

014 marks the 20th anniversary of State Water Board Decision 1631 that mandated lake level rise for Mono Lake and restoration of Mono's tributary streams and waterfowl habitat. For the last 20 years the Mono Lake Committee has embraced D1631 and the subsequent restoration orders as if they were family members. Not a day goes by without someone saying, "well, according to D1631...."

For D1631's birthday, Committee staff would like nothing more than to announce that the lake had reached 6392 feet above sea level. That would be the ultimate ... right? But here we sit in the third year of drought looking back at what amounts to 20 pretty dry years and a lake level of 6380'. It's disappointing, drought years are unnerving, and we're worried.

But the fact that Mono Lake has not reached 6392' yet is not D1631's fault. There is wisdom in D1631. It is science-based and thoughtfully crafted, and it would be a disservice to evaluate its effectiveness solely on the lake level right now. The articles in this issue of the *Mono Lake Newsletter* highlight progress made on other D1631 fronts and the ongoing effort to navigate the bigger picture view that it represents for the Mono Basin.

That being said, on January 30 it snowed 16 inches in Lee Vining. A storm finally broke through the Ridiculously Resilient Ridge and serendipitously combined forces with a Tonopah low to almost literally dump snow. It was beyond beautiful, and the sense of relief in the office and out in the glistening sagebrush was palpable. You could almost hear a collective sigh of relief from all 16,000 Mono Lake Committee members that day.

There is richness in having enough water. Sometimes we need a drought to remind us of that, and the fact that we have a very important role to play in maintaining and defining that richness. Now that I think of it, I'm pretty sure that D1631 says that too. Pray for snow.

-Arya Degenhardt, Communications Director



On the centenary of the opening of the Los Angeles Aqueduct, Lauren Bon and the Metabolic Studio performed 100 Mules Walking the Los Angeles Aqueduct, a month-long commemorative artist action to connect Los Angeles to its water source. The parade traversed 240 miles of pipelines and canals that bring water from the Eastern Sierra to Los Angeles.

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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On saving Mono Lake, 20 years later

by Hap Dunning

Editor's note: 2014 marks the 20th anniversary of California State Water Resources Control Board Decision 1631, commonly known as the decision to "save Mono Lake." We are celebrating the anniversary in the Newsletter this year with a series of articles that take a deeper look at the decision and its importance for Mono Lake. We reprint here Hap Dunning's essay for the 2014 Mono Lake Calendar to illuminate the path that led Mono Lake and its tributary streams to the landmark State Water Board decision twenty years ago.

n September 28, 1994, the California State Water Resources Control Board issued Decision 1631. That decision with its accompanying order marked, if not the end, at least a major turning point in many years of judicial and administrative activity regarding challenges to diversions of water in the Mono Basin by the Los Angeles Department of Water & Power (DWP). In 2014, the twentieth anniversary of D1631, it is worth reflecting on how D1631 came to be.

DWP diversions in the Mono Basin were an outgrowth of its construction of the Los Angeles aqueduct. That facility diverts water from the Owens River to Los Angeles. Both to augment its water supply from the east side of the Sierra and to provide water for hydropower plants to be built in the Owens Gorge, DWP sought water rights to divert water from four freshwater creeks tributary to saline Mono Lake north of the Owens Valley. In 1940, DWP was granted those rights.

After DWP built its impoundment and diversion facilities in the Mono Basin, as anticipated, the level of Mono Lake began to drop. Until a team of undergraduate science students did a study of Mono Lake in 1976, little attention was paid to it, aside from a complaint by a local Sierra Club chapter in 1973. The students who studied the lake were alarmed about the environmental damage from the diversions, both at that time and those anticipated. Loss of fresh water inflow made the lake ever more saline, putting at risk invertebrate life which was an important food source for various bird species. Other concerns were the potential for air quality degradation as the lake shrank, as well as a land bridge to an island which would allow predator access to a nesting area.

Most scientific research reports do not lead to activism by the scientists. Not so, in the case of Mono Lake. Some of those on the research team joined with others to form the Mono Lake Committee, which was subsequently represented by a major law firm, Morrison and Foerster (MoFo) in a lawsuit to challenge the diversions. One of the claims in that lawsuit related to the public trust doctrine.

Although many authors trace the public trust doctrine to Roman law, in particular to institutes promulgated by a Byzantine emperor, Justinian, its operational significance in Roman and later law is unclear. What matters for us is the public trust doctrine in American law.

The key insight of the public trust doctrine in American law is that, because of their importance to the public, certain natural resources should be subject to a special legal regime. The resources most closely associated with the public trust doctrine are the beds of navigable waters and navigable waters themselves. The values historically tied to the public trust doctrine are navigation, commerce and fishing by the public, but in California since the early 1970s environmental values have been included as well.

Central to the legal regime for these special resources has been the notion of state "sovereign" ownership. The idea was initially developed in the US in the courts of New Jersey

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in disputes over oyster beds. Later the US Supreme Court embraced the idea, and under the rubric of "equal footing" that court decided that by operation of law each new state upon statehood was granted title to the beds of its navigable water, as well as the waters themselves. Mono Lake is one such navigable water.

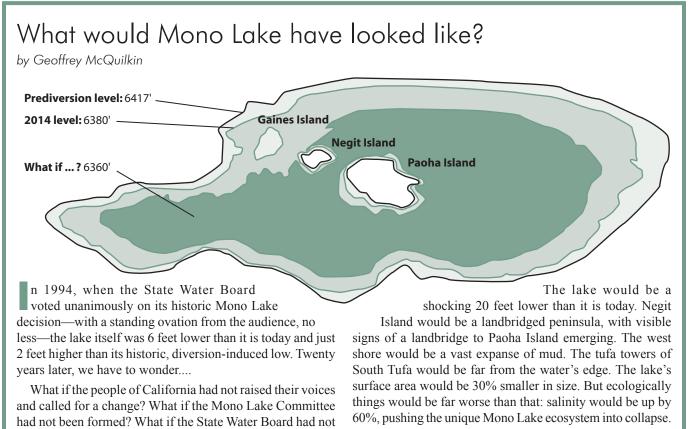
The courts in California embraced the public trust doctrine, which can be thought of as the fiduciary aspect of state sovereign ownership, as early as the 1850s. It was applied initially in tidelands disputes and later to disputes over property rights in the areas between high water and low water around lakes such as Lake Tahoe. But by 1979, when MoFo filed its lawsuit, the public trust doctrine had never been applied to the exercise of water rights. However, in 1983 the Supreme Court of California in its Mono Lake decision held that the public trust doctrine can indeed impact the exercise of water rights. But it also said both that this could happen only when "feasible" and that the public trust doctrine and the historic system of appropriative water rights must in some fashion be accommodated.

After 1983, there were numerous judicial developments. One of particular importance was the opening of a "second front" of sorts, when lawyers for California Trout and others sued over the impact of DWP's facilities in the Mono Basin on fish in the creeks. They relied on a provision in the California Fish & Game Code, Section 5937, which requires owners and operators of dams in California to keep downstream fish "in good condition." By 1990, they had obtained a permanent injunction which established minimum flow levels for the creeks in question.

Ultimately, both the public trust doctrine and the Section 5937 aspects of the Mono Basin litigation were referred to the State Water Board. The board issued D1631 and an order regarding both creek flows and the lake's level. And an important aspect of D1631 is that DWP did not challenge it in court.

D1631 effectively is a compromise. When DWP began its Mono Basin diversions, Mono Lake's elevation was 6417 feet above sea level. In 1994, the State Water Board ordered that the elevation be restored to fluctuate around 6392 feet above sea level, a level which would not restore some previously important waterfowl habitat, but which would provide significant environmental benefits. Interestingly, 6392' is only two feet higher than the elevation of at least 6390' recommended to the State Water Board by a representative of Governor Wilson before the Board's formal evidentiary hearings began. As of this writing (February 2013), the elevation is 6382', only ten feet above the historic

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The dark green in the figure above represents what Mono Lake might have looked like, if the worst had come to pass.

been involved? What if-in other words-water diversions

had continued, undiminished, at their full historic levels?

LA water license revision underway

ast year, the Mono Lake Committee completed an innovative Stream Restoration Agreement with the Los Angeles Department of Water & Power (DWP), California Trout, and the Department of Fish & Wildlife that ensures a healthy future for Mono Lake's tributary streams and their fisheries, wildlife, birds, and streamside forests (see Fall 2013 *Mono Lake Newsletter*).

After celebrating the Agreement last September atop the Grant Lake Reservoir Dam and along Rush Creek, the Committee turned immediately to the daunting list of tasks needed to actually implement the Agreement's restoration actions.

First: revise the rules

The California State Water Resources Control Board is the ultimate authority controlling DWP's water rights in the Mono Basin, and the Agreement is the outcome of a discussion process that it asked the parties to conduct. Now it must review the Stream Restoration Agreement, determine its adequacy, and prepare new water licenses for DWP that incorporate its terms.

The task of taking all existing license requirements—including key provisions unaffected by the Agreement, such as the rules for Mono Lake's management level—and incorporating the Agreement provisions is a difficult one, especially given that existing license requirements are spread across a variety of documents, including State Water Board decisions and orders, official correspondence, scientific reports, and compliance materials.

The Committee's job is to make sure that nothing is lost in translation, including the Agreement provisions, but also all the rest of the license terms that protect Mono Lake, chart restoration activities, and set rules for DWP operations.

