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.

Dun Glen fault (Class A) No. 1134

Last Review Date: 2000-07-23

citation for this record: **Anderson, R.E., compiler, 2000, Fault number 1134, Dun Glen fault, 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 02:18 PM.**

Synopsis	Most of the Dunn Glen fault is mapped as a major convex-west range-front structure separating the northern part of the East Range from the basin beneath the Humboldt River Valley, about 30 km southwest of Winnemucca, Nevada. However, most of the bedrock escarpment lacks the geomorphic expression typical of major range fronts in the region. Also, similar-age rocks are exposed on both sides of the Humboldt River Valley, suggesting that the total displacement across the fault may be limited to the structural depth of the basin, possibly a small to moderate amount as compared with other major range-front structures in the region. The structural relation between the Dunn Glen fault and the Buena Vista faults [1638] along the western flank of the East Range to the south is not known. Quaternary alluvium is faulted against bedrock along most of the fault, but short (<2 km) west-facing scarps or lineaments are formed on Quaternary surficial deposits or erosion surfaces. The last surface-rupturing event is considered to be late Pleistocene. No detailed studies or recurrence times are reported.

Name comments	Name taken from dePolo (1998 #2845) who applied it to the fault at the western base of the northern East Range west of Dunn Glen Peak. As mapped by Dohrenwend and Moring (1991 #282), the fault extends from about Amos Spring in a broad convex-west trace southwest to the flats at Rose Creek Station. **Fault ID:** Referred to as fault WI1 by dePolo (1998 #2845).
County(s) and State(s)	HUMBOLDT COUNTY, NEVADA PERSHING COUNTY, NEVADA
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:100,000 scale. *Comments:* Fault compiled from the 1:250,000-scale map of Dohrenwend and Moring (1991 #284) which was produced by analysis of 1:58,000-nominal-scale color-infrared photography transferred directly to 1:100,000-scale topographic quadrangle maps enlarged to scale of the photographs. Wallace (1979 #203) recognized only two widely separated, short (approximately 3-km-long) young scarps along the fault.
Geologic setting	Dohrenwend and Moring (1991 #282) mapped most of the Dunn Glen fault as a major convex-west, range-front structure that separates the northern part of the East Range from the basin beneath the Humboldt River valley, southwest of Winnemucca, Nevada. Because similar-age rock is exposed on both sides of the valley, the total displacement may be limited to the structural depth of the basin, possibly a small to moderate amount as compared with other major range-front structures in the region. In the south, one strand of the fault veers away from the range front and crosses the adjacent piedmont slope. The structural relation between the Dunn Glen fault and other faults along the western flank of the East Range to the south is not known.
Length (km)	18 km.
Average strike	N23°E
Sense of movement	Normal *Comments:* No specific data available; sense inferred from

	location and orientation in extensional tectonic province.
Dip Direction	W
Paleoseismology studies	
Geomorphic expression	According to photogeologic reconnaissance by Dohrenwend and Moring (1991 #282), Quaternary alluvium is faulted against bedrock along most of the fault, but along short (approximately 2-km-long) traces, west-facing scarps or lineaments are formed on Quaternary surficial deposits or erosion surfaces. Although they map most of the fault as a major active range-front structure, most of the bedrock escarpment lacks the geomorphic expression typical of major active range fronts in the region, including abrupt piedmont-hillslope transitions, aligned fault facets, wineglass valleys, and sub parallel systems of high-gradient, narrow, steep-sided canyons. dePolo (1998 #2845) reported a preferred maximum basal facet height of 134 m (110-158 m). Lineaments and low scarps on Quaternary piedmont-slope deposits apparently mark a fault splay that veers away from the range in the south.
Age of faulted surficial deposits	According to reconnaissance photogeologic mapping by Dohrenwend and Moring (1991 #282), scarps are formed on deposits of early to middle and (or) late Pleistocene (0.01-1.5 Ma) and late Pleistocene (10-130 ka) age.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Neither Wallace (1979 #203) nor Dohrenwend and Moring (1991 #282) recognized evidence for Holocene displacement. The assigned age is based on the youngest scarps reported by Dohrenwend and Moring (1991 #282).
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) assigned a reconnaissance vertical slip rate of 0.248 mm/yr 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)	2000 R. Ernest Anderson, U.S. Geological Survey, Emeritus
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. #282 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the Winnemucca 1° by 2° quadrangle, Nevada: U.S. Geological Survey Miscellaneous Field Studies Map MF-2175, 1 sheet, scale 1:250,000. #284 Dohrenwend, J.C., and Moring, B.C., 1991, Reconnaissance photogeologic map of young faults in the McDermitt 1° by 2° quadrangle, Nevada, Oregon, and Idaho: U.S. Geological Survey Miscellaneous Field Studies Map MF-2177, 1 sheet, scale 1:250,000. #203 Wallace, R.E., 1979, Map of young fault scarps related to earthquakes in north-central Nevada: U.S. Geological Survey Open-File Report 79-1554, 2 sheet, scale 1:125,000.