Mono Lake

Newsletter

Summer 2022

Raising Mono Lake Requires a New Plan | Drought Worsens | Protecting California Gulls | Mono Lake Map

It felt like a grim spring here at Mono Lake.

It was too dry. No snow to speak of in January, February, or March. Meager storms in April that barely dampened ground that had been drying out for months.

It was too warm. Plants hurriedly leafed out during unseasonable warm spells and swarming, biting gnats made springtime evenings unbearable.

It was so windy. It was hard to sleep, worrying about an upwind spark becoming a disaster. It was hard to focus, watching sheets of white dust lift off of Mono Lake's eastern shore.

In these grim times we need some hope. Lucky for us, Mono Lake always provides hope.

In this issue of the *Mono Lake Newsletter*, turn to page 9 to see that hope in the form of a graph with a tinge of green (notice that we've printed it in color, to emphasize this important point). That green shade says that despite the drought, despite climate change, despite water agencies' inertia, Mono Lake *can* reach the healthy management level set so many years ago by the State Water Board.

Water can submerge the dust-emitting dry lakebed, it can deepen the moat that keeps California Gull chicks safe, it can reduce the salinity the brine shrimp struggle against. It *is* possible.

If you get to visit Mono Lake this summer, bring this *Newsletter* and imagine what that green-tinged graph means for this landscape. Find a tufa tower at the shore and imagine the water 12 feet higher up the tower. Take a canoe tour and imagine bobbing along 12 feet higher than you are. Look through binoculars at the dusty white rim along the eastern shore and imagine it much narrower. We have a long way—and 12 vertical feet—to go, but it *is* possible. What a hopeful thought.

—Elin Ljung, Communications Coordinator

COVER PHOTO COURTESY OF ROBB HIRSCH, *ROBBHIRSCHPHOTO.COM*

RYAN GARRETT

In the week leading up to the important April 1 lake level reading (see page 4), Robbie and Maureen checked the gauge daily, even donning waders to get a close look.

Mono Lake Committee Mission

The Mono Lake Committee is a non-profit citizens' group dedicated to protecting and restoring the Mono Basin ecosystem, educating the public about Mono Lake and the impacts on the environment of excessive water use, and promoting cooperative solutions that protect Mono Lake and meet real water needs without transferring environmental problems to other areas.

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Raising Mono Lake requires a new plan

Stream diversions holding back lake rise

by Geoffrey McQuilkin

On the wall of the Mono Lake Committee Information Center & Bookstore is a vertical blue tube representing Mono Lake's level, with a yellow sliding arrow pointing to the present-day surface elevation. It is one of the first things visitors inspect because it answers the popular question; how's the lake doing?

We installed the display fifteen years ago and expected that, in the majority of years, we'd be bumping that display arrow upward to track the lake's rising journey of recovery to the hard-won, state-mandated, ecologically sound level of 6392 feet above sea level.

Raising Mono Lake, however, has not gone according to plan. As drier conditions settle on the West, amplified by climate change, we often have been pushing that arrow lower, tracking the lake's decline. Today, years after it was expected to return to the required healthy level, the lake is only 30% of the way there.

The lack of progress has motivated the Mono Lake Committee to undertake a multi-year project to update the most comprehensive water balance model of Mono Lake so that we can evaluate the causes—and consider the role of stream diversions by the Los Angeles Department of Water & Power (DWP)—in slowing Mono Lake's return to health.

Lake not rising on schedule

In 1994, nearly 30 years ago now, the California State Water Resources Control Board issued its landmark water rights decision after extensively reviewing the tremendous impacts of tributary stream diversions by DWP. Those excessive diversions began back in 1941 and dried up the streams, imposing the equivalent of a vast drought on the lake for decades. As a result, Mono Lake fell more than 45 vertical feet, lost half its volume, doubled in salinity, and motivated a citizen-driven protection effort led by the Mono Lake Committee.

The State Water Board required that Mono Lake rise 17 feet to protect the lake's unique and valuable public trust resources for current and future generations, including returning the lake to ecological health, protecting habitat for millions of migratory and nesting birds, submerging dusty exposed

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PHOTO COURTESY OF PETER ESSICK

In this photograph from April 2018, Mono Lake's level is 6382 feet above sea level, two vertical feet higher than it is now.

lakebed, and restoring tributary streams. The decision also set forth rules, derived from modeling projections, allowing DWP to continue stream diversions at a volume compatible with raising the lake.

The momentous recovery mandated by the State Water Board got off to a strong start with four wet winters that promptly caused a ten-foot increase in Mono Lake's level. The prescribed healthy level seemed easily within reach as the new century arrived, but the 2000s had many more dry years than wet ones and the lake ended the decade several feet lower than it started.

While some rise and fall of Mono Lake is to be expected in response to wet and dry years, all the celebrants of the State Water Board decision, including the Committee and Los Angeles leaders, expected an upward trend that would deliver the lake to its healthy long-term management level in a reasonable amount of time. In particular, the State Water Board expected the journey to take 20 years and made provision for a hearing if the lake rise wasn't accomplished by 2014.

But as 2014 approached, even a glance at the lake level graph raised questions about whether the lake's recovery was on track (see page 8). With virtually no possibility of fulfilling the State Water Board's expectation, an extension was agreed to in hopes of seeing the planned rise complete by 2020. Five years of drought instead dropped the lake a shocking seven vertical feet. The wet winter of 2017 delivered a welcome lake rise, but 2020 came and went with the lake far short of the goal, triggering the hearing requirement.

These days a glance at the lake level graph raises alarm. The lake sits 12 feet below the mandated sustainable level—after nearly 30 years it is just 30% of the way to the level required for protection. And with continuing drought it will fall further (see *Lakewatch*, page 12).

WILDLIFE CAMERA PHOTO

When the lake level is low, a landbridge is exposed, allowing coyotes to prey on California Gulls nesting on the islets.

At low levels like this, the situation is perilous because the lake has no buffer left to absorb dry year drops. Already, on windy days, dust is blown off the exposed lakebed, creating the nation's worst PM_{10} particulate air pollution. As the lake falls farther, predators will gain access to critical California Gull nesting grounds, lake salinity will increase, and lake productivity will decline, reducing food supply for millions of migratory birds.

Lake falls below key threshold

On the chilly, dry morning of April 1, 2022, Committee and DWP staff met on the sandy shore to cooperatively read the gauge used to measure the level of Mono Lake. We do this every year because the State Water Board rules use the lake level on that day to determine how much water DWP is allowed

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ELIN LJUNG

The lake level reading on April 1, 2022, was particularly consequential because of the implications of the reading on DWP's stream diversions for 2022. This is the second time in seven years that exports have been automatically reduced due to Mono Lake's low level.

Raising Mono Lake from page 4

to divert to LA for the entire year from the tributary streams.

Because this year the result was particularly consequential, we were joined by representatives from the Mono Lake Kutzadika'a Tribe, Great Basin Unified Air Pollution Control District, California Trout, Mono Lake Tufa State Natural Reserve, and the Mono Basin National Forest Scenic Area.

The official reading was 6379.92 feet above sea level, an inch below the 6380-foot precautionary threshold set forth in DWP's licenses to divert water. Because the current low level is ecologically perilous, limitations designed to slow further decline of the lake take effect. For the next twelve months, DWP stream diversions cannot exceed a total of 4,500 acre-feet of water, a significant reduction from the 16,000 acre-feet allowed in the prior twelve months. However, DWP will separately be able to continue exporting more than 5,000 acre-feet of Mono's groundwater in the Mono Craters Tunnel annually (see Winter & Spring 2022 *Mono Lake Newsletter*).

This respite, though welcome, is a temporary change for a year, and it comes from the same package of stream diversion rules that has left the lake far short of a healthy level. Thus, we are left with the same essential question: What is the long-term outlook for Mono Lake's level?

Modeling Mono Lake

As the lake lingered at low levels in the 2010s the Committee responded by launching a significant effort to analyze the problem in technical detail. The lake's lack of progress indicated we had a problem, but we needed a tool to project Mono Lake levels over the long term in order to understand the scale of the problem—and how to approach fixing it.

The critical tool of this effort is the Mono Lake water balance model, called the Vorster model (see box below), which comprehensively tallies all the water entering and departing the Mono Basin in order to simulate rises and falls in lake level over time. The Committee has been dedicating

Continued on page 6

A tool to answer lake level questions

by Maureen McGlinchy

In 1985, Committee hydrogeographer Peter Vorster published the results of his master's thesis research, entitled "A Water Balance Forecast Model for Mono Lake." The model quantifies 19 inflows and outflows of Mono Lake and its surrounding groundwater basin and was instrumental in informing the early court cases and State Water Board proceedings. Here at the office, we fondly call it "the Vorster model."

A water balance model is conceptually simple: add up the inflows to the lake and then subtract the outflows. If the sum is positive, the lake rises that year; a negative sum means the lake drops. Special attention is required because of Mono Lake's high salinity and hydrologically-closed basin, which allows direct measurements of some components but requires extrapolation from relevant data for others. For instance, stream gauges maintained by the Los Angeles Department of Water & Power (DWP) and Southern California Edison (SCE) measure runoff from eight Sierra Nevada creeks, combining to create the largest inflow to Mono Lake. Mono Lake evaporation—the largest outflow—is primarily derived from evaporation pan measurements, adjusted for lake volume-dependent salinity and year-to-year variability.

Other inflow components of the Vorster model account for precipitation on the lake, ungauged runoff from the Bodie Hills and other surrounding mountains, groundwater inflow, and a small water import, diverted from Virginia Creek to the north. Outflow components include evapotranspiration from phreatophytes (plants whose roots access groundwater), bare ground evaporation from the exposed lakebed, evaporation from Grant Lake Reservoir and, of course, surface and groundwater exports to Los Angeles.

When lake level fluctuations over the past 20 years indicated that Mono Lake would not reach the 6392′ management level under the current stream diversion rules, the Committee undertook the task of reviving the Vorster model as a tool to better understand how Mono Lake's level responds to changes in diversions and hydroclimate. Committee staff, under the guidance of Peter, updated the model onto a modern computer platform, identified small adjustments to a few components, and then compiled the necessary data from the past 40 years. As the accompanying graphics on page 9 show, the Vorster model can answer questions such as how much difference diversions make in achieving the management level.