The time-intensive effort for staff, attorneys, and consultants is well worth it. It is critical that the rules and by Geoffrey McQuilkin

requirements for DWP in the Mono Basin—which stretch beyond 50 pages in length—are clear, complete, accurate, and easily enforceable in the future.

Then: make it happen

Many steps to implement the restoration provisions of the Agreement lie ahead. Some have to wait until the State Water Board officially issues a new water license to DWP, but the Committee and Agreement parties are already getting others underway.

Grant Outlet studies: DWP put crews in the field late last year to gather core samples in the future Grant Lake Reservoir Outlet construction area, kicking off geotechnical design work.

New monitoring procedure: The new Monitoring Administration Team mechanism for overseeing stream, lake, and waterfowl monitoring has to be created. This is a critical program, and the Committee has an Agreementmandated oversight role to play.

New aqueduct operations plan: The Committee's experts will work closely with DWP to be sure the State Water Board's interlinked stream, lake, reservoir, and export rules are all part of the plan.

Adaptive management: The Stream Scientists will use coordinating

procedures to adjust timing, magnitude, and duration of streamflows for maximum ecological benefit based on their expertise and on new information that comes in via the monitoring program.

Grant Outlet design and construction: DWP has a series of deadlines in 2014 and 2015 regarding design and construction plans, environmental analysis, and permitting. The outlet should be constructed and operational in 2018.

A new era of restoration

When the Committee set out to save Mono Lake in 1978, the streams were already dry. Scientific research has revealed how critical the streams are more than mere channels to carry water from the mountains to the lake, they are lifelines for fisheries, streamside forests, and bird populations. For the restoration of the Mono Basin to reach its full potential, the streams must be restored in harmony with Mono Lake.

The Agreement spells out these specific steps that must be taken in order to modernize the aqueduct, but it is still just a plan on paper. The Committee is moving full steam ahead in the process of translating that plan into physical reality on the ground. \checkmark



Last fall DWP gathered core samples at the Grant Lake Reservoir spillway to begin geotechnical analysis for the new Grant Outlet.

Mono Lake amidst a drought

by Bartshé Miller

historic drought is unfolding in California and the West and the impacts are everywhere: fallow fields, drying wells, shrinking rivers, and perilously low reservoirs triggering mandatory water conservation and rationing around the state. In January, Governor Jerry Brown declared a drought emergency for the state while the US Department of Agriculture designated roughly half of the state's counties as natural disaster areas-including Mono County. The February 1 statewide snow survey revealed a snowpack at only 12% of normal, an all-time record low that shattered the previous record of 21% from 1963 and 1991.

On January 31, the Department of Water Resources indicated it would halt all water deliveries along the State Water Project (SWP) in order to conserve the remaining water in storage. This is the first time in the history of the SWP that a "0" allocation



Mono Lake's receding shoreline at Old Marina.

has been declared. Even if significant storms arrive soon, the chance of achieving anything close to a normal water year is slim.

Lake level forecast

This year is the third year in a row of below-average precipitation for

What's up with this drought?

n unprecedented, dominant, high pressure ridge has persisted over the Eastern Pacific and west coast, shunting Pacific storm systems well north of California. High pressure ridging is a regular, intermittent feature of the California rainy season, but as of February 2014 this ridge has been largely stagnant for 14 months straight. Other large-scale weather anomalies in the Northern Hemisphere are taking place as well: extreme precipitation and warm temperatures in Alaska, extremely cold conditions and snow in the Eastern US, and all-time records for precipitation and flooding in the United Kingdom.

Modern, satellite-based weather observation is not even 50 years old, but there is evidence that California has experienced much worse prehistoric epic droughts. Digging into the underlying cause to this drought leads to a world of larger climate concepts with endless acronyms ... ENSO, PDO, NAO, PNA, and more.

Scientists are always gathering data and learning more about these dynamic processes, while accelerating climate change has made analysis more complicated. Some scientists are drawing attention to research that shows that the loss of Arctic sea ice may be driving the high pressure ridge anomaly observed over the last year.

Regardless of the underlying cause natural variability, climate change, or both—the way we respond today will determine how well we cope with the next severe drought. California and the Eastern Sierra. Locally, the February 1 Mono Basin snowpack is at 25% of average. A single January winter storm on the 30th dropped over an inch of water (mostly as snow) along the Sierra crest and Highway 395. The precipitation brought Mono Lake up about two inches and brought much-needed relief to the parched Eastern Sierra. Mono Lake will rise slightly as the spring runoff commences, but not by much. Overall the lake will drop through the summer and fall. In the worst case, with no more significant winter precipitation, Mono Lake could drop as much as two feet by late fall.

What a lower lake means

Mono Lake rises and falls according to wet and dry years. This natural cycle was accounted for in 1994 when the California State Water Resources Control Board chose a management level for the lake. Currently Mono Lake is 11.5 feet below its management level of 6392 feet above sea level. This current drought will set the lake back further, and depending on future wet years, the lake may require between 7 and 38 years to achieve its management elevation based on Mono Lake Committee model projections.

An easement for Conway Ranch?

Working towards a collaborative solution for Mono Basin property

by Lisa Cutting

ithin the wide open spaces of the Mono Basin, Conway Ranch is a historically significant and locally celebrated treasure. Nestled below Conway Summit in the north part of the basin, the beautiful ranch sprawls out for over 1,000 acres of grass nestled in a sea of sagebrush. Historically recognized for its food production for the town of Bodie in the 1800s, today the focus is not on potato production for hungry miners, but on trout to stock Sierra streams for anglers.

Mono County has continued the fish-rearing operation on Conway Ranch since acquiring 770 acres of the ranch and associated water rights in 2000. The Mono Lake Committee has consistently supported the County's acquisition of Conway Ranch for open-space protection and the associated fish-rearing on the property—provided that water use is within the County's legal water rights (see Summer 2011 *Mono Lake Newsletter*).

The challenge at hand is to balance the protection of Conway Ranch's natural values with the economic importance of fish rearing and the associated limited infrastructure needed to make it a viable operation. Given Conway Ranch's central and highly visible location in the Mono Basin and the complexities of water delivery systems in the north basin, the Committee is involved in the ongoing process of striking this balance.

Development loses, public gains

In the 1990s Conway Ranch was slated for a development scheme that would have significantly changed the look and

feel of the land with large homes and a golf course. The local community united against the project and in 1995 Trust for Public Land purchased the property to protect its valuable open space and habitat with the plan to act as an intermediary until Mono County could eventually secure ownership.

In 2000 Mono County completed the acquisition of the property using funding from a package of grants from Caltrans, the National Fish & Wildlife Foundation (NFWF), and California Department of Parks & Recreation (DPR). As a condition of the funding the grantors required that open space, wildlife corridors, cultural resources, and wetland habitat be protected while historic uses of sheep grazing and fish rearing were allowed to continue.

Grant restrictions prohibit necessary infrastructure

In 2010 Inland Aquaculture Group, the company responsible for the fish-rearing operation, began moving ahead with plans to build a barn-like structure to house the necessary trout egg incubating process, but discovered that it was not allowed under the Caltrans' grant guidelines.

To solve the problem, Caltrans proposed that Mono County could, as per the grant guidelines, pay Caltrans \$95,800 to lift the restrictions on a 75-acre section of Conway Ranch where the fish-rearing takes place. As part of the deal, the Eastern Sierra Land Trust (ESLT) would be brought in to create and hold a conservation easement on the property and would assume the responsibility for the required *Continued on page 24*



Conway Ranch in the north Mono Basin once produced crops that fed Bodie's miners. Today the property is protected open space and also supplies trout to stock Sierra streams for anglers.

Outdoor Education Center improvements

A new labyrinth, native wildflower garden, and roof at the OEC

by Elina Rios

or 20 years the Committee's education programs have been run out of the Outdoor Education Center (OEC)—an understated, single-family home that serves as lodging, kitchen, and classroom facilities for programs that bring students to the Mono Basin mainly from Los Angeles. The house itself could use some physical upgrades, but those take contractors and money, so in 2013 OEC staff and students broke ground on a project they could do themselves to enhance the facility: a labyrinth and native wildflower garden.



Participants walk the brand-new labyrinth at the OEC.

Student groups that come to the OEC dedicate one day of their five-day education program to a service project. Service projects, also known as "giving back to nature" projects, are an opportunity for participants to help the Mono Basin's natural resources. Those projects have included invasive plant removal, lakeshore clean-ups, or planting and

The OEC has a new roof

A nyone who has visited the OEC knows that the program maximizes its use of the modest facility. And since dry and protected indoor space allows for effective outdoor education, OEC staff and students were extremely grateful to get a new roof installed by the Los Angeles Department of Water & Power last fall. Thank you, DWP! watering trees along Mono Lake's tributary streams. Last summer and fall, as their service projects, multiple groups designed, created, and collaborated to make a beautiful threesectioned labyrinth and a native wildflower garden to attract hummingbirds and insects.

Seven groups helped create the labyrinth and garden, leaving a tangible and literal print on the OEC:

- AADAP Olympia Academy
- Benjamin Franklin High School
- Girl Scouts of Greater LA
- Girl Scouts of Los Angeles
- Harden Middle School
- Kid City
- Port of Los Angeles High School

By collecting stones, digging plant beds, planting native wildflower seeds, and creating intricate maze designs and meditation spots, each group is proud to leave behind a legacy. OEC staff envision that the new labyrinth and garden can be a quiet and beautiful area for future participants.

