

Sea of Cortez

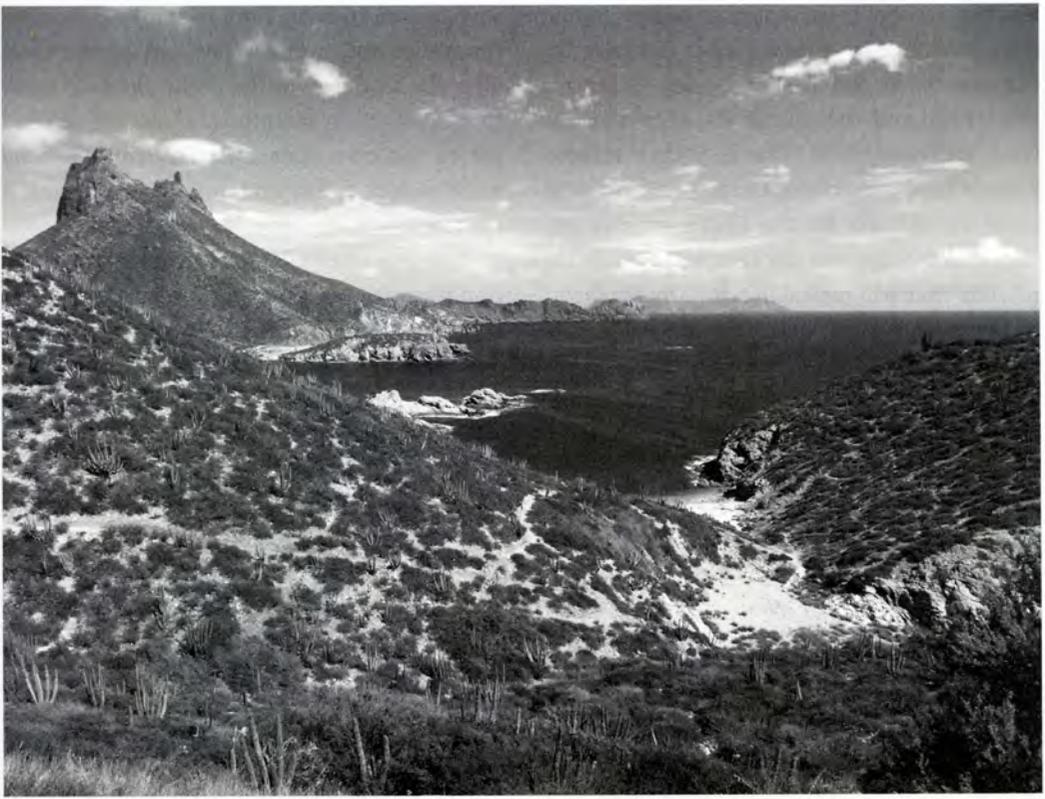
Richard C. Brusca

THE SEA OF CORTEZ—the name alone evokes romance, calls like a siren, promises glimpses of Shangri-la. It is a magical place, and a biological wonder as well—one that has held the fascination of naturalists and adventurers since Spanish navigator Hernando Alarcón first sailed to the head of the Gulf in 1540. Also known as the Gulf of California (both names are valid, both derived from sixteenth-century Spanish maps), this great sea is over 700 miles (1120 km) long and spans nine degrees of latitude, crossing the Tropic of Cancer near the city of La Paz in Baja California Sur.

This sea was created around 6 million years ago, when the great East Pacific Rise spreading center slipped under the North American Plate, lopping off a strip of land from the western coast and pulling it away from the mainland to create the Baja California Peninsula (and Southern California). The warm waters of the tropical Pacific quickly rushed into the already present basin (known as the “Proto-Gulf”). This same spreading center continues to push the peninsula (and Southern California) northwestward at a rate of nearly 2 inches (5 cm) per

year. The sea divides the Sonoran Desert into two halves, on the mainland and on the Baja Peninsula, with southwestern Arizona the capstone that connects the two parts.

