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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.

Santa Cruz-Catalina Ridge fault zone, Catalina Escarpment section (Class A) No. 284b

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citation for this record: **Fisher, M.A., and Bryant, W.A., compilers, 2017, Fault number 284b, Santa Cruz-Catalina Ridge fault zone, Catalina Escarpment section, 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	**General:** The Santa Cruz-Catalina Ridge fault zone is a right-lateral strike-slip fault that strikes northwest from the offshore area south of Santa Catalina Island and terminates at the faults that make up the province boundary that separates the western Transverse Ranges from the California continental borderland (Vedder, 1987; Legg, 1992). This fault connects to the southeast with the San Diego Trough fault [292] through a left restraining bend at Santa Catalina Island (Legg and Borrero, 2001; Legg and others, 2003). **Sections:** This fault has 2 sections. The Santa Cruz-Catalina Ridge fault zone is divided into the Pilgrim Banks section and Catalina Escarpment section.

Name comments	**General:** Referred to as the Santa Cruz-Santa Catalina Ridge fault zone by Ziony and Jones (1989), Jennings (1994), and Jennings and Bryant (2010). Current literature (such as Chaytor and others, 2008 and Legg and others, 2015) uses the name Santa Cruz-Catalina Ridge fault zone for the fault-bounded geographic feature known as Santa Cruz-Catalina Ridge. The fault zone consists of two principal faults: Santa Cruz-Catalina Ridge fault and the Catalina fault. The name Santa Cruz-Catalina Ridge fault zone will be used in this compilation. **Section:** The Catalina Escarpment section is delineated by the Catalina fault (Legg and others, 2015). The Catalina Escarpment section is located along the southwest side of Santa Catalina Island from the right-releasing step-over with the Santa Cruz-Catalina Ridge fault near Farnsworth Bank southeast to the intersection with the San Diego Trough fault [292].
County(s) and State(s)	LOS ANGELES COUNTY, CALIFORNIA
Physiographic province(s)	PACIFIC BORDER
Reliability of location	Poor Compiled at 1:250,000, locally 1:750,000 scale. *Comments:* Location of fault from Qt_flt_ver_3-0_Final_WGS84_polyline.shp (Bryant, W.A., written communication to K.Haller, August 15, 2017) attributed to 1:250,000-scale mapping by Legg and others (2015) and Vedder and others (1986), and 1:750,000-scale compilation by Jennings (1994).
Geologic setting	The Santa Cruz-Santa Catalina fault zone extends through the Catalina terrane, which underlies the area west of the coast of the California mainland where Miocene extension unroofed a metamorphic core complex (Catalina Schist) (*e.g.*, Bohannon and Geist, 1998; Wilson and others, 2005). Following the Miocene extension, the region underwent transpression, and strike-slip faults formed. The metamorphic basement exposed during the Miocene is buried beneath middle Miocene and younger sedimentary deposits. Regional strike-slip faults, like Santa Cruz-Santa Catalina fault zone, probably developed along pre-existing structural features, such as extensional faults. Chaytor and others (2008) proposed that as much as 50 km of dextral strike-slip

	offset has occurred along the Santa Cruz-Catalina Ridge fault zone.
Length (km)	km.
Average strike	
Sense of movement	Right lateral *Comments:* Dextral to locally dextral normal near Farnsworth Bank where the Catalina fault forms an approximately 10 km wide right-releasing step over to the Santa Cruz-Catalina Ridge fault (Legg and others, 2015).
Dip Direction	V
Paleoseismology studies	
Geomorphic expression	Fault is delineated by prominent southwest facing escarpment along the southwest side of Santa Catalina Island.
Age of faulted surficial deposits	Vedder and others (1986) reported offset Quaternary sediments along Catalina fault; Normark and others (2004) showed that the youngest offset basin sediment correlates with oxygen isotope stage 8 (~300 ka).
Historic earthquake	
Most recent prehistoric deformation	middle and late Quaternary (<750 ka) *Comments:* Timing of the most recent paleoevent is not known
Recurrence interval	
Slip-rate category	Between 0.2 and 1.0 mm/yr
Date and Compiler(s)	2017 Michael A. Fisher, U.S. Geological Survey William A. Bryant, California Geological Survey
References	#8389 Bohannon, R. G., and Geist, E. L., 1998, Upper crustal structure and Neogene tectonic development of the California continental borderland: Geological Society of America Bulletin, v. 110, p. 779–800.

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