We built the native wildflower garden in hopes that it will invite passing hummingbirds and butterfly species to linger at the OEC. So far it has exceeded our expectations and has also attracted pollinating bees and hungry rabbits. It created a new habitat for creatures to congregate as well as more opportunities for students to see and interact with native plants and wildlife at the OEC.

One goal of the OEC is to take students out of their city atmosphere and to allow them to enjoy the outdoors. Walking the labyrinth, students can reflect and learn to appreciate being away from city lights and sounds. To aid in reflection, students built in meditation spots that face east, north, and west. Students can walk the labyrinth and stop at these specific sections to literally practice slowing down, breathing, and taking time to focus on their lives and personal goals.

It was an exciting season last year for the OEC team—these new additions are valuable enhancements to the OEC space. We hope that new and returning groups can enjoy the labyrinth and garden as much as last year's groups did, as well as help with maintaining and further developing the project. The labyrinth and native wildflower garden—and the reflective and educational opportunities they provide—will be part of the Outdoor Education Center for many years to come. *****

Elina Rios is the Committee's Los Angeles Watershed Education Coordinator. She's compiling a list of good hiking spots in the greater LA area.

California Gull research turns 30

by Elin Ljung

ast summer, out on Mono Lake's windswept, tufacovered islands under bright blue skies with the sounds of bird calls and salty waves lapping, the California Gull research project turned 30 years old.

This remarkably long-lived program was started in 1983 by Point Blue Conservation Science (formerly PRBO Conservation Science), and every summer since biologists and volunteers have assessed the population size and reproductive success of Mono Lake's California Gull colony.

Increase in gull population

After a cold, wintry spring in 2011, researchers at Mono Lake measured a record-low number of nesting California Gulls (see Winter & Spring 2011 *Mono Lake Newsletter*). That year, researchers tallied only 16,774 nests, which yielded a population of 33,548 nesting adult gulls. Those nests only fledged 0.31 chicks per nest—among the lowest chick production rates ever recorded. During an average year, there are about 24,000 nests at Mono Lake that fledge an average of 0.91 chicks per nest.

The research done in 2012 and 2013 showed that the population has been returning to numbers closer to the 30-year average. In 2012, researchers counted 20,059 nests, with a fledging rate of approximately 0.72 chicks per nest. There were 22,755 nests at Mono Lake in 2013, with the same fledging rate as the year before.

Both 2012 and 2013 had low runoff—55% and 66% of average, respectively. The combined effect is that Mono Lake's level is currently 6380.6 feet above sea level. The last time the lake was at 6380' was in 1996, which was the year that coyote predation ended in the main nesting areas near Negit Island. Thirty years of research during Mono Lake's fluctuations has shown that, among other things, coyotes are a threat to gulls when Mono Lake drops and nesting habitat becomes vulnerable.

Coyote predation at Old Marina

The small group of California Gulls nesting at Old Marina experienced coyote predation last summer. In late July a Mono Lake Volunteer observed a coyote raiding nests on the Old Marina Islet, which it accessed by crossing a small channel of water (see Fall 2013 *Mono Lake Newsletter*).

Since gulls began using the Old Marina Islet as a nesting ground, no more than 10% of the total population of Mono Lake's California Gulls have nested there. The other 90% use Mono Lake's islets—their primary habitat. Old Marina is, essentially, "bonus" habitat, since historically it has been underwater, and it will be underwater again as Mono Lake rises to its management level of 6392 feet above sea level.

The Old Marina Islet is a peninsula for the first time since gulls began nesting there in 2002. Since it is no longer safe



A volunteer collects a California Gull chick for banding at Mono Lake.

from predators and disruption—including coyotes, snakes, ground squirrels, and humans—it will be interesting to see if the gulls attempt to use this habitat for nesting this year.

State Water Board safeguards

Unless we get some substantial storms this spring, in the summer Mono Lake is likely to drop below its current level of 6380.6 feet above sea level.

Members and visitors will surely be wondering: *Will coyotes* reach the islands again this year? The answer is: It's possible.

At a lake level of about 6380', it's possible that coyotes could potentially reach some of the gulls' primary nesting habitat on the Negit Islets. From 1989 to 1996, coyotes learned to cross up to 200 meters of water in order to raid gull nests on the islets.

However, at a lake level of 6380', protections set in place by the California State Water Resources Control Board kick in. If Mono Lake drops below 6380' as measured on April 1, the amount of water that the Los Angeles Department of Water & Power (DWP) can export from the Mono Basin is reduced from 16,000 acre-feet to 4,500 acre-feet per year. If Mono Lake falls to 6377', DWP's exports get suspended altogether.

These State Water Board protections were set in place in large part to assure protected nesting habitat for the California Gulls, so it's no coincidence that they kick in at a level when predation becomes theoretically possible. No matter what, the Mono Lake Committee and the California Gull researchers will be watching closely this coming summer. \clubsuit

Learn more, support the project

The complete 2012 and 2013 California Gull reports are online at *monobasinresearch.org*. For more information or to support this important, long-term project, please contact Lisa Cutting (*lisa@monolake.org*) at (760) 647-6595.

Research connects Mono Lake, evolution, and cardiovascular health

by Julia Frankenbach

ast October the Mono Lake Committee received an inconspicuous manila envelope containing some very conspicuous news. Daniel Minor, PhD, a biochemist and professor at the Cardiovascular Research



Institute at the University of California, San Francisco, wrote to inform us of his research, which makes striking connections between Mono Lake, evolutionary history, and cardiovascular health.

Dr. Minor and his laboratory team study ion channels proteins embedded in the lipid membrane surrounding all cells. These proteins serve as channels that allow charged ions of calcium, sodium, and potassium to pass through the membrane, traveling into and out of the cell. This passage of ions is responsible for generating the electrical impulses that allow our muscles, hearts, and brains to function.



Dr. Minor and his laboratory team at Mono Lake. Back row: Felix Findeisen, PhD; Aram Chang, PhD; David Shaya, PhD; Marco Lolicato, PhD; Cristina Arrigoni, PhD; Ahmed Rohaim, PhD. Front row: Fayal Abderemane-Ali, PhD and Daniel L. Minor, Jr., PhD.

Comprehending how ion channels work is, therefore, the gateway to developing better pharmaceutical solutions to treat things like arrhythmias, epilepsy, and pain. Dr. Minor and his team are interested in better understanding these ion channels as the specific targets for such drugs.

Dr. Minor uses a method known as X-ray crystallography to attain atomic-level views of ion channel structure information necessary for predicting interactions with drugs. Mono Lake enters the picture here, as the particular ion channel that Dr. Minor was able to successfully map comes from Mono Lake. It is a bacterial ion channel in the genome of *Alkalilimnicola ehrlichei*—an organism unique to Mono Lake's alkaline, high-salinity environment.

The atomic view of this organism's ion channel (called NavAe1) provides a rare look into the mechanics of these essential proteins. In mapping the structure of NavAe1, Dr. Minor and his team observed striking similarities between its architecture and that of the human cardiac ion channel, Cav1.2. This discovery, strengthened by further experiments, effectively connects the atomic structures of Mono Lake's unique organisms with atomic structures in the human heart. This connection is possible because the specific structure of these ion channels has been preserved over billions of years of evolution, from bacterial species in Mono Lake to living, breathing human beings.

The implications for human health are significant. Dr. Minor continues his research, seeking further mappings that he believes will lead to understandings directly benefiting human cardiovascular health.

This highlights Mono Lake's value as a biological resource. The lake has taught us about the atomic mechanisms responsible for running our hearts and brains the very organs, as Dr. Minor poetically observes, that allow us to enjoy the lake's beauty and protect it from harm.

In his letter, Dr. Minor expressed his sentiments beautifully: "....as a UC faculty member and Californian who has spent many enjoyable hikes around Mono Lake, I am proud to have been able to make a connection between the research that goes on in my laboratory in San Francisco and this very special California ecosystem. The NavAe1 channel was truly a gift from the lake for us." �

Julia Frankenbach is a Committee Project Specialist. She plans to ride her horse to Bodie State Historic Park this coming summer.

Find more online

Read the full paper in the January 2014 issue of the *Journal of Molecular Biology*, or online at *bit.ly/NavAe1*.

Two Mono Lake Interns in the family

by Katie Quinlan

Editor's note: In the summer of 2013 the Committee had the first secondgeneration intern on staff. We asked Katie Quinlan to reflect on this full-circle connection with her son Bryce Tiernan.

he summer of 1982 was my first summer as an intern in the Mono Basin. My memories of that summer are dotted with landmarks—Rush Creek was once again flowing into Mono Lake and the public trust doctrine was working its way through the courts.

The next summer I was hired as the first intern coordinator. One of my duties was to teach the interns how to do a South Tufa tour and then evaluate how they were doing. I was supposed to evaluate Emily Stuart, which was a little absurd because Emily and I had been interns together the year before and she was a theater major, so her tours were better than mine.

On the day I was to evaluate her tour she made me promise to stand in the back and be quiet. Things were going along just fine, but then I spotted a bird out on a tufa tower that I didn't recognize. Emily was better at identifying birds than I was, so I interrupted her tour. She looked daggers at me, but when she looked through her binoculars her expression changed to a look of wonderment ... it was an Osprey! We hadn't seen an Osprey at the lake before, after all they are fishing raptors and everyone knows there are no fish in Mono Lake. This was one of the first sightings of Osprey at the lake.

