

A Checklist of Mollusks for Puertecitos, Baja California, Mexico

BY

HELEN DUSHANE

Conchological Club of Southern California, Los Angeles 7, California

(1 Textfigure)

Introduction

Puertecitos on the west shore of the Gulf of California is 180 miles south of the International Boundary, at Latitude 30° 25' N., Longitude 114° 39' W. It nestles between low, rocky promontories, and at each low tide the great rush of tidal bore drains away some 18 to 20 feet of water, leaving a rocky rubble area at one's feet and, beyond that, a muddy sand flat broken by runnels and drainage channels. The variety of molluscan life here includes Tagelus, Dosinia, Chione, plus Terebra and Oliva. On the coral-line shelf are Trigonostoma and Strombina, while Mitra, Anachis, and various amphineurans hide under the boulders. The outer strand, at extreme low tide, offers such rarities as Terebra bridgesi and Clavus ianthe, while the rubble at the foot of the promontories shields Cypraea annettae, Trivia solandri, Lima orbigny, and L. pacifica.

This paper is intended to supply collectors with a working list and does not presume to be all-inclusive. The specimens include those taken by active collectors in an area of about five miles north to about five miles south of the tiny settlement of Puertecitos.

Systematic Account

In this list the following format is adopted:

1. The species number given by Keen (1958) and the scientific name.
2. An asterisk (*) preceding the Keen number indicates range extension.
3. Relative abundance or rarity; a number in parentheses indicates the number of persons known by me to have taken this species at Puertecitos.
4. The habitat of the specimen such as "sand beach, low tide" or "intertidally, under rocks".

5. Range extensions are noted, giving the most northerly previously recorded place of occurrence. It must be remembered that the northern limits for a species given in Keen (1958) are generalized and based upon admittedly incomplete lists. An attempt is made here to point out any extension of range from that reported in Keen's work.
6. The following individuals have made their collections available and are designated in the working list by initials:

Dr. Bruce Campbell	Ca
Emery Chace	Ch
Eugene Coan	Co
Joseph and Helen DuShane	D
Faye Howard	H
Dr. Homer King	K
Dr. Donald Shasky	Sh
Gale Sphon	Sp

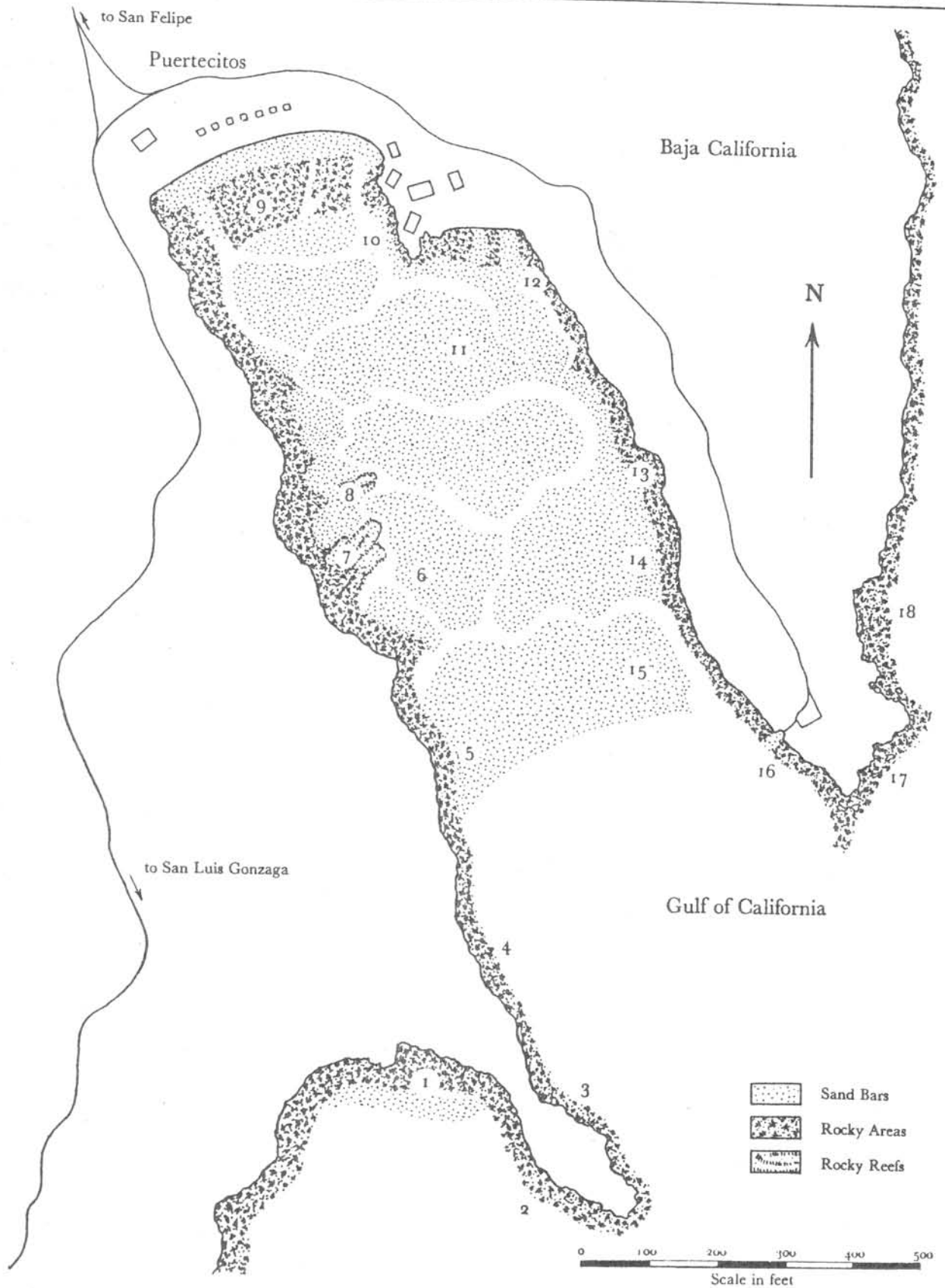
Ecological Notes on Eighteen Collecting Areas as numbered on map (figure 1)

