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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, Pilgrim Banks section (Class A) No. 284a

Last Review Date: 2017-07-01

citation for this record: **Fisher, M.A., and Bryant, W.A., compilers, 2017, Fault number 284a, Santa Cruz-Catalina Ridge fault zone, Pilgrim Banks 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 Pilgrim Banks section is named here for the linear ridge bounded on the northeast by the Santa Cruz-Catalina Ridge fault zone. This section consists of the Santa Cruz-Catalina Ridge fault and extends from its complex intersection in the area of the Northern Channel Island platform southeast to a right-releasing step-over near Farnsworth Bank along the southwestern side of Santa Catalina Island.
County(s) and State(s)	VENTURA COUNTY, CALIFORNIA
Physiographic province(s)	PACIFIC BORDER
Reliability of location	Good 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:* Sea floor geomorphic expression and focal plane solutions indicated dextral strike-slip offset (Legg and others, 2015).
Dip Direction	V
Paleoseismology studies	
Geomorphic expression	This fault is located along a series of submarine ridges and knolls that extends southwest from Santa Cruz Island in the northern Channel Islands to the vicinity of Santa Catalina Island. Legg and others (2015) reported that the fault zone offsets sea floor and is characterized by geomorphic features indicative of dextral strike-slip offset, such as linear ridges and troughs, linear and dextrally deflected submarine canyons, pressure ridges, and linear escarpments.
Age of faulted surficial deposits	
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Vedder and others (1986) reported offset Holocene sediments along Santa Cruz-Catalina Ridge fault zone; however, 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
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