Fast-forward to the summer of 2013 when my 22-year-old son, Bryce, was a Mono Lake Intern. As a family we have enjoyed the privileges that come with having an intern in the family. We used the Committee's canoe and Bryce took my husband, Tim, and me out on a beautiful, glassy day. We were paddling among tufa I used to walk around. We spotted an Osprey sitting on a nest ... and then another ... and another. In all we saw five nests and 12 Osprey. What an amazing difference from 30 years ago when we got excited to see just one.

My favorite day of last summer, however, was the day Bryce and I went out to the north shore to find "The Black Hole" (see Fall 2013 *Mono Lake Newsletter*).

In the 1980s this was a large spring right at the shoreline of the lake. I unfortunately had not seen it back then. We knew it would be in the lake now,

but we weren't sure how far out it would be. I expected the lake to be clearer than it was—there was about six feet of visibility and then the algae was too thick to see much below that. Our plan became to swim around and see if we could feel the spring. Descriptions from the past were that it was a very cold spring. For



Katie, her son Bryce (far left), and two friends take a boat trip on Mono Lake in the 1990s.

an hour and a half we swam back and forth hoping to pass over it.

There are a lot of birds on the north shore, and at first when you get in the water the birds swim away, but after you are floating around for a while they realize you are not a threat and they come back. You become immersed in the world at their level, with gulls calling back and forth and flocks of avocets zipping by just above the water's surface.

As the afternoon moved on, the lake got calmer. Bryce, using an old photo, lined up landmarks and noticed a large area where the surface was disturbed. We swam out there and sure enough it was a large, very cold, spring. I had brought a cam line (a metal wire on a reel with one-foot intervals marked on it) with me. I dragged it along the bottom of the lake and when it got to the edge of the spring it started reeling off like crazy. The final measurement was 14 feet deep at the edge of the spring and 57 feet deep in the center of the spring. Then we measured how far from shore the spring was-400 feet!

The thought that the shoreline has moved 400 feet on the north shore since the 1980s made me realize that what I remember and the landmarks I look for from my intern years have drastically changed—I would say for the better. ❖



Katie Quinlan as an intern at South Tufa in 1982.

Policy notes

by Lisa Cutting

Test plots to inform larger Caltrans Rockfall Project

Caltrans approached the Mono Lake Committee back in 2012 about a project to address the rockfall problem on Highway 395 north of Lee Vining and adjacent to Mono Lake. More than 650 Committee supporters weighed in, advocating for a responsible project with minimal visual and water quality impacts.

After analyzing the problem and consulting with experts, the Committee and Caltrans found that the best path forward was to balance engineering solutions with soil and vegetation restoration solutions for natural slope stability (see Spring & Summer 2013 *Mono Lake Newsletter*). Other slopes adjacent to the problem areas are just as steep but more stable due to wellestablished, mature vegetation.

Steep topography and uneven slopes with deep rills mean that the need for anchored mesh is unavoidable. But the Committee has worked with Caltrans to minimize the structural engineering and maximize stabilizing the slopes with soil rehabilitation and natural plantings.

Key to the revegetation aspect of the Lee Vining Rockfall Safety Project (due to begin in 2015) is knowing which revegetation protocols to use with the challenging ancient lakebed sediment



A vegetation test plot, left, in Caltrans' Lee Vining Rockfall Safety Project area.

soil on the slopes. That's how the Lee Vining Test Plot Project will help.

Last August, small areas of the larger project area were planted using different seed mixtures and soil amendments. This spring and summer the plots will be evaluated to see which method produced the best results for plant density and diversity. These results will be incorporated into the final project to ensure the best possible outcome.

Inyo National Forest planning process underway

The multi-year planning process to revise the Inyo National Forest's 26-year-old Forest Plan is underway.



The Inyo National Forest planning process includes the Mono Basin National Forest Scenic Area.

Begun in 2012, the process is now roughly halfway to reaching the goal of a final forest management plan to replace the 1988 version.

The Inyo National Forest Assessment, completed in 2013, is the foundation of the process. The Assessment is an inventory of current forest conditions and trends, including natural resource conditions, social and economic factors, and recreational opportunities and access.

Next, the Inyo National Forest will use the Assessment document to craft a "need for change" document, which applies an overlay of changing natural and societal realities to the current conditions. It will become the primary driver for the revised draft Inyo National Forest Land & Resource Management Plan. The proposed plan is expected to be evaluated next year under the National Environmental Policy Act and to undergo revisions based on public input. Under the current timeline, a final plan is expected around December 2015.

Proposed listing for endangered frog and toad

The Sierra Nevada yellow-legged frog, the northern distinct population of

mountain yellow-legged frog, and the Yosemite toad have both been proposed for listing under the Endangered Species Act (ESA). If listed, they will be given extra protection under the ESA and a recovery plan will be developed to help minimize threats to the populations. Threats include habitat degradation and fragmentation, predation, disease, and climate change.

Currently, these species are extinct in over 90% of their historic range, and without special protection they are on a trajectory to become completely extinct within decades.

Throughout Mono and Inyo counties local politics has turned this proposal into a "fish or frog" debate. In high elevation streams and lakes, nonnative fish that were once stocked have out-competed the frogs and pushed them out of their native habitat. The California Department of Fish & Wildlife has been successful in removing fish from a limited number of remote, high elevation waters to create isolated frog oases. These efforts have been focused on secluded and less-traveled areas in order to minimize the impacts to hikers and recreational anglers.

The Committee is urging the agencies involved to take a balanced approach—it's not a question of fish *or* frogs—but of striking a balance so that both can exist. The Eastern Sierra draws visitors for recreational pursuits as well as for the native biodiversity of the area, and the Sierra Nevada is big enough for fish *and* frogs. *



An adult Sierra Nevada yellow-legged frog (Rana sierrae).

Proposed listing for Mono Basin Sage Grouse

The Mono Basin Sage Grouse, formally referred to as the Bi-State Distinct Population Segment of Greater Sage Grouse, was proposed to be listed last fall as a threatened species under the Endangered Species Act by the US Fish & Wildlife Service (USFWS).

If listed, federal agencies will be required to confer with USFWS prior to taking any action that might jeopardize the bird or its habitat needs if that action is within the designated critical habitat. Also, if a project is on private land within the critical habitat area and there is a federal connection (such as funding or a federal authorization), consulting with USFWS may be required.



The Committee submitted comments supporting the proposal to list the Mono Basin Sage Grouse as a threatened species.

The total critical habitat area encompasses approximately 1.8 million acres along the California and Nevada border from east of Carson City in the north, to south of Bishop and into the White Mountains in the south and is divided into six distinct areas called population management units (PMUs). The Mono Basin has two important PMUs—Bodie and South Mono. Data suggest that sage grouse populations in the Bodie and South Mono PMUs have the greatest likelihood of persisting into the future but still face threats.

The Mono Basin Sage Grouse is a charismatic bird that is completely dependent on sagebrush habitat. Known for its unique courtship display, the birds congregate in leks where males perform strutting behavior to attract females. In the summer they eat insects, buds, and flowers in addition to sagebrush and so are often found at the edges of sagebrush and wet meadows. But in the winter, sage grouse eat sagebrush exclusively; for this reason they cannot survive where sagebrush does not exist.

Sage grouse population decline is tied to development activity that removes sagebrush habitat also removes sage grouse. Threats include urbanization, construction, wildfires, piñon-juniper encroachment, invasive species (especially cheat grass), improper grazing practices, illegal off-road vehicle use, predation, and disease.

The Mono Lake Committee has submitted comments supporting the Bi-State Distinct Population Segment of Greater Sage Grouse listing and will continue to educate Mono Basin visitors on the importance of this bird species as well as the status of the USFWS listing.

Third dry year in a row

by Greg Reis

C now surveys in the headwaters of The Mono Basin found only 25% of average snow water content for February 1. The preliminary runoff forecast, which assumes median conditions in the future, is just 33% of average. Past years with similar or less snowpack ended up with 44-64% of average runoff. This is a third officially "Dry" year in a row, which means there will be no peak flows on Mono Basin streams below the aqueduct.

What if the drought continues and we end up with a year with 20% of average runoff, or about half of the runoff in our driest year, 1977? Grant Lake Reservoir would reach "minimum pool," the lowest legal water level, by the end of the runoff year (March 2015). Walker Creek might dry up before it reaches Rush Creek. Lundy Lake Reservoir could be drained, the Lundy

hydropower plant might shut down, and water users along the Wilson diversion system could get little or no water for part of the year. And, Mono Lake might drop as much as two feet.

This is a scenario to be prepared for-even if it doesn't happen this year, it is likely to happen someday. Water management planning in California is based upon our recent hydrologic records. There are generally no plans for more severe droughts, which periodically occurred in California's past, including two "epic" droughts in the Middle Ages lasting more than 100 years, and first discovered by geomorphologist and paleoclimatologist Scott Stine in his research at Mono Lake.

A third dry year in a row qualifies as an official drought (see page 6). As we go to press, we are in the middle of



Project Specialist Emma Oschrin measures flow in the Lundy hydropower plant tailrace.

what are typically the wettest months of the year. While it is premature to assume the worst case scenario, it would be prudent to prepare for another dry summer ahead. *

Lakewatch

Mono Lake to drop again this summer; possible cutback in LA's water supplies next year 6417'

by Greg Reis

rediversion lake level, 1941

• 013 was the driest calendar year on record for most of California and for much of the Mono Basin. Last year followed on the heels of a dry 2012 and is being 6392' followed by a dry 2014. Mono Lake has dropped 3.4 feet in the last two years to 6380.6 feet above sea level, and is now lower than at any time since January 1997. 6372' It will probably drop another foot and a half this coming summer and spend most of the Aanagement lake level summer of 2014 at Historic Iow, 1982 the same levels as the summer of 1996.