The “long arm” of the Sea of Cortez even reaches deep into Arizona, and into much of the Southwest, in the form of summer monsoons. We now know that almost all our summer rain, once thought to originate in the Gulf of Mexico, comes from the Gulf of California/Tropical Eastern Pacific, often in masses of water-laden air called *gulf surges* that rush right up the middle of the Sea of Cortez to dump their harvested moisture in southeastern Arizona and adjacent areas. The oceanic waters of the Pacific also rush up the length of the Gulf as twice-daily tides, and as they funnel into the shallow, narrow, uppermost Gulf, they create some of the world’s largest tidal ranges—up to 24 vertical feet (7.3 m) near the town of Puerto Peñasco (Rocky Point), and over 30 feet (9.2 m) at the very head of the Gulf on the delta of the Colorado River. On shallow tidal flats in the northern Gulf, a 20- to 30-foot (6.1–9.2-m) vertical tidal drop can expose miles of once-



A high view of the Sea of Cortez at Mirador Escénico, San Carlos, on mainland Mexico. Dolphins, pelicans, whales, and other wildlife are often seen along the beaches of this coast.

submerged seabed, with the sea rushing back in just a few hours later. Many naïve tourists have watched their off-road vehicles become submerged in these rapidly returning tidal waters. With nearly 1000 islands and islets, the Sea of Cortez is also home to one of the world's largest island archipelagos.

Its warm, subtropical waters and abundant upwellings that bring deep-sea nutrients and oxygen to the surface have created one of the most productive and diverse seas on the planet. The Gulf's 6000 recorded animal species are estimated to represent only about 70 percent of the actual (total) fauna lurking in its rich waters. So productive is this sea that about half of Mexico's total fisheries production comes from the region; so rich in plankton that populations of at least two species of migratory great whales (sperm whales and finback whales) have forsaken their ancestral migratory instinct to

