

## Geography in the News™

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### TROUBLE WITH THE SALTON SEA

A lake unlike any other in the United States is located in southern California. The Salton Sea is, in a sense, a human-made salt lake in southern California. It also is an important national wildlife refuge. Its existence, however, is being threatened by San Diego, which is attempting to buy some of the water that supplies the Salton Sea, potentially increasing the lake's salinity and even drying it up eventually.

The Salton Sea is situated in the Imperial Valley of southern California. The Imperial Valley is located in the northern end of a rift valley, whose southern end is occupied by the Gulf of California. The lake is about 35 miles long and 15 miles (56 by 24 km.) wide, and its surface is about 228 feet below sea level. This shallow lake is only about 44 feet deep as it spreads out in its saucer-like basin.

The *Salton Sea Atlas*, recently published by the Redlands Institute at the University of Redlands and ESRI Press (2002), is an exquisite environmental publication providing a detailed analysis of the sea and the threats to its environs.

Prior to 1905, the Salton Sea was an intermittent salt lake, called a *playa* (PLY-ah). When the All-American Canal was being built to bring Colorado River water to the Imperial Valley for agriculture, a flood overpowered a dike. Water from the Colorado River poured into the Imperial Valley for two years, forming the Salton Sea.

The Imperial Valley has internal drainage but is cut off from draining to the Gulf of California by a natural dam formed by the delta of the Colorado River. The Colorado has created a delta where the river enters the Gulf. This delta extends entirely across the Gulf of California, forming the dam that isolates the Imperial Valley from the Gulf.

As the deltaic dam formed, the Colorado River's channel migrated back and forth across the growing delta. From time to time, the river would drain into the Imperial Valley raising the water level. When the river would abandon the lake, water would slowly evaporate, lowering the lake's level.

Like all of the world's salt lakes, the Salton Sea has no way to drain externally, leaving evaporation as the only way for water to leave the lake. The evaporation process removes water as water vapor, but the suspended particles and most of the minerals remain behind. Generally, the Salton Sea is 25 percent saltier than the ocean, although the Great Salt Lake in Utah has an even greater concentration of salts.

The irrigation of the Imperial Valley with fresh water from the Colorado River has created one of the world's most famous agricultural regions, known as the Lettuce Bowl. The process of irrigating desert regions requires water not only for the plants to use, but water for flushing the soils as well. Water must be applied to the fields regularly, so that salts are constantly leached downward through the soils and into drainage ditches surrounding the fields. The Salton Sea depends upon the release of this irrigation water to maintain its current levels and its ecology.

Because the lake's level and its salinity have largely stabilized, it has become a mecca for more than 350 species of birds. Scientists continuously monitor the unusual chemistry of this salt lake and its ecosystem, including nitrates from fertilizer and pesticides leached from agricultural fields.

Now "The San Diego County Water Authority and Imperial Valley farmers have tentatively agreed to an unprecedented water sale..." according to *The San Diego Union Tribune* (Oct. 17). "Imperial Valley farmers are a target

because they control 75 percent of California's share of the (Colorado) river." But the deal is extremely tenuous, requiring farmland to be taken out of production so that some of the valley's Colorado River water can meet urban water demands in San Diego County. Although California has to guarantee that the Salton Sea will continue to receive its share of water, it is difficult to see how that can happen under the present agreement. And San Diego's thirst for water will only grow with time.

The Salton Sea's uniqueness derives from the fact that its survival as a lake depends upon human activities along its shores and, now, the demand for urban water by San Diego.

And that is Geography in the News. November 8, 2002. #649.

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### THE SALTON SEA



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