

## Early Twentieth Century Records of Marine Decapod Crustaceans from Los Angeles and Orange Counties, California

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*Abstract.*—Early twentieth century records of marine decapod crustaceans from Los Angeles and Orange counties, California by Mary K. Wicksten. *Bull. Southern California Acad. Sci.*, 83(1):12-42, 1984. During 1900-1930, 100 species of decapod crustaceans were collected along the coasts of Orange and Los Angeles counties, California. Records from the published literature, the files of the Allan Hancock Foundation, and the collections of the U.S. National Museum are presented. Checklists for major areas of collecting are provided. Thirty-four other species, not reported during 1900-1930, are listed.

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One of the most difficult problems facing marine ecologists is assessing the impacts of environmental alterations after they have occurred. A comparison of modern maps of the coast of Los Angeles and Orange counties, California will show that much of the area has been dredged, filled or otherwise altered. (Compare, for example, the maps in Figures 3 and 5). The extensive tidal marshes and beds of eelgrass (*Zostera* sp.) of San Pedro Bay, reported by early collectors such as Williamson (1829), are gone. Deadman's Island in San Pedro has been demolished and incorporated into Terminal Island. The tidelands of Ballona Creek, Anaheim Bay, Alamitos Bay, and upper Newport Bay have been reduced in size. The beds of giant kelp (*Macrocystis pyrifera*) off the Palos Verdes Peninsula have fluctuated in size (Wilson 1982). The stands of elk kelp (*Pelagophycus porra*) reported off Laguna Beach and San Pedro (Guernsey 1912, as *Nereocystis gigantea*; Parker and Bleck 1965) have not been found in recent years. Undoubtedly, the marine fauna of these areas has been altered, but the absence of historical data makes comparison difficult.

From 1900 to 1930, extensive collections of marine decapod crustaceans were made along the coasts of the two counties. In 1901-1902, workers from the University of California maintained a marine station at San Pedro. They collected in the intertidal zone and subtidally as deep as 100 fathoms (Raymond 1903; Ritter 1905). Percy S. Barnhart and his students collected along the shores of Santa Catalina Island and near the Venice Marine Biological Station. Emery P. Chace and Elsie M. Chace took specimens along shore in Anaheim Bay, the Cerritos Channel, and San Pedro. Elmer and Lena Higgins collected in Anaheim Bay. At Santa Catalina Island, H. N. Lowe dredged animals. William A. Hilton, his students, and associates of the Laguna Marine Laboratory collected and reported on the fauna of Laguna Beach.

Dredges and trawls were employed from the R.V. *Anton Dohrn* (Fig. 1), the first research vessel of the University of Southern California. Samples were collected extensively from Point Dume to Newport Bay and Santa Catalina Island, to a depth of 40 fathoms (74 m). This 38-foot (12 m) launch, built in 1911, served the university until 1930.



Fig. 1. The R. V. *Anton Dohrn*.

Most of the specimens taken by workers from the University of Southern California were sent to the U.S. National Museum for verification of identifications. Some material, however, remained to become part of the holdings of the Allan Hancock Foundation. I have not been able to locate the specimens taken by W. A. Hilton. Records of many of these specimens were published in the works of Rathbun (1918, 1925, 1930, and 1937), Schmitt (1921), and Hilton (1916, 1918). A map of the stations of the *Anton Dohrn* was given with a description of its operations (Ulrey 1917). The map later was included in the work on fishes by Ulrey and Greeley (1928).

No complete list was compiled of the specimens taken by any of the collectors working between 1900 and 1930. The log of the Venice Marine Biological Station often listed animals as "crabs," "macrurans," etc. rather than by species. Inconsistencies in identification in the log prevent modern workers from being sure which species was intended. Many of the original specimens have been lost or dehydrated to the point of being unrecognizable. Other specimens have not been located. Data on exact location, depth, date of collection, and number of individuals taken was not given for many lots of specimens.

This paper provides a list of decapods taken in 1900–1930, as compiled from original records at the Allan Hancock Foundation, specimens at the Allan Hancock Foundation and the U.S. National Museum, and references in the literature. For comparison, records are given of other species found in the two counties but not reported in that time period.

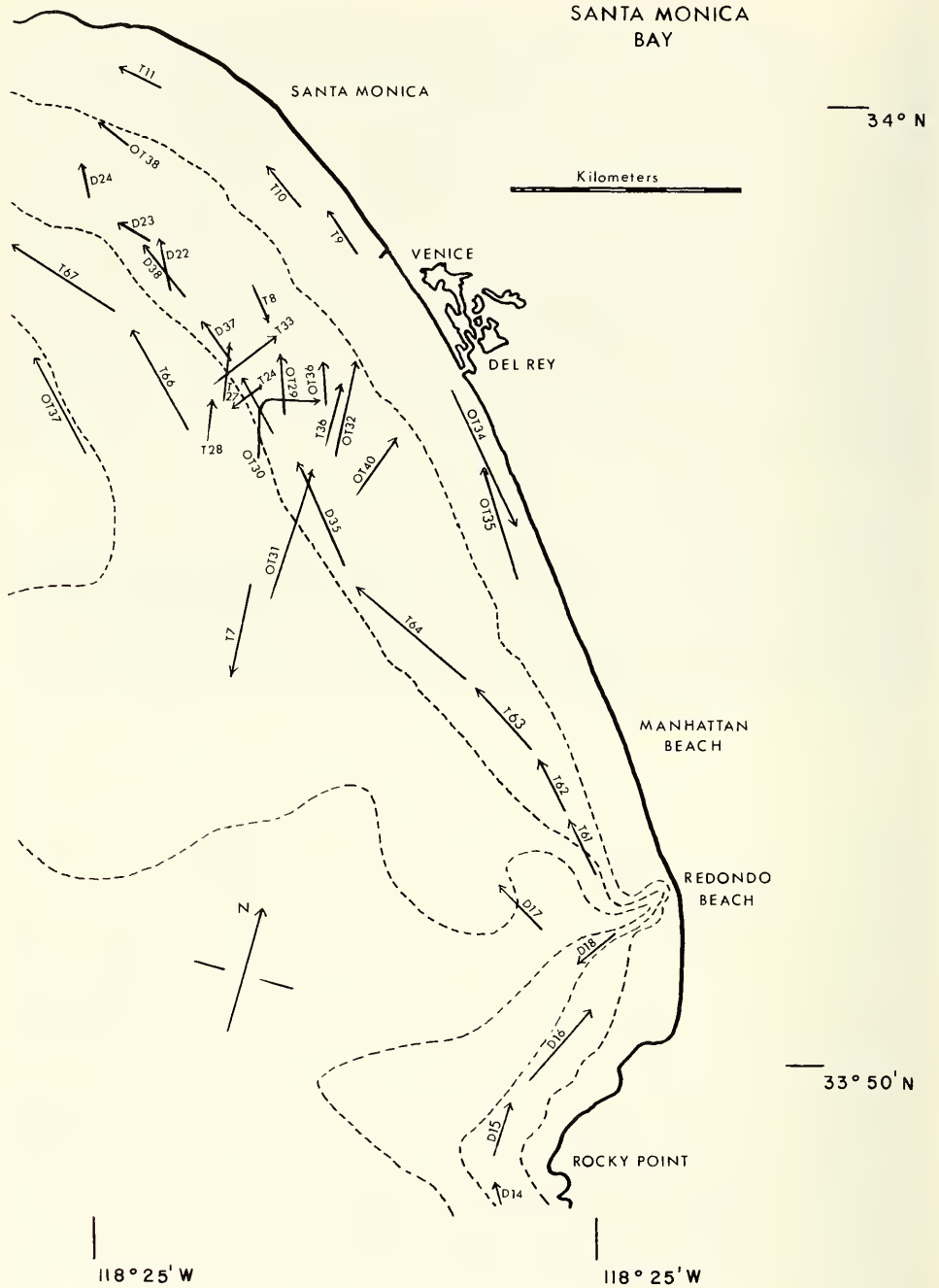


Fig. 2. Map of Santa Monica Bay, showing stations of the R.V. *Anton Dohrn*.

### Methods

The species recorded in the literature or given in the station log of the Venice Marine Biological Station were listed by locality. The specimen catalogue of the Allan Hancock Foundation also was searched for material taken during 1900–

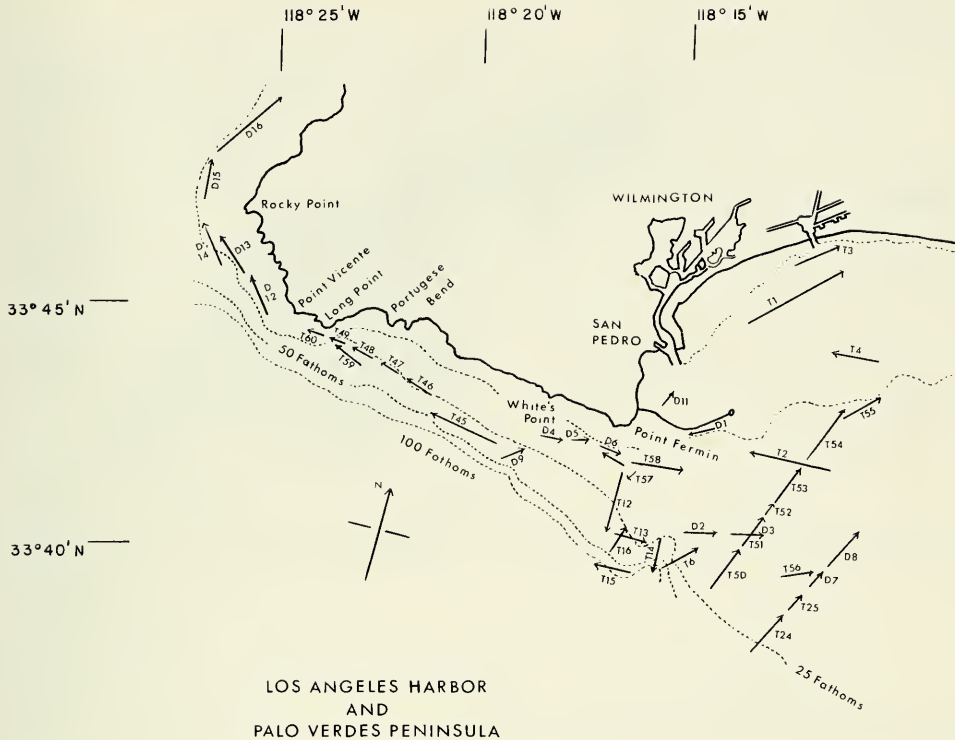


Fig. 3. Map of Los Angeles Harbor and the Palos Verdes Peninsula, showing stations of the R.V. *Anton Dohrn*.

