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.

East Dayton-Oxford fault (Class A) No. 3509

Last Review Date: 2004-02-13

Compiled in cooperation with the Idaho Geological Survey

citation for this record: **Machette, M.N., and Neier, R.S., compilers, 2004, Fault number 3509, East Dayton-Oxford 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 02:51 PM.**

Synopsis	This north-trending, high-angle, down-to-east, normal fault bounds the eastern margin of the Bannock Range, and has been considered to be a northward extension of the West Cache Valley fault [2521], which is known to displace Quaternary age Lake Bonneville sediment further south in Utah. These two faults overlap across an 8- to 10-km-wide step, and thus are considered separately herein. In Idaho, the East Dayton-Oxford fault separates the Bannock Range from Marsh Valley, which have about 800 m of topographic relief between them.
Name comments	Fault of extends from east of Oxford Peak south-southeast through the western part of Marsh Valley to northeast of Weston,

	Idaho according to Witkind (1975 #320). Witkind (1975 #320) indicated that this is part of the West Cache Valley fault zone [2521], which extends into southern Idaho along the eastern margin of the Malad Range (west of Weston). These two faults overlap across an 8- to 10-km-wide step, and thus are considered separately herein. The fault is referred to as the East Dayton-Oxford fault by Carney and others (2002 #6553). **Fault ID:** Fault 3 of Witkind (1975 #320).
County(s) and State(s)	FRANKLIN COUNTY, IDAHO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Poor Compiled at 1:250,000 scale. *Comments:* Trace from 1: 750,000 scale map of Witkind (1975 #320), who compiled data collected from Don Trimble and Steve Oriel and Woodgren-Lundgren Associates. Trace recompiled at 1:250,000 scale, but this location is considered both poor and highly generalized.
Geologic setting	North-trending, high-angle, down-to-east, normal fault that forms the eastern margin of the Bannock Range, which has about 800 m of topographic relief.
Length (km)	23 km.
Average strike	N20°W
Sense of movement	Normal
Dip Direction	E
Paleoseismology studies	
Geomorphic expression	Mapped trace lies near the base of the Bannock Range. There is no documented evidence of late Quaternary fault scarps. Recent mapping by Carney and others (2002 #6553) shows the trace of the fault as entirely covered, but adjacent to the abrupt termination of various Quaternary deposits.
Age of faulted	Tertiary sedimentary rocks of the Salt Lake Formation and

surficial deposits	Paleozoic sedimentary rocks in Idaho. According to Rember and Benett's (1979 #6543) compilation, in Idaho the fault trace does not displace upper Quaternary sediment. Witkind (1975 #320) considered this fault to be part of the West Cache fault [2521], which offsets late Quaternary sediment of Lake Bonneville in the Utah. Recent mapping by Carney and others (2002 #6553) show the trace of the fault as entirely covered, but adjacent to the abrupt termination of various Quaternary deposits, suggesting but not proving Quaternary deformation.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) *Comments:* Rember and Benett (1979 #6543) do not show the fault trace as displacing upper Quaternary sediment in Idaho. However, Pierce and Morgan (1992 #539) show the fault as a lesser late Pleistocene structure, although they did not state their basis for designating this as a relatively young fault.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* Slip rate unknown, but probably slow based on rates for other similar structures in the area. It was classified as a major Quaternary fault by Breckenridge and others (2003 #5878), but a lesser late Pleistocene structure by Pierce and Morgan (1992 #539).
Date and Compiler(s)	2004 Michael N. Machette, U.S. Geological Survey, Retired Ricky S. Neier, University of Idaho
References	#5878 Breckenridge, R.M., Lewis, R.S., Adema, G.W., and Weisz, D.W., 2003, Miocene and younger faults in Idaho: Idaho Geological Survey Map 8, 1 sheet, scale 1:1,000,000. #6553 Carney, S.M., Janecke, S.U., Oriel, S.S., Evans, J.C., and Link, P.K., 2002, Geologic map of the Clifton quadrangle, Franklin and Oneida Counties, Idaho: Idaho Geological Survey Technical Report 03-4, 1 sheet, scale 1:24,000. #539 Pierce, K.L., and Morgan, L.A., 1992, The track of the Yellowstone hot spot€”Volcanism, faulting, and uplift, *in* Link,

	P.K., Kuntz, M.A., and Platt, L.B., eds., Regional geology of eastern Idaho and western Wyoming: Geological Society of America Memoir 179, p. 1-53, 1 pl. #6543 Rember, W.C., and Bennett, E.H., compilers, Mitchell, V.E., Hustedde, G.S., and Al Lee, R.Y., 1979, Geologic map of the Pocatello quadrangle, Idaho: Idaho Bureau of Mines and Geology Geologic Map Series GM-13, scale 1:250,000. #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.