Trouble Ahead for Exotic Mono Lake

The lake's rare environment is threatened as Los Angeles diverts water away, a new report says

Mono Lake, generally regarded as one of the oldest and most unusual and beautiful lakes in North America, may be literally sinking toward ruin to satisfy the thirst of Los Angeles. Tucked away in the High Sierras near the border of California and Nevada, the lake is known for its striking mineral formations that jut above the silvery waters. Its exotic landscape is familiar to many through Ansel Adams' photographs.

But Mono Lake's haunting beauty and its rare ecosystem are headed for serious trouble if the city of Los Angeles keeps tapping the streams feeding into the 69-square-mile lake, according to a new report by a committee of the National Academy of Sciences. The study's findings will figure prominently in the fierce legal and regulatory battles that have pitted environmentalists against the Los Angeles city government, which depends on the streams to supply water to a half million people.

Since 1941, Los Angeles has drawn water from the High Sierra streams 300 miles away, causing a 37-foot drop in water level at Mono Lake. The lake has not been severely harmed yet, but the report makes clear that a continued fall in water level will eventually set off an environmental chain reaction leading to the collapse of the lake's food chain. If the water level of Mono Lake subsides another 10 to 20 feet, the decrease could produce "noticeable changes" in the ecology, the report said. A big drop in lake level could also endanger the mineral monuments, known as tufa towers, because many would be accessible by land bridges, rendering them potentially susceptible to vandalism, the committee said.

The findings of the Academy report, "The Mono Basin Ecosystem: Effects of Changing Lake Level," will have an important role in two sets of deliberations over the future of Mono Lake. The federal Forest Service is currently developing an environmental impact statement and, in addition, a plan to manage Mono Lake. As part of this effort, the agency will suggest a specific level to maintain the lake. This recommendation is scheduled to be announced in October as part of the draft environmental impact statement, according to Marc Harris, a staff member of the U.S. Forest Service's Mono Lake Range and District. Although the recommendation is not binding, environmental groups say that it will be politically significant.

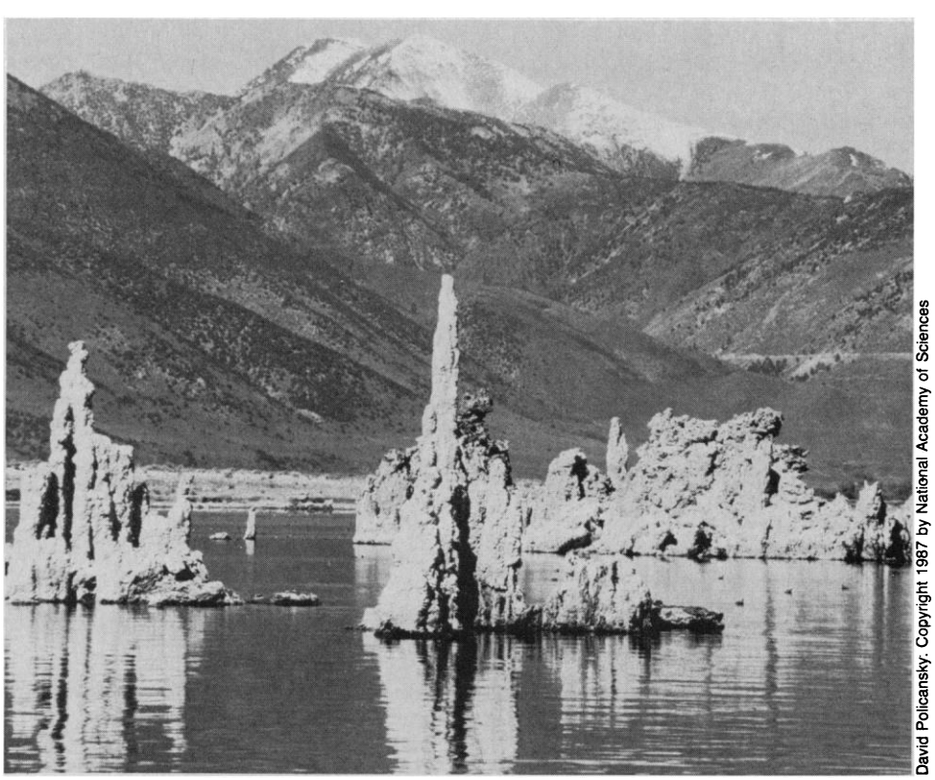
The Academy findings are also expected to strengthen the case of the National Audubon Society in a suit it filed almost 9 years ago against the city of Los Angeles. The environmental group is contesting the city's diversion of water from the streams feeding Mono Lake. The Los Angeles Department of Water and Power argues that the water is crucial to 15% of the city's needs.