DWP also utilizes a recently updated Mono Lake forecast model. Both models adequately reconstruct the observed lake elevations over the past 30 years and produce similar results looking forward. However, the models use different approaches. The DWP model is derived from the statistical relationships between lake fluctuations and the four major components of the water balance during the 1980–2019 time period. The assumption is then that these relationships will not change in a future climate. The components of the Vorster model have been developed independently of a discrete time period, which provides greater confidence and flexibility in evaluating a broader range of possible hydroclimate scenarios.

staff and resources in a methodical effort to update and refine the Vorster model, which previously ran all its calculations on a mainframe computer using out-of-date Fortran programming code. Now we are able to run the model using commonplace software and computers here in Lee Vining. Importantly, the "input hydrology" is up-to-date as well, meaning it uses the 1991–2020 hydroclimate sequence that includes recent droughts, extreme wet and dry years, and climate impacts for its calculations.

Hydrogeographer Peter Vorster, who created the model back in the 1980s and has been essential to the Committee's advocacy for Mono Lake's protection, joined in the modernization effort. Peter is quick to remind us that all lake forecast models are inherently flawed because they are simplifications of complex physical processes. They necessarily assume an unknown future climate, meaning that they indicate a range of *possible* lake levels, not what will *actually* occur. But forecast models are also useful, he adds, particularly when comparing results from multiple projections where one component (such as stream diversions) is varied, and the other components (such as the hydroclimate) are held constant.

How far could the lake fall if the drought continues? What rise could be expected if a record-breaking wet winter like 2017 comes around again? The Vorster water balance model can evaluate questions like these.

Most critically, the Vorster model allows us to evaluate how the State Water Board's current stream diversion rules affect the lake's upward progress. It also allows us to try out different rules for DWP's stream diversions and project their impact on the lake level over a longer time span. And by utilizing up-to-date hydroclimate information, the Vorster model projects a reasonable range of possibilities for the lake level in the coming decades.

The updated Vorster model now allows us to turn observations of the lake's lackluster upward progress into the essential question about the future: Can Mono Lake rise to the sustainable 6392-foot level with the State Water Board's current stream diversion allocations in place? If not, would reducing or pausing stream diversions get the job done?

Will Mono Lake rise if stream diversions continue unchanged?

Will Mono Lake heal by rising to the required sustainable level in the next 30 years with stream diversions continuing at the level authorized in the existing State Water Board rules?

The model projection says no.

The takeaway: The State Water Board rules that authorize these water diversions, which were intended to result in a rising lake, are simply not going to deliver the results expected when they were written.

Will Mono Lake rise if stream diversions are paused?

We have heard concern that perhaps between drought and climate change the lake won't rise under any scenario. The model lets us put that question to the test. If stream diversions are paused during the transition, would Mono Lake rise to the required sustainable level in the next 30 years?

The model projection says yes.

The takeaway: The current stream diversions have a real impact on lake level. Even with the drier climate of the past 30 years, Mono Lake has the capacity to rise to the management level if diversions are paused.

Will Mono Lake rise if stream diversions are reduced?

It is true that the more water that remains in the streams, the faster Mono Lake will rise. A year in which no streamflow is diverted is a year in which the lake receives the maximum input possible. But water policy decisions are made after considering alternatives, and a host of possible stream diversion rules exist that are reductions from the current rules but are not a full pause. The question is: How do those scenarios measure up?

We used the Vorster model to consider one such partial reduction scenario. What if the currently authorized stream diversions are cut in half?

The model projection of a 50% cutback is, well, underwhelming.

The takeaway: In this 50% scenario the lake level projection shows an upward trend in the decades ahead, but the lake falls short of reaching the mandated 6392-foot level.

Continued on page 7

PHOTO COURTESY OF LLOYD BAGGS

On windy days Mono Lake's exposed alkali lakebed emits large plumes of dust, producing air quality violations that far exceed the public health standards of the federal Clean Air Act.

Raising Mono Lake from page 6

Mono Lake pays for shortfalls

The State Water Board relied on water balance model projections when making the plan to halt the lake's precipitous decline and developed the stream diversion rules to raise Mono Lake to a healthy level. The modeling work done in the early 1990s was solid, but the period of record for precipitation and runoff that the State Water Board relied on for the projections was a bit wetter than the long-term average. The past 30 years have been drier than that average, providing less water than anticipated due to slightly decreased Sierra Nevada runoff and decreased precipitation over Mono Lake. In addition, DWP stream diversion operations have been more robust than the State Water Board expected, exporting nearly the maximum allowed every year.

PHOTO COURTESY OF RON OZUNA

The mandated management lake level of 6392' will support a productive lake ecosystem of brine shrimp and alkali flies, which provide food for millions of migratory birds like these phalaropes.

Under the current State Water Board rules, when there is a water shortfall while the lake is rising, Mono Lake foots the bill. DWP stream diversions don't change unless the lake is at a critically low level. So on the way to 6392' a dry year usually results in less water arriving at the lake while stream diversions remain constant. Over the years that debt has added up, holding the lake back on its journey to a higher level. Put another way, DWP has received the water supply benefits provided by the State Water Board decision, but Mono Lake has not received the renewed health and sustainability it was promised.

State Water Board anticipated this could happen

In the landmark 1994 decision requiring the protection of Mono Lake the State Water Board wrote that it was "keenly aware of the limitations of computer modeling hydrologic systems and the probability that future hydrologic conditions may differ significantly from historical conditions."

Knowing that the projections of Mono Lake's rise might not become a reality, the State Water Board stated, "If future conditions vary substantially from the conditions assumed in reaching this decision, the [State Water Board] could adjust the water diversion criteria in an appropriate manner under the exercise of its continuing authority over water rights."

In fact, the State Water Board made a provision to hold a hearing if its expectations for lake rise were not met, and with those dates now in the past it plans to consider actions to ensure Mono Lake rises to the level it mandated. Though the hearing is not yet scheduled, the Committee's work to prepare is already well underway.

Writing a new chapter of the Mono Lake story

The work of the Mono Lake Committee and the effort to save Mono Lake that has been embraced by so many is a work in progress. We have achieved history-making successes in environmental protection and water policy at Mono Lake.

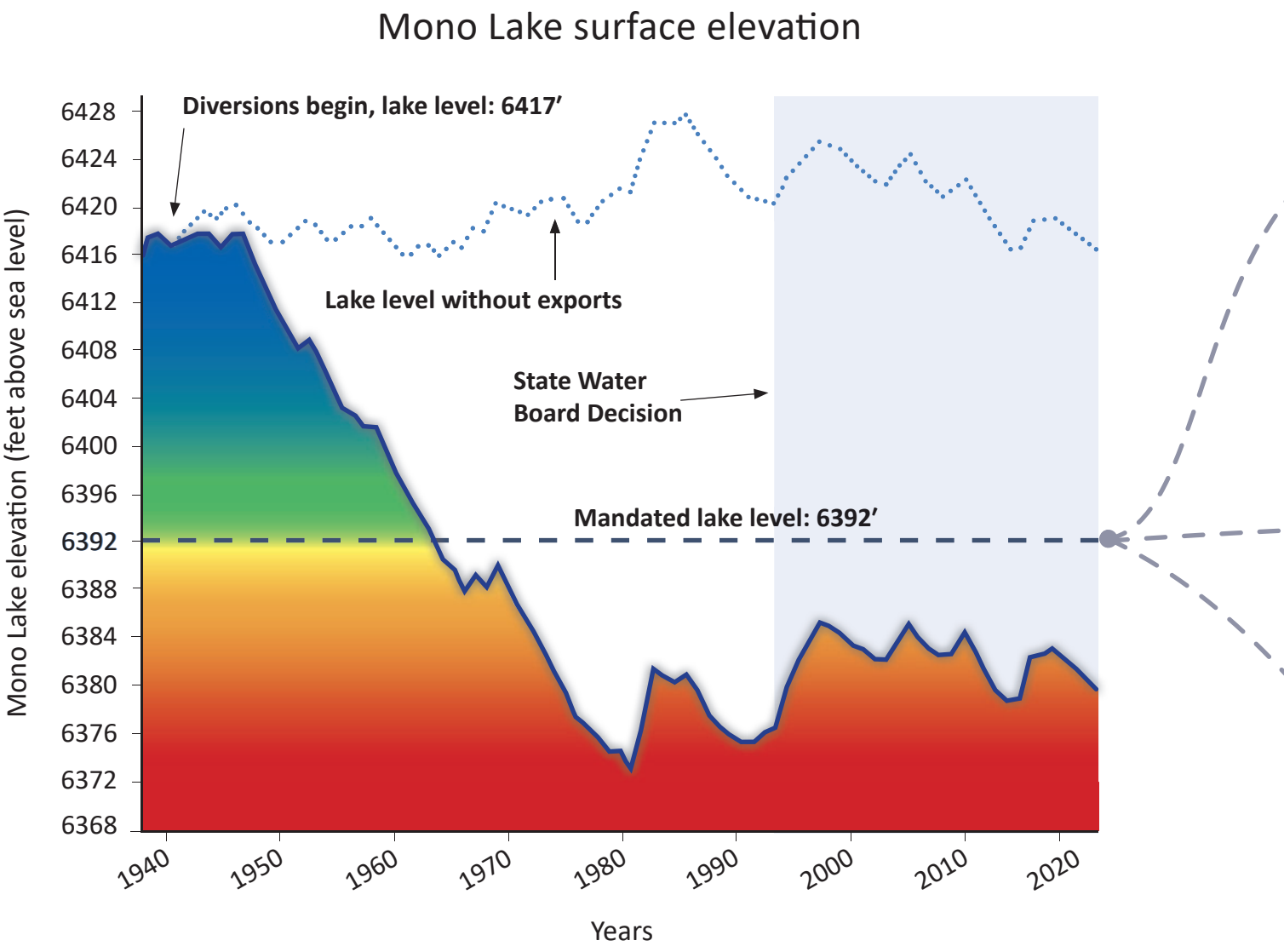
These victories arrive as weighty words written on pieces of paper. We know that our job is to transform those words into positive changes in the landscape, bringing restoration to the streams and raising Mono Lake to the healthy level that will protect the lake and its wildlife for generations to come.

