

The Revolution that Saved a Lake

Nora Matell

Senior Division

Historical Paper

It was June of 76, and a revolution was about to begin. In an aspen grove near a small creek, a dozen college undergraduates set up camp for the summer. Nearby lay a large and little known alkaline lake, the subject of their scientific research. Mono Lake had been visited by such people as John Muir and Ansel Adams, who both documented its unique beauty. But many people were inclined to agree with Mark Twain, who had called it the “Dead Sea of California” and insisted that the Eastern Sierra where it lay was a “lifeless, treeless, hideous desert” (Twain, 258,259). Mono Lake was, as one student put it, “not even on the map” (Herbst).

For three and a half months, the students conducted original research on lake ecology, geology, and hydrology; and on the birds, plants, and insects that lived on and near the lake. Assisted by a just a few graduate student friends, and with professors an infrequent phone call away, the students were completely in charge of what they wanted to study and how (Herbst). No one had ever done this research before.

The camp atmosphere was stimulating – somebody was always discovering something new on the lake (Herbst). After breakfast, most of the students would head out to the lake or shore to do whatever research they were working on for the day. Several spent most of their time at the Sierra Nevada Aquatics Research Lab, 30 miles south, studying insects, shrimp, and algae (Dana). Out on the lake, students brought up water samples to look at brine shrimp or algae, collected plants and aquatic insects, studied the geology of the basin, and conducted counts of California Gulls, grebes, and other birds. Being on the lake or hiking around it was “hot and bright and salty” (Winkler, Interview), but it was also “glorious” (Herbst).

In the evenings, they would compare data and discuss findings, changing their own research in response to new discoveries by others. Essentially, the students were creating new methods and research questions as they went along, adapting their study as they learned more about the

lake. They felt like explorers on the edge of a frontier (Herbst; Winkler, Interview). Dave Herbst remembers spending a night among the tall sagebrush on the far side of the lake. “It was like being in a lost world. There was nothing out there, nobody out there, just this wild place with big open sandy beaches and tufa towers and springs” At other times, of course, the students hung around camp in the evenings just like any other young people: talking, playing cards, playing guitar (Winkler). David Gaines, a graduate student friend and “John Muir like guy,” (Herbst) often spoke of the importance of conservation (Herbst; Winkler, Interview).

In the fall of 1975, Jefferson Burch had contacted his friend David Winkler about a grant offered by the National Science Foundation for undergraduate research. Interested in the birds, plants, and ecosystem of Mono Lake, they and several friends applied for the grant. When they received it in the spring, they assembled a student team, putting up posters and talking to friends at UC Davis and Stanford. Their objective was to identify the consequences of lowered lake

levels caused by water diversion to Los Angeles (Winkler, Interview).



300 miles north of sprawling Los Angeles, the Mono Lake Basin has provided water for LA since the 1940's. But too much diversion has threatened to dry Mono Lake up. Owens Lake, also a victim of diversion, was dried up completely. (graphic by author)

Around the turn of the 20th century, Los Angeles, approaching the limit of its own water supply, had begun tapping water from the Eastern Sierra to the north. An aqueduct, constructed over 6 years beginning in 1907, sent water 250 miles downhill from the Owens River near Mt. Whitney to Los Angeles. Employing 3900 men and breaking numerous world records for tunnel drilling, the aqueduct was finished in 1913 (Story). By 1926, an alkaline lake fed by that river, Owens Lake, would be dry;

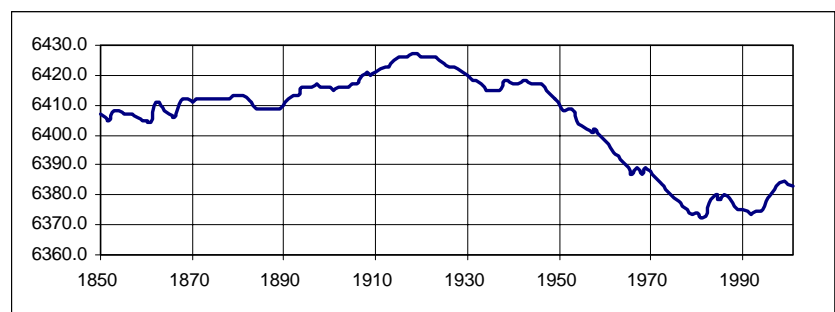
the brine shrimp and birds which once lived there gone (Reheis).