1930. Specimens of *Pagurus armatus* and *Petrolisthes cabrilloi* were borrowed from the U.S. National Museum to check earlier identifications.

Records from the literature are included in the appropriate columns of Tables 1–3. Unpublished records from the station log and the specimen catalogue are noted as “AHF.” None of the early sampling was quantitative; therefore the records should be viewed only as indicating presence of the species in the general area.

The maps of the stations of the *Anton Dohrn* are reproduced in Figs. 2–4. A recent map of Los Angeles-Long Beach Harbors is provided for comparison (Fig. 5). Trawl stations are indicated by “T” or “OT,” dredge stations are labelled “D.”

Except as cited, the list of additional species in Table 4 is based on records in the collections of the Allan Hancock Foundation. There is no checklist of decapods of Los Angeles and Orange counties. Only species usually found at 50 fathoms (90 m) or less are included. Species noted as accidental (A) are known to migrate, have been collected less than five times in the area, or are pelagic.

#### Systematic List of Species Taken in 1900–1930

##### Suborder Dendrobranchiata

##### Family Penaeidae

##### *Penaeus californiensis* Holmes

Between Long Beach and Belmont Pier, 10 m, 17 July 1926, T231.

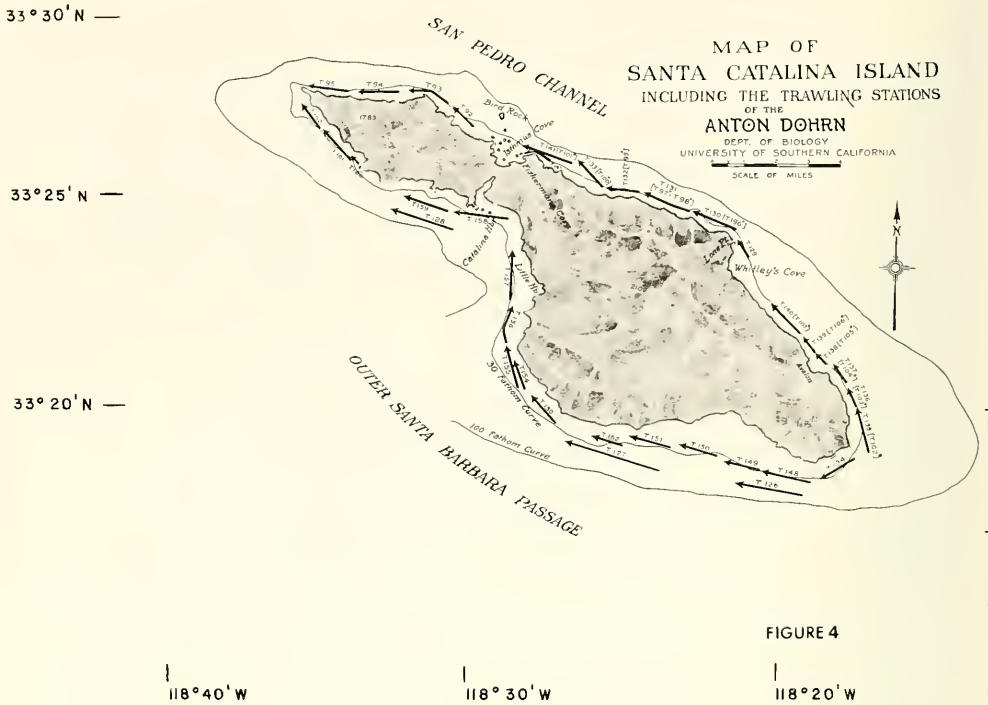


Fig. 4.

## Suborder Pleocyemata

## Infraorder Caridea

## Family Palaemonidae

*Palaemonetes hiltoni* Schmitt

San Pedro, Stout and Stafford, collectors (Schmitt 1921).

## Family Pandalidae

*Pandalus danae* Stimpson

East of Santa Barbara Island, 29 and 30 July, 1919.

*Pandalus gurneyi* Stimpson

Off Portuguese Bend, 27 December 1913, T47; Isthmus Harbor, 19 August 1913, T42.

*Pandalus platyceros* Brandt

Off Long Point, Palos Verdes Peninsula, 55 m, 27 December 1913, T48; off Portuguese Bend, 46 m (Schmitt 1921).

## Family Hippolytidae

*Hippolyte clarki* Chace

From kelp at Portuguese Bend, shore, 14 July 1914 (Chace 1951).

*Heptacarpus carinatus* HolmesLaguna Beach, dredged, 18–28 m, W. A. Hilton, collector (Schmitt 1921, as *Spirontocaris carinata*).*Heptacarpus decorus* (Rathbun)

Along Long Point, west of Avalon, Santa Catalina Island, 74 m, 19 July 1924, D103; off Long Beach, 14 March 1914, T54.

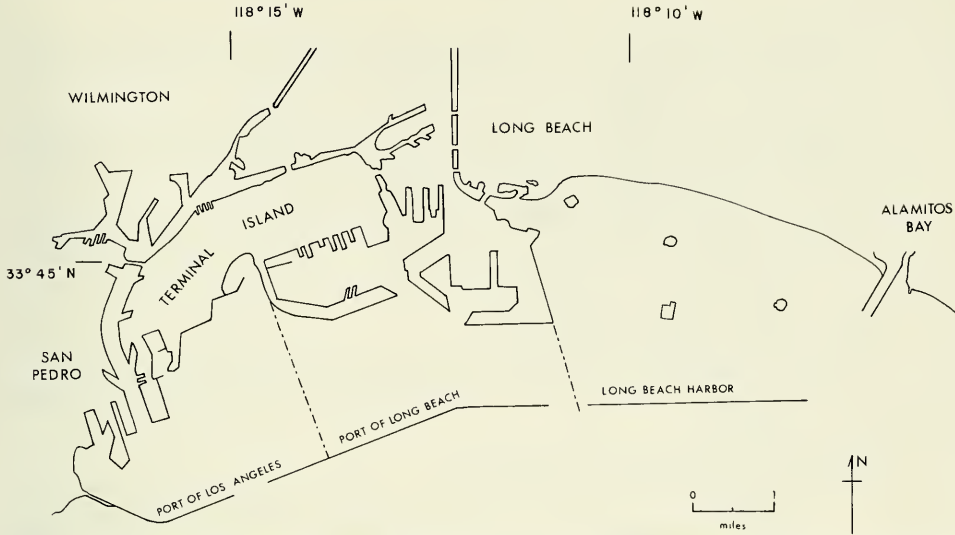


Fig. 5. Map of Los Angeles-Long Beach harbors in 1979, showing development of Terminal Island and Long Beach Harbor.

*Heptacarpus franciscanus* (Schmitt)

Laguna Beach, W. A. Hilton, collector (Schmitt 1921, as *Spirontocaris franciscana*).

*Heptacarpus kincaidi* (Rathbun)

South of Point Fermin, 29–30 November 1912; off Venice Beach, 19 September 1911.

*Heptacarpus palpator* (Owens)

Piling of Long Wharf, 18 July 1912; opposite Long Point, 27 December 1913, T49; east end of Santa Catalina Island, 1 April 1915, T102.

*Heptacarpus pictus* (Stimpson)

Between base of Government Breakwater and second point toward Point Fermin, low tide, 2 April 1913; west shore of Isthmus Harbor, 27 November 1913; west shore of Isthmus Cove, 29 March 1915. Laguna Beach (Baker 1912; Hilton 1916; as *Spirontocaris pictus*).

*Heptacarpus stimpsoni* Holthuis

5 miles south of Venice Pier, 26 July 1913, T28; Rocky Point to Point Vicente, 26 m, 10 July 1926; D152; South of Point Fermin, 29–30 November 1914; ¼ mile east of Long Beach, 7–18 m, 7 July 1923, D67; off Seal Beach, 24 April 1926; southwest of Newport, 32 m, 16 June 1915, T113; entrance to Catalina Harbor, 30 December 1912, T19.

*Heptacarpus taylori* (Stimpson)

Beach west of Long Wharf, 5 December 1911; off Venice Beach, 19 September 1911; west end of Venice Breakwater, 29 October 1913; off Playa del Rey, 2 August 1913; T36; west basin, San Pedro, 15 July 1913.

*Heptacarpus tenuissimus* Holmes

Off Santa Monica, 52 m, 13 August 1914, T67; 5 miles off Newport, 20 March 1915; east of Santa Barbara Island, 30 July 1919.

*Lebbeus lagunae* (Schmitt).

Laguna Beach, 22–28 m, 27 August 1917, W. A. Hilton, collector (Schmitt 1921, as *Spirontocaris lagunae*). TYPE LOCALITY.

*Lysmata californica* (Stimpson)

Venice canals, 16 October 1911; in live fish box off Venice Pier, 7 December 1912. Laguna Beach (Baker 1912; Hilton 1916, 1918; as *Hippolysmata californica*).

*Spirontocaris synderi* Rathbun

Piles at Long Wharf, 18 July 1912; south of Point Fermin, 29–30 November 1912; entrance to Catalina Harbor, 30 December 1912, T19.

## Family Alpheidae

*Alpheopsis equidactylus* (Lockington)

In holdfast of *Pelagophycus porra* at Venice Beach, 3 October 1911; shore of Catalina Harbor, 28 November 1913. Laguna Beach (Baker 1912; Hilton 1916; as *Alpheus equidactylus*).

