

CRUSTACEANS FROM BAITED TRAPS AND GILL NETS OFF SOUTHERN CALIFORNIA¹

MARY K. WICKSTEN²
Allan Hancock Foundation
University of Southern California
University Park
Los Angeles, California 90007

Twenty-seven species of crustaceans were taken in baited sablefish traps, shrimp traps, and gill nets off southern California in 1969 and 1978-80. Most of them were strictly benthic or capable of swimming only short distances. Only two species of shrimp were caught in the traps. *Caprella unguilina*, *Axius acutifrons*, *Acantholithodes hispidus*, and *Glyptolithodes cristatipes* are recorded for the first time from southern California. A new host record is given for *Parapleustes commensalis*. Baited traps seem effective in attracting scavenging decapods and bringing them to the surface in good condition.

INTRODUCTION

Decapod crustaceans are among the largest animals living on the continental shelf and slope of southern California. Previous collections of these animals have been conducted with dredges, trawls, and box cores. Although these methods have captured many decapods, they allow fast-moving species to escape. The patchy distribution of many species causes sampling devices to miss concentrations of the animals. Baited traps, however, attract predatory and scavenging species. These species and their associated commensals and parasites may suffer less damage when raised to the surface in a trap than when dragged along the bottom in a dredge or a trawl.

METHODS

From 1978-80, fishermen working out of San Pedro used traps baited with chopped fish to capture sablefish, *Anoplopoma fimbria*, at depths to 1330 m. These traps often caught invertebrates as well as fish. Shrimp traps and gill nets also incidentally caught benthic crustaceans. James Phelan of the California Department of Fish and Game obtained frozen specimens from these commercial fishermen. Additional decapods were donated by William F. Samaras of Carson High School. The crustaceans were taken to the Allan Hancock Foundation for identification and storage in their collection.

Crustaceans were taken in March-September 1978, January-October 1979, and June 1980 at depths of 165-1055 m. The specimens were collected by the boats *ARISTA*, *BILL KENTNER*, *CALAFIA*, *CAPE BLANCO*, *CAROLYN L*, *FOOL'S DELIGHT II*, *GERNOMINO*, *JUANALOA, JJ*, *LAURA MICHELLE*, *MISS ALLISON*, *OCEANA*, *PETE BOY*, and *SALTY II*. Detailed records of all the specimens are available for examination in the card catalog of the Allan Hancock Foundation.

In 1969, crustaceans were collected off Anacapa and Santa Cruz islands in baited shrimp traps. These animals, taken at 215-269 m by the *N. B. SCOFIELD*, already had been donated to the Allan Hancock Foundation. Their records, from

¹ Accepted for publication May 1981

² The author's current address is: Dept. of Biology, Texas A&M University, College Station, TX 77843

lesser depths than those of the sablefish traps, provided a useful comparison of species living on the upper continental slope.

Localities for all species from the traps and gill nets are grouped into broad areas: mainland (Point Dume, Dana Point, San Onofre, and La Jolla), northern islands (from Point Conception to Anacapa, Santa Cruz, and Santa Rosa islands and their vicinity), and southern islands (San Nicolas, Santa Barbara, Santa Catalina, and San Clemente islands; Tanner and Cortez banks, and nearby banks or canyons (Table 1).

TABLE 1. Species Taken in Sablefish Traps, Shrimp Traps, and Gill Nets Off Southern California

