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Desert Ecology: An Introduction to Life in the Arid Southwest, by John Sowell

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Robert Brulle does the best job in scouting out fruitful directions for political and institutional change.

REVIEWS

Desert Ecology. An Introduction to Life in the Arid Southwest. By John Sowell. Salt Lake City: University of Utah Press, 2001. Pp. 192. $17.95 paper.

This small book, 6" X 9" and 192 pages, is organized into nine chapters. An opening chapter describes the general features of deserts, two chapters treat plants (adaptations to arid conditions, life histories), three cover animals (thermoregulation, osmoregulation, life histories), one discusses desert ecosystems (food webs, productivity), one describes desert mountains (the "sky islands" of the Southwest), and one chapter discusses humans living in desert environments.

This is a book worth reading if you are a novice to deserts and their ecology. It is largely well written, with a reasonable dose of "desert lore," some appropriate quotes, and good opening passages for each chapter. However, it treats the broad subject of deserts somewhat unevenly, and the writing could have benefited by some careful editing.

The opening chapter, with which most authors would hope to "hook" their readers, is rather unpolished. It starts strong, with a vivid description of Death Valley. But then, little-by-little, the writing becomes rather cumbersome. The information is generally there, it just isn't always precise or easily extracted due to the uneven writing. Terms are used without definition (*e.g.*, playa, arroyo), allusions are attempted that don't always work (*e.g.*, "oceanic deserts"), and examples are sometimes confusing (*e.g.*, the coastal chaparral of Baja California seems to be treated as a desert, even though the map of southwestern deserts clearly excludes it, as well it should be).

The plant and animal chapters are probably the strongest, though showing a clear bias toward physiology over ecology and evolutionary biology. The coverage of plant physiology is excellent, and the discussion of CAM C-4 photosynthesis (a difficult topic about which to write) is one of the clearest I've read. However, the discussion of halophytes is so superficial as to be of little use. The chapter on plant life histories is generally well done, although it is, again, rather uneven. Sometimes Latin names of plants are parenthetically provided, other times not; readers unfamiliar with names like "saguaro" and "cardon" may not recognize these as cacti. Given the unevenness of the text, a glossary would have made this book far more useful. It could also have benefited by inclusion of a table listing common and scientific names of

the organisms mentioned. More maps also would have been a valuable aid for readers.

The "Islands in the Sky" chapter devotes only 10 pages to these geologically and biologically fascinating ecosystems of the desert southwest, giving short shrift to what many regard as their most interesting attribute, the evolutionary aspects of isolation on these montane "islands." This chapter also has a section devoted to "riparian corridors," which, in the desert southwest, have far more to do with the desert floor itself than with sky islands. The riparian corridors of southwestern deserts are the anchors and lifeblood of dryland ecosystems and biodiversity, and these critically important habitats deserve a chapter unto themselves.

The final chapter is devoted mostly to human physiology, more of interest to the medically inclined than to readers with an interest in human ecology and how humans and environments interact. The BIG issue in the southwestern deserts is what humans have done to the landscape, and it's mostly about water and habitat conservation (especially riparian habitat conversion). The deeply important issues of conservation are largely glossed over when, in fact, they also deserved their own chapter.

There is no bigger issue in the southwest today than water. Water is the ultimate limiting factor for humans as well as ecosystems in these drylands. Approximately 23 million people live in the Lower Colorado River Basin and are largely dependent upon water from the Colorado River. By 2020 it is estimated that more than 38 million people will be living in this region. The population of the Sonoran Desert alone now exceeds seven million people and has experienced a seven-fold population increase in the past 50 years, with a doubling between 1970 and 1990. This is the fastest growth and most massive land conversion in North America's history. There are no signs that this growth is tapering off. Nearly all of the rivers and riparian systems in North America's deserts have been severely altered, or destroyed. The combination of anthropogenic riparian destruction (including cattle grazing) and groundwater overdraft has profoundly impacted deserts and deserves to be treated in a book on desert ecology. The rich riparian forests that once crisscrossed the southwest are now rare, due to urban growth, agriculture, ranching, surface water diversion, and over-pumping of ground water. The development of powerful mechanized pumps in the 1920s led to massive groundwater overdraft in agricultural areas throughout the Sonoran Desert, and today the overdraft in this region averages 1.25 million acre-feet/yr . The massive Costa de Hermosillo (Sonora) irrigation district, for example, peaked at 887 pump-powered wells supplying ground water to more than 100,000 hectares of irrigated land, exceeding recharge rates by 250 percent. Due to plummeting water

tables and saltwater intrusion, millions of acres of farmland have been permanently abandoned throughout northwestern Mexico and the American Southwest. In the Sonoran Desert, about 60 percent of the native vegetation has been converted or destroyed, and nearly all of its rivers have been diverted or dried up over the past century. In Arizona, only ten percent of the historic riparian habitat still survives. These landscape-scale changes in southwestern deserts have become an integral part of the region's ecological fabric and they cannot be ignored without giving false impressions.

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Silent Spill: The Organization of an Industrial Crisis. By Thomas D. Beamish. Cambridge, MA: The MIT Press, 2002. Pp. 220. $21.95 softcover.

Invisible oil spills sit silently among us. Unable to capture our imagination with a photo of a tanker stranded on the rocks or the plaintive cry of an oil-soaked bird, these faceless spills continue for years. Those with the power to stop these unheard and unseen spills do nothing. In *Silent Spill*, Beamish introduces us to the granddaddy of all "silent spills"—the Guadalupe Dunes oil spill in California. He explains how such spills happen, but not from the traditional focus on ruptured pipelines or corroded tanks. Beamish describes, instead, the societal mechanisms at work in oil companies, government bureaucracies, and communities that aid and abet these silent spills and allow them to worsen long after they are discovered.

The Guadalupe Dunes sit on the California Coast about 170 miles north of Los Angeles. There, workers at a Unocal oil field spilled various oil products, quietly and chronically, for 38 years. The quantity spilled (10–20 million gallons) exceeded the amount spilled by the Exxon Valdez. But while the fouling of Alaska's Prince William Sound was national news and generated hundreds of stories, the Guadalupe Dunes spill, discovered during the same period, generated only nine stories between 1990 and 1996. Beamish analyzes why such spills generate so little news and why society does not stop them from continuing when they are first discovered.

Beamish begins by naming this problem—crescive troubles. Such troubles overcome us with stealthy, tiny increments that do not call attention to the larger picture. One increment is unworthy of attention.