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Research Note

First Occurrence of A Pacific Crevalle Jack, *Caranx caninus*, North of San Diego, California

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Pacific crevalle jack (*Caranx caninus*) is common throughout the tropical waters of the eastern Pacific Ocean (Eschmeyer et al. 1983, Nelson et al. 2004). It was believed that a single crevalle jack species (*C. hippos*) was circumglobal in its distribution, but Smith-Vaniz and Carpenter (2007) divided the species into three taxa, *C. hippos* (Atlantic, mainly western), *C. caninus* (eastern Pacific), and *C. fischeri* (eastern Atlantic). They described numerous meristic differences between the three species while maintaining them under the *C. hippos* complex. Throughout their tropical range, Pacific crevalle jack are often found in shallow inshore areas, including brackish waters (Eschmeyer et al. 1983). Along the eastern Pacific boundary, the northern range limit extends to San Diego Bay, California (Miller and Lea 1972; Eschmeyer et al. 1983; Love et al. 2005).

The northern range limit for Pacific crevalle jack was established with the collection of an individual in south San Diego Bay in March 1972 (Miller and Lea 1972; SIO [Scripps Institution of Oceanography] 72–69) during a period of warmer than normal sea surface temperatures (Lea and Rosenblatt 2000). Lea and Rosenblatt (2000) report a total of four individuals collected from southern California, all within San Diego Bay, with the last individual collected on 21 January 1998 (SIO 98–119), during the one of the most intense El Niño events of the twentieth century. The remaining two individuals were collected in May 1975 (SIO 75–383) and September 1984 (SIO 84–251), both in San Diego Bay.

El Niño Southern Oscillation (ENSO) events commonly transport more tropical species northwards along the Northeast Pacific Coast (Lea and Rosenblatt 2000), especially species known to aggregate around flotsam, such as jacks (Hunter and Mitchell 1966). While two carangid species (yellowtail jack [*Seriola lalandi*] and jack mackerel [*Trachurus symmetricus*]) are common to the Southern California Bight, Lea and Walker (1995) noted the record of 12 novel carangid species collected within southern California. Most of these occurrences were attributed to natural migrations associated with warm-water oceanographic events, although they did note the potential for anthropogenic introductions, especially of juveniles or adults carried north aboard sportfishing vessels, either as bait or alive within their holds.

On 5 December 1982, M. D. Curtis collected one juvenile Pacific crevalle jack during an impingement survey at Huntington Beach Generating Station in Huntington Beach, California. Initially preserved in 10% formalin, the specimen was later transferred to 90% ethanol for archiving in the MBC Applied Environmental Sciences voucher collection. The individual measured 83 mm standard length, with a total length of 100 mm (Table 1). Morphometric analysis compared favorably to measurements in Miller and Lea (1972) with the current specimen exhibiting the following fin spine/ray counts: anal fin III, 18, pectoral fin I, 21, and dorsal fin VII, 21 (Table 2). Furthermore, a high arch in

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Table 1. Body length measurements of a juvenile Pacific crevalle jack, *Caranx caninus*.

Length	Measurement (mm)
Head Length	28
Standard Length	83
Fork Length	91
Total Length	100

Table 2. Morphometric analysis of current specimen and reported values from Miller and Lea (1972).

Morphometric	Miller and Lea, 1972	Current specimen
Anal Fin	II+I, 15–18	III, 18
Pectoral Fin	I, 18–21	I, 21
Dorsal Fin	VII–VIII+I, 18–23	VII, 21
Gill Rakers	15–19	16

the lateral line over the pectoral fin was observed as well as dark vertical lines over the length of the body (Figure 1), consistent with the published description of a juvenile Pacific crevalle jack (Miller and Lea, 1972). The individual was donated to the Scripps Institution of Oceanography Marine Vertebrates Collection (SIO 07–71), which held the four previously reported California collections.

This specimen represents the first collection north of San Diego Bay, California. It is presumed this individual was present in the Huntington Beach, California area due to higher than normal seawater temperatures recorded during the ENSO event of 1982 (Lea and Rosenblatt 2000). This individual is substantially smaller than all of the previously known specimens. All previous collections were provided by fishermen, both commercial and recreational.

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Fig. 1. Pacific crevalle jack, *Caranx caninus*, collected at Huntington Beach, California on 5 December 1982.

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