*Alpheus bellimanus* Lockington

In holdfast of *Pelagophycus porra* at Venice Beach, 3 October 1911; entrance to Catalina Harbor, 30 December 1912, T19; west shore of Catalina Harbor, 28 November 1913; west shore of Catalina Harbor, 28 November 1913.

*Alpheus clamator* Holmes

Piles at Long Wharf, 18 July 1913; ½ mile north of Long Wharf, storm debris, 23 July 1913; under Venice Aquarium, 19 February 1913; west end of Venice Breakwater, 29 October 1913; Venice Beach, 3 October 1911; Venice Breakwater, 26 April 1912; Portuguese Bend, shore, 26 June 1914; Point Fermin to White's Point, 30 November 1912; south of Point Fermin, 29–30 November 1912; north side of Santa Catalina Island, 30 March 1915; west shore of Catalina Island, 28 November 1913; west shore of Isthmus Harbor, low tide, 27 November 1913; between Bird Rock and east shore of Isthmus Cove, 37 m, 28 January 1927, T240; east of Santa Barbara Island, 30 July 1919. Laguna Beach (Baker 1912; Hilton 1916; as *Alpheus dentipes*).

*Betaeus harfordi* (Kingsley)

Isthmus Harbor, low tide, 27 November 1913; Catalina Harbor, from shell of green abalone, 27 November 1913; entrance to Little Harbor, low tide rocks, 27 December 1912; Rocky Point, from mantle of abalone, 2 February 1912. Laguna Beach (Hilton 1916).

*Betaeus longidactylus* Lockington

First rocky beach west of Long Wharf, 5 December 1911; Rocky Point, 2 February 1912; Portuguese Bend, shore, 26 June 1914; near Point Fermin, shore, 31 July, 1923, Clarke, collector; between base of Government Breakwater and second point toward Point Fermin, low tide, 2 April 1913; Catalina Harbor, 28 November 1913, shore, P. S. Barnhart and party; Catalina Island, shore, 26 April 1916; west

Table 1. Natant decapods taken in 1900–1930.

	Santa Barbara Island	Isthmus area: Santa Catalina Island	Other Areas: Santa Catalina Island	Laguna Beach	Newport Bay	Huntington Beach	Anahim Slough	Seal Beach	Long Beach	San Pedro	White's Point-Point Fernin	Portuguese Bend-Point Vicente	Rocky Point-Redondo Beach	El Segundo	Playa del Rey	Venice	Santa Monica	References
<i>Alpheopsis equidactylus</i> (Lockington)		x		x												x		Hilton 1918; AHF
<i>Alpheus bellimanus</i> Lockington		x														x		AHF
<i>Alpheus clamator</i> Holmes	x	x	x	x							x							Baker 1912; Hilton 1916; AHF
<i>Betaeus harfordi</i> (Kingsley)		x	x	x														Hilton 1916; AHF
<i>Betaeus longidactylus</i> Lockington		x	x	x						x								Baker 1912; Hilton, 1916; AHF
<i>Crangon alaskensis</i> Lockington			x			x				x							x	AHF
<i>Crangon alba</i> Holmes				x							x				x			Hilton 1918; AHF
<i>Crangon holmesi</i> Rathbun		x		x							x				x			Hilton 1918; AHF
<i>Crangon munitellus</i> Walker			x	x							x				x			Hilton 1918; AHF
<i>Crangon munitus</i> Dana		x																AHF
<i>Crangon nigricauda</i> Stimpson					x													Hilton 1918
<i>Crangon nigromaculata</i> Lockington					x													Baker 1912; Hilton 1916; AHF
<i>Crangon spinosissima</i> Rathbun											x							Schmitt 1921; AHF
<i>Heptacarpus carinatus</i> Holmes				x														Schmitt 1921



Table 1. Continued.

	Santa Barbara Island	Isthmus area: Santa Catalina Island	Other Areas: Santa Catalina Island	Laguna Beach	Newport Bay	Huntington Beach	Anaheim Slough	Seal Beach	Long Beach	San Pedro	White's Point-Point Fermín	Portuguese Bend-Point Vicente	Rocky Point-Redondo Beach	El Segundo	Playa del Rey	Venice	Santa Monica	References
<i>Heptacarpus decorus</i> (Rathbun)		x																AHF
<i>Heptacarpus franciscanus</i> (Schmitt)				x														Schmitt 1921
<i>Heptacarpus kincaidii</i> (Rathbun)											x					x		AHF
<i>Heptacarpus palpator</i> (Owen)			x									x						Hilton 1916; AHF
<i>Heptacarpus pictus</i> (Stimpson)		x								x								Baker 1912; Hilton 1916; AHF
<i>Heptacarpus stimpsoni</i> Holthuis		x							x		x					x		AHF
<i>Heptacarpus taylora</i> (Stimpson)										x								Hilton 1916; AHF
<i>Heptacarpus tenuissimus</i> Holmes	x																	AHF
<i>Hippolyte clarkii</i> Chace																		Chace 1951
<i>Lebbeus lagunae</i> (Schmitt)				x								x						Schmitt 1921
<i>Lysmata californica</i> (Stimpson)			x															Baker 1912; Hilton 1916, 1918; AHF
<i>Neocerangon communis</i> (Rathbun)		x			x													AHF
<i>Neocerangon resima</i> (Rathbun)		x			x											x		AHF

Table 1. Continued.

	Santa Barbara Island	Isthmus area: Santa Catalina Island	Other Areas: Santa Catalina Island	Laguna Beach	Newport Bay	Huntington Beach	Anaheim Slough	Seal Beach	Long Beach	San Pedro	White's Point-Point Fernin	Portuguese Bend-Point Vicente	Rocky Point-Redondo Beach	El Segundo	Playa del Rey	Venice	Santa Monica	References
<i>Ogyrides</i> sp.								x		x								AHF Schmitt 1921
<i>Palaemonetes hiltoni</i>																		AHF AHF
<i>Pandalus danae</i> Stimpson	x											x						AHF AHF
<i>Pandalus gurneyi</i>		x																Schmitt 1921
<i>Pandalus platyceros</i>												x						AHF
Brandt									x									AHF
<i>Penaeus californiensis</i>																		AHF
Holmes																		AHF
<i>Spirotocaris snyderi</i>		x									x							Schmitt 1921; AHF
Rathbun																		
<i>Synalpheus lockingtoni</i>	x	x		x														Schmitt 1921; AHF
Coutière																		

shore near entrance of Catalina Harbor, 28 December 1912; west shore of Isthmus Harbor, 27 November 1913; shore of Catalina Harbor, 28 November 1913. Laguna Beach (Baker 1912; Hilton 1916).

*Synalpheus lockingtoni* Coutiere

East of Santa Barbara Island, 30 July 1919. West shore of Catalina Island, littoral; Venice Beach (Schmitt 1921).

Family Ogyrididae

*Ogyrides* sp.

Off Seal Beach pier, 24 April 1926, D147.

Family Crangonidae

*Crangon alaskensis* Lockington

Off Santa Monica, 46 m, 13 August 1914; T67; off Playa del Rey, 2 August 1913; T36; 2 miles south by east of Playa del Rey, 37 m, 8 August 1913; OT40; ½ mile out between El Segundo and Playa del Rey, 10 m, 2 August 1913, T35; east by northeast of Redondo Beach, 29 July 1916, T169; off Point Vicente, 22 July 1922, T207; Point Vicente, 26 m, 10 July 1926, D151; off Long Point, 5 m, 27 December 1913, T48; opposite Long Point, 27 December 1913; T49; off Portuguese Bend, 55 m, 27 December 1913, T46; off Portuguese Bend, 55 m, 27 December 1913, T47; off Portuguese Bend, 15 July 1922, T205; off White's Point, 55 m, 26 December 1912, T45; White's Point to San Pedro, 29–30 November 1912; southwest of Point Fermin and south of White's Point, 65 m, 26 April 1924, D89; off Point Fermin, 18 November 1922, D51; off San Pedro and Long Beach, 15 July 1927; southeast of Los Angeles Breakwater light, 65 m, 14 May 1928, D164; east of Fish Harbor, Wilmington, and west of Edison Power Plant, 7–9 m, 7 July 1923, D64; south of Long Beach, 24 July 1926, D154; Alamitos Bay, 31 March 1913, T23; off Seal Beach pier, 24 April 1926, D147; across from end of pier, Huntington Beach, 24 February 1923; Huntington Beach, 24 February 1922; southwest of Newport, 42 m, 16 June 1915, T111; off Santa Catalina Island, 1913; along Long Point, west of Avalon, 19 July 1924, D103.

*Crangon alba* Holmes

5 miles south of Venice Pier, 26 July 1913, T28; 2 miles south by east of Playa del Rey, 37 m, OT40; off Point Fermin, 31 m, 25 March 1912, T5; off Long Beach, 1 March 1914, T54. Laguna Beach (Hilton 1918, as *Crango alba*).

*Crangon communis* Rathbun

Off Newport, 63 m, 6 April 1917, T176; along Long Point, west of Avalon, 74 m, 19 July 1924, D103.

*Crangon holmesi* Rathbun

2 miles south by east from Playa del Rey, 37 m, 8 August 1913, P. S. Barnhart and party; off Point Vicente, 37 m, 17 December 1926, D153; entrance to Catalina Harbor, 30 December 1912, T19. Laguna Beach (Hilton 1918, as *Crango holmesi*).

*Crangon munitellus* Walker

Rocky Point to Point Vicente, 26 m, 10 July 1926, D152; south of Point

Table 2. *Macrura* and *Anomura* taken in 1900-1930.