Mono Lake is a reflector of climate, in

that its level responds to precipitation, runoff, and evaporation. Since surface water exports to Los Angeles are limited by Mono Lake's level, it is also true that water exports are indirectly based on recent climate

Mono Lake acts like a reservoir for Los Angeles. Regardless of how wet any single year is, a series of wet years ensures a steady or increasing water supply from the Mono Basin and a series of dry years could mean a cutback. But because Mono Lake is so big, it takes time for it to rise and fall—so the earliest there might be a reduction in export is 2015. The same is true for water supplied to Southern California from the large reservoirs on the Colorado River-there could be cutbacks in 2015.

Also, as Mono Basin hydrology enthusiasts know, the Mono Craters aqueduct tunnel intercepts and captures about 7,000 acre-feet of groundwater per year on average. When added to the 16,000 acre-feet of surface water exports, 6-34% of the flow in the LA Aqueduct has come from the Mono Basin in recent years. The higher percentages occur in dry years. This means that in 2014, during water supply cutbacks all over the state, the Mono Basin remains LA's most reliable highquality water supply. *

Greg Reis is the Committee's Information & Restoration Specialist. He is looking forward to leading this year's aqueduct and stream restoration seminars in July (see page 19).

Mono Basin Journal

A roundup of quiet happenings at Mono Lake

by Geoffrey McQuilkin



Level are Mono Lake hikes that are old favorites; they take you to familiar places that have changed just enough to be thought provoking. In early winter I returned to one of these, near the north shore of the lake, to gain a panoramic view to Negit and Paoha islands, the lake, and the distant Mono Craters dusted with snow.

The hike was warm, a sign of the drought year, but as enjoyable as ever, especially with my daughters along, discovering mysteries of the trip—the puzzle of streamrounded granite cobbles embedded in volcanic ash, for example—for the first time. At the top of the climb, the view of Mono Lake, which is always surprisingly larger than one expects, was magnificent. The thought-provoking change of the hike, however, was a sobering symptom of the drought. Gaines Island, that flat pancake of land that once connected Negit Island to the mainland, had bulked up in size, added to its breadth, stretched its edges farther into the lake's salty water, showing how the past two dry years have lowered Mono Lake's level.

Negit, to be sure, remained an island. But gazing at Gaines Island brought home the statewide reality: We really need a good, big, wet, snowy winter in the Sierra, for Mono Lake and for California.

Geoff McQuilkin is the Committee's Executive Director. He enjoyed a chance meeting with Committee members from Gilroy while on a family trip in Hawaii this winter.

Benchmarks

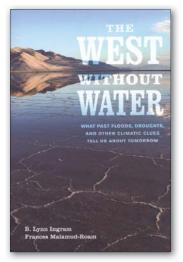


In April 2012 Mono Lake stood at 6384 feet above sea level—its highest level since July 2007.



The same gauge stands high and dry in February 2014. Mono Lake level: 6380.6'.

MONO LAKE COMMITTEE INFORMATION CENTER & BOOKSTORE



THE WEST WITHOUT WATER

BY B. LYNN INGRAM AND FRANCES MALAMUD-ROAM These UC Berkeley geologists and authors present a striking blend of paleoclimate research, history, and poetic writing in this exploration of the West's tumultuous climate history. In piecing together the story of water in the West over the last twenty thousand years, the authors consider what "normal" climate for this region looks like, and ask whether or not we can count on the benign climate of the past century to continue into the present. SEE ALL PRODUCTS IN COLOR ONLINE AT MONOLAKE. ORG/STORE

The West Without Water, hardcover, University of California Press, 289 pages, 9"x 61/2": \$29.95

BIRD SHOWER TIMER

Water conservation can be fun ... and cute! This light green, bird-shaped shower timer cheerfully reminds you to shorten your shower, so you save water, energy, and money. Simply stick it to your shower wall and set the digital timer for your ideal shower length.

Bird shower timer, approximately 51/2"x 31/2": \$11.00









ORGANIC SOAP

Our friends at Berkeley-based company Juniper Ridge use infusions of carefully harvested coastal and desert sage, pine, and cedar to make these unique and popular soaps. Enrich your (short) shower experience with four brisk scents celebrating California's wild places: Sierra Summer Pine (sap and wood smoke), San Jacinto (light sage), Big Sur (tangy salty sage), or Siskiyou Cedar (gingery).

Organic soap, 3½"x 2½"x 1," please specify Sierra Summer Pine, San Jacinto, Big Sur, or Siskiyou Cedar scent: \$12.00

REUSABLE PRODUCE BAG KIT

Save water used in the making of plastic bags and keep plastic waste out of waterways and oceans with your own reusable produce bags. The kit includes three 12"x 16½" fabric bags—one made of hemp-cotton and two made from 100% post-consumer recycled plastic bottles. Each is designed for specific foods, such as beans and grains, fresh greens, and ripening fruits. All three bags stuff into a small red storage bag until your next grocery run. *Reusable produce bag kit: \$17.00*



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

SoCal water drops

by Elin Ljung

New DWP general manager

After a three-year period of stability for the Los Angeles Department of Water & Power (DWP), General Manager Ron Nichols announced his resignation from the post on January 9. Nichols, who was hired in early 2011, has been the longest serving General Manager of recent years. Notably, Nichols worked with the Mono Lake Committee, California Trout, and the California Department of Fish & Wildlife in bringing the Mono Basin Stream Restoration Agreement to fruition, an achievement completed late last summer (see Fall 2013 *Mono Lake Newsletter*).

Acting quickly, Mayor Eric Garcetti on January 30 nominated Anaheim City Manager Marcie Edwards as the new General Manager. Edwards previously worked at DWP for more than 20 years and managed Anaheim's water and electric utility as well. Pending confirmation by the Los Angeles City Council, Edwards will be tackling a long list of challenges at the nation's largest municipal utility, including negotiations with the employee union, issues of financial transparency, and—most important to the Mono Lake Committee—following through on DWP's commitments to Mono Lake and its tributary streams. Edwards will also make history as the first woman to lead DWP.

LA Aqueduct centennial celebrations

November 5, 2013 marked 100 years to the day of the Los Angeles Aqueduct first diverting water from the Owens River to the city. Back in 1913, Eastern Sierra water first cascaded down into the LA basin as the principal engineer, William Mulholland, famously remarked, "There it is—take it."

Executive Director Geoff McQuilkin attended DWP's centennial events to represent Mono Lake and the northernmost water source of the aqueduct. Among the DWP representatives and city leaders were descendants of the founders of the aqueduct, and Geoff had the chance to talk about Mono Lake with Christine Mulholland, greatgranddaughter of William Mulholland. "What better praise for the successes of Committee members at Mono Lake," Geoff reported, "than to share observations with a descendant of the aqueduct's founder about how valuable Mono Lake is ecologically and how critical it is to assure that the lake and its streams have a healthy and sustainable future."

Another commemoration of the aqueduct's centenary took place along its entire length. Artist Lauren Bon and her team at Metabolic Studios performed the "100 Mule March" from Lone Pine to Los Angeles. One hundred mules traveled along the aqueduct to illuminate the enduring connection between Los Angeles and its extended watershed in the Eastern Sierra.

While 2013 was not a centennial year for the aqueduct reaching the Mono Basin—which happened in 1941—

the anniversary provided an opportunity to take stock nonetheless. The *Los Angeles Times* looked to Mono Lake as a symbol of a more sustainable future for the LA Aqueduct in an editorial:

So the century-old Los Angeles Aqueduct has two stories. One is about ambition, optimism and the construction of a great city; the other is about arrogance and environmental destruction wreaked in the Eastern Sierra and replicated across much of the state.

But there is a third story as well, and it is still being written. Depending on one's point of view, it may be seen as a story of redemption or comeuppance, but in any case it may well be a story of a sustainable future.

It began with the lawsuit brought against Los Angeles and its Department of Water and Power in 1979 to protect Mono Lake. —November 5, 2013, "Quenching L.A.'s thirst"

With the Stream Restoration Agreement signed last year and currently being implemented, increasing water conservation statewide, and 16,000 dedicated Committee members advocating for Mono Lake, the next 100 years look bright for the Mono Basin. ❖

Elin Ljung is the Committee's Communications Coordinator. Small world true story—she grew up playing soccer with Christine Mulholland's son, Devin.



Geoff McQuilkin and Christine Mulholland at DWP's celebration of the Los Angeles Aqueduct's centennial.

2014 Field Seminars



Visions of the Past: First Discoveries

June 7–8 • Terri Geissinger \$155 per person / \$140 for members

The Mono Basin is filled with monuments to a bustling past—take a journey back in time and discover its fascinating history. The past will spring to life as you hear stories of the discoverers, the prospectors, and the families who settled here and made the Mono Basin their home. Visit Dogtown, Monoville, Bodie (with a special visit to the Bodie Bluff!), Mono Mills, stagecoach routes, railroads, and gold mines. Terri Geissinger is a Bodie State Historic Park interpreter and guide with a contagious love of history.