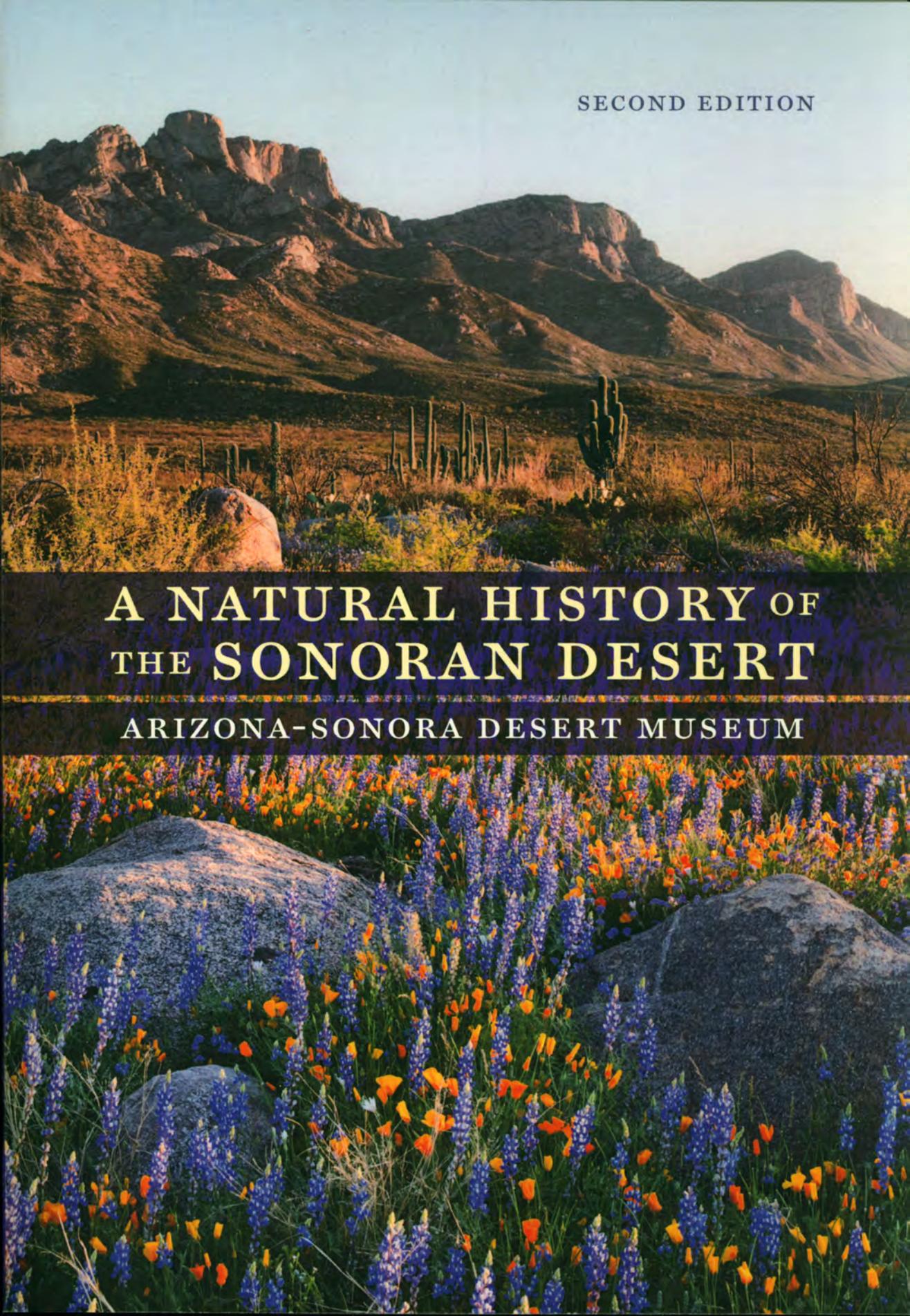
take up permanent residence there. Sperm whales are the largest of all the toothed whales (up to 60 ft/18.3 m in length) and are among the deepest divers in the ocean, routinely reaching depths of 3000 feet (916 m) or more; their major prey, the jumbo squid, can weigh more than 100 pounds (45 kg). Jumbo squid are so abundant in the Sea of Cortez that on a good night local fishers may pull in 10,000 pounds (4500 kg) or so, in one locality! Seven marine reptiles inhabit the Sea of Cortez, five threatened or endangered sea turtles, one sea snake (*Pelamis platura*), and one crocodile (*Crocodylus acutus*).

Much of the mainland coast of Sonora, Sinaloa, and Nayarit has been heavily damaged by development (e.g., urbanization, marina and harbor construction, shrimp aquaculture, and other forms of habitat destruction) and by over-collecting of marine life by both residents and

tourists. Most of these coastal areas now harbor but a pale shadow of their former diversity. On the other hand, the coast of the Baja California Peninsula, and the numerous islands in the Gulf, are largely intact thanks to their remoteness or legal protection. These healthy coastal areas are refugia for the Gulf's coastal species, and perhaps one day they will provide the recruits that will reestablish healthy seashores in the eastern Gulf, once they are better protected. Unsustainable fishing is also a major conservation concern in the Sea of Cortez, and every commercial species (except jumbo squid) are overfished in these waters. The Mexican government's continued allowance of bottom trawling, mainly shrimp trawlers, is still of crit-

ical concern in 2015. Bottom trawling destroys the seabed and, over decades, can permanently alter the food web of the ocean floor. In addition, every year shrimp trawlers kill an estimated 120,000 endangered totoaba (*Totoaba macdonaldi*), a fish endemic to the northern Gulf.

The good news is, Mexico takes conservation seriously, and in recent years the government has created many new protected areas, both on land and sea. In the Gulf of California, numerous parks and reserves now dot the coastline, including two Marine Protected Areas (MPAs)—Loreto Bay National Park and Cabo Pulmo National Park—where no fishing at all is allowed.



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