	Santa Barbara Island	Isthms area: Santa Catalina Island	Other areas: Santa Catalina Island	Laguna Beach	Newport Bay	Huntington Beach	Anaheim Slough	Seal Beach	Long Beach	San Pedro	White's Point-Point Fermín	Portuguese Bend-Point Vicente	Rocky Point-Redondo Beach	El Segundo	Playa del Rey	Venice	Santa Monica	References
<i>Callinassa affinis</i> Holmes	x			x					x	x	x	x						Baker 1912; Hilton 1916; AHF Hilton 1916
<i>Callinassa californiensis</i> Dana				x						x								AHF
<i>Callinassa longimana</i> Stimpson				x												x		Baker 1912; Hilton 1916; AHF
<i>Panulirus interruptus</i> (Randall)				x														Baker 1912; Hilton 1916; AHF
<i>Blepharipoda occidentalis</i> Randall				x	x													Baker 1912; Hilton 1916; AHF
<i>Emerita analoga</i> (Stimpson)				x														Baker 1912; Hilton 1916; AHF
<i>Isocheles pilosus</i> (Holmes)				x												x		Baker 1912; Hilton 1916; AHF
<i>Lepidopa californica</i> Efford				x														Hilton 1918; AHF
<i>Munida quadrispina</i> Benedict				x														Baker 1912
<i>Orthopagus minimus</i> (Holmes)				x														Hilton 1916
<i>Pachycheles holosericus</i> Schmitt				x							x			x				Hilton 1918; AHF
<i>Pachycheles rudis</i> Stimpson				x												x		Niminger 1918; Schmitt 1921 Baker 1912; Hilton 1916; AHF

Table 2. Continued.

	Santa Barbara Island	Isthms area: Santa Catalina Island	Other areas: Santa Catalina Island	Laguna Beach	Newport Bay	Huntington Beach	Anaheim Slough	Seal Beach	Long Beach	San Pedro	White's Point-Point Fernin	Portuguese Bend-Point Vicente	Rocky Point-Redondo Beach	El Segundo	Playa del Rey	Venice	Santa Monica	References
<i>Paguristes bakeri</i>				x								x			x		x	Hilton 1916; AHF
Holmes																		
<i>Paguristes ulreyi</i>				x														Hilton 1918; AHF
Schmitt																		AHF
<i>Pagurus armatus</i> (Dana)				x								x						Hilton 1916; AHF
<i>Pagurus hirsutiusculus</i> (Dana)																		Hilton 1916; AHF
<i>Pagurus sannuelis</i> (Stimpson)				x						x								Hilton 1916; AHF
<i>Petrolisthes cabrilloi</i> Glassell				x							x							Baker 1912; Hilton 1916; AHF
<i>Petrolisthes manimaculis</i> Glassell				x														Hilton 1916; Haig 1960
<i>Petrolisthes rathbunae</i> Schmitt				x														Hilton 1916; AHF
<i>Phinochirus californiensis</i> (Benedict)																		AHF
<i>Pylopagurus holmesii</i> Schmitt																		Schmitt 1921

Table 3. Brachyura taken in 1900–1930.

	Santa Barbara Island	Isthmus area: Santa Catalina Island	Other areas: Santa Catalina Island	Laguna Beach	Newport Bay	Huntington Beach	Anaheim Slough	Seal Beach	Long Beach	San Pedro	White's Point-Point Fermín	Portuguese Bend-Point Vicente	Rocky Point-Redondo Beach	El Segundo	Playa del Rey	Venice	Santa Monica	References
<i>Cancer antennarius</i>				x	x					x	x					x		Hilton 1916; Rathbun 1930; AHF
Stimpson																		
<i>Cancer anthonyi</i> Rathbun			x								x	x			x	x		Rathbun 1930, AHF
<i>Cancer branneri</i> Rathbun					x			x			x	x						Ninger 1918; Rathbun 1930; AHF
<i>Cancer gracilis</i> Dana					x				x	x	x	x			x	x	x	Rathbun 1930; AHF
<i>Cancer jordani</i> Rathbun		x			x				x	x	x	x			x	x		Rathbun 1930; AHF
<i>Cancer productus</i> Randall					x				x									Ninger 1918; Rathbun 1930
<i>Clythrocerus planus</i> Rathbun					x					x	x	x						Schmitt 1912; Rathbun 1937
<i>Cycloxanthops novemdentatus</i> Holmes			x		x					x	x	x						Baker 1912; Hilton 1916; Rathbun 1930
<i>Epialtoides hiltoni</i> Rathbun					x													Hilton 1916; Rathbun 1925
<i>Erileptus spinosus</i> Rathbun		x																Rathbun 1925; AHF
<i>Fabia lowei</i> Rathbun										x								Rathbun 1918
<i>Fabia subquadrata</i> (Dana)			x															Rathbun 1918
<i>Hemigrapsus nudus</i> (Dana)										x								AHF
<i>Hemigrapsus oregonensis</i> (Dana)					x					x					x			Ninger 1918; Rathbun 1918; AHF
<i>Herbstia parvifrons</i> Randall		x				x				x								Hilton 1916; Ninger 1918; Rathbun 1925

Table 3. Continued.

	Santa Barbara Island	Isthmus area: Santa Catalina Island	Other areas: Santa Catalina Island	Laguna Beach	Newport Bay	Huntington Beach	Anaheim Slough	Seal Beach	Long Beach	San Pedro	White's Point-Point Fernin	Portuguese Bend-Point Vicente	Rocky Point-Rondo Beach	El Segundo	Playa del Rey	Venice	Santa Monica	References
<i>Heterocrypta occidentalis</i> (Dana)				x	x	x		x	x	x	x			x	x	x		Hilton 1916; Nininger 1918; Rathbun 1925; AHF Rathbun 1930; AHF
<i>Lophopanopeus bellus diegensis</i> Rathbun		x						x	x	x	x				x			Rathbun 1930; AHF
<i>Lophopanopeus frontalis</i> (Rathbun)						x			x	x								Rathbun 1930; AHF
<i>Lophopanopeus leucomanus heathi</i> Rathbun					x			x							x			Hilton 1916; Rathbun 1930
<i>Lophopanopeus leucomanus leucomanus</i> (Lockington)			x		x			x		x	x				x			Baker 1912; Hilton 1916; Nininger 1918; Rathbun 1930; AHF
<i>Loxorhynchus crispatus</i> Stimpson			x		x					x					x			Hilton 1916; Rathbun 1925; AHF
<i>Loxorhynchus grandis</i> Stimpson					x					x								Hilton 1916; Rathbun 1925; AHF
<i>Malacoplax californiensis</i> (Lockington)						x				x								Rathbun 1918
<i>Mursia gaudichaudii</i> (Milne Edwards)		x																Rathbun 1937
<i>Opisthopus transversus</i> Rathbun		x			x					x					x			Rathbun 1918

Table 3. Continued.

	Santa Barbara Island	Isthmus area: Santa Catalina Island	Other areas: Santa Catalina Island	Laguna Beach	Newport Bay	Huntington Beach	Anaheim Slough	Seal Beach	Long Beach	San Pedro	White's Point-Point Fermin	Portuguese Bend-Point Vicente	Rocky Point-Redondo Beach	El Segundo	Playa del Rey	Venice	Santa Monica	References
<i>Pachygrapsus crassipes</i> Randall		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Baker 1912; Hilton 1916; Rathbun 1918; AHF
<i>Parapinnixa affinis</i> Holmes								x	x	x								Schmitt 1921
<i>Paraxanthias taylori</i> (Stumpson)		x	x	x	x			x	x	x	x	x						Baker 1912; Hilton 1916; Rathbun 1930; AHF
<i>Pelidnota tumida</i> (Lockington)		x	x	x	x					x	x	x						Hilton 1916; Rathbun 1925
<i>Pilumnus spinohirsutus</i> (Lockington)					x				x	x	x							Hilton 1916; Rathbun 1930, AHF
<i>Pinnixa barnharti</i> Rathbun										x								Rathbun 1918
<i>Pinnixa littoralis</i> Holmes				x														Rathbun 1918
<i>Pinnixa longipes</i> (Lockington)					x													Nininger 1918
<i>Planes cyaneus</i> Dana				x	x													AHF
<i>Podochela hemphilli</i> (Lockington)		x	x	x	x					x					x			Rathbun 1930; AHF
<i>Portunus xantusii</i> (Stumpson)		x	x			x	x	x	x	x			x	x	x			Rathbun 1930; AHF
<i>Pugettia dalli</i> Rathbun		x	x	x	x					x	x	x	x		x			Rathbun 1925



Table 3. Continued.

	Santa Barbara Island	Isthmus area: Santa Catalina Island	Other areas: Santa Catalina Island	Laguna Beach	Newport Bay	Huntington Beach	Anaheim Slough	Seal Beach	Long Beach	San Pedro	White's Point-Point Fernin	Portuguese Bend-Point Vicente	Rocky Point-Redondo Beach	El Segundo	Playa del Rey	Venice	Santa Monica	References
<i>Pugettia producta</i> (Randall)				x	x					x	x	x	x			x		Baker 1912; Hilton 1916; Rathbun 1925
<i>Pugettia richi</i> Dana				x	x					x	x		x		x	x		Hilton 1916; Rathbun 1925; AHF
<i>Pugettia venetiae</i> Rathbun				x		x												Rathbun 1925; AHF
<i>Pyromania tuberculata</i> (Lockington)					x	x			x	x	x	x						Hilton 1916; Rathbun 1925; AHF
<i>Randallia ornata</i> (Randall)			x	x	x	x				x	x	x	x					Baker 1912; Hilton 1916; Rathbun 1937; AHF
<i>Scyra acutifrons</i> Dana					x	x				x	x							Hilton 1916; Rathbun 1925; AHF
<i>Taliepus nuttalli</i> (Randall)			x	x	x						x							Hilton 1916; Rathbun 1925

Fermin, 29–30 November 1912; 25 miles southeast of Santa Catalina Island light, 26 m, 17 December 1926, D156; entrance to Catalina Harbor, 30 December 1912, T19. Laguna Beach (Hilton 1918, as *Crango munitellus*).

*Crango munitus* Dana

Off first cove east of Catalina Harbor, 23 June 1916, T159.

*Crango nigricauda* Stimpson

Balboa (Hilton 1918, as *Crango nigricauda*).