South Shore Kayak

June 14 • Stuart Wilkinson & Committee staff \$105 per person / \$95 for members limited to 12 participants

Early summer reveals snow-capped mountains towering over a glassy Mono Lake—a great time to kayak! Join Stuart Wilkinson and a Mono Lake Committee staff member for a guided naturalist expedition that will cover a wide variety of topics relating to this unusual Great Basin lake, such as geology, ecology, history, and politics. Expect to see underwater tufa towers, birds, brine shrimp, and lake-bottom springs. Some kayak experience is helpful, but not necessary; kayaks and safety equipment are provided.

Capturing the Mono Basin in Pastel

June 27–29 • Ane Carla Rovetta \$175 per person / \$160 for members \$35 materials fee limited to 12 participants

The sparkling light and radiant skies of the Mono Basin are pure inspiration. Add a set of brilliant pastel chalks and your own unique imagination, and you have an incredible weekend of color exploration and art. Landscape painter Ane Carla Rovetta is known for her realistic depiction of western landscapes. She will guide students through a value system she modeled after Ansel Adams' work that will help organize the overwhelming hues of the summer terrain. Each participant will go home with at least one small finished painting and several sketches, color studies, and value experiments that will fuel future artistic endeavors. Ane Carla can provide you with your own set of 72 pastel chalks; *you must reserve your set when you sign up for the class*.

Mono Lake Committee Field Seminars fill quickly every year call (760) 647-6595 or register online at *monolake.org/seminars*.

Mono Basin & Bodie Photography

July 11–13 • David Gubernick \$300 per person / \$275 for members limited to 12 participants

Join this warm and supportive field seminar to enhance your photo-taking abilities 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. Plus, the group will visit Bodie for private after-hours evening access. David Gubernick is an internationally and nationally published and award-winning nature photographer and workshop leader. His exhibition prints can be seen at Gallery Sur in Carmel and the Ventana Inn & Spa in Big Sur.

Summer Birds of the Mono Basin

July 11–13 • David Wimpfheimer \$165 per person / \$150 for members

This field seminar will concentrate on the identification and ecology of birds that breed in the Mono Basin and others that migrate to Mono Lake during the summer. In sagebrush meadows and riparian and montane forests, the class will explore a number of sites—mixing short leisurely walks with periods of observation and natural history discussion. A major focus will be Mono Lake and other wetlands where phalaropes and other shorebirds feed. David Wimpfheimer has been an educator and interpreter for over 20 years, focusing on birds and California's natural history.



Searching for pikas in the high country during the mammals seminar.



South Tufa photographed by instructor David Gubernick.

Los Angeles Aqueduct Tour

July 19 • Greg Reis \$105 per person / \$95 for members

The Mono Basin extension of the Los Angeles Aqueduct began transporting water 350 miles south to the City of LA in 1941. Visit all the major aqueduct facilities in the Mono Basin and learn about the aqueduct's effects on Mono Lake, its tributary streams, the Upper Owens River, and land management in the area. The group will discuss the history of water diversions, the effort to save Mono Lake, and the future of habitat restoration. Greg Reis is the Committee's Information & Restoration Specialist with nearly 20 years of experience in Mono Basin hydrology and restoration.

Mono Basin Streams: Flow, Fish, Forests, & Feathers July 20 • Greg Reis \$75 per person / \$65 for members

The new Mono Basin Stream Restoration Agreement reached with the Los Angeles Department of Water & Power will begin changing the Mono Basin's streams for better in the next few years. Join the Committee's Information & Restoration Specialist Greg Reis for a tour of Lee Vining and Rush creeks to see and discuss evolving restoration philosophies, the process of reaching the Stream Restoration Agreement, and what the expected results are for flows, fish, trees, birds, mammals, and Mono Lake.

Mono Basin Mammals

July 25–27 • John Harris \$155 per person / \$140 for members

This class will cover the diversity of mammals found in the Mono Basin, from desert sand dunes to forests and alpine meadows of the high Sierra. More mammals occur here than in many states, and the group will try to see as

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

many as possible by live-trapping and field observation. Participants will look for tracks and learn to identify skulls, focusing on identification and adaptations to Mono's varied environments. John Harris is a Professor of Biology at Mills College whose interest in Mono's mammals began in 1975 while studying chipmunks as an undergraduate.

Introduction to High Country Plants & Habitats

August 1–3 • Ann Howald \$165 per person / \$150 for members

This class will explore the mosaic of habitats found in the Eastern Sierra high country—flower-filled meadows fed by meandering streams, sagebrush-covered slopes, lodgepole pine forests, subalpine lakes bordered by willows, and flowery rock gardens. Sight identification of common trees, shrubs, and wildflowers will be emphasized, as well as the many ways that plants, birds, insects, and other wildlife interact in high country habitats. Ann Howald is a retired consulting botanist who has taught popular Committee field seminars for over ten years.

Mono Basin Moonlight Photography

August 8–10 • David Gubernick \$275 per person / \$250 for members limited to 10 participants

Nighttime photography opens up a new world of photographic possibilities, both compelling and challenging. Through guided practice sessions, field trips in the Mono Basin and upper reaches of the Eastern Sierra, coaching in the field, and review of images, you will learn to create nighttime images with visual impact. David Gubernick is an internationally and nationally published and award-winning nature photographer and workshop leader. His exhibition prints can be seen at Gallery Sur in Carmel and the Ventana Inn & Spa in Big Sur.

Geology of the Mono Basin

August 15–17 • Greg Stock \$165 per person / \$150 for members

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 the premier sites, will present in understandable fashion the geologic stories of the Mono Basin. Greg Stock is the first ever Yosemite National Park geologist. He has authored or co-authored over 50 papers and abstracts on Sierra Nevada geology and is co-author of the book *Geology Underfoot in Yosemite National Park*.

Loosen Up with Watercolor

August 22–24 • Penny Otwell \$175 per person / \$160 for members limited to 12 participants

With larger brushes and brilliant transparent watercolor, learn to express your vision of the remarkable landscape of the Mono Basin through this field seminar. Painting exercises focusing on design and color will form the basis of this class for beginners to intermediate painters while working both indoors and outdoors. Instructor Penny Otwell paints professionally in the Sierra Nevada, and her distinctive style has evolved as a self-taught painter. Her work has been influenced by the work of Chiura Obata, Maynard Dixon, Edgar Payne, and Wayne Thiebaud.



Watercolor of aspen trees by instructor Penny Otwell.

Living on the Edge: Sierra Nevada Bighorn Sheep in the Mono Basin

September 6–7 • John Wehausen \$180 per person / \$165 for members

This field seminar will involve discussions of the fascinating biology of the federally endangered Sierra Nevada bighorn sheep, their relationship with other mammals (including mountain lions and humans), and their conservation in the field. Past participants saw bighorn 14 out of the last 15 years—while there is a very good chance of seeing bighorn sheep during this seminar, there is no guarantee. John Wehausen has been studying the Sierra Nevada bighorn and working for their conservation since 1974. *Please be aware that this seminar involves very strenuous hiking at the* 10,000-foot elevation and above.

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



The Mono Basin's diverse habitats, from alpine meadows to sagebrush scrub, make for excellent birding.

Creating the Illuminated Field Journal

September 12–14 • Hannah Hinchman \$175 per person / \$160 for members limited to 12 participants

A field journal is an ideal vehicle to record moments of discovery about the natural world, as well as a quiet way of simply being present outdoors. In this workshop, artist/writer Hannah Hinchman will guide you in exploring the variety of nearby habitats—opening windows to nature's many secrets and learning to personalize these experiences through journal entries, both drawn and written. Hannah is the author of three books about field journals, and has been teaching field journal workshops all over the US for over 20 years.

Birding the Migration: Mono Basin & Bridgeport Valley

September 18–19 • Dave Shuford \$190 per person / \$175 for members

Birding the Migration: Mono Basin & Long Valley

September 20–21 • Dave Shuford \$155 per person / \$140 for members

The east slope of the Sierra Nevada is a major migration route for birds traveling from northern nesting areas to warm southern habitats. As a result, autumn is the time of year to see late fall migrants and early arriving wintering birds in the Mono Basin, Bridgeport Valley, and Long Valley. Dave Shuford has been a staff biologist at Point Blue Conservation Science for over 30 years. He has conducted numerous surveys and research projects in the Mono Basin and beyond and is well acquainted with where to find birds in the Eastern Sierra.

Visions of the Past: Bodie, Masonic, Aurora

September 20–21 • Terri Geissinger \$155 per person / \$140 for members

In the Bodie Hills lie three ghost towns full of stories of pioneer families, prospectors, muleskinners, heroes, and gunslingers. This guided tour will visit the town and the cemetery of Bodie, once the second-largest city in California. Next, visit the rock cabins and foundations of Masonic, where 500 people resided in a beautiful canyon—mining gold with great hope and eventually producing considerable wealth. The last stop is Aurora, once a bustling town of 8,000 souls in the 1860s. Your leader Terri Geissinger is a Bodie State Historic Park interpreter and guide with a talent for making history come alive.

Geology of the Mono Basin

October 3–5 • Greg Stock \$165 per person / \$150 for members

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 the premier sites, will present in understandable fashion the geologic stories of the Mono Basin. Greg Stock is the first ever Yosemite National Park geologist. He has authored or co-authored over 50 papers and abstracts on Sierra Nevada geology and is co-author of the book *Geology Underfoot in Yosemite National Park*.