When the promises on paper aren't transforming into real-world change, then our job is also clear. Our years of work on the Vorster water balance model now give us the ability to identify what isn't working, and what could. Next up is the crucial work of mapping out the solutions Mono Lake needs, crafting the plan to implement them, and traveling the long advocacy road that is required to make them real.

We will look to Los Angeles, where Mayor Eric Garcetti's major commitment to local water supplies creates great opportunities to find collaborative solutions. We will look to Sacramento, where the State Water Board will hold its hearing to consider changes to stream diversions. And we will look to Mono Lake supporters everywhere to be part of this new chapter in the story of citizen action, water solutions, and legal precedents all in service of our commitment to a simple goal: Save Mono Lake. ❖

Mono Lake's rise is stalled

As a result of DWP's past excessive stream diversions, Mono Lake lost half its volume and fell more than 45 vertical feet. The low level negatively affects the Mono Lake ecosystem, millions of migratory and nesting birds, and air quality. In 1994 the State Water Board mandated that Mono Lake rise 17 vertical feet in order to achieve ecological sustainability, restore damaged public trust resources, and minimize air quality violations. Now, 28 years later, the lake is 12 feet below the goal and only 30% of the way to 6392′.

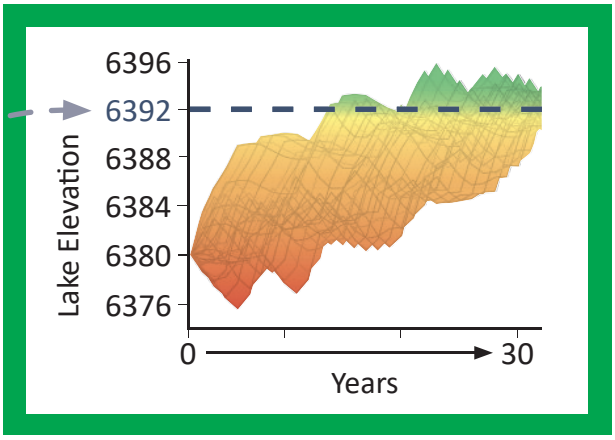


Current stream diversions hold the lake back

A review of the conditions affecting lake level since 1994 shows that the hydroclimate was drier than was expected—with the shortfall impacting Mono Lake. Because the lake has not risen on the schedule the State Water Board expected, it will hold a hearing to consider modifying stream diversion rules to ensure the sustainable lake level is achieved. The Mono Lake water balance model uses Mono Basin-specific hydroclimate data to help us understand how lake level responds to stream diversion scenarios in drier-than-average times, and inform whether and how Mono Lake can reach 6392′.

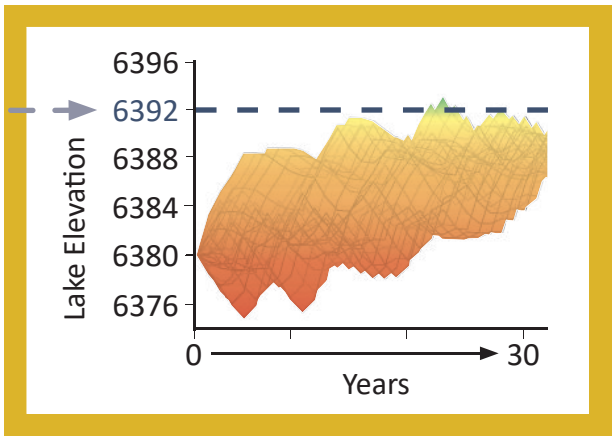
Model shows 6392' is possible, but only if stream diversion rules change

These graphs depict ranges of possible lake elevations under three different stream diversion scenarios. The Mono Lake water balance model processed 30 unique sequences of wet and dry years from 1991–2020 to produce the range of lake levels illustrated in each projection. This comparison demonstrates how modifying stream diversions makes a real difference in allowing Mono Lake to rise to 6392'.



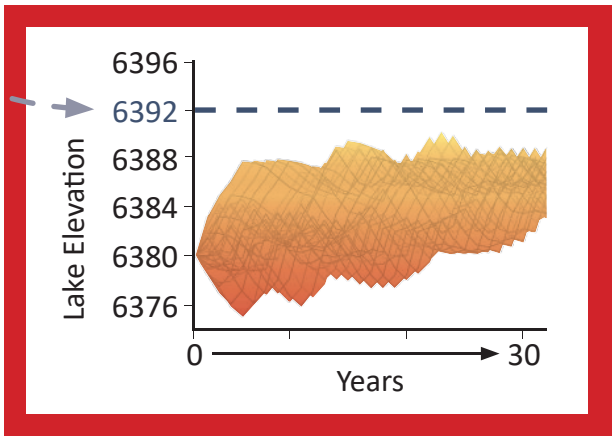
Pause diversions

Pausing diversions would allow Mono Lake to rise. This scenario shows the lake can rise to the 6392′ management level if diversions are paused, even in the drier hydroclimate of the past 30 years.



Reduce diversions

This scenario shows a 50% reduction in the currently authorized stream diversions. While there's an upward trend in lake level, it falls short of reaching and maintaining the critical 6392′ goal.



Continue diversions

With stream diversions continuing at the level authorized in the existing State Water Board rules, the model shows that Mono Lake would not rise to 6392′ in the next 30 years.

Drought worsens

Drought forces reduced diversions, causes problems for nesting birds and air quality

by Bartshé Miller

Mono Lake is suffering from a severe drought. The lake has dropped more than three feet in elevation since 2019, exposing more lakebed. Dust storms have become more common on windy days. The third consecutive year of below-average snowpack has greatly reduced runoff into Mono Lake, impacting the lake's salinity, shoreline, and wetlands. The landbridge between the mainland and Negit Island has expanded, leading hungry coyotes closer to ground-nesting California Gulls on nearby islets. Growing expanses of bright, salt-encrusted alkali flats and tufa shoals have emerged from a retreating lake. It looks like drought.

Record dry period

Around the state the theme is the same—not enough water. Rivers, lakes, streams, and groundwater are all diminished as California struggles through another series of drought years. The April 1, 2022, snow surveys measured Sierra Nevada snowpack at 37% of average. This follows the previous year's 59%, and the year before that, 54% of average. While this multi-year trend has yet to top the drought of 2012–2016, consecutive years of well-below-average winter precipitation have been more frequent. According to research published in March using reconstructed tree ring data, California and eight other Western states are now coping with the driest period in the past 1,200 years.

Los Angeles' one percent

This year Mono Lake dropped below 6380 feet in elevation, resulting in a mandatory reduction in stream diversions for the Los Angeles Department of Water & Power (DWP). On April 1, the start of the runoff year, stream diversions to Los Angeles were reduced to 4,500 acre-feet from 16,000 acre-feet—making this the second time in seven years that exports have been automatically reduced due to Mono Lake's low level. From 2015 to 2017 Los Angeles adjusted to the same lower diversion allocation without issue. The 4,500 acre-feet of water that DWP plans to divert this coming year makes up less than one percent of Los Angeles' total annual average water consumption.

Significantly larger reductions in water supply are affecting Los Angeles and Southern California due to statewide shortages. The Metropolitan Water District declared a Water Shortage Emergency Condition in April. The new declaration imposes a mandatory reduction that limits outdoor watering to one day a week with a complete cessation of outdoor watering by September 1 if water demand does not continue to decrease.

Problems at Mono Lake

A chronically low Mono Lake continues to create challenges for California Gulls. This year the Mono Lake Committee has installed a network of wildlife cameras to monitor the exposed landbridge for coyotes trying to reach the gull colony (see page 18).

Mono Lake has the dubious distinction of being the largest active source of air pollution in the nation for particulate matter less than ten microns in diameter (PM_{10}). DWP's historical excessive diversions dropped the lake's level, exposing a ring of dry lakebed all around the lake that produces dust in the wind. The lower the lake, the worse this problem gets.

The Committee's lake level forecast for the next 12 months indicates that Mono Lake will likely fall a foot and remain below 6380 feet next April 1. Neither the coyote predation threat nor air quality violations will be helped by these low lake levels.

More water needed

Today, Mono Lake still sits 12 feet below the mandated 6392-foot lake level—the level that would enhance lake productivity, submerge dust-producing areas, and eliminate the landbridge. The reduced diversions this year represent a significant boost to Mono Lake—11,500 more acre-feet of water will stay in the Mono Basin. While this totals around three inches of lake elevation, if allowed to continue regardless of lake level, diversion modifications add up over years. Just as a slowly dripping faucet can overflow a bathtub, a little less water diverted—and a little more flowing into Mono Lake—can begin raising the lake sooner. ❖

ROSE NELSON

Toxic dust storms, such as this one on April 9, 2022, occur when Mono Lake languishes at levels too low to submerge the dry lakebed exposed by DWP's excessive diversions.

ROBBIE DI PAOLO

A peek inside the OEC

We often focus news about the Outdoor Education Center (OEC) program on the participants who experience the transformational trips to Mono Lake. We less often share about the OEC itself, but the building and surrounding property are key to the safe, successful, and holistic watershed education goals of the program.

The OEC is the home base for the program and is stocked with gear and equipment needed for the students, leaders, and chaperones to be able to safely and comfortably participate in the program's wide range of outdoor activities. Thanks to generous donations there's a gear closet with everything from loaner hiking boots, jackets, water bottles and backpacks to sleeping bags and sleeping pads. There's also a library and game room for down time. While the OEC currently satisfies the needs of the groups, we're always working to improve it.

We have entered an exciting new phase of making the OEC a better example of what a water-conscious home and landscape can look like. It is important that the OEC itself demonstrates how people can conserve water at home, both actively and passively. The updated landscape project we began in 2021 is another part of the longer term plan to make the OEC an even more water-conscious facility.

To see the OEC for yourself, you can find a full tour on our blog at *monolake.org/oectour*.