1. Shore is rocky with turnable-sized rocks that reveal Trivia solandri, Cypraea annettae, Pterynotus erinaceoides, small Turridae, and the common mollusks. At only a very low spring tide is a small sandbar exposed on which have been found Terebra berryi, T. variegata, Cancellaria obesa, and Strombus galeatus in shallow water.

2. Shore similar to (1) except rocks are larger and, in addition to the above, Coralliophila squamosa, Cymatium gibbosum, Heliacus bicaniculatus are encountered.

3. Shore of large rocks, cliffs, caves.

4. Medium-sized rocks with much plant growth. On this growth are found Mitra tristis, Parametaria duponti, Trivia solandri, Jenneria pustulata, Cypraea annettae, Arca pacifica, A.



mutabilis, Modiolus capax, Fusinus felipensis, F. ambustus, and at a very low tide the gorgonians are uncovered and Neosimnia and Cyphoma may be found.

5. This area consists of coarse sand and broken shells with draining runnels in which are found Olivella, Hormospira maculosa, Terebra berryi, and Conus ximenes.

6. Typical sandbar with Terebra variegata and Cassis centiquadrata.

7. An area of small tidepools with runnels and rocks on the reef. Shells found here are Trigonoostoma goniostoma, Muricanthus nigrinus, Hexaplex erythrostomus, Crassispira nymphia, C. grandimaculata, and others.

8. This is a small area of low lying rocky reefs from which come almost all of the borers, including Lithophaga, Petricola, and Gregariella.

9. Here are numerous small- and medium-sized rocks on which are Ostrea palmula. Under the rocks are O. angelica, Plicatula anomioides, Phenacolepas osculans, and Chitons, Tegulas, Acanthinas, and Pinnas.

10. Fair-sized sand flat that remains wet and yields Tagelus, Solen rosaceus, and Diplo-dontas.

11. Large sandbar that is exposed at almost all low tides and has the usual sand dwellers, such as Terebra variegata, Glycymeris, Trachycardium, Polinices, and Natica.

12. This is a good place to dig Semele, Diplo-donta, and Protothaca.

13. A unique area because where the rocky shore meets the sand there is a zone of mud interspersed with rocks where Crassispira is found. Pitar concinnus occurs on the sandbar close by.