From nearly the beginning, the city had had its eye on additional water, located just north of the Owens Valley in the Mono Basin. As early as 1912, the Los Angeles Department of Water and Power began buying water rights and land in the basin (Hart, 37). In 1940, the Hot Creek Agreement allowed Los Angeles to bypass several fishery laws which required a minimal level of stream flow below dams (Hart, 45). By 1941, after the construction of an aqueduct tunnel through the Mono Craters, water began leaving the creeks of the Mono Basin for Los Angeles (Story). In 1970, with the construction of an additional aqueduct pipe, the amount of water sent south from the Mono Basin nearly doubled (Hart, 57). By the summer of 1976, the lake level had fallen 39 feet to 6378 feet (Yearly).

In the fall of 1976, the student researchers went back to college, continuing their formal studies and writing up their summer research. In June of 1977, the compilation of their research, *An Ecological Study of Mono Lake, California*, was published. Backed up by a summer's worth of scientific research, the students were able to knowledgeably comment on the health of the lake. Their prognosis was grim: the lake was drying up, dropping in level and becoming more saline. At increased

salinities, the algae, shrimp, and flies which live in the lake – and the birds which

feed upon them – wouldn't be able to survive (Winkler, *Ecological*).



After Los Angeles began diverting water from the Mono Basin in 1941, Mono Lake's water level dropped dramatically. Since a decrease in water diversions mandated in 1994 by the California State Water Resources Board, the level has rebounded slightly. (graphic by author, data from *Yearly Lake Levels*)

The study established that at 1976 diversion levels, the lake would eventually drop to 6,323 feet before stabilizing. At such low levels, the lake would lose 45% of its 1976 volume. Alkali



(graphic modified by author from *Ecological Study*)

dust, exposed by the falling lake levels, would cause health problems in the

basin and downwind in Nevada. In

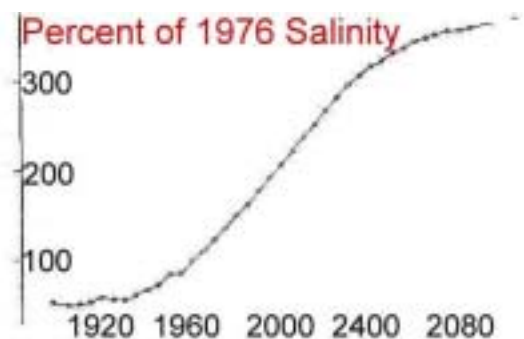
addition, the two main islands, Negit and Paoha, would be connected to the

shore. Outside of the Great Salt Lake, Mono Lake was – and still is –the

largest California Gull nesting ground in the world. The students had counted

close to 40,000 California Gulls on the lake in 1976, as well as hundreds of thousands of other birds. Most of these gulls nested on Negit Island and the islets surrounding it. If the islands were connected to the mainland, predators such as coyotes would devastate the nesting gulls (Winkler, *Ecological*).

Because of its high salinity, Mono Lake has never supported fish. But the tiny brine shrimp which live in the lake and the brine fly which live near its shores have adapted to the lake. Or at least, the lake as it once was. Salinity tolerance studies conducted by students Dave Herbst and Gayle Dana found that both the flies and shrimp did best at salinity levels lower than those of 1976, and worse at higher levels. With rapidly increasing salinities,



Mono Lake's salinity was predicted to quadruple pre-diversion levels by the year 2000. Lake organisms such as the brine shrimp and fly could not survive such an increase. (graphic modified by author from *Ecological Study*)

the shrimp and flies would not survive (Winkler, *Ecological*; Herbst).