2022 OEC groups

We are thrilled to be hosting a full OEC season this year with more than 20 groups:

- Chicano & Chicana Studies Department, California State University, Northridge
- Communities for a Better Environment, Huntington Park (2 groups)
- Crenshaw High School STEMM Magnet
- Cricket's Hope, Modesto
- East Yard Communities for Environmental Justice, Wilmington & Long Beach
- Generation Green: John Muir High School, Los Angeles & John R. Wooden High School, Reseda
- Homeboy Industries, Los Angeles (2 groups)
- Inyo County Health & Human Services
- Kid City, Los Angeles
- Lopez family legacy OEC group, East Los Angeles
- ONEgeneration, Los Angeles
- Outward Bound Adventures, Pasadena
- Pacoima Beautiful (2 groups)
- Peace Camp Network, Los Angeles
- Port of Los Angeles High School
- Puente Program, Whittier High School
- Sierra Expeditionary Learning School, Truckee
- The Renaissance International School, Oakland
- Torres East Los Angeles Performing Arts Magnet

Thank you OEC supporters

We have been blown away by the support of this year's fundraisers in support of the OEC: the Wild & Scenic Film Festival and the commemoration of Andrea Lawrence's birthday. With the funds raised we are sponsoring groups with transportation grants to help make trips to Mono Lake possible and replacing the OEC's decades-old carpet. Thank you to everyone who has gone the extra mile for this program. And mark your calendar for the Trail Chic Fashion Show fundraiser on July 22 in Lee Vining!

MONO BASIN Outdoor Education Center

Our mission is to build understanding and appreciation for the Mono Basin/Los Angeles watershed through education programs and muscle-powered recreational activity; to demonstrate that balanced solutions are possible for meeting the water needs of people and the environment; and to kindle stewardship through service projects that restore and improve the quality of the Mono Basin watershed.

monolake.org/oec *facebook.com/mono.oec*

Streamwatch

Surface water exports curtailed by low Grant Lake Reservoir storage

by Greg Reis

During the 2021 runoff year (April 1, 2021–March 31, 2022), the Los Angeles Department of Water & Power (DWP) was allowed to export up to 16,000 acre-feet of stream diversions from the Mono Basin because Mono Lake was above 6380 feet above sea level on April 1, 2021. Yet, only 13,300 acre-feet of water was taken, consistent with the low reservoir requirements in DWP's water licenses, which were amended last year by the California State Water Resources Control Board (see Fall 2021 *Mono Lake Newsletter*).

The new licenses contain an overall minimum level of 11,500 acre-feet of storage for Grant Lake Reservoir, with a minimum of 20,000 acre-feet for July–September. On March 15 of this year, dropping levels in Grant forced DWP to curtail surface water exports and on April 4, Grant came within 36 acre-feet of the minimum level. This summer it will remain below the 20,000 acre-foot summertime minimum, with similar conditions as the 2015 drought year.

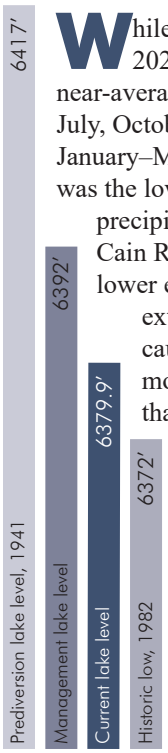
Prior to the new licenses, low Grant levels were supposed to limit surface water exports; however, those limitations had never stopped DWP's exports before. DWP's 1996 Grant Lake Operations & Management Plan specified a 12,000 acre-foot minimum operating level for Grant, but DWP decided that exports trumped that plan in 2008–2009 and 2015–2016. In both instances, the reservoir dropped below 12,000 acre-feet, which resulted in dust storms around the reservoir as well as high turbidity and warm temperatures in the water released to Rush Creek, both of which are detrimental to fish.

Reservoir recreation, fish health, and air and water quality aren't the only resources impacted by low Grant levels. When Grant is below 11,500 acre-feet of storage, water flows released from Grant into Rush Creek are reduced to match the inflow upstream of the reservoir in order to prevent additional reservoir declines. As of early May, Grant is just above this level, and could drop below it with low runoff. Rush Creek could be low enough that stream temperatures could rise to lethal levels for trout. April precipitation was a little above average at high elevations, and this disastrous situation is looking less likely, but it will still be a challenging year for fish in Rush Creek. ❖

Lakewatch

Record-dry winter keeps Mono Lake below key 6380-foot level

by Greg Reis



While precipitation for the 2021 runoff year was near-average thanks to a wet July, October, and December, the January–March period in 2022 was the lowest on record (0.2″ of precipitation was measured at Cain Ranch and Lee Vining), lower even than 2013's extremely dry winter. This caused Mono Lake to rise more during the autumn than was expected, but this was followed by its lowest January 1–April 1 rise since 1977.

The record-dry January–March combined with very warm temperatures in early spring created an abnormal snow distribution on April 1, when snowpack water content is measured. The snowpack below 8,000 feet as well as on higher-elevation, south-facing slopes was largely depleted. Because runoff forecasting relies on a historical relationship between ground-based snow observations and resulting runoff, these atypical snow distributions make runoff forecasting challenging and sometimes misleading.

DWP's Mono Basin runoff forecast for the April–July period is 58% of average, among the highest in the state. However, DWP's snowmelt forecasts for the past two years have exceeded the actual runoff by more than 20%. Unless precipitation this spring and summer is above average, actual runoff will likely be lower than forecast.

Mono Lake rose only 0.03′ from January 1 to its April 1 level of 6379.92′. An April 1 level below 6380′ sets a 4,500 acre-foot limit on stream diversions to Los Angeles. This restriction last occurred from 2015–2017 and is likely to continue next year. The current restriction will mitigate drought impacts by raising Grant Lake Reservoir, and in time will allow a little more water to reach Mono Lake. If fall and winter precipitation is about average, then the April 1, 2023 Mono Lake level is projected to be near 6379.0′—a net decline of about a foot for the runoff year. ❖

Greg Reis is the Committee's Information & Restoration Specialist. He is excited that restoration of Rush Meadows (currently flooded by Waugh Reservoir) is in the planning stages.

Mono Basin Journal

A roundup of quiet happenings at Mono Lake

by Geoffrey McQuilkin

SANTIAGO M. ESCRUCERIA

Mono Lake, shimmering silver and blue in the bright sun, with creamy tufa towers reaching skyward and birds flocking overhead, is a sight that inspires. Add to that the fifty-mile-views to distant snowy peaks that come with the region's clean air and you have the scenic wonder we all enjoy.

This spring a few hazy days dampened these epic scenic views, the distant White Mountains only faintly visible and the closer Bodie Hills fading from view. The unexpected cause, the weather service announced, was dust from the distant Gobi Desert and smoke from wildfires in Siberia, all carried by wind across the Pacific Ocean in a reminder of the planet's interconnectedness.

Clear skies returned, but then one spring Sunday they abruptly vanished. It was a windy day, with gusts lifting fine dust particles off the exposed bed of Mono Lake, stirring up trouble from places that should, by now, be well underwater. Walls of bright white dust rose vertically, then curled westward with the wind and swept into Lee Vining.

The count of the toxic PM_{10} particles, which are so small they lodge in the lungs when inhaled, climbed from 12 to 20 to a dangerous 80 to a hazardous 225 and then 350 $\mu g/m^3$ in town. Calls came in, checking on how people were doing; photographers went out, documenting the disturbing event. In the evening the wind subsided and the air cleared, but the event is a lingering reminder of the perils of Mono Lake being far too low. ❖

Benchmarks

ELIN LJUNG

August 2006: Mono Lake at 6385.1 feet above sea level, the highest it has risen since the 1994 State Water Board decision and less than seven vertical feet from the management level of 6392 feet.

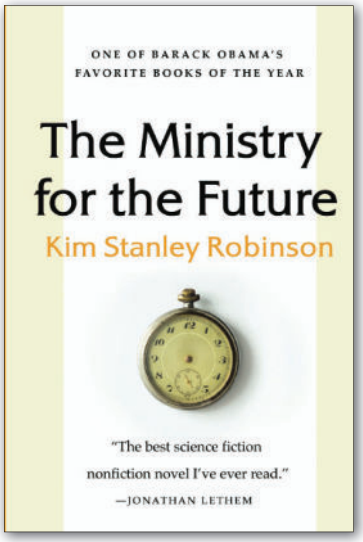
ANDREW YOUSSEF

April 2022: Now during a drought, Mono Lake is at 6379.9 feet above sea level, 5.2 feet below the 2006 high point and more than 12 vertical feet below the mandated management level.

MONO LAKE COMMITTEE
INFORMATION CENTER & BOOKSTORE

Mono Lake topo map T-shirt
Enjoy the warm weather like Katie and Ryan in this top-selling T-shirt. Each T-shirt features a topo map design of the beautiful Mono Basin printed on a light natural-beige colored shirt. Made from 100% certified organic cotton, these T-shirts are cool, soft, and comfortable for summertime wear.
Mono Lake Committee exclusive.
Mono Lake topo map T-shirt, 100% organic cotton, unisex sizes S–XXL: $30.00

Brine shrimp plush
If you've ever taken a dip in Mono Lake then you've certainly gotten close to plenty of *Artemia monica*, the Mono Lake brine shrimp. Now you can cuddle up with this much-larger-than-life plush interpretation of our favorite crustacean and get a chuckle from this silly and snuggly shrimp toy.
Brine shrimp plush, approximately 10″ long, $24.00