14. Sandy area where Terebra armillata, Olivella, Oliva, Donax gracilis, and D. navicula can be found.

15. On this sandbar, bare at low tide, are Terebra, Donax, Olivella fletcheri, O. dama, Oliva incrassata, Laevicardium elatum, Dosinia, and Polinices.

16. A rocky shore with medium- and large-sized rocks under which, or at night, may be found Acmaea, Turridae, Chitons, Trivia, and Cypraea.

17. Rocky shore with large rocks and sandy tidepools. Cassis coarctata has been taken here.

18. Medium-sized rocks in an exposed area. When the Gulf is rough, this is a very exposed area; therefore, only the hardier forms are found, such as Acmaea, Chitons, Nerita, and Acanthina.

Acknowledgment

It takes many people to pursue a problem to its proper conclusion; therefore, my gratitude is extended to Dr. Bruce Campbell whose accurate map makes the area meaningful to the reader; to Dr. Donald Shasky, whose time and interest contributed materially to this paper; to Emery Chace, Eugene Coan, Faye Howard, Homer King, and Bruce Campbell for checklists that offered a working basis; to Gale Sphon, who not only made his collection available but gave unstintingly of his time to the manuscript; to Dr. Myra Keen, who identified troublesome specimens and is always a source of inspiration to the worker; and to Joseph DuShane, whose patient understanding has given me the time necessary for completion.

Pelecypoda

- *5 Nuculana costellata (Sowerby, 1833); rare (1), sand beach, low tide, Santa Inez Bay south (Ch).
- 12 Nuculana impar (Pilsbry & Lowe, 1932); rare (2), sand beach (Sh, D).
- 36 Arca mutabilis (Sowerby, 1833); common under rocks, low tide (Sh, D, Sp, Co, K, Ch, Ca, H).
- 37 Arca pacifica (Sowerby, 1833); common around rocks, intertidally (Sh, D, Sp, Co, K, Ch, Ca, H).
- 38 Arca lurida (Sowerby, 1833); one valve (H).
- 39 Barbatia bailyi (Bartsch, 1931); one valve (H).
- 40 Barbatia gradata (Broderip & Sowerby, 1829); (H).
- 43 Barbatia reeveana (Orbigny, 1846); common intertidally (Sh, D, Sp, Co, K, Ch, Ca, H).
- *44 Barbatia illota (Sowerby, 1833); common attached to rocks, intertidally, Angel de la Guarda Island south to Peru (Sh, D, Sp, Co, K, Ch, Ca, H).
- 46 Arcopsis solida (Sowerby, 1833); common attached to rocks, intertidally (Sh, D, Co, K, Ch, Ca, H).
- 57 Anadara multicostata (Sowerby, 1833); rare (4), on sandbar, low tide (Sh, Sp, Co, K).

