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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.

Faults in boundary region of Yellowstone and Grand Teton National Parks (Class A) No. 764

Last Review Date: 1998-04-01

citation for this record: **Pierce, K.L., compiler, 1998, Fault number 764, Faults in boundary region of Yellowstone and Grand Teton National Parks, 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 02:02 PM.**

Synopsis	This group of about 10 older faults offset the 2.1-Ma Huckleberry Ridge Tuff in the boundary region of southern Yellowstone and northern Grand Teton National Parks. They are described collectively because they all have fault scarps are expressed on the 2.1-Ma Huckleberry Ridge Tuff (bedrock), but don't appear to offset younger (middle or late Pleistocene) deposits. Younger faults that could be included within this group are described separately as the Snake River caldera faults [765]. Escarpments on bedrock are as much as 150 m high at the northern end of the Teton Range. This group of faults extends from Heart Lake on the north to Jackson Lake on the south, an area about 30 km wide and 60 km long.
Name	This group of older faults is in the boundary region of southern

comments	Yellowstone and northern Grand Teton National Parks. They extend from Heart Lake on the north to both east and west of Jackson Lake on the south, an area about 30 km wide and 60 km long.
County(s) and State(s)	TETON COUNTY, WYOMING
Physiographic province(s)	MIDDLE ROCKY MOUNTAINS
Reliability of location	Good Compiled at 1:125,000 scale. *Comments:* Includes faults in late Cenozoic volcanic rocks as mapped by R.L. Christiansen (U.S. Geological Survey, 1972 #639; Christiansen and others, 1978 #2282; Christiansen, 2001 #1784). Surficial geology mapped at 1:62,500 by Richmond (1973 #2283; 1973 #2284). For digitizing, the faults from within Yellowstone National Park south to latitude 44 degrees were digitized at 1:125,000; those to south were digitized from 1:62,500 scale mapping by Love and others (1992 # 2289). Some of the faults are shown by Ostenaa and others (figs. 6 and 7, 1993 #2290).
Geologic setting	These faults extend southward from the southern margin of the 2.1-Ma caldera that erupted the Huckleberry Ridge Tuff into Jackson Hole, where the faults generally parallel the Teton fault [768].
Length (km)	59 km.
Average strike	N8°W
Sense of movement	Normal
Dip Direction	E; W
Paleoseismology studies	
Geomorphic expression	Fault scarps are expressed on Huckleberry Ridge Tuff (bedrock). Scarps that are on the northern projection of the Teton Range are as much as 150 m high (Ostenaa and others, 1993 #2290).
Age of faulted surficial	Faults commonly offset 2.1-Ma Huckleberry Ridge Tuff, but

surficial deposits	some do not offset the 0.63-Ma Lava Creek Tuff.
Historic earthquake	
Most recent prehistoric deformation	undifferentiated Quaternary (<1.6 Ma) *Comments:* These faults are all younger than 2.1 Ma, whereas some are middle Quaternary in as much as they locally displace the 0.63 Ma Lava Creek Tuff (Christiansen, 2001 #1784; Love and others, 1992 #2289). For this compilation, all the faults are shown as Quaternary (<1.6 Ma).
Recurrence interval	*Comments:* No scarps are documented on surficial material (Richmond, 1973 #2283; 1973 #2284), thus the faults pre-date the last deglaciation (~15 ka).
Slip-rate category	Less than 0.2 mm/yr *Comments:* Bedrock escarpments as much as 150 m high on the 2.1-Ma Huckleberry Ridge Tuff suggest a low long-term slip rate. On the basis of these data, the faults are assigned to the <0.2 mm/yr slip-rate category.
Date and Compiler(s)	1998 Kenneth L. Pierce, U.S. Geological Survey, Emeritus
References	#1784 Christiansen, R.L., 2001, The Quaternary and Pliocene Yellowstone Plateau volcanic field of Wyoming, Idaho, and Montana: U.S. Geological Survey Professional Paper 729-G, 145 p., 3 pls., scale 1:125,000. #2282 Christiansen, R.L., Blank, H.R., Jr., Love, J.D., and Reed, J.C., Jr., 1978, Geologic map of the Grassy Lake Reservoir quadrangle, Yellowstone National Park and vicinity, Wyoming: U.S. Geological Survey Geologic quadrangle Map GQ-1459. #2289 Love, J.D., Reed, J.C., Jr., and Christiansen, A.C., 1992, Geologic map of Grand Teton National Park: U.S. Geological Survey Miscellaneous Investigations Map I-2031, scale 1:62,500. #2290 Ostenaa, D.A., Wood, C., and Gilber, J.D., 1993, Seismotectonic study for Grassy Lake Dam-Minidoka Project, Wyoming: U.S. Bureau of Reclamation Seismotectonic Report

	93-3, 68 p., scale 1:24,000. #2283 Richmond, G.M., 1973, Surficial geologic map of the Huckleberry Mountain quadrangle, Yellowstone National Park and adjoining area, Wyoming: U.S. Geological Survey Miscellaneous Geologic Investigations I-639, scale 1:62,500. #2284 Richmond, G.M., 1973, Surficial geologic map of the Warm River Butte quadrangle, Yellowstone National Park and adjoining area, Wyoming: U.S. Geological Survey Miscellaneous Geologic Investigations I-645, scale 1:62,500. #639 U.S. Geological Survey, 1972, Geologic map of Yellowstone National Park: U.S. Geological Survey Miscellaneous Geologic Investigations I-711, 1 sheet, scale 1:125,000.