

Mono Lake:

Coming Back from the Brink?

Greg Reis – Mono Lake Committee

Before Americans began populating the Mono Basin in the mid-1800s, its wetlands provided a spectacular wildlife oasis on the otherwise arid eastern side of the Sierra Nevada. Three major creeks flowed into Mono Lake, the salty, alkaline terminal point, which teemed with alkali flies and endemic brine shrimp. Historical accounts tell of skies darkened by flocks of ducks and of abundant populations of California gulls and other bird species in the basin. Cottonwood bottomlands lined the streams and lakeside deltas, creating one of the more biologically diverse ecosystems in the Great Basin, 6,400 feet above sea level.

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A Giant Sucking Sound Ensues

In 1941 the Los Angeles Department of Water and Power began diverting Mono Lake's two largest streams – Rush and Lee Vining – redirecting them into the L.A. Aqueduct to feed the water needs of a growing city 350 miles away. Over the next 45 years, most water in the streams below the diversion dams dried up. Where streams did enter Mono Lake, occasional floods incised into the deltas, leaving the former floodplain more than 30 feet above the active channel in some places.

Mono Lake itself suffered as well.

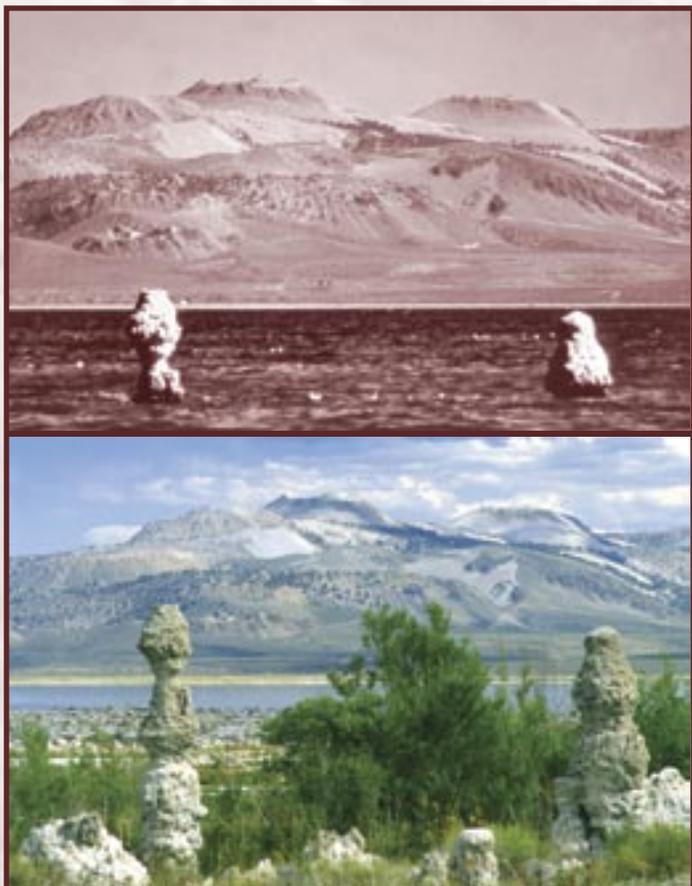
Evaporation from the lake surface continued

as most of the inflow was diverted to Los Angeles, and wetlands, lagoons, and ponds dried up, leaving behind alkali dust that fed dust storms on windy days. From 1941 to 1982, the volume of the lake fell from 4.3 million acre-feet to 2.1 million acre-feet and the surface elevation fell 45 feet, to a record low. During the same period, salinity increased from 53.1 grams per liter (g/l) to 99.4 g/l.

The Community Acts

The nonprofit Mono Lake Committee was formed in 1978 to protect and restore the Mono Basin ecosystem. The committee, along with the National Audubon Society and CalTrout, successfully argued two lawsuits that ultimately were combined into one proceeding before the California State Water Resources Control Board (SWRCB). In 1994, the SWRCB issued Decision 1631, which amended Los Angeles' water right licenses and set minimum flows for the streams, set limits on water exports, and ordered the Los Angeles Department of Water and Power to restore streams and waterfowl habitats.

The restrictions that Decision 1631 placed on stream discharges and exports vary according to existing conditions. Minimum inflow is based on time of year and wet-dry-normal precipitation year classification, and ranges from 25 to 54 cubic feet per second (cfs) for Lee Vining Creek and from 31 to 68 cfs for Rush Creek. Water exports are based on lake level. At the current elevation of 6,383 feet, 16,000 acre-feet per year may be exported. The export allowance decreases in increments to zero below 6,377 feet. Above 6,391 feet, all water in excess of required streamflows (estimated to total 89,000 acre-feet per year) may be diverted; that amount is expected to be on the order of 30,800 acre-feet per year.



Tufa towers in foreground illustrate the decline in Mono Lake water level from 1962 (top) to 1995 (bottom). (Photos courtesy of the Mono Lake Committee)

Basin Restoration

SWRCB's restrictions on water exports and minimum stream flows are designed to protect and restore the lake and the streams that feed it, but the planned restoration level is in fact a compromise. The ordered stabilization level of 6,392 feet (which must be met within the next two decades) is 20 feet above the present lake level but less than half of the 45 feet lost after diversions began. Although many resources will be restored by this compromise, some wetland waterfowl habitats will not.

The required stream and waterfowl habitat restoration plans were approved in 1998. These plans adopt the overall philosophy of adaptive management, which looks at results from monitoring activities, such as waterfowl counts, and modifies the restoration actions, if necessary, to conform to what is expected to be most beneficial. Thus, changing conditions and new information can be incorporated into the overall strategy at any time.

To date, most restoration efforts have been focused along the streams, especially the cottonwood bottomlands. Almost all these areas, among the most biologically diverse environments in the Great Basin, have been degraded by water diversions. In the long list of desiccated terminal lakes – Owens, Mono, Walker, Carson, Humboldt, Pyramid, Winnemucca – the Mono Basin is the one place where opportunity now exists to restore this type of habitat.

Unfortunately, the bottomlands can't easily be brought back. Channel incision into the floodplain is probably hardest to reverse, and although a higher lake level will help begin the aggradation process, the streams will need time and the energy from water releases to begin carving new floodplains. The biggest question is what magnitude, timing, and duration of flow during the spring snowmelt period will be necessary to restore the natural stream processes. The question of timing is especially critical for Rush Creek. After 10 years of grazing bans and 20 years of at least minimal flows, the creek's bottomlands still contain almost no female cottonwood trees. Cottonwood regeneration is also hampered by upstream reservoirs, which delay the peak flow considerably past the time that the cottonwoods are adapted to releasing seeds.

Future Views

What will the Mono Basin look like in the future? Assuming the models used in Decision 1631 are correct, Mono Lake will reach its mandated stabilization level in 10 to 20 years. This level is expected to protect the lake and minimize toxic dust storms. Reaching this level will allow water exports to roughly double in order to prevent the lake from rising higher, reducing flows in the streams as well.

Perhaps the greatest lesson of Mono Lake

is that it is better to prevent damage than to rely on restoration. Restoration in the basin has been hard-fought and expensive, and the ecosystems will never fully recover their former vibrancy. Nonetheless, restoration and water conservation hold promise that many of Mono Basin's damaged resources will recover at least partially, and that the lake and basin will continue to offer a diverse and complex oasis for both people and wildlife.

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