

Mike Davis

When the rivers ran dry... The drought next time

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“We may be the most reckless and suicidal overconsumers of water in world history.”



LA Aqueduct: Alabama Hills, near Lone Pine, CA (1991)



Owens Dry Lake: Dirty Socks Spring, near Olancho, CA (1969)

Seen from an airplane, Los Angeles' lifeline— the Owens Valley Aqueduct— is a straight-edged silver ribbon delicately slicing an ochre desert. It is the most potent symbol of our dependency on looted water and our resulting vulnerability. Drastically reduce the rainfall that feeds the Owens Valley Aqueduct, and the metropolis immediately would begin to die.

Yet, according to research to be presented this weekend, just such a devastating drought occurred 800 years ago. In a keynote address to an environmental-history conference at CSU Northridge geographer Scott Stine discussed his identification of ancient Native American campsites and alkali-encrusted shrubs in what was formerly the deep bed of Owens Lake. It is a startling discovery.

Until Los Angeles built the aqueduct and cut off Owens Lake's supply of fresh

water, the 112-square-mile lake was the southern terminus of the Owens River, which drains the eastern watershed of the Sierra Nevada. (It dried up in the mid-1920s.) “We

now have compelling proof,” says Stine, “that Owens Lake dried up and became a desert playa in the early medieval period. The finding has ominous implications for the future security of Los Angeles’ water supply.”

Two years ago, Stine caused a sensation in the science press with his claim that California had endured two epic droughts in the Middle Ages, one of 220 years (from 892 to 1112) and the other of 140 years (from 1209 to 1350). By contrast, the most severe recent drought— which created an unprecedented statewide water emergency— lasted only six years, from 1987 to 1992.

Stine’s primary evidence, now broadly accepted, consists of ancient tree stumps that were exposed to view when the 1980s drought and DWP greed reduced water levels by more than 50 feet in Mono Lake (the northernmost catchment of the Los Angeles Aqueduct) and other Sierran lakes and streams.

The rooted stumps of ancient cottonwoods and Jeffrey pines are obvious proof that the lakebeds were previously dry and that the trees drowned when water levels rose. By radiocarbon-dating the outermost tree layers, then counting the annual growth rings, Stine has been able to construct a precise chronology of the droughts as well as the interval of extraordinarily wet climate that separates them.

Last year, while Stine was autopsying the dusty cadaver of Owens Lake, other researchers were confirming the catastrophic impacts of the megadroughts across the West. Cores drilled from San Francisco Bay, for example, demonstrate that sedimentation levels abruptly fell while salinity rose during medieval dry spells: unequivocal evidence of a drastic decline in freshwater inflow to the bay.

Researchers in the Great Plains, meanwhile, found evidence that at around the same time sand hills, immobilized for a millennium, suddenly discarded their plant cover and began to migrate, turning parts of eastern Colorado and western Nebraska into an American Sahara. In the same period, lake levels in the upper basin of the Colorado River— the source of the Metropolitan Water District’s water— were rapidly falling.

What was happening during these epic droughts in Southern California? Although Stine’s work encompasses only our Sierra Nevada watersheds, other investigators have been exploring the history of local vegetation. In another panel at the Northridge conference, “Southern California Before 1900: Landscape, Climate and Ecology,” Matthew Bost, Owen Davis and Kevin Pope discussed their discovery of fossil pollen in Long Beach marsh sediments that suggests a sagebrush steppe environment (instead of grasslands that came later) during Stein’s dry centuries.

As the desert encroached upon coastal California, moreover, native cultures probably battled fiercely over dwindling water supplies. Mark Raab, a Northridge archaeologist who will share the podium with Stine Saturday night, has been studying human remains from prehistoric Chumash cemeteries in Ventura County. A radical increase in violent death, indicated by arrow and stone wounds, coincides with the period, quite possibly due to a drought-induced subsistence crisis.

As Stine points out, “The crisis in medieval California was undoubtedly part of a global pattern. Although Europe prospered from a warmer climate, there was a mass collapse of hydraulic civilization in the rest of the world. Just think of the Maya or the powerful state of Tiwankaku in the Andes.”

Indeed, the prestigious journal *Nature* last year published new scientific evidence, based on cores of lakebed sediments, that the decline of Classical Mayan civilization coincided with an exceptionally dry interval between 880 and 1000 A.D.— the period of Stine's first Sierran megadrought. Other researchers have tried to correlate drought to the collapse of Angkor Wat (Cambodia), Great Zimbabwe, Tula (Mexico) and the Anasazi culture in the Southwestern United States.

Could epic drought return in the near future? As Stine admits, “This is the \$64,000 question. Although we can model the atmospheric circulation contraction of the Arctic vortex most likely to sustain a drought for centuries, we don't know what caused the circulation to change in the first place. We don't know where the crucial climate switch is located.”

What is certain, however, is that modern Southern California has been capitalized on sheer gamblers' luck. Regional water-resource planning has been based on a 140-year rainfall record that, according to most paleoclimatologists, is one of the most anomalously wet periods in the last 4,000 years.

Nor can we save ourselves by building more huge dams, like the MWD's new \$1.9 billion reservoir in Domenigoni Valley near Hemet. All the concrete in the world can only postpone the inevitable hardships of a drought for a few years at most. It cannot stop nature when it decides to turn drier than Carrie Nation.

“It is the downtime of an environmental system,” Stine observes, “like protracted droughts or Little Ice Ages, that determines its ultimate carrying capacity, not the lush eras.” From this perspective, we may be the most reckless and suicidal overconsumers of water in world history.

Mike Davis is a noted voice in urban studies and is the author of *City of Quartz: Excavating the Future of Los Angeles* (Vintage, 1991), *Dead Cities and Other Tales* (New Press, 2003), and *The Ecology of Fear* (Vintage, 1999). This article reproduced from the *LA Weekly*, 9/20/96; © Stern Publishing, Inc. and the *LA Weekly*. All rights reserved.