTY, IDAHO
Physiographic province(s)	NORTHERN ROCKY MOUNTAINS
Reliability of location	Poor Compiled at 1:250,000 scale. *Comments:* Inferred location of the fault is at bedrock-alluvial contact, source of trace 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).
Geologic setting	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.

Length (km)	This section is 20 km of a total fault length of 121 km.
Average strike	N26°W (for section) versus N39°W (for whole fault)
Sense of movement	Normal
Dip	80° SW *Comments:* Fault is exposed on north side of Chamberlain Creek in approximately 14-m-deep stream cut (Haller, 1988 #27). Dip cited is apparent dip of the bedrock-alluvial contact.
Paleoseismology studies	
Geomorphic expression	Fault trace is defined by aligned springs and discontinuous scarps on bedrock. Scarps on Quaternary deposits are generally absent, but most deposits along range front are thought to be younger than about 25 ka (Haller, 1988 #27). Range-front morphology is similar to that along adjacent sections including a steep faceted profile, high structural relief, and an unembayed mountain front.
Age of faulted surficial deposits	
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Based on range-front morphology, most recent faulting may have been approximately 100 ka (Haller, 1988 #27; Crone and Haller, 1991 #186).
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Scott and others (1985 #76) suggested a slip rate of 0.3 mm/yr for central part of Beaverhead fault based on an analogy with the central part of the Lost River fault [601] along which 4 m of offset has occurred in the past 15 k.y. More recent, fault specific geomorphic studies suggest that this part of the fault has a very low slip rate based on the general absence of scarps on

	late Quaternary deposits (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, *in* 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. #76 Scott, W.E., Pierce, K.L., and Hait, M.H., Jr., 1985, Quaternary tectonic setting of the 1983 Borah Peak earthquake, central Idaho: Bulletin of the Seismological Society of America, v. 75, p. 1053–1066. #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. #85 Stickney, M.C., and Bartholomew, M.J., 1987, Seismicity and late Quaternary faulting of the northern Basin and Range province, Montana and Idaho: Bulletin of the Seismological Society of America, v. 77, p. 1602-1625. #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.

Questions or comments?