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

Arborglyphs & Aspen Natural History

October 4–5 • Richard Potashin & Nancy Hadlock \$180 per person / \$165 for members

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 the instructors for an enchanting journey into the aspen groves to explore this historic art form and to learn about the wildlife, insects, and birds that are drawn to the groves. Richard Potashin has been discovering and documenting aspen carvings for many years. Nancy Hadlock has been a naturalist, interpreter, and educator for the National Park Service and US Forest Service for over 30 years.

Mono Basin Fall Photography

October 10–12 • Richard Knepp \$225 per person / \$200 for members

Autumn in the Mono Basin is one of the greatest photographic experiences in the country. Spectacular foliage and skies combine with exceptional light, presenting ample subject matter for photographers in both color and blackand-white. Join accomplished photographer Richard Knepp to explore varied shoreline locations at sunrise and sunset, fall color in nearby canyons, and grand overviews of the Mono Basin. Photographers of all levels are welcome; a fully adjustable camera of any size or format is suggested. This is the 20th year in a row of this popular seminar.



An autumn dawn along Mono Lake's western shore.

Field Seminar Registration Information

To register for a field seminar, please call the Mono Lake Committee at (760) 647-6595 and ask for the seminar desk, or register online at *monolake.org/seminars*.

More extensive seminar descriptions are available online at monolake.org/seminars.

We accept VISA, MasterCard, and Discover only. We cannot accept personal checks or registration by mail or email. Seminars are limited to 15 participants except where noted. If a seminar receives less than six participants (with some exceptions) the seminar will be cancelled two weeks in advance, and full refunds will be issued.

If you cancel three weeks prior to the seminar start date, we will refund your payment (less a \$15 processing fee). No refunds can be issued *for any reason* if cancellation is within three weeks of field seminar date, but tuition can be applied to another seminar that takes place within one calendar year of cancellation date. **New in 2014: If you cancel within one week of the seminar start date**, *no credit can be issued*.

Participants must sign a liability release form. All seminars operate under permits from the Inyo National Forest and California State Park system.

The Mono Lake Committee works with instructors and field leaders 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 Mono Lake Committee Field Seminars benefit research and education in the Mono Basin.

Mono Lake Committee Field Seminars are open to everyone, but Mono Lake Committee members get to register early and receive class discounts. If you are not a current member of the Mono Lake Committee, you can receive the discount by joining when you register. Registration opens every year on February 1st for members.

Drought from page 6

Visitors will notice the impact. A white bathtub ring is already obvious around the lake from last year's drought. This will grow as the lake drops. More tufa will be exposed at Old Marina and at South Tufa. Gaines Island, the land bridge island between Black Point and Negit Island, will grow in size as the water level recedes from this shallow stretch of lake: however, Negit Island will remain an island. Dust events will tick up in frequency and scale as more lake bottom is exposed along the north and east shores. Visitors will also continue to see plenty of brine shrimp, alkali flies, and birds—a productive and robust ecosystem that has endured thousands of years of change.

Mono Lake has survived droughts in the past. She is an old lake. Beneath her waters and around her shores are clues to extreme climate swings: epic droughts, wet periods, and larger glacial and interglacial episodes. Yet, Earth's dynamic climate could not do what recent decades of excessive water diversions almost accomplishedtransforming Mono into a barren and briny sump. Fortunately, this disaster was averted after years of effort by the Mono Lake Committee and others. The 1994 State Water Board decision reversed the course, and balanced the needs of Mono Lake and its streams with the water needs of Los Angeles.

Anticipating 6380'

Mono Lake will naturally fluctuate on its way to 6392 feet above sea level, and water diversions to Los Angeles will fluctuate as well. Total annual diversions depend on the specific level of Mono Lake each year on April 1. If Mono Lake falls below 6380' by April 1, the Los Angeles Department of Water & Power (DWP) is restricted to 4,500 acre-feet of water export (about 4,500 football fields of water one foot deep) from Mono's tributary streams. As long as Mono Lake remains above this level, DWP can export 16,000 acre-feet per year.

If Mono Lake were to fall even

further, to 6377', diversions to LA would be suspended. The more water Mono has, the more there is to share. When the lake reaches its management elevation DWP can export 35,000 acre-feet or more depending on runoff conditions. This will be a time to celebrate—Mono Lake will have reached a level that protects its public trust values. In the meantime, there is a plan for lake stabilization in times of drought.

It is unlikely that by this April the lake will fall below 6380'. As of press time, Mono Lake sits at 6380.6'. However, without a snowy winter, by April 2015, it's a reasonable bet the lake will be below 6380' and Los Angeles exports will be reduced accordingly.

Solutions and drought security

Los Angeles and Southern California are drought resilient. Past droughts, along with efforts to protect Mono Lake and other environmental values, helped to positively transform water efficiency and supply management. Today, LA is the lowest per-capita water consumer of any city over a million people—per-capita residential water use is just under 85 gallons per person, per day. The city has added a million residents over the last 40 years but total water use remains static. LA and Southern California have invested in water conservation, water recycling, groundwater storage, and other solutions. The Mono Lake Committee supported this effort, successfully lobbying for state and federal funds that contributed to developing water recycling infrastructure.

Like Mono Lake, Los Angeles is a veteran of drought. This one is particularly severe and climate change may be a contributing factor. Fortunately, water efficiency investments in LA and the State Water Board decision at Mono Lake remind us that we can successfully balance water resource values during times of uncertainty. It will be hard to watch the lake level drop, but there is a plan in place, and eventually, this drought will be a memory. �

Bartshé Miller is the Committee's Education Director. In February he skipped staff meetings for exciting Olympic hockey games.



Mono Lake at approximately 6381.5 feet above sea level as seen from Mt. Dana.

Conway Ranch from page 7

monitoring and enforcement.

To figure out the details of the easement, Mono County, Caltrans, and ESLT have been meeting regularly and in May 2013 reached a formal Memorandum of Understanding (MOU). This MOU is the agreement that is now guiding the conservation easement process.

Current discussions center on what level of development is appropriate for the 75-acre fish-rearing area given the continuing grant restrictions and community concerns. The County is waiting to formally hear from DPR as to whether or not the proposed fishrearing plan is acceptable to them. NFWF has signaled that they support some improvements as long as they don't affect the values protected under their grant. Honoring the intent and direction of the original grants, while still having a viable operation, is the balance that must be struck before the conservation easement can move forward. Also key is the 75-acre parcel—the remaining grantors, County, and local community approval will determine whether or not the parcel is included in the ESLT easement. ESLT, Caltrans, and the County are working toward an April 1 deadline for finalizing the conservation easement.

A win-win for Conway Ranch

The Mono Lake Committee believes that a conservation easement on the entire property—including the 75 acres—will ensure success for all the parties involved. Local land trust knowledge and monitoring will ensure easement compliance, and muchneeded management plans for both the aquaculture operation and the entire property will be developed by Mono County and updated on a regular basis.

The Committee endorses the process that the parties are pursuing to resolve the current issues at Conway Ranch. It's encouraging to envision Conway Ranch with permanent protection strengthened by a conservation easement and combined with continued historical uses and scenic values so that it remains one of the gems of the Mono Basin. ❖

Lisa Cutting is the Committee's Eastern Sierra Policy Director. She has noted the Westfalia migration on Highway 395 has begun—a sure sign of spring.

2013 Free Drawing winners

We would like to send out a big thank you to all those who entered the 2013 Free Drawing—your donations help protect and restore Mono Lake! Congratulations to all of the winners, and many thanks to all of the businesses and organizations who generously donated the prizes for the Free Drawing.

The Apple iPad mini went to: Evelyn & Don Fraser of San Diego. GoPro camera: James Bowles of Petaluma. Sierra Star Golf Club season pass: Patricia Gotchall of El Cerrito. Mammoth Mountain ski pass: Herb Grench of Palo Alto. San Francisco vacation: Bob Benson of Lafayette. Eastern Sierra fly fishing trip: Denise Baca of Covina.

Adventure in Yosemite: Ora Prochovnick of San Francisco. Death Valley photography vacation: Steve & Rush Nash of Larkspur. June Lake Loop escape: Gregory & Doris Morton of Hermosa Beach. Crowley Lake escape: Brian McInerny of Carlsbad. Hope Valley vacation: Cam Miller of Murrieta. Benton Hot Springs retreat: Yvonne Zellmer of West Hills. Mammoth Lakes weekend: Joseph Lattuada of San Jose.

Snowboard: Gerry Murphy of San Francisco. Mono Lake Committee field seminar: Ryan Hollister of Turlock. Framed Mono Lake

photograph: Joan Kiley of Oakland. Sierra Nevada keepsakes: Patricia Coffey of Orinda. Mono Lake Committee shopping spree: Georg Hellerich of La Honda. Patagonia gear: Peggy Gerick of Sacramento, Cheryl James of Hawthorne, NV, and Laurie Lenzi of Loomis.

Napa wine tour and tasting: Kathy McFarland of Menlo Park. Framed quaking aspen photograph: Mr. & Mrs. Blesse of Auberry. A season of Eastern Sierra theatre: Bruce MacMillan of Laguna Beach. Paddle Mono Lake: R.F.



Ellen King pulls a winning 2013 Free Drawing ticket with Emma Oschrin preparing to draw the next winner.

Kumano, Jr. of Sanger. American River rafting trip: Jora Fogg of June Lake. Mono Lake canoe tour: Jill Denton of Los Osos. Jim Cokas poetry prints: Carol Garvey of San Jose. Mono Basin handcrafted stoneware: Robert Evanhoe of Yreka. Mono Lake Committee gift packs: David Beans of Weaverville and Jane Taylor of Sacramento. REI Trail 25 backpack: Jan Lecklikner of Berkeley. Friends of the Inyo membership and T-shirt: Howard Strauss of Culver City.