The Academy study provides the first comprehensive look at the impact of decreasing lake levels on Mono Lake's ecology, which has been highly controversial. "This report may be the ammunition that groups can use to say, 'If levels drop, this is what happens,' " said Duncan Patten, chairman of the Academy committee and director of the Center for Environmental Studies at Arizona State University, in an interview.

Mono Lake's unusual characteristics stem from the fact that the lake is a closed basin, which makes the water highly saline. In fact, it has two and a half times the salinity of the Pacific Ocean. Mono Lake, said to be named after the Monachi Indians, has no fish, but algae, brine shrimp, and brine flies thrive there and provide the basic meal for hundreds of thousands of birds of several species. The tufa towers are formed when calcium-rich water from mountain streams and springs mix with the carbonate-saturated water of the lake, and the minerals precipitate and accumulate. This process is helped along by the lake's algae.

A drop in lake level affects the salinity of the water, and salinity "is a crucial factor in the lake's ecosystem," the report says. Patten says that additional water losses will bring about "a gradual decline and then 'Bingo,' you lose a major portion of brine shrimp because they are not reproducing." This in turn disrupts the feeding patterns of the bird populations.

The lake is currently 6380 feet above sea level. But if the lake level falls 10 feet, causing the shoreline to shrink back, the brine flies will lose 40% of their habitat—the lake bottom under shallow water—to



Mono Lake's haunting beauty. *If the water level continues to fall, the lake's ecology and these mineral formations, known as tufa towers, will be endangered.*

reproduce and feed. Without enough brine flies to feast on, the migratory phalaropes, birds that resemble sand pipers, will have difficulty molting and fattening up before they head off to their next destination. California gulls would reproduce more poorly and begin to die off.

If the level of Mono Lake drops 20 feet, to 6360 feet, three main species of birds will start having trouble finding a square meal. The brine shrimp larvae will have difficulty hatching. As the shrimp population declines, the migratory eared grebes, which look like a loosely feathered duck with light-colored tufts of feathers on the sides of their heads (the "ears"), will leave the lake earlier in search of other food sources. California gulls, which favor the brine shrimp, will start dying off and reproducing less, too.

If the water level dropped another 10 feet or so to 6350 feet, the lake would be headed toward disaster. The lake would become so salty that the reproductive cycles of the brine flies and the brine shrimp would be significantly disrupted. The phalaropes would no longer stop over at Mono Lake, and the grebes would not find enough to eat. Lower lake levels would also form land bridges to the islands in the lake that the gulls use for nesting, which would make the birds more vulnerable to predators. As more dry lake bed is exposed, dust would be kicked up by the Sierra winds.

For years, Los Angeles has drawn off enough water each year from the Sierra streams to flood 100,000 acres a foot deep. If Los Angeles keeps this up, Patten says, Mono Lake could reach the critical level of 6350 feet in about 30 years. For the past 2 years, however, the city has been under court order to take only 80,000 acre-feet.

Environmental groups are particularly encouraged that committee members recommended a 10-foot buffer zone be added to whatever lake level is finally chosen. Committee members offered this suggestion at a press conference in Los Angeles on 4 August, when the report was released, but did not explicitly say this in the report. A buffer zone would protect against fluctuations in climatic conditions, changes in the evaporation rates of the lake, and the imprecision of the ecological models, Patten said.