- 669 *Marginella californica* Tomlin, 1916; under muddy rocks, uncommon (Sh, H).
Cystiscus sp. (Sh).
- 685 *Cancellaria obesa* Sowerby, 1832; sand spits, low tide at night, rare (4) (Sh, D, Sp, Ca).
- 693 *Cancellaria cassidiformis* Sowerby, 1832; sand spits, low tide, rare (2) (D, Ca).
- 710 *Trigonostoma goniostoma* Sowerby, 1832; rocky reef, low tide, common (Sh, D, Sp, K, Ca, H).
- 726 *Knefastia funiculata* (Kiener, 1838-40, ex. Valenciennes MS); rocky reef, low tide, uncommon (D, Sp).
- 727 *Knefastia olivacea* (Sowerby, 1833); rocky reef, low tide, common (Sh, D, Sp, Co, K, Ch, Ca).
- 753 *Clavus ianthe* (Dall, 1919); sand beach, low night tide, rare (6) (Sh, D, Sp, K, Ca, H).
- 758 *Clavus pembertoni* Lowe, 1935; dead specimen (H).
- 769 *Clathrodrillia pilsbryi* Lowe, 1935; dead specimens (D, Ca).
- *770 *Clathrodrillia aenone* Dall, 1919; rocky reef, rare (2), Agua Verde Bay, Gulf of California (D, Sp).
- *790 *Crassispira bacchia* Dall, 1919; under rocks, intertidally, rare (3), La Paz, Gulf of California (D, Sp, Ca).
- *802 *Crassispira erebus* Pilsbry & Lowe, 1932; rocky reefs, low tide, uncommon, Southern Mexico to Panama (Sh, D, K, Ch, H).
- *809 *Crassispira grandimaculata* (C. B. Adams, 1852); under rocks, intertidally, uncommon, Nicaragua to Panama (D, Sp, Ca).
- 815 *Crassispira lucasensis* (Bartsch, 1950) ? = *C. kluthi* Jordan, 1936; sand beach and under rocks, low tide, common (Sh, D, Sp, Co, K, Ch, Ca, H).
- 822 *Crassispira nymphia* Pilsbry & Lowe, 1932; under rocks, low tide, common (Sh, D, Sp, Co, K, Ch, Ca, H).
- 825 *Crassispira pluto* Pilsbry & Lowe, 1932; under rocks, low tide, common (Sh, D, Sp, K, Ch).
- *839 *Crassispira xanti* Hertlein & Strong, 1951; rare (2), southern end of the Gulf of California to Costa Rica (Sh, Sp).
- *840 *Crassispira zonulata* (Reeve, 1843); under rocks, low tide, rare (2), Nicaragua to Panama (Sp, H).
- 851a *Mangelia hamata* Carpenter, 1865; intertidally, rare (1) (H).
- 863a *Mangelia* cf. *M. euryclea* Dall, 1919; intertidally, rare (1) (Sp).
- Mangelia* cf. *M. oenoa* Dall, 1919; intertidally, rare (1) (Sh).
- *866 *Mangelia subdiaphana* Carpenter, 1864; intertidally, rare (1), Cape San Lucas, Gulf of California (Sp).
- *867 *Mangelia antiochroa* Pilsbry & Lowe, 1932; intertidally, rare (1), Panama (H).
- 870 *Mangelia cyrene* Dall, 1919; intertidally, rare (1) (H).
- Mangelia doris* Dall, 1919; intertidally, rare (1) (H).
- Mangelia*, two species (Sh, Ch).
- *894 *Tenaturris* cf. *T. nereis* (Pilsbry & Lowe, 1932); under rocks, low tide, rare (3), Nicaragua (Sh, Sp, Ca).
- 908 *Hormospira maculosa* (Sowerby, 1834); among rocky rubble, intertidally, uncommon (D, Sp, K, Ca).
- 910 *Pleuroliria nobilis* (Hinds, 1843); washed up by storm, alive (D).
- 922 *Conus princeps* Linnaeus, 1758; dead specimen (Ch).
- 926 *Conus perplexus* Sowerby, 1857; sand beach, low tide, uncommon (D, Ch, Ca).
- 930 *Conus ximenes* Gray, 1839; in coarse sand, edge of runnels, low tide, common (Sh, D, Sp, Co, K, Ca, H).
- *948 *Terebra robusta* Hinds, 1844; sand beach, low tide, rare (2), Guaymas, Mexico, to Ecuador (D).
- 949 *Terebra strigata* Sowerby, 1825, cf. *T. ornata*; beach specimen (D).
- 956 *Terebra armillata* Hinds, 1844; muddy sand flats, intertidally, common (Sh, D, Co, Ca, H).
- *958 *Terebra* cf. *T. bridgesi* Dall, 1908; sand beach, low night tide, uncommon (18), Panama (Sh, D, H).
- 963 *Terebra glauca* Hinds, 1844; sand beach, intertidally, uncommon (Sh, D, Ch).
- *968 *Terebra ligyrus* Pilsbry & Lowe, 1932; sand beach, intertidally, rare (1), Guaymas, Mexico (Sp).
- 980 *Terebra variegata* Gray, 1834; sand beach, intertidally, common (Sh, D, Co, K, Ca, H).
- Terebra berryi* Campbell, 1961; sand beach, low tide, rare (2) (D, Ca).
- 982 *Bulla gouldiana* Pilsbry, 1895; among rubble as tide recedes, common (Sh, D, Sp, Co, K, Ca, H).
- 986 *Haminoea strongi* Baker & Hanna, 1927; rare (4) (Sh, Sp, Ch, H).
- 992 *Acteocina angustior* Baker & Hanna, 1927; sand beach, uncommon (Sh, D, Ch).
- 994 *Acteocina inculta* (Gould & Carpenter, 1857); sand beach (Sh, D).