Without shrimp and flies to eat, migratory birds would not flock to Mono Lake. Although the California Gull is the only bird which nests in large numbers, hundreds of thousands of other birds such as grebes, phalaropes, and plovers use Mono Lake as a rest stop on their migration paths. Wilson's Phalaropes use the lake to fatten up before flying nonstop to South America (Birds). For all the migratory birds, Mono Lake is a crucial feeding stop. If the shrimp and flies died off, the birds could not use the lake – and there aren't many other places for them to go (Winkler, *Ecological*).

By the fall of 1977, a land bridge connected Negit Island to the shore. After walking across it, David Winkler went to see David Gaines on the coast of northern California, where Gaines and his then girlfriend, Sally Judy (they would eventually marry) were working. There they unofficially formed the Mono Lake Committee, dedicated to reducing diversions so that Mono Lake could survive (Winkler, Interview). Within a few months, they would incorporate, first under the financial wing of the Santa Monica Bay Chapter of the Audubon Society, and then on their own (Hart, 72).

In the months to follow, they printed their first newsletter. David Winkler spent time in Sacramento and San Francisco, lobbying the California Department of Fish and Game and the legislature to do something about the land bridge so the coyotes would stay off the islands (Winkler, Interview). David Gaines and Sally Judy traveled the state, giving presentations about Mono Lake. They spent the summer camped at the lake, giving tours to visitors, taking them to see the tufa towers (calcium carbonate structures formed by the upwelling of freshwater springs, and exposed by the falling lake), nearby volcanic craters, and to swim in the lake. "It was just little by little, we'd get people, like maybe ten people at a time would learn about it, and they'd

tell ten people, and more people came to visit, and that was the beginning” (Sally Gaines).

In the fall of 1978, David Winkler began studying for his PhD in ornithology (Winkler, Interview; Department). He left the committee in the hands of David Gaines and Sally Judy, but



Beginning in 1980, a Mono Lake tradition was the rehydration ceremony. Demonstrators collected water in buckets and jugs from Mono Basin creeks (water is diverted from streams that flow into Mono Lake, not the lake itself), then dumped the water in the lake. It was not enough to raise lake levels, but enough to show the lake’s need for water. (Photo courtesy Mono Lake Committee)

he wasn’t abandoning the lake. In the years to

follow, David Winkler, Dave Herbst, and Gayle

Dana would extend their undergraduate summer

research into graduate study and beyond. Others,

such as hydrologist Peter Vorster,

geomorphologist Scott Stine, and biologists at the

Point Reyes Bird Observatory would also spend

time on the lake (Hart, 87). As scientists, they too

would help the lake: compiling greater and greater

amounts of evidence supporting the necessity of higher lake levels. As David Winkler explained

about why he left the committee, “When I took this year off after my undergrad, I flirted with the

idea that hey, maybe I’ll save the world. But I found out that I’m really not very well suited to

that” (Interview). Dave Herbst also told me that he had never wanted to be an advocate – being a

scientist “was more interesting to me ... and more needed ... than any other role I could play.”

Advocacy was left to David Gaines. He and Sally Judy continued the committee, a constant

force among the many staff who came and left, drifting off to other interests or better paying

jobs. They continued working to publicize the lake, in California and especially in Los Angeles.

Publicizing was all they believed they could do: publicize, and watch the lake slowly drain and

die (Sally Gaines).

But in 1978, the State of California gathered an Interagency Task Force to form a plan for the

lake. By December 1979, the task force would recommend that diversion be reduced to a maximum of 15,000 acre feet (the amount of water which would flood one acre of level land one foot deep) per year, down from 100,000 AF/year, in order to gradually stabilize the lake at 6388 feet (California, 1).

In 1979, the National Audubon Society designated Mono Lake as a high priority site (Hart, 81). Soon after, backed by a new interpretation of an old doctrine called the Public Trust, the Mono Lake Committee, the National Audubon Society, and Friends of the Earth sued Los Angeles (Political). According to the Public Trust, waterways have certain protected uses: usually fishing, navigation, and commerce. But an earlier California Supreme Court case had ruled that the Public Trust also included wildlife habitat, nature research, and beauty (Hart, 64). And so, the plaintiffs argued, excessive water diversions from the Mono Basin violated Mono Lake's Public Trust.