Species	165-500 m	500-1000 m	1000 m +	Mainland	Pt. Conception- northern islands ¹	Southern islands and banks ²
<i>Acantholithodes hispidus</i> (Stimpson)	X					X
<i>Axius acutifrons</i> (Bate)			X			X
<i>Caprella unguolina</i> Mayer		X				X
<i>Chionoecetes tanneri</i> Rathbun		X		X		X
<i>Chirostylus</i> sp.		X				X
<i>Chorilia longipes turgida</i> Rathbun	X	X				X
<i>Galathea californiensis</i> Benedict ..	X				X	
<i>Glyptolithodes cristatipes</i> (Faxon)	X	X		X		X
<i>Gnathophausia ingens</i> (Dohrn) ..			X			X
<i>Lithodes couesi</i> Benedict		X	X			X
<i>Lopholithodes foraminatus</i> (Stimpson)	X				X	X
<i>Loxorhynchus crispatus</i> Stimpson	X					X
<i>Munida hispida</i> Benedict	X				X	X
<i>Munidopsis depressa</i> Faxon		X		X		X
<i>Munidopsis hystrix</i> Faxon		X		X		X
<i>Munidopsis quadrata</i> Faxon		X				X
<i>Munidopsis verrilli</i> Benedict			X			X
<i>Paguristes ulreyi</i> Schmitt	X				X	
<i>Pandalopsis ampla</i> Bate			X		X	
<i>Paralithodes californiensis</i> Benedict		X			X	X
<i>Paralithodes rathbuni</i> (Benedict)	X					X
<i>Paralomis multispina</i> (Benedict)		X				X
<i>Parapagurus pilosimanus benedicti</i> de St. Laurent		X				X
<i>Parapleustes commensalis</i> Shoemaker		X		X		
<i>Parapleustes</i> sp.		X		X		
<i>Pasiphaea pacifica</i> Rathbun		X				X
<i>Stereomastis sculpta pacifica</i> (Faxon)			X		X	X

¹ Northern islands: Anacapa, Santa Cruz, and Santa Rosa Islands.

² Southern islands and banks: Santa Barbara, Santa Catalina, San Nicolas, and San Clemente Islands; Tanner and Cortez Banks.

RESULTS

Twenty-two of the species were taken at depths and locations well within their known ranges. Except for *Pasiphaea pacifica* and *Gnathophausia ingens*, the crustaceans tend to be strictly benthic or capable of swimming only short

distances. *Chionecetes tanneri*, *Chorilia longipes turgida*, *Galathea californiensis*, *Munida hispida*, *Munidopsis hystrix*, and *Paralomis multispina* were caught most frequently in the traps.

Five of the species taken in the sablefish traps have not been reported previously from southern California. Adults of *Stereomastix sculpta pacifica* were collected six times. An account of the range of larvae and adults of this polychelid lobster has been published elsewhere (Wicksten 1981). Records of the other four species are given below. A new host is given for one species.

Caprella unguлина Mayer

This skeleton shrimp has not been reported previously in California south of Monterey (D. Laubitz, National Museums of Canada, pers. commun.) Two specimens were taken: one from the *JJ* on 10 May 1978, lat 32°45'N, long 118°14'W, 925 m; and another from the *JUANALOA* on 28 August 1979, off Cortez Bank, 1015 m. Both were clinging to the legs of the lithodid crab *Paralomis multispina*.

Parapleustes commensalis Shoemaker

The gammarid amphipod *Parapleustes commensalis* was described as a commensal of the spiny lobster, *Panulirus interruptus* (Randall), from Santa Barbara (Shoemaker 1952). Many of these amphipods were found on the carapace of the lithodid crab, *Paralithodes californiensis*. This crab was taken off San Onofre at 555 m in January 1979 by the boat *MISS ALLISON*.

Axius acutifrons (Bate)