*Crango nigromaculata* Lockington

Off Venice Beach, 19 September 1911; 3 miles south of Venice Pier, 26 m, 29 July 1913; T32; ½ mile out between El Segundo and Playa del Rey, 10 m, 2 August 1913, T35; southwest of El Segundo, 4 August 1917, T188; north of Portuguese Bend, 11 July 1928, D3; off Long Beach, 24 July 1926, T236. Laguna Beach (Baker 1912; Hilton 1916).

*Neocrango resima* (Rathbun)

Off Long Point, 55 m, 27 December 1913, T48; off Portuguese Bend, 55 m, 27 December 1913, T47; off Newport, 63 m, 6 April 1917, T176; along Long Point, west of Avalon, 74 m, 19 July 1924, D103.

*Crango spinosissima* Rathbun

Off Long Point, 55 m, 27 December 1913, T48. Point Fermin, 28 m (Schmitt 1912, as *Crango spinosissima*).

Infraorder Palinura

Family Palinuridae

*Panulirus interruptus* (Randall)

Venice, in storm debris, 23 July 1914. Laguna Beach (Baker 1912; Hilton 1916).

Infraorder Anomura

Family Callianassidae

*Callianassa affinis* Holmes

Portuguese Bend, 26 June 1914; Portuguese Bend, shore, 10 April 1915; Point Fermin, in burrows with “blind goby,” 1911; between base of Government Breakwater and second point toward Point Fermin, low tide, 2 April 1913; west shore of Isthmus Harbor, 27 November 1913. Laguna Beach (Baker 1912; Hilton 1916, as *Callianassa longimana*).

*Callianassa californiensis* Dana

Laguna Beach (Hilton 1916).

*Callianassa longimana* Stimpson

Sand and mud banks of West Basin, San Pedro, 15 June 1913.

Family Paguridae

*Pagurus armatus* Dana

3 miles southwest by south of Venice Pier, 41 m, 2 August 1913, T33; northwest of Point Vicente, 46 m, 24 June 1914, D14.

*Pagurus hirsutiunculus* (Dana)

Rocky Point, 4 January 1912. Laguna Beach (Hilton 1916).

*Pagurus samuelis* (Stimpson)

West of Long Wharf, 14 January 1911; near foot of breakwater to Point Fermin, San Pedro, 21–22 February 1913, P. S. Barnhart; near base

of Government Breakwater and second point toward Point Fermin, shore, 2 April 1913; between Government Breakwater and Point Fermin, 1 April 1913; Avalon, littoral, 22 October 1910; Sugar Loaf Rock (Casino Point), Avalon, 19 June 1913; entrance to Little Harbor, 27 December 1912; Catalina Harbor, 28 December 1912.

*Orthopagurus minimus* (Holmes)

Off Del Rey, 42 m, 11 August 1914, D36; off Point Vicente, 46 m, 23 June 1914, D13. Laguna Beach (Hilton 1918, as *Parapagurus minimus*).

*Phimochirus californiensis* (Benedict)

Between Bird Rock and East shore, Isthmus Cove, 37 m, 28 January 1927, T240; Isthmus Harbor, 19 August 1913, T44; west shore of Isthmus Harbor, 27 November 1913; west of Avalon, 65 m, 1 April 1915, T106.

Family Diogenidae

*Isocheles pilosus* (Holmes)

Between Aquarium and end of breakwater, Venice, 11 December 1912; off Venice Beach, 19 September 1911; off Venice Pier, 7 December 1912; under Venice Aquarium, 9 December 1912; off inlet to Long Beach Harbor, 24 March 1912; about 1 mile east of Anaheim Landing, 28 July 1926; across from end of pier, Huntington Beach, 24 February 1912, D55. Laguna Beach (Hilton 1918, as *Holopagurus pilosus*).

*Paguristes bakeri* Holmes

Off Santa Monica, 46 m, 11 August 1914; beneath Venice Aquarium, 9 December 1912; under Venice Aquarium (no date); 3½ miles southwest from Venice, 44 m, 29 July 1913; off Del Rey, 48 m, 12 August 1914; Hyperion, Santa Monica Bay, 28 July 1917, T186; off Portuguese Bend, 55 m, 27 December 1913; T47; off Portuguese Bend, 55 m, 27 December 1913.

*Paguristes ulreyi* Schmitt

3 miles south of Venice Pier, 26 m, 29 July 1913, T32; south by east of Playa del Rey, 37 m, 8 August 1913; OT40; Hyperion, Santa Monica Bay, 28 July 1917, T186; Off Redondo Beach, 42 m, 12 August 1914, T61; Rocky Point to Point Vicente, 26 m, 10 July 1926, D152; Point Vicente, 26 m, 10 July 1926, D151; off Long Beach, 14 March 1914, T54. Laguna Beach (Hilton 1918).

Family Galatheidae

*Munida quadrispina* Benedict

Laguna Beach (Hilton 1918).

Family Porcellanidae

*Pachycheles holosericus* Schmitt

Venice (Schmitt 1921). TYPE LOCALITY. Laguna Beach (Nininger 1918).

*Pachycheles rudis* Stimpson

From piles of Long Wharf, 15 July 1914; piles of Long Wharf, 10 July 1914; off piles of Long Wharf, 18 July 1914; under Venice Aquarium, 9 March 1913, Ross Beck; under Venice Aquarium, 19 February 1913, J. Ross Beck; end of Venice breakwater, 25 October 1912;

north end of Venice breakwater, 26 April 1912; Venice breakwater, 13 March 1913; west end of Venice breakwater, 29 October 1913; off inlet to Long Beach Harbor, 24 March 1912. Laguna Beach (Baker 1912; Hilton 1916).

*Petrolisthes cabrilloi* Glassell

Venice pier and breakwater, 3 January 1912; under Venice Aquarium, 24 January 1913, J. Ross Beck; west end of Venice breakwater, 29 October 1913; under Venice Aquarium, 9 March 1913, Ross Beck; near foot of breakwater to Point Fermin, 21–22 February 1913, P. S. Barnhart; Catalina Harbor, shore, 28 November 1913, P. S. Barnhart; west shore near entrance of Catalina Harbor, 28 December 1912; Catalina Harbor, 28 December 1912; Sugar Loaf Rock, Avalon Bay, 18 June 1913. Laguna Beach (Baker 1912; Hilton 1916, as *Petrolisthes cincitipes*).

*Petrolisthes manimaculis* Glassell

Laguna Beach (Hilton 1916, as *Petrolisthes eriomerus*).

*Petrolisthes rathbunae* Schmitt

West shore near entrance of Catalina Harbor, 28 December 1912; Sugar Loaf Rock, Avalon Bay, 18 June 1913; Catalina Harbor, shore, low tide, 28 November 1913; west shore of Isthmus Cove, 29 March 1915. Laguna Beach (Hilton 1916).

Family Hippidae

*Emerita analoga* (Stimpson)

1–1½ miles north of Long Wharf, from storm debris, 23 July 1914; 1 mile west of Long Wharf, 1 August 1914. Laguna Beach (Baker 1912; Hilton 1916).

Family Albuneidae

*Blepharipoda occidentalis* Randall

On bar in main channel, Balboa, Newport Bay, 15 December 1914, Higgins, Hobbs, and Burnight. Laguna Beach (Baker 1912; Hilton 1916).

*Lepidopa californica* Efford

Laguna Beach (Baker 1912; as *Lepidopa myops*).

Infraorder Brachyura

Family Dorippidae

*Clythrocerus planus* Rathbun

Off Point Vicente, 37 m, 31 July 1926, D153; Point Fermin to White's Point, 29–30 November 1912. Near Rocky Point, 22 m, 10 May 1924; near Rocky Point, 17 May 1924; Long Beach, 18 m, 25 October 1924; Laguna Beach (Rathbun 1937).

Family Leucosiidae

*Randallia ornata* (Randall)

Off Point Dume, 25 July 1914; near Point Dume, 25 July 1914; off Malibu Cove, 34 m, 1 August 1914; off Santa Monica, 42 m, 8 August 1914; off Santa Monica, 46 m, 11 August 1914; off Long Wharf, 46 m, 1 August 1914; about 2 miles southwest of Venice, 46 m, 11 July 1914; 1½ miles southwest of Venice, 46 m, 11 July 1914; 2 miles south by east of Playa del Rey, 37 m, 8 August 1913;

off Del Rey, 42 m, 11 August 1914; off Point Vicente, 46 m, 23 June 1914; off Point Vicente, 46 m, 23 June 1914; northwest of Point Vicente, 46 m, 24 June 1914; Portuguese Bend, 3 July 1926; Point Fermin to White's Point, 30 November 1912; due south from Point Fermin buoy, 29 November 1912; Santa Catalina Island to San Pedro Hill, 25 March 1912; off Government Breakwater, San Pedro, 2 April 1913; outer harbor, San Pedro, 3 April 1913; Long Beach, 21 July 1923; entrance to Catalina Harbor, 30 December 1912. Between Long Wharf and Venice, 8 August 1914; off Long Wharf, Venice, 1 August 1914; southwest of Venice, 11 July 1914; between Venice and Rocky Point, 11 August 1914; near Rocky Point, 10 May 1924, 22 m, D93; Point Vicente, 15 m, 5 July 1924; Point Vicente, 28 m, 5 November 1924; near Portuguese Bend, 23 June 1914; near Portuguese Bend, 24 June 1914; off Point Fermin, 18 November 1922; 3 miles south of Point Fermin, 29 November 1912; south of San Pedro Breakwater, 37 m, 24 September 1924, D105; Long Beach, 3 October 1925, 17 October 1925, 21 November 1922; just east of beach, Long Beach, 4 November 1922; Newport, 42 m, 16 June 1915, T109; Newport, 5 April 1917; Catalina Harbor, 23 June 1916; southwest of Catalina Harbor, 23 June 1916 (Rathbun 1937). Laguna Beach (Baker 1912; Hilton 1916).

#### Family Calappidae

*Mursia gaudichaudii* (Milne Edwards)

Near Rocky Point, 17 May 1924; off Santa Catalina Island, 92 m, H. N. Lowe (Rathbun 1937).