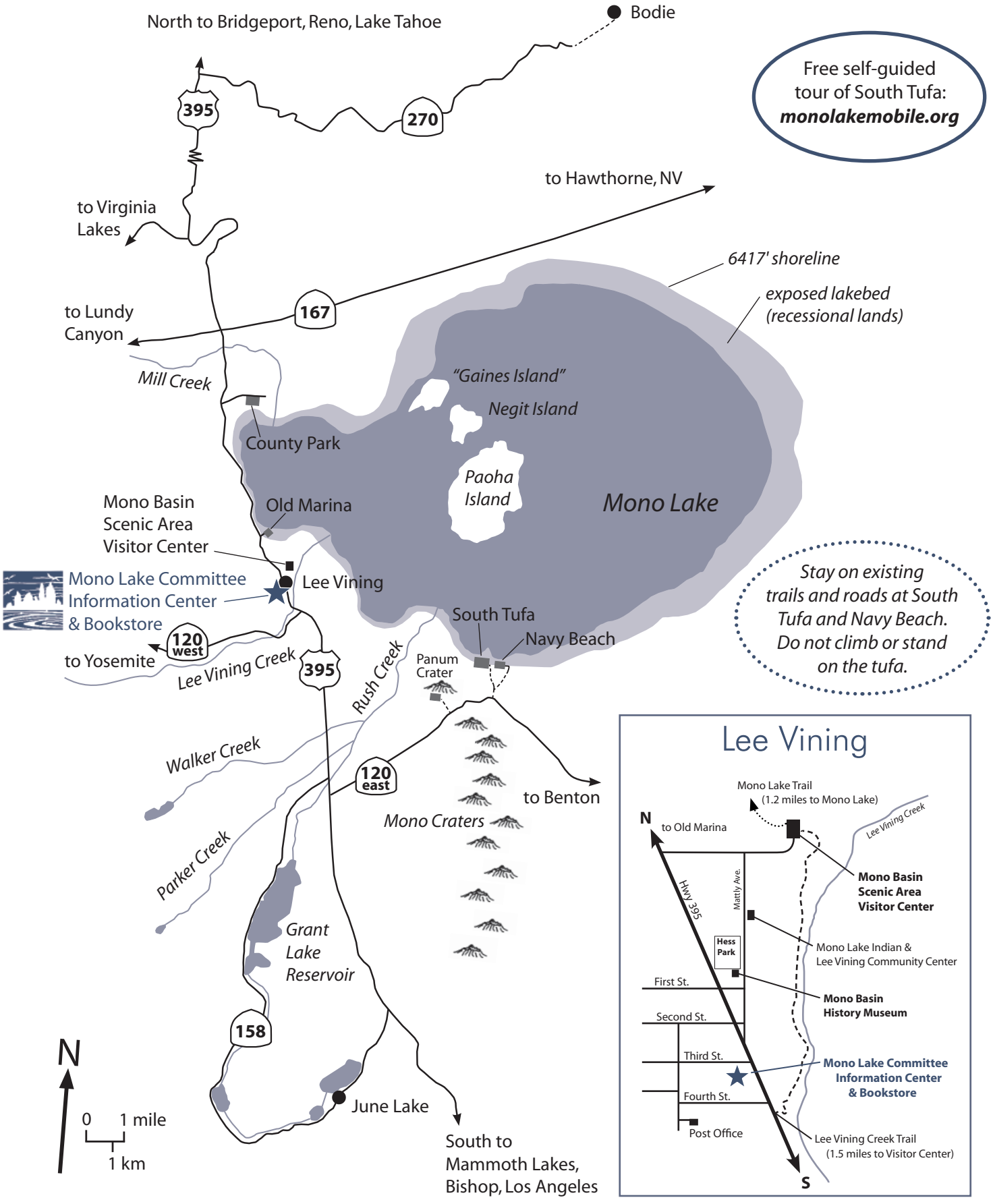


The Ministry for the Future
by Kim Stanley Robinson
This newest novel by award-winning science fiction author Kim Stanley Robinson is a vision of a not-too-distant future shaped by the threat of climate change. Rather than sketching a bleak post-apocalyptic world, *The Ministry for the Future* showcases humanity's optimistic capacity for cooperation and ingenuity in the face of disaster to try and turn the tide before it's too late.
The Ministry for the Future, paperback, Orbit, 576 pages, 5½″x 8¼″: $17.99

Mono Lake Committee logo glass to-go mug
Enjoy your favorite beverage on the go in this beautiful 16-ounce borosilicate glass mug. Designed to keep your hands comfortable regardless of beverage temperature, it has a removable silicone lid and thermal sleeve complete with the Committee logo printed in white. Dishwasher and microwave safe, this mug is a great way to reduce consumption of single-use items.
Mono Lake Committee exclusive.
Mono Lake Committee logo glass to-go mug, 16 ounces, please specify navy blue or stone blue: $24.00

order at monolake.org/shop or (760) 647-6595

Mono Lake map



When you visit Mono Lake

Nestled at the edge of the arid Great Basin and the snowy Sierra Nevada, Mono Lake is an ancient saline lake that covers over 70 square miles and supports a unique and highly productive ecosystem. The lake has no fish; instead it is home to trillions of brine shrimp and alkali flies. Freshwater streams feed Mono Lake, supporting miles of lush riparian forests of cottonwood and willow. Along the lakeshore, scenic limestone formations—tufa towers—rise from the water's surface. Millions of migratory birds visit the lake each year.

The Mono Lake story begins

In 1941, the Los Angeles Department of Water & Power (DWP) began excessive water diversions from Mono Basin streams. Mono Lake dropped 45 vertical feet, lost half its volume, and doubled in salinity.

The Mono Lake Committee was founded in 1978 in response to the threat of ecological collapse of Mono Lake. The Committee set up headquarters in the old dance hall in Lee Vining and went to work spreading the word about Mono Lake. The Committee took the City of Los Angeles to court, arguing that DWP had violated the public trust doctrine, which is "the duty of the state to protect the people's common heritage of streams, lakes, marshlands and tidelands..." (Supreme Court of California, 1983).

In 1994, after more than a decade of litigation, the California State Water Resources Control Board ordered DWP to reduce diversions and raise Mono Lake to a healthy level of 6392 feet above sea level—twenty feet above its historical low. This was truly an environmental victory. Now, twenty-eight years after the State Water Board's historic decision, the lake is only 30% of the way to the healthy management level. There is more work to be done.

ELIN LJUNG

Mono Lake Committee Information Center & Bookstore

- *Open daily 9:00AM–7:00PM during the summer*
- monolake.org *and (760) 647-6595*

See detailed displays about Mono Lake's political history and the current work of the Mono Lake Committee, "The Mono Lake Story" film, an art gallery, a comprehensive selection of books on natural and local history, T-shirts, maps, and locally made artisan gifts. This is also the Lee Vining Chamber of Commerce.

Mono Lake's recovery depends on water conservation in Los Angeles, and the Committee has created solutions to the demand for water by implementing conservation and recycling programs in LA that have saved more than enough water to share with Mono Lake. Today LA is one of the most water-conscious cities in the United States, and the Committee works statewide to promote wise water use.

AMERICAN RIVER CONSERVANCY

Canoe on Mono Lake

- *Saturdays and Sundays at 8:00, 9:30, and 11:00AM*
- *June 25, 2022 through September 4, 2022*
- *Tours last one hour*
- *$35 per person; $20 for children ages 4–12*
- *Sorry, no children under the age of 4 and no pets*
- *Reservations required:* monolake.org/canoe *or (760) 647-6595*

Guided canoe tours provide a unique look at the ecology and geology of Mono Lake. Discover bubbling springs, alkali flies, brine shrimp, underwater tufa towers, and migrating birds from the vantage point of a canoe. No canoe experience is necessary and all equipment is provided.

you are part of the Mono Lake story

GABRIELLE RENTERIA

Free naturalist tours at South Tufa

- *Daily at 10:00AM and 6:00PM**
- **Reservations recommended:* monolake.org/freetour *or (760) 647-6595*
- *Tours are free, but there is a $3 per person entrance fee to the South Tufa area*
- *Meet at the kiosk at the South Tufa parking lot*

Find out why Mono Lake is salty, taste alkali fly pupae, make tufa, and see migratory and nesting birds on this fascinating hour-long walk. (If you can't make a tour, you can take a self-guided tour on monolakemobile.org.*)*

The Mono Lake story is not over

The Committee works in the areas of public policy, ecological protection and restoration, education, water conservation, and scientific research. We continue to strive for solutions that balance the needs of people and the environment.

Protection. The Committee defends existing Mono Lake protections to ensure that established rules, orders, agreements, and victories remain active and strong. We make sure that DWP complies with existing rules and agreements, acting as a watchdog when necessary. In addition to demands for water, challenges facing Mono Lake also include poorly-planned development, increasing recreation pressures, underfunded management agencies, and climate change.

Restoration. The Committee works to restore the ecological functions of Mono Lake, its tributary streams and waterfowl habitat, and the watershed as a whole. Our restoration programs work to heal the damage caused by 50 years of DWP's past excessive water diversions. As a result of historic litigation, DWP is required to fulfill its restoration obligations in the Mono Basin as ordered by the State Water Board. The Committee plays a critical role as a monitor to transform the restoration requirements into measurable restoration progress.

Education. The Committee offers hands-on programs to share the sense of wonder that Mono Lake evokes. South Tufa tours, activities for school groups, Field Seminars (see page 19), custom guided trips, and the annual Mono Basin Bird Chautauqua all provide ways to learn more about Mono Lake. In addition, the Mono Basin Outdoor Education Center brings students from Los Angeles to learn about the source of their water, educating the next generation of California policymakers.

Science. Scientific research is the basis of our policy work, a guide for restoration, and an inspiration for understanding Mono Lake. The Committee supports and works with researchers, hosts a comprehensive research library, and runs the Mono Basin Field Station to enhance the scientific knowledge of Mono Lake, its tributary streams, and the surrounding lands.

Get involved at Mono Lake

Mono Lake has a great success story, and you can be a part of it! Add your voice to the 16,000 members who are committed to the protection and restoration of Mono Lake. Your support as a Committee member will be put to work for Mono Lake.

Join us on a walking tour, Field Seminar, or custom guided trip. Check out Mono Lake online at *monolake.org* to stay connected to Mono Lake and help ensure its protection for generations to come. ❖

monolake.org *@monolakeca*

@Mono_Lake *Mono Lake Committee*

ELIN LJUNG

Free bird walks

- *Fridays* and Sundays at 8:00AM at Mono Lake County Park*
- *Saturdays* at 8:00AM in Lundy Canyon*
- **Reservations recommended:* monolake.org/birdwalks *or (760) 647-6595*

Magic is literally flying and flitting through the air in the Mono Basin. Join a resident expert to see everything from shorebirds to songbirds on a free walk for all levels of birders. Bring binoculars and a bird book if you have them (not required).

