

The Littoral Polyplacophora of Shell Beach, San Luis Obispo County, California

BY

BARRY FOLSOM PUTMAN

Moss Landing Marine Laboratories, Moss Landing, California 95039

INTRODUCTION

AFTER APPROXIMATELY SIX YEARS (1974-1980) of collecting and observing littoral mollusks in San Luis Obispo County, California, a considerable sampling of the indigenous species of Polyplacophora has been collected. The intent of this paper is to present the species of littoral polyplacophoran mollusks found by the author at Shell Beach along with their approximate zonation, habitat, and abundance.

SITE LOCALITY AND ECOLOGICAL NOTES

Shell Beach is a small, Pacific-front community located in San Luis Obispo County at Latitude $35^{\circ}11'N$, Longitude $120^{\circ}51'W$ on U.S. Highway 101, approximately 18 km south of the city of San Luis Obispo. Overlooking the Pacific atop rocky cliffs, beach access is possible in two areas via stairs that conveniently divide the location into a northern area and a southern area.

North Shell Beach is a characteristic semi-protected, rocky outer coast, receiving almost directly the force of the northwesterly winds from the Pacific, the direct force being broken by Point San Luis.

South Shell Beach, on the other hand, is a fully protected, rocky outer coast. Here the direct force of the Pacific is not only broken somewhat by Point San Luis but is also lessened by the presence of several, slightly offshore rocks that provide a rather good chiton habitat.

TERMINOLOGY

Zonation: When dealing with the intertidal zonation of Shell Beach, I use a system superficially resembling that proposed by RICKETTS & CALVIN (1968) in that the terms "Zone 1" through "Zone 4" are used. However within the system used in this paper, "Zone 1" extends from the

splash zone down to, but not including, the *Pollicipes-Mytilus* zone; "Zone 2" begins with the *Pollicipes-Mytilus* zone and extends down to a point roughly half-way between this and the mean lower low water; "Zone 3" covers the remaining half of the habitat to mean lower low water, and "Zone 4" is identical to that of Ricketts and Calvin in that it covers the portion of the littoral zone only exposed during minus tides. This particular system is unusually well suited to most, if not all, of San Luis Obispo County's rock intertidal areas.

Habitat: Two notations will generally be given for habitat: One for physical habitat and one for biological habitat.

1. Physical Habitat: Defined by 4 terms:
 - a. Exposed Nip: A small impression within solid rock that is generally open to direct sunlight.
 - b. Exposed Shelf: An unrecessed, relatively flat substratum generally open to direct sunlight.
 - c. Protected Shelf: An unrecessed, relatively flat substratum not exposed to the light, as habitats under ledges and dark areas on the sides of tidal troughs.
 - d. Under Rock: A substratum beneath a movable stone or boulder, generally positioned on a gravel or sand/mud bottom.
2. Biological Habitat: That habitat characterized by the organisms found in association with the animal. Since the primary purpose of this paper is one of systematics, only brief, random notations shall be given for some of the species.

Abundance: Due to the arbitrary nature of this term, abundance shall be expressed using the terms "very common," "common," "uncommon," and "rare." Within the parameters of these terms, a "very common" chiton is a species that would always be found on any given day; whereas a "rare" animal is one that was found by the author only once, and only singularly.

SYSTEMATIC ACCOUNT

North Shell Beach

- Cyanoplax dentiens dentiens* (Gould, 1846). Zone 2, exposed shelf; uncommon.
- Cyanoplax hartwegii* (Carpenter, 1855). Zone 2, exposed shelf; very common. Found under drapes of *Pelvetia*.
- Lepidozona cooperi* (Dall, 1878). Zone 3, under rock; common.
- Mopalia lignosa* (Gould, 1846). Zone 4, exposed shelf; uncommon.
- Mopalia muscosa* (Gould, 1847). Zone 3, exposed shelf; common.
- Nuttallina californica* (Reeve, 1847). Zone 1, exposed nip; very common. Zone 2, exposed shelf; common.
- Stenoplax heathiana* Berry, 1946. Zone 3, under rock; common.
- Tonicella lineata* (Wood, 1815). Zone 3, protected shelf; uncommon. On lower zone *Lithothamnium*.

SYSTEMATIC ACCOUNT

South Shell Beach

- Cryptochiton stelleri* (Middendorff, 1847). Zone 4, exposed shelf; rare.
- Cyanoplax hartwegii* (Carpenter, 1855). Zone 2, exposed shelf; very common. Found in aggregations under drapes of *Pelvetia*. Zone 3, exposed shelf, uncommon. Zone 4, protected shelf, rare.
- Lepidozona cooperi* (Dall, 1878). Zone 3, under rock; common. Zone 4, under rock; common.
- Lepidozona mertensii* (Middendorff, 1847). Zone 4, exposed shelf; uncommon.
- Mopalia hindsi hindsi* (Reeve, 1847). Zone 3, exposed shelf; uncommon.

- Mopalia lignosa* (Gould, 1846). Zone 3, exposed shelf; uncommon. Zone 4, under rock; common.
- Mopalia muscosa* (Gould, 1847). Zone 2, exposed shelf; common. Zone 3, under rock; uncommon.
- Nuttallina californica* (Reeve, 1847). Zone 2, exposed nip; very common. Zone 3, exposed shelf; uncommon.
- Stenoplax heathiana* Berry, 1946. Zone 4, under rock; common.
- Tonicella lineata* (Wood, 1815). Zone 4, protected shelf; common.

DISCUSSION

Within the waters of San Luis Obispo County, some 47 species of polyplacophoran mollusks have been noted (PUTMAN, 1980). Of these 47 species, 8 have been found to occur within the littoral zone of north Shell Beach, 10 within the littoral zone of south Shell Beach. Excluding sublittoral forms, of likely occurrence within the littoral part of the Shell Beach area, due to their occurrence in littoral areas to the north or to the south, or both, are the following species: *Lepidopleurus rugatus* (Pilsbry, 1892), *Ischnochiton regularis* (Carpenter, 1855), *I. interstinctus* (Gould, 1846), *Stenoplax fallax* (Pilsbry, 1892), *Lepidozona sinudentata* (Pilsbry, 1892), *Basiliochiton heathii* (Pilsbry, 1898), *Katharina tunicata* (Wood, 1815), *Placiphorella velata* Dall, 1878, *Chaetopleura gemma* Pilsbry, 1892, and *Mopalia ciliata* (Sowerby, 1840).

Literature Cited

- PUTMAN, BARRY FOLSOM
1980. Taxonomic identification key to the described species of polyplacophoran mollusks of the west coast of North America (north of Mexico). Pacif. Gas Electr. Co., Dept. Engineer. Res. Repr. 411-79.342. Pacif. Gas Electr. Co. Biol. Labor., Avila Beach, Calif.
- RICKETTS, EDWARD F. & JACK CALVIN
1968. Between Pacific tides. 4th ed. rev. by Joel W. Hedgpeth. xiv+614 pp.; illus. Stanford Univ. Press, Stanford, Calif.