#### Family Majidae

*Erileptus spinosus* Rathbun

Entrance to Catalina Harbor, 30 December 1912, T17; entrance to Catalina Harbor, 39 December 1912, T19; 1½ miles south of Catalina Harbor, 30 December 1912, T18; Isthmus Harbor, 1 January 1913, T20; north side of Santa Catalina Island, 30 March 1915, T94. Off Santa Catalina Island, 92 m, H. N. Lowe (Rathbun 1925).

*Podochela hemphilli* (Lockington)

Venice, 5 August 1922; south by west of Venice, 44 m, 29 July 1913, T30; south by east from Playa del Rey, 37 m, 8 August 1913, OT40; south of Los Angeles Breakwater lighthouse, 12 July 1924; D102; Terminal Island, San Pedro Bay, 31 March 1915; Seal Rock, Santa Catalina Island, 15 June 1916, T135; southeast of Avalon, 15 June 1916, T136; entrance to Catalina Harbor, 30 December 1912, T17; entrance to Catalina Harbor, 30 December 1912, T19; Isthmus Harbor, 1 January 1913, T20; west shore of Isthmus Harbor, 27 November 1913; north side of Santa Catalina Island, 33 m, 31 March 1915, T99. North side of Santa Catalina Island, 31 March 1915, T96; Venice, 8 August 1913; Laguna Beach (Rathbun 1925). Laguna Beach (Niniger 1918).

*Pyromaia tuberculata* (Lockington)

Off Santa Monica, 46 m, 11 August 1914; about 2 miles southwest of Venice, 46 m, 11 July 1914, D23; off Del Rey, 42 m, 11 August

1914; 2–3 miles off Playa del Rey, 29 July 1913, T29; 2 miles southeast from Playa del Rey, 37 m, 8 August 1913, OT40; off Playa del Rey, 2 August 1913, T36; ½ mile out between El Segundo and Playa del Rey, 10 m, 2 August 1913; off El Segundo, 37 m, 12 August 1914, T64; southwest of El Segundo, 4 August 1917; T188; off Point Vicente, 37 m, 31 July 1926, D153; Point Fermin to White's Point, 29–30 November 1912; south of Point Fermin, 59 m, 19 April 1924, D87; from bend in breakwater to buoy, San Pedro, 17 m, 16 February 1924, D81; off Wilmington and Long Beach, 5 August 1922, T212; off Long Beach (no date); center of Long Beach, 18–22 m, 29 July 1922, T209; between Seal Beach and Long Beach, 4 November 1922, D44; ¼ mile north of Point Orange, Balboa, Newport Bay, 28 November 1914, Rittenhouse and party; southwest of Newport, 32 m, 16 June 1915, T113; southwest of Newport, 16 June 1915, T112. Off Venice, 2 August 1913; off Venice, 29 July 1913; southwest of Venice, 11 July 1914; between El Segundo and Playa del Rey, 2 August 1913; San Pedro, H. N. Lowe and E. P. Chace; Long Beach, H. N. Lowe; Alamitos Bay, H. N. Lowe; Balboa, Laguna, W. A. Hilton (Rathbun 1925). Balboa Beach (Hilton 1916 as *Dasygius tuberculatus*).

*Epialtoides hiltoni* (Rathbun)

Laguna Beach (Hilton 1916; as *Epialtus bituberculatus*; Rathbun 1925; as *Epialtus hiltoni*).

*Taliepus nuttalli* (Randall)

Off Venice pier, 7 December 1912; ¼ mile west of Venice pier, live fish trap, 7 December 1912; kelp in Portuguese Bend, 14 July 1914; San Pedro, H. N. Lowe; Avalon Bay (no date); Avalon Bay, 22 October 1910; west shore of Isthmus Harbor, 27 November 1913; west shore of Isthmus Cove, 29 March 1915 (Rathbun 1925). Laguna Beach (Hilton 1916, as *Epialtus nuttalli*).

*Pugettia dalli* Rathbun

Off Del Rey, 42 m, 11 August 1914; 3 miles south of Government Breakwater, San Pedro, 14 March 1914, T51; Avalon Bay, 22 October 1910; west shore of Isthmus Harbor, 27 November 1913. Between Venice and Rocky Point, 11 August 1914; Point Vicente, February 1918; off Point Fermin, 14 March 1914; Laguna Beach, W. A. Hilton (Rathbun 1925).

*Pugettia producta* (Randall)

Venice Breakwater and below Aquarium, February 1911; Venice breakwater, 25 October 1912; under Venice Aquarium, 24 January 1913; Venice breakwater, 13 March 1913; Portuguese Bend, 26 June 1914; Portuguese Bend, 14 July 1914; near foot of San Pedro Breakwater, 21–22 February 1913; San Pedro Breakwater, 30 October 1917, E. P. Chace; Laguna Beach, W. A. Hilton; west shore of Isthmus Harbor, 27 November 1913; west shore of Isthmus Cove, 29 March 1915; Avalon Bay, 22 October 1910 (Rathbun 1925). Laguna Beach (Baker 1912; Hilton 1916; as *Epialtus productus*).

*Pugettia richi* Dana

Under Venice Aquarium, 24 January 1913; Venice breakwater, 16 October 1913; southwest from Venice, 44 m, 29 July 1913, T30; 2 miles south by east from Playa del Rey, 8 August 1913, 37 m, P. S. Barnhart and party; off Playa del Rey, 2 August 1913; T36; Rocky Point, south of Redondo, 2 February 1912; off Long Beach (no date). Venice, 2 February 1911; under Venice Aquarium, 16 October 1913; off Venice, 2 August 1913; San Pedro, 15 December 1918, E. P. Chace; Long Beach wharf, H. N. Lowe; Laguna Beach, W. A. Hilton; off Santa Catalina Island, 92 m, H. N. Lowe (Rathbun 1925). Laguna Beach (Hilton 1916).

*Pugettia venetiae* Rathbun

5 miles off Newport Beach, 20 March 1915, T89. TYPE LOCALITY. Off east end of Santa Catalina Island, 55 m, 1 April 1915 (Rathbun 1925).

*Scyra acutifrons* Dana

Venice breakwater, 25 October 1922; end of Venice breakwater, 25 October 1912; 3 miles south of Venice pier, 26 m, 29 July 1913, T32; 2 miles south by east from Playa del Rey, 37 m, 8 August 1913, OT40; off Long Beach, 18 m, 14 March 1914, T55; southwest of Newport, 42 m, 16 June 1915, T111. Off Venice, August 1913–1914; off Point Fermin, 14 March 1914; Laguna Beach, W. A. Hilton (Rathbun 1925). Laguna Beach (Hilton 1916).

*Loxorhynchus crispatus* Stimpson.

Southwest of Venice, 28 July 1917, T186; southwest by south of Venice pier, 41 m, 2 August 1913, T33; 3½ miles south by west from Venice, 44 m, 29 July 1913, T30; 2 miles south by east of Playa del Rey, 37 m, 8 August 1913, P. S. Barnhart and party; off Manhattan Beach, 30 m, 12 August 1914, T63; off Portuguese Bend, 15 July 1922, T205; ¼ mile from Government Breakwater, San Pedro, 2 April 1913, D10a; entrance to Catalina Harbor, 30 December 1912, T19; Isthmus Cove, 29 March 1915, T90. Between Venice and Rocky Point, 12 August 1914; San Pedro, 7 m, H. N. Lowe; entrance to Catalina Harbor, 30 December 1912; off Santa Catalina Island, 92 m, H. N. Lowe (Rathbun 1925). Laguna Beach (Hilton 1916).

*Loxorhynchus grandis* Stimpson

2 miles south by east of Playa del Rey, 8 August 1913, 37 m, P. S. Barnhart and party; San Pedro, June 1911; Alamitos Bay (no date). San Pedro Bay, 18 m, H. N. Lowe; San Pedro Breakwater, June 1911 (Rathbun 1925). Laguna Beach (Hilton 1916).

*Pelia tumida* (Lockington)

Venice pier and breakwater, 3 January 1912; under Venice Aquarium, 19 February 1913; Venice breakwater, 16 October 1913; west end of Venice breakwater, 29 October 1913; Avalon Bay, 22 October 1910. Venice breakwater, 29 October 1913; between Venice and San Pedro, 18 June 1913; Point Vicente, February 1918, H. N. Lowe; Reef Point, 6 July 1917, E. P. Chace; San Pedro, H. N. Lowe; Long

Beach, H. N. Lowe; Isthmus Harbor; off Santa Catalina Island, 92 m, H. N. Lowe (Rathbun 1925). Laguna Beach (Hilton 1916, as *Pelia clausa*; Nininger 1918).

*Herbstia parvifrons* Randall

San Pedro, H. N. Lowe; Long Beach, H. N. Lowe; Laguna Beach, W. A. Hilton; San Pedro to Catalina Island, 27 November 1913; west shore of Isthmus Harbor, 27 November 1913; Isthmus Harbor (Rathbun 1925). Laguna Beach (Hilton 1916; Nininger 1918).

Family Parthenopidae

*Heterocrypta occidentalis* (Dana)

Santa Monica Bay, 10 May 1912; Hyperion, Santa Monica Bay, 28 July 1917, T186; southwest of El Segundo, 4 August 1917, T188; off Point Vicente, 22 July 1922, T207A; off Point Vicente, 37 m, 31 July 1926, D153; Portuguese Bend, 3 July 1926; off Point Fermin, San Pedro, 17 m, 29 March 1924, D82; from bend in breakwater to buoy, San Pedro, 17 m, 16 February 1924, D81; San Pedro, 27 May 1901; Long Beach, 24 March 1912; ½ mile off San Pedro Breakwater, 24 February 1928, T248; northeast of breakwater light, Long Beach, 12 July 1924, D102; off Wilmington and Long Beach, 5 August 1922, T212; Seal Beach, 26 April 1926; south of Seal Beach, 26 m, 3 November 1923, D77; on bar in main channel, Balboa, Newport Bay, shore, 15 December 1914, Higgins, Hobbs, and Burnight. Off Venice, 1913–1914; off San Pedro, 1912–1924; San Pedro, M. Baldrige and H. N. Lowe; off Santa Catalina Island, H. N. Lowe (Rathbun 1925). Laguna Beach (Hilton 1916; Nininger 1918).