Throughout, interest in Mono Lake continued to spread. Committee membership climbed to 2000 in 1980, and 4000 in 1982 (History). In 1978, Audubon Magazine published an article about Mono Lake (Rowell). By 1983, articles would also appear in National Geographic and Smithsonian (Chasan, Young).

In 1980, the Committee opened a visitor center in Lee Vining (Sally Gaines). Maybe they had once been just college kids, passionate enough – and crazy enough – to begin a revolution that could not be won. But it was gradually beginning to look like maybe, just maybe, it *could* be won.

* * *

David Gaines was optimistic about the future of the lake, but he would never see it rise. In 1988, he was killed in a car accident south of Lee Vining (Sally Gaines).

In September 1994, after 15 years and 5 lawsuits, the California State Water Resources Board ruled to limit diversions so that Mono Lake could establish equilibrium at 6,392 feet (*Political*).

Today, Mono Lake is at 6383 feet (Yearly). The Mono Lake Committee has a full time staff of 14 (Degenhart). Sally Gaines is on the advisory board, but she spends most of her time as a substitute teacher in nearby Mammoth Lakes (Sally Gaines). Gayle Dana, after doing her “life’s work” on the Mono Lake brine shrimp, is studying Antarctic glaciers (Dana). Dave Herbst is still the world’s expert on alkali flies (Herbst). David Winkler is the director of Graduate Studies in the Ecology and Evolutionary Biology Department at Cornell University (Winkler, Department).

The annual gull counts continue – I participated in one last summer. Mono Lake is no longer an unknown place – last year, over 250,000 people visited – many from Los Angeles (Education). And through conservation measures, the people of Los Angeles still have water to drink.



Today, Mono Lake is appreciated for its unique ecosystem and beauty. (Photo courtesy Mono Lake Committee)

The revolution has succeeded, and the reforms won are saving a lake – and sending a message that sometimes, the impossible is possible.

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Included CA Department of Water Resources, US Forest Service, Bureau of Land Management, Los Angeles Department of Water and Power, Mono County Board of Supervisors, US Fish and Wildlife Service, and Department of Fish and Game. The task force formed recommendations for action to take in order to preserve Mono Lake while considering economics, the environment, and public attitude.

Dana, Gayle. Personal Communication. 23 Feb. 2002.

Gayle Dana, part of the 1976 Ecological Study, later continued her work on the brine shrimp before moving on to glaciology. In this e-mail, she answered questions I had about the 1976 student study and her work since then.

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Arya Degenhart is the Communications Director for the Mono Lake Committee. Series of e-mails in which small questions (such as number of staff of Mono Lake Committee) are answered.

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Tour guide and ecological and historical explanation of Mono Lake's ecosystem and the controversy, written during the early days of the Mono Lake Committee.

Gaines, Sally. Personal Interview. 1 Feb. 2002.

Sally Gaines co-founded the Mono Lake Committee, worked for it until 1984, and is still on the advisory board today. In this interview, I asked questions about the early history of the Mono Lake Committee.

Herbst, David. Personal Interview. 29 Jan. 2002.

Dave Herbst was the lake chemistry and bug expert in the 1976 Ecological Study, and is still the world expert on the alkali fly. In this interview, I asked questions about his involvement in the 1976 study and with Mono Lake since then.

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Mentions Muir's trips to Mono Lake while in the Sierra.

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The classic 1976 student study. This printing includes a 1980 update which presents newer research findings and an update on the state of the lake.

Winkler, David. Telephone Interview. 24 Feb. 2002.

David Winkler was involved in applying for the Ecological Study grant, was an ornithology expert on the study, and edited it. He co-founded the Mono Lake Committee

and did extensive research on California Gulls at Mono Lake. In this interview, I asked questions about his involvement in the 1976 study and with Mono Lake since then.

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slight bias towards the Mono Lake Committee, but overall quite balanced with interviews from Los Angeles as well.

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<<http://www.monolake.org/committee/history.htm>>

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