



AQUATIC LIFE

Benthic Organisms

BATIQUITOS LAGOON FOUNDATION

SHELL OF ORANGE
BUBBLE SNAIL



WHITE BUBBLE SNAIL



SHELLS OF CALIFORNIA
HORN AND CONE SNAILS



CHANNELED
DOG WHELK



TWO EGG COCKLE



WAVY CHIONE



JACKKNIFE CLAM



BENT-NOSE CLAM



SPECKLED
BAY SCALLOP



Benthic organisms live on or just beneath the bottom of the lagoon or in the intertidal zone (mainly mudflats). They crawl over, burrow into, or are attached to the sediments or anything else on the bottom. Benthic organisms are important links in the estuarine food chains, providing an important food source for fishes, birds, and mammals. Without benthic organisms, these larger animals would not be able to survive.

The number and types of benthic organisms that exist within a lagoon are closely tied to the regularity and amount of tidal exchange in the lagoon. Therefore, when Batiquitos Lagoon was not open to the ocean current, there were smaller and less diverse populations of benthic organisms to support the overall food web. Now that the lagoon has active tidal action, the diversity and abundance of benthic organisms has increased. This, in turn, provides a much more stable and consistent primary food source for fish and birds which are higher on the food chain.

The most conspicuous and dominant groups of benthic animals present in a productive lagoon are mollusks (shelled animals like snails and clams plus more) and crustaceans (crabs). There are many different kinds of snails, including the orange and white bubble snails, horn snails, and cone snails, as well as whelks, cockles, and thick-shelled chiones. Batiquitos also has many kinds of clams, like jackknife clams and bent-nose clams, also scallops such as the speckled bay scallop. Probably the most noticeable are the crabs, like lined shore crabs, mudflat crabs, and fiddler crabs. There are also crabs you probably don't see, like swimming crabs. These crab species are important to marsh food chains because the crabs are plant eaters, and they provide additional food source for the large animals (that is, converting plant to animal biomass).

Many benthic organisms are not the ones seen crawling around but instead the burrowers, like polychaete worms, some mollusks, sea cucumbers, and some shrimp. Also present are sea hares and sand dollars.

Most benthic organisms are invertebrates and can be subdivided into two groups: **epifauna** (animals living on top of or associated with the sediments, rocks, stones, shells, pilings, or bottom vegetation., usually animals of the intertidal or shallow subtidal zones) and **infauna** (animals dwelling within the sandy or muddy surface layers of the lagoon floor). Epifauna are sampled by a looking at a known area of the surface, and infauna are sampled by screening out the animals in sediment cores. (The smaller benthic animals—single-celled animals and small invertebrates—are usually not sampled, but there are many of them, too!)

Benthic communities are often patchy, showing the existence of place-to-place differences in things such as food distribution, substrate (e.g., particle size), environmental impacts, water flow and quality, dissolved oxygen, and, in particular in post-dredging Batiquitos, unstable and irregular sediments.

Since Batiquitos Lagoon has been open to incoming ocean waters, the animals found in benthic surveys have gone from those usually associated with freshwater and brackish conditions (like insect larvae) to those of marine environments. These changes are by no means all that are expected since there will be changes yet as more sediment settles and stabilizes, as more vegetation, like eelgrass, gets established on the bottom of the lagoon, and as the coastal salt marsh habitat around the lagoon stabilizes.

There are also both vertebrate fish and plants which live in the benthic zone. Sand and mud bottoms of lagoons provide important habitat for benthic fish species (vertebrates), including rays, small sharks, and flatfish. These soft-bottom habitats provide refuges from larger predators. The benthic fish species feed on clams and crabs. In addition, the bottom and mudflat plants, which may serve as food or substrates for the invertebrates, include sea lettuce (a flat green alga, *Ulva* sp.), eelgrass (in the process of establishing a significant underwater population at Batiquitos), *Enteromorpha* (another green alga that form mats on the mudflats), and the mudflat grass, cordgrass or *Spartina* (also forming a significant and visible population at Batiquitos).

POLYCHAETES



MUDFLAT CRAB



LINED SHORE CRAB



FIDDLER CRAB



SWIMMING CRAB



BROKEN BACK SHRIMP



SEA CUCUMBER



SEA HARE



SAND DOLLAR