Family Cancridae

*Cancer antennarius* Stimpson

Venice, 27 June 1926; Venice, 27 March 1913; Venice pier and breakwater, 3 January 1912; end of Venice breakwater, 25 October 1912; under Venice Aquarium, 19 February 1913; west end of Venice breakwater, 29 October 1913; 1–1½ miles north of Long Wharf, storm debris, 23 July 1914; between base of Government Breakwater and second point toward Point Fermin, low tide, 2 April 1913. Under Venice Aquarium, 9 March 1913, J. Ross Beck; Venice Aquarium, 29 October 1913, Venice Aquarium, 13 March 1913; White's Point, 18 May 1919, E. P. Chace; San Pedro Breakwater, 18 m, 30 November 1912; San Pedro, Baker, collector; off Long Beach, 10 m, 16 May 1925; Los Angeles-Long Beach Harbor, 10 July 1914; Long Beach, H. N. Lowe; Laguna, W. A. Hilton (Rathbun 1930). Laguna Beach (Hilton 1916).

*Cancer anthonyi* Rathbun

West end of Venice breakwater, 16 April 1912, P. S. Barnhart; 3 miles south of Venice pier, 26 m, 29 July 1913, T32; Venice pier and breakwater, 3 January 1912; off Playa del Rey, 2 August 1913, T36; 2 miles south by east from Playa del Rey, 37 m, 8 August 1913, OT40; Point Fermin, 9 June 1926; center of Long Beach, 18–22 m, 29 July 1922, T209. Off Venice, 2 August 1912; White's Point, 18 May 1919, E. P. Chace; San Pedro, 18 May 1919, E. P. Chace, Long



Beach, H. N. Lowe; off Long Beach, 10 m, 16 May 1925; Seal Beach, 28 July 1923; Anaheim Bay, 18 November 1918, E. P. Chace; about 1 mile east of Anaheim Landing, 28 July 1926; off Santa Catalina Island, 92 m, H. N. Lowe (Rathbun 1930).

*Cancer branneri* Rathbun

Under Aquarium, Venice, 24 January 1913, J. Ross Beck; off Point Vicente, 37 m, 31 July 1926, D153. Seal Beach, 5 m, 24 February 1923 (Rathbun 1930).

*Cancer gracilis* Dana

Off Santa Monica, 46 m, 11 August 1914, D37; off Santa Monica, 46 m, 11 August 1914, D38; south of Venice pier, 26 m, 29 July 1913, T32; 3 miles southwest by south of Venice pier, 41 m, 2 August 1913, T33; off Del Rey, 42 m, 11 August 1914, D36; off Point Vicente, 37 m, 31 July 1926, D153; center of Long Beach, 18–22 m, 29 July 1922, T209; off Long Beach, 18 m, 25 October 1924, D108; Wilmington to Long Beach, 5 August 1922, T212; 5 miles off Newport, 20 March 1915, T89. Between Venice and Rocky Point, 11 August 1914; off Point Vicente, 26 m, 29 July 1913; off Point Vicente, 18 m, 1924; Point Fermin, 16 July 1923; south side of San Pedro Bay, east of Long Beach, 4 November 1922; off Long Beach, 21 October 1922; Newport Bay, 26 November 1914; Laguna Beach, W. A. Hilton (Rathbun 1930).

*Cancer jordani* Rathbun

3½ miles south by west from Venice, 44 m, 29 July 1913, T30; 2–3 miles off Playa del Rey, 29 July 1913, T29; south by east from Playa del Rey, 37 m, 8 August 1913, OT40; ½ mile out between El Segundo and Playa del Rey, 10 m, 2 August 1913, T35; kelp in Portuguese Bend, 14 July 1914; up channel from Point Orange in Newport Bay, 27 November 1914, T81; west shore of Isthmus Harbor, 27 November 1913. Santa Monica, E. P. Chace; off Venice, 29 July 1913; off Venice, 2 August 1913; south of Venice breakwater, 37 m; 2 miles out between Playa del Rey and El Segundo, 2 August 1913; Point Vicente, 5 July 1924, 15 m; Point Vicente, 26 m, 15 November 1924; Point Fermin, 16 July 1923; San Pedro, H. N. Lowe; San Pedro, E. P. Chace; Long Beach, 18 m, H. N. Lowe; off Long Beach, 10 m, 16 May 1925; Seal Beach, 6 m, 24 February 1923; Laguna Beach, W. A. Hilton (Rathbun 1930).

*Cancer productus* (Randall)

Laguna Beach, 22–28 m (Rathbun 1930). Laguna Beach (Nininger 1918).

Family Xanthidae

*Cycloxanthops novemdentatus* Holmes

Venice pier and breakwater, 3 January 1912; near Point Vicente, 17 July 1923; Point Fermin, 9 June 1926; between base of Government Breakwater and second point toward Point Fermin, 2 April 1913; near foot of breakwater to Point Fermin, San Pedro, 21–22 February 1913, P. S. Barnhart; Laguna Beach, April 1923, A. D. Howard; Catalina Harbor, 28 November 1913, P. S. Barnhart; north side of Santa Catalina Island, near West End, 30 March 1915, T95; Santa

Catalina Island, 26 April 1916; west shore near entrance of Catalina Harbor, 28 December 1912; Sugar Loaf Rock, Avalon Bay, 18 June 1913; west shore of Isthmus Harbor, 27 November 1913. Venice, 13 March 1913, J. R. Beck; Redondo, E. P. Chace; Point Fermin, 25 March 1918; San Pedro, H. N. Lowe, December 1924; Laguna, W. A. Hilton; Avalon, C. F. Baker (Rathbun 1930). Laguna Beach (Baker 1912; Hilton 1916).

*Lophopanopeus bellus diegensis* Rathbun

3 miles southwest by south of Venice pier, 41 m, 2 August 1913; off Point Vicente, 46 m, 23 June 1914, D13; from bend in breakwater to buoy, San Pedro, 16 February 1924, 17 m, D81; off Long Beach, 18 m, 14 March 1914, T55; off Seal Beach pier, 24 April 1926, D147; along Long Point, west of Avalon, 19 July 1924, D103; entrance to Catalina Harbor, 30 December 1912, T19; west shore of Isthmus Harbor, 27 November 1913. Off Santa Monica, August 1913–1914; off Venice, August 1913–1914; Venice breakwater, 19 February 1913; south of Venice breakwater, 37 m, 24 September 1924; Point Vicente, February 1918, H. N. Lowe; near Portuguese Bend, 23 June 1914; off Point Fermin, 14 March 1914; San Pedro, H. N. Lowe; Long Beach, 30 m, 26 September 1926; Long Beach, 52 m, 17 October 1925; Long Beach, 44 m, 17 October 1925 (Rathbun 1930, as *Lophopanopeus diegensis*).

*Lophopanopeus frontalis* (Rathbun)

Venice, March 1911; ¼ mile north of Point Orange, Balboa, Newport Bay, 28 November 1914, Rittenhouse and party; Isthmus Harbor, 1 January 1913, T20; north side of Santa Catalina Island, 33 m, 31 March 1915, T99. About 1 mile east of Anaheim Landing, 28 July 1926; Anaheim Bay, piles, February 1918, H. N. Lowe (Rathbun 1930). San Pedro, H. N. Lowe; Long Beach, H. N. Lowe; Anaheim Slough, Lena Higgins; Newport, 27 November 1914 (Rathbun 1930, as *Lophopanopeus lockingtoni*).

*Lophopanopeus leucomanus heathii* Rathbun

Venice, under Aquarium, February 1911, P. S. Barnhart; San Pedro, shore, 1924, E. P. Chace (Rathbun 1930, as *Lophopanopeus heathii*). Laguna Beach (Hilton 1916, as *L. heathii*).

*Lophopanopeus leucomanus leucomanus* (Lockington)

From haptera of *Pelagophycus porra* on Venice Beach, 3 October 1911; Venice breakwater, 13 March 1913; west end of Venice breakwater, 29 October 1913; Portuguese Bend, August 1924; Portuguese Bend, shore, 26 June 1914; between base of Government Breakwater and second point toward Point Fermin, 2 April 1913; from bend in breakwater to buoy, San Pedro, 16 February 1924, 17 m, D81; 3 miles south of Government Breakwater, 14 March 1914, T51; Fisherman's Cove, Santa Catalina Island, 25 April 1916; southeast of Avalon, 10 June 1916, T136; Isthmus Harbor, 27 July 1919; entrance to Catalina Harbor, 30 December 1912, T19; west shore of Isthmus Harbor, 27 November 1913; west shore of Isthmus Cove, 29 March 1915. Venice, in kelp holdfast at breakwater, 29 October

1913; Point Vicente, February 1918, H. N. Lowe; San Pedro, H. N. Lowe; San Pedro, 1901, T. D. A. Cockerell; San Pedro, 15 December 1918, E. P. Chace; near foot of San Pedro Breakwater, 30 October 1917; White's Point, 18 May 1918; White's Point, November 1924; Seal Beach, 2 March 1919, E. P. and E. M. Chace; Laguna Beach, W. A. Hilton; Catalina Harbor, 15 April 1915 (Rathbun 1930, as *Lophopanopeus leucomanus*). Laguna Beach (Baker 1912; Hilton 1916; Nininger 1918; as *L. leucomanus*).