Protecting California Gulls at Mono Lake's low levels

by Robert Di Paolo

Each autumn Mono Lake Committee staff optimistically hope for a wet and snowy winter, but cautiously prepare for drought. Last fall, drought contingency planning included the possibility of re-deploying the mile-long temporary electrified fence to protect California Gulls; no small feat to be sure.

Each spring tens of thousands of California Gulls migrate inland to Mono Lake's islets to nest, making Mono Lake host to one of the three largest California Gull breeding colonies in the world. However, when Mono Lake's elevation drops, a landbridge begins to form, making the nesting grounds accessible to coyotes. The worst instance of this occurred in 1977 after decades of excessive water diversions to Los Angeles lowered the lake far enough that coyotes were able to access Negit Island, the black volcanic island that was the former nesting habitat for the California Gull. The gulls have avoided nesting on Negit ever since and have instead nested on smaller, adjacent islets.

Full-fledged fence five years ago

The islets, surrounded by slightly deeper water, are safer from the threat of coyotes than Negit, but with Mono Lake still 12 feet shy of the California State Water Resources Control Board's mandated management level, the Committee remains vigilant. That's why in 2017 the Committee designed, implemented, and maintained a mile-long electrified gull protection fence. Wildlife cameras installed along the fence documented coyotes stalking the fence line, but none made it out to the nesting gulls (see Summer 2017 *Mono Lake Newsletter*).

The 2017 gull protection fence was a hugely successful effort made possible thanks to California State Park's partnership, 228 individual donors who funded the fence materials as part of a crowdfunding campaign, as well as the support of the Committee's 16,000 members.

The winter of 2016–2017 was one of the snowiest winters in recorded history, which meant the fence had to be moved several times as the lake rose nearly three feet during the April to August nesting season. But last fall when Committee staff began planning for a potential re-deployment of the fence, we knew, thanks to our lake model projections, that this year was going to be a close call.

Out of caution, we pulled the fence equipment out of storage, conferred with California Gull biologists from Point Blue Conservation Science, worked with California State Parks to update the fence permit, and mapped out a fence route. It wasn't until the eleventh hour in mid-March that we were able to determine that the lake would stay close enough to 6380 feet above sea level during the nesting season, and that the fence would not be needed. The 6380' elevation has been identified by California Gull researchers as a conservative "lowest lake elevation" that effectively protects the gulls from coyotes.

Monitoring and assessing coyote problems

Instead of deploying the fence, Committee staff installed a temporary network of motion detection wildlife cameras that monitor coyote activity via wirelessly transmitted images. As of press time, we are happy to report that no coyotes have been observed on the landbridge.

While we closely monitor the coyote threat in 2022, our lake level forecasts suggest that unless next winter proves to be one of the wettest winters on record, we will have to deploy the fence in early 2023. With permits and equipment lined up, our fall contingency planning process will be rather straightforward—a small consolation in the face of the grim prospect of an even lower lake level. Until we get Mono Lake significantly closer to the healthy management level mandated by the State Water Board, the Committee will have to stay ready to implement these kinds of stop-gap measures. ❖

BARTSHÉ MILLER

Committee staff installed a temporary network of motion detection wildlife cameras that transmit images wirelessly to monitor coyote activity on the landbridge this year.

Policy notes

by Arya Harp, Claire Landowski, Elin Ljung, & Bartshé Miller

Lee Vining US 395 Rehab Project proceeds

The California Department of Transportation (Caltrans) is continuing to plan for the Lee Vining US 395 Rehab Project, which will replace pavement on Highway 395, improve sidewalks and curbs, upgrade drainage systems, and improve safety for pedestrians and cyclists in Lee Vining.

In April, Caltrans completed the environmental process for the project, which has been reduced in length from 5 miles (see Fall 2018 *Mono Lake Newsletter*) to 2.5 miles, between Highway 120 west and Old Marina.

The Mono Lake Committee had been most concerned about design possibilities and impacts along the west shore of Mono Lake. With that area removed from the project, the Committee's official comment letter focused on encouraging consultation with the Mono Lake Kutzadika'a Tribe, the need for effective drainage engineering, and support of the project's potential to align with the Mono Basin Community Plan. Project construction is scheduled for 2025.

Getting dump remediation back on course

The Committee is advancing a settlement agreement to secure important fixes to the paused Lee Vining Burn Dump remediation project (see Winter & Spring 2022 *Mono Lake Newsletter*). Those fixes include replacing the berm that was part of the original Mono Basin Visitor Center landscape design and implementing a soil stabilization and revegetation plan that includes monitoring to ensure its success. In April Committee staff met with stakeholder agencies and the Kutzadika'a Tribe at the project site to find a path toward project completion.

The California Department of Resources Recycling & Recovery (CalRecycle) buttoned up the project last fall and has tentative plans to return to address significant project shortfalls. CalReycle did not perform adequate CEQA analysis nor satisfy permitting through the Lahontan Regional Water Quality Control Board and California Department of Fish & Wildlife. CalRecycle also mistakenly removed the berm and failed to meet specific criteria regarding erosion control and the

Continued on page 20

Wild horse activity at South Tufa

Last winter, wild horse activity sharply increased at and around South Tufa, with upward of 100 horses regularly seen on the trail to Mono Lake, near Navy Beach, and at the freshwater spring along the shoreline.

Wild horses used to be a rare sighting in the Mono Basin—spotted only in remote areas far from Mono Lake and in small numbers. A recent surge in horse numbers and activity at the lake and close to major highways has generated concern for management agencies in charge of visitor safety, resource protection, and the horses themselves.

The horses have moved far beyond their designated territory, which is located approximately 30 miles away near Montgomery Pass and the Nevada state line. The sustainable size of the herd is 138–230 horses. In November 2020, the Inyo National Forest conducted a single-day aerial survey and counted 642 horses in the herd, 498 of which were outside of the herd's home territory. In August 2021 more than 440 horses were counted along Mono Lake's shore.

The Inyo National Forest is the lead agency for the horses in the Mono Basin and is working on plans that prioritize both managing the horses and protecting the resources at Mono Lake. Informational meetings have been useful for sharing observations and ideas from California State Parks, the Lahontan Regional Water Quality Control Board, the Great Basin Unified Air Pollution Control District, the Bureau of Land Management, local residents, the Mono Lake Committee, and others.

The Committee is recording impacts to resources and horse activity around Mono Lake and sharing that information with the Inyo and other management agencies. Horses have significantly impacted springs, wetland habitat, and tufa on the south shore, and left considerable manure piles on South Tufa trails and in parking areas. The horses also temporarily extended their range into the lower Rush Creek drainage but departed the area by early March.

Volunteers and Committee staff have been removing horse manure from the trails at South Tufa and Navy Beach to help keep those popular Mono Lake visitation areas accessible and enjoyable.

While beautiful, the horses are wild animals and are federally protected; people should never approach them or attempt to touch or feed them.

Documentation of impacts to springs, wetlands, and tufa continues—if you have a resource damage sighting, please contact Mono Lake Committee Project Specialist Ryan Garrett (*rgarrett@monolake.org*) at (760) 647-6595.

Policy notes from page 19

construction of concrete drainages.

The Inyo National Forest, which is the landowner, does not accept the project in its current state because CalRecycle and its contractor failed to meet agreed-upon specifications regarding the construction of drainages and revegetation. While at the site, CalRecycle listened to the input of all stakeholders and is considering modifications for agency approval. Construction may resume this summer or fall if the Committee's proposed settlement agreement and agencies' review of CalRecycle plans are approved.

Rush Creek hydroelectric relicensing

Southern California Edison (SCE) has initiated the relicensing process with the Federal Energy Regulatory Commission (FERC) for its hydroelectric project on Rush Creek and is proposing major changes to its facilities in the High Sierra.

The utility announced in December 2021 that it plans to either partially or fully remove two dams on Rush Creek within the Ansel Adams Wilderness: Rush Meadows Dam, which impounds Waugh Lake, and Agnew Lake Dam. SCE also plans to modify the Gem Lake Dam and spillway to be seismically compliant and slightly lower in height. The proposed changes are partly the result of geologic studies done in 2007 that identified an increased earthquake hazard on the Silver Lake Fault—SCE reduced storage capacity in 2012 and began retrofitting the dams in 2017.

The Rush Creek Powerhouse would continue to operate at the same capacity under the proposed plan. The Committee is engaged in the process because these changes have the potential to affect the timing and quantity of water delivered to Grant Lake Reservoir and Rush Creek. SCE plans to file its final application for the new FERC license in 2025, and the license would be issued in 2027 for a 30-year period. ❖

BARTSHÉ MILLER

CalRecycle mistakenly removed a large, fully vegetated berm that was part of the original Visitor Center landscape design.

Wild & Scenic Film Festival raises record funds for the Outdoor Education Center

by Andrew Youssef

In early March, more than 1,000 Mono Lake Committee members and supporters tuned in for our eleventh annual Wild & Scenic Film Festival. This was our second year hosting the festival virtually, which allowed people from 28 states to join us for an inspiring evening of films and conversation with all of the proceeds benefitting the Mono Basin Outdoor Education Center (OEC). This year's film program included a diverse array of environmental activism and outdoor adventure films, many of which featured people whose stories are not often told across a variety of cultures, races, and sexualities.

Committee staff spoke between each film to discuss our current work at Mono Lake and the OEC. We were also delighted to welcome Milton Hernandez-Nimatuj from Communities for a Better Environment as a guest speaker, who discussed their experience as an OEC trip leader. Since 2011, they have brought more than 200 youth and their families to the OEC. Milton described how the program is "transformational and deepens our relationship to water" and explained that the OEC also "provides a space to process and heal."

The festival raised more than $12,000 for the OEC program, which set a new record for this event. These funds will ensure that cost will not be a barrier for any of the groups that are scheduled to visit this year and will also support new facility improvements.

Thank you to everyone who bought tickets, spread the word, donated raffle and silent auction prizes, and made extra donations to the OEC to support this important program. If you have any questions about the film festival or ideas for next year, please contact *andrew@monolake.org* or (760) 647-6595.

