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.

Jackson Mountains fault zone (Class A) No. 1494

Last Review Date: 1999-03-10

citation for this record: **Sawyer, T.L., compiler, 1999, Fault number 1494, Jackson Mountains fault zone, 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 02:50 PM.**

Synopsis	Faults bounding the west front and piedmont slope of the Jackson Mountains and intrabasin faults at Quinn River Crossing and to the north-northwest appear to define a relatively long fault along the east side of the Black Rock Desert. The upthrown (eastern) block is largely comprised of the Jackson Mountains, which are an eastward-tilted fault block. The age of the range-front fault is poorly constrained but may show evidence of late Quaternary movement. Near the southern part of the fault, scarps are more distributed, shorter and possibly younger. Reconnaissance photogeologic mapping of the fault zone are the sources of data. Trench investigations and detailed studies of scarp morphology have not been conducted.
Name	Refers to a long series of faults mapped by Willden (1964 #3002),

comments	Slemmons (1966, unpublished Vya 1? X 2? sheet), Dohrenwend and Moring (1991 #281), and Dohrenwend and others (1991 #285) along and near the west front of the Jackson Mountains from the vicinity of Sugarloaf Knob in the southern Jackson Mountains north to Quinn River Crossing. dePolo (1998 #2845) referred to the fault as the Jackson Mountains fault zone, a name which is applied herein. The fault extends from Quinn River Crossing along the entire western front of the Jackson Mountains south to near Butts Spring. **Fault ID:** Includes fault V13A and V13B of dePolo (1998 #2845).
County(s) and State(s)	HUMBOLDT COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault locations based on 1:250,000-scale map of Dohrenwend and Moring (1991 #281) which is from analysis of 1:58,000-nominal-scale color-infrared photography transferred directly to 1:100,000-scale topographic maps enlarged to scale of the photographs. Additional faults based on 1:62,500- and 1:250,000-scale maps of Slemmons (1966, unpublished Vya 1? X 2? sheet), which are from analysis of 1:60,000-scale AMS photography transferred to mylar overlaid onto either a 1:62,500- or 1:250,000-scale topographic map using proportional dividers. The arcuate fault bounding the west and northwest front of King Lear Peak is from the 1:250,000-scale geologic map of Willden (1964 #3002).
Geologic setting	These faults bound the western front and piedmont slope of the Jackson Mountains and intrabasin faults at Quinn River Crossing (Willden, 1964 #3002; Slemmons, 1966, unpublished Vya 1:250,000-scale map, Dohrenwend and Moring, 1991 #281). They appear to define a relatively long fault along the east side of the Black Rock Desert. The upthrown (eastern) block is largely comprised of the Jackson Mountains, which are an eastward-tilted fault block (Stewart, 1978 #2866). Although not studied in detail, the 4- to 6-km-wide right stepover of the fault zone might suggests the existence of a significant boundary as implied by

	dePolo (1998 #2845) in his representation of the fault as having two discrete pieces.
Length (km)	67 km.
Average strike	N14°E
Sense of movement	Normal *Comments:* Shown as normal faults by Slemmons (1966, unpublished Vya 1:250,000-scale map) and Dohrenwend and Moring (1991 #281).
Dip Direction	W; E
Paleoseismology studies	
Geomorphic expression	Most of the fault is expressed by the range-bounding fault that juxtaposes piedmont-slope deposits and bedrock along the base of the abrupt western front of the Jackson Mountains. Although the fault may be extensively covered along the range front, a few scarps have been mapped across the upper (older) piedmont-slope at the mouth of the range-front embayment west of Deer Creek Peak, west of King Lear Peak, and west of Navajo Peak (Slemmons, 1966, unpublished Vya 1:250,000-scale map; Dohrenwend and Moring, 1991 #281). From about 10 km north of Deer Creek Peak to Quinn River Crossing, the trace of the fault appears to be largely inferred by Slemmons (1966, unpublished Vya 1? X 2? sheet) and based on the linearity of a low escarpment along the east side of the Black Rock Desert. The preferred maximum basal fault facet is reported as 185 m (158-254 m) for the northern part of the fault and 152 m (134-171 m) for the southern part (dePolo, 1998 #2845).
Age of faulted surficial deposits	Late Pleistocene (?), Pleistocene, Tertiary. Faults have been mapped in Pleistocene deposits and possible late Pleistocene piedmont-slope deposits northwest of Deer Creek Peak and at Hobo Canyon; other faults juxtapose Pleistocene alluvium and bedrock at the range-front west of Deer Creek Peak, King Lear Peak, and Navajo Peak near Deer Creek Peak (Slemmons, 1966, unpublished Vya 1:250,000-scale map; Dohrenwend and Moring, 1991 #281).
Historic earthquake	

Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* No detailed studies of the timing or amounts of displacement have been made along the Jackson Mountains fault zone. The timing of most recent event is not well constrained and the two map sources differ greatly. Most of the fault is characterized as Pleistocene in age. However, isolated scarps may suggest young movement. Dohrenwend and Moring (1991 #281) show a single scarp on late Pleistocene deposits and Slemmons (1966, unpublished Vya 1:250,000-scale map) suggests there may be some latest Quaternary scarps; the latter are not shown on the map by Dohrenwend and Moring (1991 #281). The assigned age category reflects the considerable uncertainty suggested by the various interpretations.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* No detailed data exists to determine slip rates for this fault. dePolo (1998 #2845) reported a reconnaissance vertical slip rate of 0.340 mm/yr for the fault bounding the west front of the northern Jackson Mountains and 0.277 mm/yr for the southern part of the fault based on an empirical relationship between his preferred maximum basal facet height and vertical slip rate. The size of the facets (tens to hundreds of meters, as measured from topographic maps) indicates they are the result of many seismic cycles, and thus the derived slip rate reflects a long-term average. However, the late Quaternary characteristics of this fault (overall geomorphic expression, continuity of scarps, age of faulted deposits, etc.) suggest the slip rate during this period is of a lesser magnitude. Accordingly, the less than 0.2 mm/yr slip-rate category has been assigned to this fault.
Date and Compiler(s)	1999 Thomas L. Sawyer, Piedmont Geosciences, Inc.
References	#2845 dePolo, C.M., 1998, A reconnaissance technique for estimating the slip rate of normal-slip faults in the Great Basin, and application to faults in Nevada, U.S.A.: Reno, University of Nevada, unpublished Ph.D. dissertation, 199 p. #281 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Vya 1° by 2°

	quadrangle, Nevada, Oregon, and California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2174, 1 sheet, scale 1:250,000. #2866 Stewart, J.H., 1978, Basin-range structure in western North America—A review, *in* Smith, R.B., and Eaton, G.P., eds., Cenozoic tectonics and regional geophysics of the western cordillera: Geological Society of America Memoir 152, p. 1-31, scale 1:2,500,000. #3002 Willden, R., 1964, Geology and mineral deposits of Humboldt County, Nevada: Nevada Bureau of Mines and Geology Bulletin 59, 154 p., scale 1:250,000.