*Paraxanthias taylori* (Stimpson)

Under Venice Aquarium, 19 February 1913; Venice breakwater, 13 March 1913; west end of Venice breakwater, 29 October 1913; near Point Vicente, 17 July 1923; Portuguese Bend, 26 June 1914; breakwater at San Pedro, 21–22 February 1913; Catalina Harbor, 28 November 1913, P. S. Barnhart and party; near West End, north side of Santa Catalina Island, 30 March 1915, T95; Fisherman's Cove, Santa Catalina Island, 25 April 1916; entrance to Little Harbor, 27 December 1912; west shore near entrance to Catalina Harbor, 28 December 1912; west shore of Isthmus Harbor, 27 November 1913; north side of Santa Catalina Island, 1 April 1915, T104; west shore of Isthmus cove, 29 March 1915. Point Vicente, 1918, H. N. Lowe; Portuguese Bend, 26 June 1914; San Pedro, 15 December 1918, E. P. Chace; San Pedro, H. N. Lowe; foot of San Pedro Breakwater, 21 February 1913; Long Beach, H. N. Lowe; Laguna Beach, W. A. Hilton; Isthmus of Santa Catalina Island, 27 December 1912; Isthmus Harbor, 27 November 1913; Catalina Harbor, 1 April 1915; Avalon Bay, 22 October 1910; Seal Beach, 2 March 1911, E. P. and E. M. Chace (Rathbun 1930). Laguna Beach (Baker 1912; Hilton 1916, as *Xanthias taylori*).

*Pilumnus spinohirsutus* (Lockington)

White's Point, 10 October 1911. San Pedro, 1917, E. P. Chace; Long Beach, H. N. Lowe; Santa Catalina Island, H. N. Lowe (Rathbun 1930). Laguna Beach (Hilton 1916).

Family Portunidae

*Portunus xantusii* (Stimpson)

3 miles south of Venice pier, 26 m, 29 July 1913; 2 miles south by east from Playa del Rey, 37 m, 8 August 1913; T40; ½ mile out between El Segundo and Playa del Rey, 10 m, 2 August 1913, T35; San Pedro, 27 May 1901; off inlet to Long Beach Harbor, 24 March 1912; Anaheim Slough, 9 January 1926; ¼ mile north of Point Orange, Balboa, Newport Bay, 15 December 1914, Higgins, Hobbs, and Burnight; east to north shore of Catalina Harbor, 28 December 1912; entrance to Catalina Harbor, 30 December 1912. 3 miles out between El Segundo and Point Del Rey, 2 August 1913; near Rocky Point, 22 m, 10 May 1924; Point Vicente, 15 m, 5 July 1924; San Pedro, H. N. Lowe; south side of San Pedro Bay, 13 October 1914; Long Beach, 24 March 1912; off Long Beach, 22 m, 21 October 1922; off Long Beach, 10 m, 16 May 1925; between Long Beach and Seal Beach, 9 m, 4 February 1922; Anaheim Bay, E. P. Chace;

Table 4. Species not reported in 1900–1930.

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*Species described before 1930*

*Alpheus californiensis* Holmes  
*Callinectes arcuatus* Ordway A (Garth and Stephenson 1966)  
*Cancer oregonensis* (Dana) A (Word 1975)  
*Euphyllax dovii* Stimpson A (Word 1976)  
*Mimulus foliatus* Stimpson A (Garth and Abbott 1980)  
*Paguristes parvus* Holmes (Haig and Wicksten 1975)  
*Pagurus granosimanus* (Stimpson) (Wicksten 1982)  
*Palaemon macrodactylus* Rathbun A  
*Palaemonella holmesi* (Nobili) A (Holthuis 1951)  
*Panulirus gracilis* Streets A  
*Pinnixa franciscana* Rathbun  
*Pinnixa occidentalis* Rathbun  
*Pinnixa schmitti* Rathbun  
*Pleuroncodes planipes* Stimpson A  
*Podochela lobifrons* Rathbun (Garth 1958)  
*Scleroplax granulata* Rathbun  
*Spirontocaris prionota* (Stimpson)  
*Uca crenulata* (Lockington)  
*Upogebia pugettensis* (Dana)  
 A = accidental

*Species described after 1930*

*Betaeus ensenadensis* Glassell  
*Betaeus macginitieae* Hart, 1964  
*Crangon handi* Kuris and Carlton, 1977  
*Crangon zacaе* (Chace)  
*Enallopagurus guatemoci* (Glassell) (Walton 1954)  
*Eualus lineatus* Wicksten and Butler, 1983  
*Haigia diegensis* (Scanland and Hopkins) (Haig and Wicksten 1975)  
*Pagurus caurinus* Hart A (Haig and Wicksten 1975)  
*Pagurus quaylei* Hart  
*Pagurus redondoensis* Wicksten, 1982  
*Pagurus spilocarpus* Haig, 1977  
*Plesionika mexicana* Chace A (Wicksten 1978)  
*Polyonyx quadriungulatus* Glassell (Haig 1956)  
*Pseudocoutierea elegans* Holthuis A (Holthuis 1951)  
*Sicyonia ingentis* (Burkenroad) (Word and Charwat 1976)

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Newport Bay, 26 November 1914; Newport Bay, 27 November 1914; Balboa, 16 December 1914 (Rathbun 1930).

Family Pinnotheridae

*Fabia lowei* Rathbun

San Pedro, H. N. Lowe; Long Beach, H. N. Lowe; Alamitos Bay (Rathbun 1918).

*Fabia subquadrata* (Dana)

Laguna Beach, W. A. Hilton (Rathbun 1918).

*Opisthopus transversus* Rathbun

2 miles south by east of Point Del Rey, 8 August 1913. San Pedro, H. N. Lowe; Anaheim Landing, H. N. Lowe; Catalina Island, H. N. Lowe; Laguna Beach, W. A. Hilton (Rathbun 1918).

*Pinnixa barnharti* Rathbun

Under pier at Venice. TYPE LOCALITY. San Pedro, 1901, T. D. A. Cockerell (Rathbun 1918).

*Pinnixa littoralis* Holmes

Off Santa Catalina Island 92 m, H. N. Lowe (Rathbun 1918).

*Pinnixa longipes* (Lockington)

Laguna Beach (Niniger 1918).

## Family Goneplacidae

*Malocoplax californiensis* (Lockington)

West Basin, San Pedro, 8 June 1912; Anaheim Creek, November 1911.

## Family Grapsidae

*Hemigrapsus nudus* (Dana)

Between Government Breakwater and Point Fermin, San Pedro, 1 April 1913; Point Fermin, 2 April 1913.

*Hemigrapsus oregonensis* (Dana)

West Basin, San Pedro, 8 June 1912; up channel from Point Orange, Newport Bay, 27 November 1914, T81. Playa del Rey, October 1915; Laguna Beach, W. A. Hilton; off Santa Catalina Island, H. N. Lowe (Rathbun 1918). Balboa (Niniger 1918).

*Pachygrapsus crassipes* Randall

1-1½ miles north of Long Wharf, storm debris, 23 July 1913; under Venice Aquarium, 17 February 1913; east of Flat Rock, 24 June 1914; Portuguese Bend, 10 April 1915; near foot of breakwater to Point Fermin, San Pedro, 21-22 February 1913; P. S. Barnhart; between base of Government Breakwater and second point toward Point Fermin, 2 April 1913; between Government Breakwater and Point Fermin, 1 April 1913; West Basin, San Pedro, 8 June 1912; off Long Beach, 30 m, 17 July 1926, T233; Anaheim Slough, 9 January 1916; Catalina Harbor, 28 December 1912; T19; Avalon Bay. About 1 mile east of Anaheim Landing, 28 July 1926 (Rathbun 1918). Laguna Beach (Baker 1912; Hilton 1916).

*Planes cyaneus* Dana

Avalon Bay.

## Discussion

Only two species (*Ogyrides* sp. and *Palaemonetes hiltoni*) taken in the early collections have not been found in the area since then. The original collection site of *P. hiltoni* in San Pedro probably has been destroyed. *Parapinnixa affinis*, described by Holmes from a specimen at Deadman's Island, has been found only once again in Newport Bay (Glassell 1933).

A noteworthy absence from the early records is the peneid shrimp *Sicyonia ingentis*. This large shrimp has been taken frequently by trawls along the mainland coast of southern California (Word and Charwat 1976). Although the species was not described until 1938, one might expect such a common animal to have been found earlier.

Some of the old records refer to species by names no longer used for them. Schmitt (1921) mentioned receiving the grass shrimp *Hippolyte californiensis* from the Venice Marine Biological Station. These specimens later were referred to *H. clarki* (Chace 1951). Records of *Petrolisthes eriomerus* at Santa Catalina Island and Venice actually refer to *P. cabrilloi*, recognized as a distinct species in 1945. Old records of *Pagurus ochotensis* should be referred to *Pagurus armatus* (Haig and Wicksten 1975).

A few of the old records probably are based on misidentifications or inaccurate data on the collection site. Baker (1912) and Hilton (1916) reported the ghost shrimp *Callinassa longimana* from rocky tidepools at Laguna Beach. *Callinassa affinis* usually lives in such a habitat. Rathbun (1918) reported the yellow shore crab *Hemigrapsus oregonensis* at 50 fathoms off Santa Catalina Island. This crab is almost strictly intertidal.

The majority of the species taken by the early collectors inhabit shallow subtidal sandy bottoms or intertidal rocky areas. The difficulties of collecting among subtidal rocks before the invention of SCUBA gear prevented taking specimens common among kelp beds. Unfortunately, there are few records from tidal marshes and eelgrass beds.

Most of the species listed by early collectors still can be found in the same area. The vicinity of Venice, however, had a greater number of species in the past than at present. Most recent collections have yielded soft-bottom species and hardy rocky or sandy intertidal animals. In contrast, the old records show not only a soft-bottom species but also abundant rocky intertidal and subtidal species. Was there a more extensive hard bottom in the past? Were there simply more dedicated collectors in Venice than in other areas? Has the area become more turbid or more polluted? Further study may show why there seems to have been such a change in the fauna.

Of the 34 additional species known from shallow waters of Los Angeles and Orange counties, about 11 probably are not residents. Many of the others are burrowers, commensals, or rocky subtidal dwellers. The lack of many of these species from the early records probably does not indicate their absence in these years, but rather inability to collect in a particular habitat.

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