2022 Field Seminars

ELIN LJUNG

Mono Basin & Bodie Photography

June 25–27 • David J. Gubernick
$325 per person / $310 for members
enrollment limited to 12 participants

Enhance your photography skills in the uniquely beautiful Mono Basin and at the world-renowned Bodie State Historic Park. Field trips and classroom sessions will combine to cover a multitude of photographic topics, and the group will visit Bodie for private, after-hours evening access. This seminar is designed to enhance your picture-taking abilities in a supportive learning environment. In addition to mastering the technical aspects of creating images, we will explore the artistry of photography with an emphasis on composition.

Mono Basin Natural History: Aquatic & Terrestrial Habitats

July 8–10 • David Wimpfheimer
$285 per person / $270 for members
enrollment limited to 12 participants

The Mono Basin is one of the most diverse ecosystems on the continent; this seminar will be an overview of the varied habitats found here. One of the best ways to get an appreciation for Mono Lake's drama and productivity is to explore its shores and then proceed higher in elevation to other habitats. We will enjoy the rich diversity of mammals, butterflies, wildflowers, and trees, and a major focus will be the identification and ecology of birds that breed here. In sagebrush meadows and riparian and conifer forests, the class will explore a number of sites intensively, mixing short leisurely walks with periods of observation and natural history discussion. A guided canoe tour of Mono's south shore is included.

En Plein Air at Mono Lake: Beginning Oil Painting

July 15–17 • Penny Otwell
$280 per person / $265 for members
enrollment limited to 12 participants

Painting outdoors allows an instant connection with landscape, and the textural possibilities and complete-coverage quality of oil paint allow participants to portray their own unique feelings in their art. This field seminar is designed to be an introduction to the sometimes-intimidating subject of oil painting for those who want to learn oil painting outdoors. With demonstrations,

To sign up for a Mono Lake Committee Field Seminar please visit *monolake.org/seminars* or call (760) 647-6595.

individual instruction, group discussions, and plenty of humor, we will discover the tools, techniques, and some of the challenges of the outdoor oil painter. Learn to transfer the feeling of where you are into what you want to say.

Geology of the Mono Basin: Land of Fire & Ice

July 22–24 • Greg Stock
$250 per person / $235 for members
enrollment limited to 15 participants

From volcanic craters to glacial moraines, earthquake faults to tufa towers, the Mono Basin displays some of the most unique, spectacular, and accessible geology anywhere in the world. This seminar, consisting mostly of field visits to a variety of fascinating geological sites, will present in understandable fashion the geologic stories of the Mono Basin. The seminar will visit and explain such scenic wonders as Mono Lake, the Mono Craters, Lee Vining Canyon, and Tioga Pass. If you've ever wanted to know more about the geologic forces that formed the diverse landscapes of the Mono Basin, this seminar is for you.

Mountain Botany & Ecology

July 29–31 • Michèle Slaton
$250 per person / $235 for members
enrollment limited to 12 participants

This seminar will explore the diverse plant communities from the shores of Mono Lake to the forests and meadows at the high elevations of Lee Vining Canyon. The class will begin by identifying common wildflowers, starting with common traits used to recognize plant families. We'll then learn the basics of flower and plant anatomy and how to use a plant key before discussing soils and geology, and examining the adaptations that enable plants to tolerate the extremes of mountain environments.

Natural History at the Edge of the Sierra

August 6 • Nora Livingston
$145 per person / $130 for members
enrollment limited to 8 participants

Natural history pays attention to all aspects of nature and widens your view when out in the forest or high desert. In this seminar, we will make our way up the east slope from Mono Lake to Tioga Pass, stopping at several locations to observe all that we find, which may include wildly colorful butterflies like the lustrous copper, hidden Sierra rein orchids in pristine meadows, and plenty of birds, from warblers to rosy-finches. This is the quintessential day in the field with a naturalist, where we will ponder the grandeur and the minutiae that envelops us in this amazing place.

Mono Basin Landscape & Night Photography

August 19–21 • Jeff Sullivan
$310 per person / $295 for members
enrollment limited to 10 participants

Summer is a special time in the Mono Basin, with wildflowers blooming, Sierra Nevada peaks catching morning alpenglow, and afternoon cloud formations for potential sunset color, often yielding to clear skies for night photography. This seminar will cover best practices for composing and capturing stunning landscape and night sky photographs. We'll also

ANDREW YOUSSEF

Red-necked and Wilson's Phalaropes use Mono Lake as a critical stopover during their summer migration to South America. Their flocking behavior at Mono Lake is a spectacular sight to behold.

monolake.org/seminars or (760) 647-6595 to register

ELIN LJUNG

Learn about the stunning array of flowering plants in the Mono Basin on a Field Seminar, such as this skunky monkeyflower.

spend time learning how to anticipate and plan for great sunrise and sunset shots and how to use composition and light for greater impact in every photograph. When we're not out photographing in the field, we will have discussions and demonstrations on post-processing indoors to refine our skills.

Late Summer Birding

August 27 • Nora Livingston
$145 per person / $130 for members
enrollment limited to 8 participants

As birds fly south for winter, people often wonder: "Where exactly are they going? Where are they coming from? How long does it take them to get there? How do they know where to go?" This seminar strives to answer those questions during a fun time in the field observing these lightweight travelers as they fuel up along the way. We will focus on shorebirds, but there will be plenty of songbird migrants to see as well.

Mono Basin Tree Identification

September 3 • Nora Livingston
$145 per person / $130 for members
enrollment limited to 8 participants

From cottonwoods and willows along creeks to gnarled windswept pines high in the mountains, the Mono Basin and adjacent mountains provide a wonderful gradient on which to look at trees and tree-like shrubs in their plant communities. There are plenty of trees to learn about and celebrate here in the Eastern Sierra. This one-day seminar will delve into the diversity of trees in the Mono Basin and their identifying traits. We will take time to examine and observe the trees to help ingrain the knowledge into our senses.

Los Angeles Aqueduct Tour

September 10 • Rose Nelson
$145 per person / $130 for members
enrollment limited to 15 participants

The Mono Basin extension of the Los Angeles Aqueduct began exporting water 350 miles south to the City of LA in 1941. Today, the aqueduct must balance competing needs for this water instead of exclusively serving one. During this seminar, we'll visit all the major aqueduct facilities in the Mono Basin and learn about their modern relationship with Los Angeles, Mono Lake, and the lake's tributary streams. We will look at the changes coming from the new State Water Board Order 21-86, discuss past and present diversions, and see how 20th century infrastructure is serving 21st century water needs. This seminar will provide a great overview of the Los Angeles Aqueduct, and a few of the historical, engineering, and ecological anecdotes that make up this fascinating water infrastructure.

Eastern Sierra Volcanism

September 17–18 • Claire Landowski
$195 per person / $180 for members
enrollment limited to 10 participants

The Eastern Sierra is a fascinating and exciting place to learn about volcanoes and to experience the volcanic history of the region. Over two days this seminar will explore some of the world-class volcanic features in Mono Lake's backyard. At Hot Creek we'll imagine the catastrophic eruption of Long Valley Caldera and observe its remnants; at the Mono-Inyo Craters we will hike through spectacular obsidian and pumice deposits; and in the north Mono Basin we will envision underwater eruptions. Whether you're a casual observer of landscape or an avid rock nerd, this seminar will deepen your understanding and appreciation of Eastern Sierra geology and natural history.

ELIN LJUNG

Field Seminars have a range of activity levels, from slow, easy walking to strenuous off-trail hiking. Learn more at monolake.org/seminars.

monolake.org/seminars or (760) 647-6595 to register

ANDREW YOUSSEF

The changing fall leaves are the perfect backdrop for a Field Seminar.

Rare Birding in Mono County

September 24–25 • Nora Livingston
$195 per person / $180 for members
enrollment limited to 6 participants

This birding seminar will scour the county looking for rare birds that show up during the fall migration. We will seek out rare birds that have been reported and we will bird several hotspots where rarities tend to appear. This seminar requires patience and enthusiasm for long days. There are no guarantees of seeing rare birds, but we will do our best to find them and will enjoy what we see, regardless of rarity.

Arborglyphs & Aspen Natural History

October 8–9 • Richard Potashin & Nancy Hadlock
$195 per person / $180 for members
enrollment limited to 12 participants

A century of sheep grazing brought Basque sheepherders into the Mono Basin's aspen-bordered meadows, and they left numerous carvings—arborglyphs—on the aspens. Join this seminar for an enchanting journey into the aspen groves at peak color to explore this historical art form and to learn about the wildlife, insects, and birds that are drawn to this habitat.

Field Seminar Information

Please visit *monolake.org/seminars* to register for a Field Seminar, see complete itineraries, cancellation and refund policies, and learn more about our Covid-19 requirements.

Our Covid-19 requirements are in place to ensure that everyone can participate safely. Keeping participants, instructors, and our staff safe is our highest priority. **All participants and instructors must be fully vaccinated and boosted.** Proof of vaccination will be required after you register for a seminar. Because statewide and region-wide conditions will continue to change, we may have to cancel seminars, possibly last-minute. Full refunds will be issued in that case.

No pets are allowed on any Field Seminars. Please consider this in advance and find boarding accommodations for your pets or leave them at home; do not leave pets in your car during seminars. Service animals assisting people with disabilities are allowed on seminars and must be leashed.

Field Seminars are open to all, but Mono Lake Committee members may register early and receive discounts. All instructors are experts who have received high ratings from past seminar participants. We emphasize a spirit of learning and camaraderie in this magnificent outdoor setting for a reasonable cost. Proceeds from Field Seminars benefit research and education in the Mono Basin.

All Field Seminars and custom trips operate under Inyo National Forest and California State Parks permits.

Questions? Email *fieldseminars@monolake.org* or call us at (760) 647-6595.

Choreographing restoration

by Bartshé Miller

Last fall the California State Water Resources Control Board ordered new requirements to further the restoration of 20 miles of Mono Basin stream habitat on Lee Vining, Rush, Walker, and Parker creeks. Order 21-86 implements new Stream Ecosystem Flows (SEFs) and an ongoing process for management of annual flows, requires the construction of an outlet at the Grant Lake Reservoir Dam, and establishes a team approach to administer independent scientific monitoring on Mono Lake and its tributary streams. If stream restoration is a dance, then all the parties are learning and performing some new steps.

