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.

Heise fault (Class A) No. 621

Last Review Date: 2010-11-09

Compiled in cooperation with the Idaho Geological Survey

citation for this record: **Haller, K.M., and Lewis, R.S., compilers, 2010, Fault number 621, Heise 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 03:03 PM.**

Synopsis	Northwest striking, about 20-km-long, normal fault that is northeast of the Snake River. The topographic relief across the fault does not suggest a long-term history of Quaternary deformation. Mapping of the fault indicates there is probably a scarp present; however, the origin of the scarp is equivocal and could be due to incision by the Snake River.
Name comments	Source of name is probably Prostka and Embree (1978 #3945). Fault extends from about 1 km southeast of the town of Lyman, Idaho, through the town of Heise, along the southeast flank of Kelly Mountain, and terminating at the Snake River along the south side of Kelly Mountain.

	Fault ID: Refers to fault number 98 (Heise fault) in compilation of active faults by Witkind (1975 #320).
County(s) and State(s)	BONNEVILLE COUNTY, IDAHO JEFFERSON COUNTY, IDAHO MADISON COUNTY, IDAHO
Physiographic province(s)	COLUMBIA PLATEAU
Reliability of location	Poor Compiled at 1:100,000 scale. *Comments:* The mapping by Prostka and Embree (1978 #3945) and Scott (1982 #278) do not agree in location or extent of the fault. The trace depicted herein is combined from the two sources further constrained by satellite imagery and topography at scale of 1:100,000. Reference satellite imagery is ESRI_Imagery_World_2D with a minimum viewing distance of 1 km (1000 m). The northwestern part of the trace is from Scott (1982 #278); he depicts the fault as well located on the 1:250,000-scale map. The southeastern part of the trace is from 1:48,000-scale map of Prostka and Embree (1978 #3945). They show the fault as buried along nearly all of its length. Witkind (1975 #320) indicates that the fault extends into Antelope Flat; however, the original mapping does not support this extension.
Geologic setting	Fault is subparallel to and northwest of the northern part of the Grand Valley fault [726]. The major difference though is that there is little topographic expression associated with the Heise fault.
Length (km)	24 km.
Average strike	N50°W
Sense of movement	Normal *Comments:* (Prostka and Embree, 1978 #3945; Scott, 1982 #278)
Dip Direction	SW
Paleoseismology studies	
Geomorphic	

expression	
Age of faulted surficial deposits	Fault is shown by Scott (1982 #278) defines the contact between two latest Quaternary alluvial deposits and extending into the late Pleistocene unit. Scott (1982 #278) does not extend the fault as far southeast as it is depicted herein. In contrast Prostka and Embree (1978 #3945) show the fault buried by Quaternary deposits along nearly all of its length.
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* In his compilation of active faults in Idaho, Witkind (1975 #320) indicates that movement on the Heise fault (fault number 23) occurred during the late Quaternary based on information provided by Hal Prostka. The only known published map showing the fault by this author does not indicate that this fault displaces any Quaternary deposits along its length (Prostka and Embree, 1978 #3945). Based on Witkind (1975 #320), Howard and others (1978 #312) include this fault as younger than 500 ka on their map. Subsequent mapping by Scott (1982 #278) supports a late Quaternary age for at least the last faulting event. However, the faulting origin of the mapped scarp is questionable. Fault shown on map of Breckenridge and others (2003 #5878) as late Quaternary.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr *Comments:* The overall expression of this feature indicates a low rate of slip. No data are published to further quantify a slip rate.
Date and Compiler(s)	2010 Kathleen M. Haller, U.S. Geological Survey Reed S. Lewis, Idaho Geological Survey
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. #312 Howard, K.A., Aaron, J.M., Brabb, E.E., Brock, M.R., Gower, H.D., Hunt, S.J., Milton, D.J., Muehlberger, W.R., Nakata, J.K., Plafker, G., Prowell, D.C., Wallace, R.E., and

	Witkind, I.J., 1978, Preliminary map of young faults in the United States as a guide to possible fault activity: U.S. Geological Survey Miscellaneous Field Studies Map MF-916, 2 sheets, scale 1:5,000,000. #3945 Prostka, H.J., and Embree, G.F., 1978, Geology and geothermal resources of the Rexburg area, eastern Idaho: U.S. Geological Survey Open-File Report 78-1009, 14 p., 2 pls. #278 Scott, W.E., 1982, Surficial geologic map of the eastern Snake River Plain and adjacent areas, 111° to 115° W., Idaho and Wyoming: U.S. Geological Survey Miscellaneous Investigations Series Map I-1372, 2 sheets, 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.