Harris of the Forest Service said that the Academy report "gives us a lot better base to form a recommendation" to establish a minimum lake level. Martha Davis, executive director of the Mono Lake Committee, an environmental group, says that her group advocates a maintenance level between 6378 and 6388 feet. But Duane Georgeson, director of the Los Angeles Water System, said he "didn't know what level was appropriate," given the complexity of the water sources feeding into the lake, such as ground water and springs. The Academy report, however, did factor these sources into its estimates.

Georgeson said that it was "encouraging to find from the Academy report that there is a thriving ecosystem at Mono Lake and that there's no imminent threat. What we're struggling with in California has no environmentally easy solution." He points out that Los Angeles will have to get its water from somewhere else, if not from the streams entering Mono Lake. He said the city could buy more water from the Metropolitan Water District, which is separate from the L.A. water department, but that would raise water bills an average of $50 per year.

But Martha Davis challenges that estimate and says that Georgeson is using the worst case scenario. Davis says he based his estimates on the most expensive water rates and assumes that customers would continue using the same amounts of water. Davis says that a combination of solutions could both provide water to Los Angeles and preserve Mono Lake. Building reservoirs, buying more water from the Metropolitan Water Department, and improving water conservation will all help.

"Mono Lake is the quintessential resource problem. It's about how to share a limited resource," Davis said. "It's not a question of 'either/or.' " According to the Academy report, the environmental groups and the water department still have time to work out a solution, but the lake is slowly edging toward a grim future. ■ **MARJORIE SUN**

NASA, NSF Await the Ax

When the Senate returns to Washington in September the National Aeronautics and Space Administration (NASA) and the National Science Foundation (NSF) may be dealt a setback. At issue is how to cut $690 million in proposed spending in the fiscal year 1988 appropriations bill covering the Department of Housing and Urban Development and independent federal agencies. A fundamental question facing legislators is whether to slow down just NASA's program, or to impose reductions at NSF too, and thereby limit growth in small science programs.

Not only are NSF officials anticipating that the subcommittee may cut their request, they worry that the agency will have to absorb a disproportionate share of the reductions. Conceivably, NSF could lose 10% or more of its budget request while NASA could suffer a cutback of at least 5%. "NSF could be sacrificed on the altar of NASA," says one Senate aide, noting the legislators could freeze the agency's budget at its 1987 level.

NASA wants to spend $767 million in 1988 to award work packages for Phase I of the space station, which is estimated to cost $18.5 billion (in 1988 dollars). "If we receive a big hit it will have a serious effect on the program," says Betsy Carter of NASA's comptroller's office. Not only would a major reduction delay the schedule, it could mean total cancellation of the station, NASA officials say.

The overall budget allocation adopted by the Senate for these government activities is $59.58 billion, which is $690 million less than the appropriations subcommittee had planned for. About $40 billion of these funds are earmarked for programs that cannot legally be cut, however. Furthermore, $8 billion of the remaining funds—veteran's medical benefits—are untouchable politically.

Aides to Senator William Proxmire (D–WI), the subcommittee's chairman, concede that plans for NASA's space station and for boosting spending at NSF are in trouble. To obtain the $690-million reduction in outlays, cuts must be made in programs with fast spending rates. The only sizeable targets are NASA and NSF, they say.

The final budget figures for NASA and NSF are almost certain to be larger than what the Senate Appropriations Committee eventually recommends because the House Appropriations Committee already has approved budgets at or close to the President's request. The House Appropriations Committee gave NASA its full request of $9.48 billion. NSF got $220 million of the $270-million increase it wanted. This is close to the $1.89-billion budget sought by the agency as part of a plan to double agency spending within 5 years.

Thus, some sort of compromise will be struck when House and Senate conferees meet early this fall to hammer out a massive continuing resolution to fund the government for 1988. But, barring a fiscal miracle, the NASA and NSF budgets likely will be smaller than the Administration's request. ■ **MARK CRAWFORD**