An appeal for more snow

A poem for a dry year

by Julia Frankenbach

Snow Man, I'm not sure if you're really there, But on the off chance you are, well, you're being quite spare. In fact, to be blunt, it just isn't fair That we're slaving away while the mountains stay bare. We MLC staff, see, we love Mono Lake And we want it to rise, for we all have a stake In a healthy living lake with water enough That the brine shrimp can live and the birds can stuff Their bellies on fresh food that keeps them well And allows them to migrate to the places they dwell. What's more, as it happens, I'm a canoe tour guide And I'm having big problems with the lowering tide See. I'd like to be able to launch these boats. To declare it from shore to shore—"It floats!" But this shoreline is shallow and rough to the hull The scraping has turned our once-bright canoes dull O woe! These deserving canoes, so abused By protruding tufa: positively bruised As I drag them and scrape them over carbonate rock By golly, we'll soon be in need of caulk

Really, just a foot more of water would do To go from beached whale to floating canoe So Snow Man, I entreat you, it really is time! Let's have us a flurry: a snowstorm sublime With feet of it up on the high mountain peaks So in springtime the snowmelt will fill up our creeks And replenish our lake, bring up its level So we in a rising lake can revel Sixty-three eighty and falling fast We'd do anything, Snow Man, for a snowy forecast And I mean anything! See, Emma and I, we believe That maybe you'll yield if we can conceive Of every superstition and trick in the book For winning back the snow you forsook. Just look at our ardor, we've been quite devout Emma's PJs are backwards and quite inside out There are spoons under pillows and offerings of ice We consider these oddities more than fair price For a good, snowy winter and a rising lake But if not for the lake, then for all of our sake! �



On January 30 Lee Vining got 16 inches of snow. Perhaps the Snow Man heard Julia's poem?

20 years later from page 4

low of 6372' in 1982.

I have here emphasized the legal strategies that were pursued from 1979 to 1994 to seek to modify DWP's operations in the Mono Basin. But the political, grassroots, and scientific strategies were equally important. Martha Davis, Executive Director of the Mono Lake Committee for thirteen years during the thick of the battle (1984–1997), took a three-fold approach to the matter of lake restoration: "real protection for Mono Lake, locally-developed replacement water supplies for Los Angeles, and the assurance that LA's water needs would not be transferred to another region." So the Committee worked ceaselessly both to develop political support in Los Angeles and to help obtain funding for efforts such as water conservation in Los Angeles. That Mono Lake is recovering is an inspiration to all those in California and elsewhere who care about restoration of rivers and lakes which have been damaged by excessive water project development. **\$**

Harrison C. "Hap" Dunning is a Professor of Law Emeritus at the School of Law, University of California at Davis.

Staff migrations

by Rosanne Catron

other Nature is fickle indeed! This winter in the Mono Basin we've had unseasonably balmy days, some of the driest stretches seen in years, sudden snowstorms, and occasional fog. Pack your T-shirt and top it off with a down jacket, because you never know what to expect.

Along with the unusual weather, we've seen some staffing changes at the Mono Lake Committee. In November we bid farewell to Information Center & Bookstore Manager **Jessica Ashley**. During her three years at the Committee, Jessica increased the selection of local art we sell in the bookstore, ramped up online sales, and continued to keep the store stocked with interesting and relevant books. Fortunately, we see Jessica often, as she is working just down the road at the Double Eagle Resort & Spa in June Lake and she always buys her books at local bookstores.

Interim Information Center & Bookstore Manager **Terry McLaughlin** deserves a special mention for jumping in to hold down the fort while we hired a new Information Center



Interim bookstore manager Terry McLaughlin and LA Watershed Education Coordinator, Elina Rios.

& Bookstore Manager. Along with our fantastic Project Specialists, **Julia Frankenbach** and **Emma Oschrin**, Terry has ensured that the front doors are open and the shelves are stocked. A huge thank you to Terry, Emma, and Julia—we couldn't have done it without you!

We also have a new addition to the Mono Lake Committee team. **Elina Rios** spent last summer as Outdoor Experiences Lead Instructor and has now taken on the role of Los Angeles Watershed Education Coordinator. Elina's enthusiasm for the education program and knowledge of the LA area will be indispensable to outreach efforts at the southern end of the Mono Basin watershed. \diamondsuit

Rosanne Catron is the Committee's Office Director. She and her husband **Bayard** welcomed their first child, **Ansel Ichiro** *Catron*, to their family on November 2, 2013.



Rosanne and Bayard Catron with their son Ansel in his hippo suit.

Volunteer for Mono Lake

The Mono Lake Volunteer Program is a fun way to meet other Eastern Sierra enthusiasts while helping out at your favorite lake. Each summer, volunteers staff the boardwalk at Old Marina and County Park, meet with visitors at South Tufa, pull invasive plants, and help with a myriad of other projects in the Mono Basin.

The Mono Lake Volunteer Program is a joint initiative sponsored by California State Parks (the Mono Lake Tufa State Natural Reserve), the US Forest Service, and the Mono Lake Committee, with support from the Eastern Sierra Interpretive Association and the Bodie Foundation. If you are interested in volunteering, or for more information, please contact Rosanne Catron (*rose@monolake.org*) at (760) 647-6595.





From the mailbag

News from members and friends

by Ellen King

Thank you to all of you who sent in contributions in honor or in memory of your friends and loved ones. We appreciate these gifts that help us carry on the work that will keep Mono Lake a special place for many generations.

In honor

Donel Crow & Lea Ann Mattly of Bakersfield gave a gift "in the name of the L. Chris Mattly Family." James & Paula Faris of Santa Cruz made a donation in honor of Grace Gaines Jacobs. Nancy & Terry Hadley of St. Marys, WV sent a contribution in honor of Randy Arnold & Greg Knight.

John & Jeri Taylor of Prosper, TX made a donation—"We are blessed to be able to be a small part of the Mono Lake Committee. We would like to have our gift noted in honor of Sherryl & Tony Taylor, for the love and work that they contribute to the Committee and to the Eastern Sierra in many ways." Joy Zimnavoda of Redondo Beach gave a gift in honor of Janet Carle.

In memory

Bridgeport-based Friends of Lisa Algeo, and Lisa's parents Jack & Marilyn Hodgman of Nanaimo, British Columbia, sent contributions in memory of Lisa Algeo. Laurie Buffington of Tahoe City gave a gift in memory of her father Wilbur Vaughan, "a longtime supporter of the Committee who loved Mono Lake." Doug Frerichs of Phoenix, AZ sent a contribution in memory of Ginny Davis. Edith Gaines of Los Angeles made a donation in memory of her son David Gaines' birthday. Joanne Hatchett of Davis sent a contribution in memory of Perry Salmonds. Gifts from Carol Mathews of Walnut Creek were sent "in loving memory of Robert Mathews." Suzanne Rogalin of Berkeley sent a contribution in memory of Lillian Kawaski.

Linda Toral of Cocoa Beach, FL made a donation in memory of her brother

Richard McWherter. **Tracey Tsugawa** of Williston, VT sent a contribution in memory of **Marilyn Hummel**: "I am so thankful for all you do to preserve the beauty and magnificence of Mono Lake; somewhere, Marilyn too is smiling at your work." **Bob Vestal** of Boise, ID gave a gift in memory of **Jane Stephens**.

We received donations in memory of **Debby Wakeman** from **Joyce Dunigan** of Newport Beach, **Frank Leonard** of Whittier, **Willis & Judith Longyear** of Newport Beach, **Glenn & Nancy Rankin** of Menlo Park, **Patricia Reed** of Estes Park, CO, and **Dale & Joanne Woolley** of Costa Mesa.

Farewell Bob Anderson

Environmental champion and longtime Committee member Bob Anderson was killed in a car accident in Africa last October. He and his wife Grace were there to celebrate his 70th birthday, and a few days earlier had made a successful climb to the summit of Mt. Kilimanjaro. Grace was injured in the accident but has recovered and is back home. In addition to being a friend to Mono Lake. Bob was well-respected for his conservation efforts at Lake Tahoe and in his home state of Montana. Many Mono Lake Committee staff have had the pleasure of spending time with Bob and we miss him, his dedication to Mono Lake, and his contagious high spirits.

Remembering Ginny Davis

A true friend to Mono Lake, Virginia Davis passed away in August 2013. Her daughter Martha Davis was the Mono Lake Committee's Executive Director from 1984 to 1997 and is a current Board member. Ginny's love of Mono Lake made her a longtime Committee supporter. Her love of books and history motivated her to coordinate and produce *Storm Over Mono*—the definitive chronicle of the Mono Lake story, written by John Hart, that is slated for updating and reprinting later this year.

Ginny was a lifelong activist with an impressive list of causes close to her heart. She lived an extraordinary life and instilled in her four daughters an appreciation for human diversity, the importance of kindness and generosity, a love for California's environment and history, and the drive to take action to make this world a better place. \clubsuit

Ellen King is the Committee's Membership Coordinator. Her new all-terrain Radio Flyer red wagon is an indispensable membership tool for trips to the Post Office.



Virginia Spencer Davis, 1926–2013.



Highway 395 at Third Street Post Office Box 29 Lee Vining, CA 93541

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RSVP by April 1 to Emma: emma.oschrin@monolake.org or (760) 647-6595.



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