ROBBIE DI PAOLO

Under Order 21-86, DWP will fund stream, waterfowl, and limnological monitoring, which will be carried out annually by independent scientists.

MAT moves

The State Water Board directed the Mono Basin Monitoring Administration Team (MAT) to collaboratively administer the Board's scientific monitoring program. The Mono Lake Committee, California Trout, California Department of Fish & Wildlife, and the Los Angeles Department of Water & Power (DWP) are voting members and participants in the MAT. The MAT has chosen the National Fish & Wildlife Foundation (NFWF) to serve as the fiscal administrator of DWP funds that will be annually deposited for scientific monitoring. That monitoring includes continuing waterfowl and limnological monitoring, plus the work of the Stream Monitoring Directors. The Directors are also integrated into other elements of the order—like advising DWP on annual operations and adaptive management related to streamflows that are critical to the streams' ecological health and self-sustaining trout populations.

The MAT has accomplished its first set of milestones required in Order 21-86. DWP deposited the required funding to NFWF with MAT approval that will finance independent scientific monitoring on Mono Lake and its tributary streams beginning this summer.

Latest outlet twist

As outlined in the order, to enable the prescribed SEFs in Rush Creek, DWP will construct an outlet at Grant Dam. The outlet design involves deepening and widening the existing overflow spillway and installing two 14-foot-tall Langemann gates, larger in scale but similar in design to the gate installed in the Lee Vining Creek diversion dam in 2005. DWP indicated this spring that permitting is underway but construction will likely not begin until 2023; DWP has until October 1, 2025 to complete the outlet and make it operational.

SEF synchronicity

A core component of Order 21-86 is delivering SEFs—allowing water to flow down the creeks to Mono Lake in the right amount and timing, mimicking the natural hydrograph to restore natural processes and protect trout. An Annual Operations Plan (AOP), developed collaboratively by DWP and the conservation parties, dictates how SEFs will actually be delivered. The Committee drew on deep familiarity with aqueduct operations to provide detailed comments on a range of AOP topics, including the AOP's consistency with DWP's amended licenses, Grant Lake Reservoir operations, and downstream flows into Rush Creek. The degree of AOP details is extensive, and it is an annual component of a broader plan called the Mono Basin Operations Plan, which DWP will develop with input from the Committee and conservation parties.

Notably, this is the first year that Parker and Walker creeks will run permanently free from diversions as mandated in the order—a remarkable and bright reversal of fortune in the water history of the Mono Basin and Eastern Sierra.

Mono tango

Managing and balancing streamflows, lake level, stream diversions, and Mono Basin operations is a complicated process, now guided by Order 21-86. The order provides an updated, well researched, and adaptive process for a new era of stream restoration, the implementation of a modernized dam outlet at Grant Lake Reservoir, and a collaborative dance score for guiding independent research and monitoring. ❖

Staff migrations

by Claire Landowski

The woodshed is almost empty, the rhubarb has been zapped by frost and bounced back, and the Pygmy Nuthatch is sassing the Steller's Jays and Cassin's Finches off the feeder in my yard, which all means that summer is surely here. The returning Osprey, grebes, and Yellow-rumped Warblers are among many meaningful migrations this season, including some of our own staff's.

Winter Project Specialist **Forrest English** has moved on to positions with Turnstone Environmental Consulting and Friends of the Inyo. We were glad to have his help this winter in the Information Center & Bookstore and on the Lee Vining Burn Dump remediation project.

Zoe Klein joins us as a Project Specialist. After summers working in the high meadows of Sequoia & Kings Canyon National Parks, and after completing her master's degree in ecology at Northern Arizona University, she is happy to be returning to the Eastern Sierra community.

Facilities Superintendent **Bill Lundeen** spent the winter in warmer climes, but we are grateful that he has returned to the roost for the summer. With a full flock of researchers at the Mono Basin Field Station we are pleased to have our overwintering caretaker **Alyx Miller** stay on as well.

Our summer seasonal staff has arrived, and we are really honored by the caliber of people that continue to find their way to the Mono Basin in service of this wonderful place.

Outdoor Education Instructor **Kelly Franklin** is an alumna of UC Santa Cruz's Natural History Field Quarter program and has been working with Santa Cruz Kids in Nature since 2019. She brings a wealth of interpretive experience to the program, as well as a passion for California natural history.

Katie Smith came to the Mono Basin last year as a field assistant with the White-crowned Sparrow and Greater Sage-Grouse research projects, and fell in love with the OEC program after presenting her research to several groups there. This year she will be on the other side as an Outdoor Education Instructor.

We have welcomed five Mono Lake Interns who will staff the bookstore, lead interpretive tours, and support other program areas through summer projects.

Holly Alvarez just finished a bachelor's degree in zoology at UC Santa Barbara and has worked as a docent at the Coal Oil Point UC Reserve, protected habitat for the Snowy Plover. Making the longest migration is **Amelia Beaumont**, graduate of Gannon College in Erie, Pennsylvania, who brings her interest in aquatic ecosystems and interpreting environmental issues. **Spencer Dutton**, also an alumnus of the Natural History Field Quarter, has worked for California State Parks at Ocotillo Wells, and has a passion for desert ecosystems.

Another bird lover, **Emma Rosen**, who is studying biology and music at St. Olaf College in Minnesota, is excited to return to the Mono Basin to help with the Bird Chautauqua, which she attended many times as a kid. With the shortest migration, **Sophia Schuldt** from Mammoth Lakes grew up coming to Mono Lake with her school, and has recently finished her bachelor's degree in biological sciences from Arizona State University.

We all are looking forward to welcoming new and returning members to the Mono Basin for what promises to be a gorgeous and bird-filled summer. ❖

Claire Landowski is the Committee's Office Director. All winter she has been daydreaming of her annual summer hike through the Parker Creek headwaters.

ELIN LJUNG

The Mono Lake Committee staff took a walk on the Lee Vining Creek Trail during our spring staff retreat day.


SANTIAGO M. ESCRUCERIA

From the mailbag

News from members and friends

by Ellen King

The arrival of summer has brought with it a flurry of activity as businesses, roads, and campgrounds re-open. Visitors are back, whether to marvel at Mono Lake and its tufa towers for the first time, or to reconnect with favorite places. Underlying it all is an appreciation for this special place and the efforts being made to protect and restore it. Thank you to everyone who sent contributions in honor or in memory of friends and loved ones. Your support is what makes our work possible.

In honor

Susan Coale of Santa Cruz made a donation in honor of **Ellen Jagger**—"she's my best friend and she loves Mono Lake!" **Brett & Robin Cox** of San Carlos gave a gift in honor of **Roland Smith**. **Sally Hibbitts** of Westlake Village sent a contribution in honor of the birthday of **Joan Edwards**. **Converse Smith** of Loveland, CO made a donation in honor of **Kim Cooper**.

In memory

Jane Askin of Bishop gave a gift in memory of **Bil Askin**. **Ernie & Michelle Belasco** of San Jose made a donation in memory of **Vivian Belasco**. **Jen Black** of Kernersville, NC sent a contribution "in loving memory" of "a remarkable woman, **Janice Hall**." **Jamie Brooks** of Carmel gave a gift in memory of **Dr. Bill Breneman**—"Bill and I took many trips to the Mono Lake area. He loved being there and photographing the lake." **Jane & Vince Buck** of Fullerton made a donation in memory of **Reed Thomas**. **Diana Gray** of Glendale sent a contribution in memory of **Huell Howser**: "I watched his show featuring Mono Lake. He was a treasure! Mono Lake is a treasure!"

Greg Humphrey of Bishop gave a gift in memory of "the two loves of my life, **Trudy Humphrey** and **Bettie Rose Humphrey**." **Sharon Kaiser** of Playa del Rey made a donation in memory of **Victoria Anne Kaiser**, "my beloved daughter, gone too soon." **Mike Lyons** of Kilauea, HI sent a contribution in memory of **Tom Lyons**, "remembering his devotion to Mono Lake and the Bike-A-Thon." **Carol Mathews** of Walnut Creek gave a gift "in loving memory" of **John Mathews**. **Nicole Nedeff** of Carmel Valley made a donation in memory of **Kevin Dummer**. **Ann Olmsted** of Palo Alto sent a contribution in memory of her father **Franklin Howard Olmsted**, who "taught me to love and value the great salt lakes of the West." **Carole Ross** of West Lafayette, IN gave a gift in memory of **Dolores Taylor**, "and in memory of our families camping along Mill Creek and swimming in Mono Lake in the 1950s."

Fran Spivy-Weber & Michael Weber of Trani, Italy made a donation in memory of Michael's brother **James A. Weber**: "He was an accomplished botanist devoted to the conservation of the diversity of life on this planet."


ELIN LJUNG

A spectacular Sierra wave cloud lit up at sunset in early May, heralding a bright summer full of visits from members and friends.

Larissa Todd of Laguna Niguel sent a contribution in memory of **Skip Todd**. **Jeff Wilson & Anne Scheer** of Port Costa gave a gift in memory of **David Steidel**. **Kirsten Winter & Charles Van Tassel** of Poway made a donation in memory of **Karen Danielsen**. **Joanne Woodward** of Carmel sent a contribution in memory of **Wayne Wilson**, who "cared a lot about Mono Lake and talked to me about it years ago."

Ralph & Ann Mendershausen of Walnut Creek, **Marion Patterson** of Gualala, and **Catherine Rose** of Santa Barbara made donations in memory of **Ann Matteson**. ❖

Ellen King is the Committee's Membership Coordinator. She is looking forward to doing some long-deferred landscaping projects this summer.

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SANDRA NOLL

Tom Killion at the Mono Lake Committee gallery

Show is on display through July.
Artist's reception July 23, 4:30–6:30PM.

PHOTO COURTESY OF TOM KILLION

TRAIL CHIC
fashion show fundraiser

July 22, 2022

a fundraiser for the Committee's Outdoor Education Center

monolake.org/trailchic

Free Mono Lake South Tufa Tours

Every day at 6:00PM through September 4.
Reserve your spot at monolake.org/freetour.

ANDREW YOUSSEF