The axiid lobster *Axius acutifrons* was taken twice. Two were found in the skeleton of a hexactinellid sponge taken by the *CALAFIA* on 6 September 1978, lat 32°15'N, long 119°36'W to lat 30°00'N, long 119°39'W, 1850–2310 m. An ovigerous female was collected by Dwight Chapin (California Department of Fish and Game) south of San Clemente Island (lat 32°22.5'N, long 118°38.0'W), 1108 m, 10 January 1979 (Figure 1). There are only four previous records of this lobster: off Banda, East Indies (lat 4°31'S, long 129°57'20"E), 665 m, volcanic mud, *CHALLENGER* station 194A, 29 September 1874 (Bate 1888); off Mariato Point, Panama (lat 6°30'0"N, long 81°44'0"W), green sand, 1025 m, 24 February 1891, *ALBATROSS* station 3358; off Mariato Point (lat 6°22'20"N, long 81°52'0"W), rocky bottom, 858 m, 24 February 1891, *ALBATROSS* station 3359 (Faxon 1895); and off the southeast coast of Great Kei Island (lat 5°5.5'S, long 132°47.7'E), 595 m, from hexactinellid sponge on gray mud, coral, and stones; 19 December 1900, *SIBOGA* station 226 (de Man 1925).

Acantholithodes hispidus (Stimpson)

The extremely spiny lithodid crab *Acantholithodes hispidus* has been recorded as ranging from Moorovskoy Bay, Alaska to Monterey Bay, California, to 142 m (Schmitt 1921). Three females and two males were caught in a gill net on Potato Patch Bank, off San Nicolas Island (lat 33°18.27'N, long 119° 47.60'W), 165 m, June 1980, *GALAPAGOS*, W. Samaras, collector. One of the females was ovigerous.

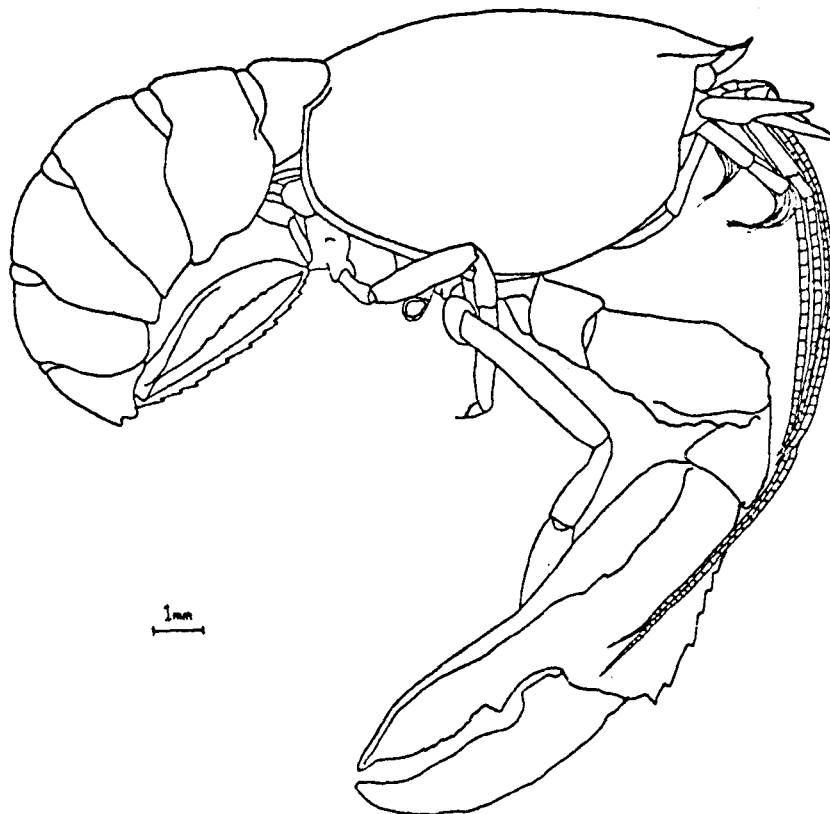


FIGURE 1. Female *Axius acutifrons* (Bate) from south of San Clemente Island, 1108 m.

Glyptolithodes cristatipes (Faxon)

This lithodid crab was collected 19 km off the east end of Santa Catalina Island, 702 m, 8 August 1979, boat *JJ*. The crab has not been reported previously from California, although there are two additional specimens from this state: an ovigerous female trawled off the Palos Verdes Peninsula (lat 33° 33.5'N, long 118° 15.7'W), 462 m, 5 March 1976, *VAN TUNA*; and at the southeast corner of Coronado Bank, 183 m, 3-chambered trap, 12 April 1969, *E. B. SCRIPPS*, R. McConnaughey (Scripps Institution of Oceanography) collector. The latter specimen is in the collections of Scripps Institution of Oceanography. Previously, *G. cristatipes* has been reported four times: off Mariato Point (lat 7°9'45"N, long 80°50'O"W), 594 m, green mud, 23 February 1891, *ALBATROSS* station 3354 (Faxon 1895); south of Banco de Mancora, Peru, mud bottom, 400 m, 1971, *SNP-1* station 7011; off northern Peru (lat 3°51'S, long 81°18'W), 800 m, 1971; and off Puerto Chicana (lat 7°42'S, long 80°26'W), 693 m, rocky bottom, 2 March 1971, *SNP-1* station 7101 (del Solar 1972). *Glyptolithodes cristatipes* may arrive in southern California only during periods of warm southern water rather than living here in permanent populations.

DISCUSSION

Deep-water animals can find bait and move to it quickly (Isaacs and Schwartzlose 1975). Many of the crustaceans taken in the traps were scavengers, attracted to the bait. Others, such as *Axius acutifrons*, may have been entangled when the trap hit the bottom. Crustaceans in gill nets may have tried to eat the entangled fish.

Only two shrimps (*Pasiphaea pacifica* and *Pandalopsis ampla*) were caught in the traps. *Pandalus platyceros* Brandt and *Spirontocaris sica* Rathbun, commonly caught in trawls off southern California, were not collected. However, both of these species have been taken in shrimp traps on the shoulders of sea canyons at Santa Catalina Island by the *BILL KENTNER* at depths lesser than the fish traps (P. Gregory, Calif. Dept. Fish and Game, pers. commun.) At greater depths, the shrimp either are not often attracted to the bait or are able to escape the traps.

ACKNOWLEDGMENTS

I thank D. Laubitz, National Museums of Canada and R. Klink and J. Haig of the Allan Hancock Foundation for aid in identifying some of the specimens. S. Goodman prepared the figure. The interest of the crews of the fishing boats is gratefully appreciated.

This work was carried out while the author held a Research Fellowship of the Allan Hancock Foundation.

REFERENCES

- Bate, C. S. 1888. Report on the Crustacea Macrura collected by the H.M.S. *Challenger* during the years 1873-76. Rep. Voy. *Challenger*, Zool. Vol. 24: 1-942.
- Faxon, W. 1895. Reports on an exploration off the west coast of Mexico, Central and South America, and off the Galapagos Islands . . . by the U.S. Fish Commission steamer "Albatross" during 1891 . . . XV. The stalk-eyed Crustacea. Mem. Mus. Comp. Zool., Harvard Univ. 18: 1-292.
- Isaacs, J. D., and R. A. Schwartzlose. 1975. Active animals of the deep-sea floor. Sci. Amer. 233(4): 84-91.
- de Man, J. G. 1925. The Decapoda of the Siboga expedition. Part VI. The Axiidae collected by the Siboga expedition. Siboga Expeditie 39a³. 127 pp.
- Schmitt, W. L. 1921. The marine decapod Crustacea of California. Univ. Calif. Publ. Zool. 23: 1-470.
- Shoemaker, C. R. 1952. A new species of commensal amphipod from a spiny lobster. Proc. U.S. Nat. Mus. 102(3299): 231-233.
- del Solar, E. M. 1972. Addenda al catalogo de crustaceos del Peru. Instituto del Mar del Peru, Callao. Informe No. 38. 21 pp.
- Wicksten, M. K. 1981. New records of *Stereomastis sculpta pacifica* (Faxon) (Decapoda: Polychelidae) in the eastern Pacific Ocean. Proc. Biol. Soc. Wash. 93(4): 914-919.