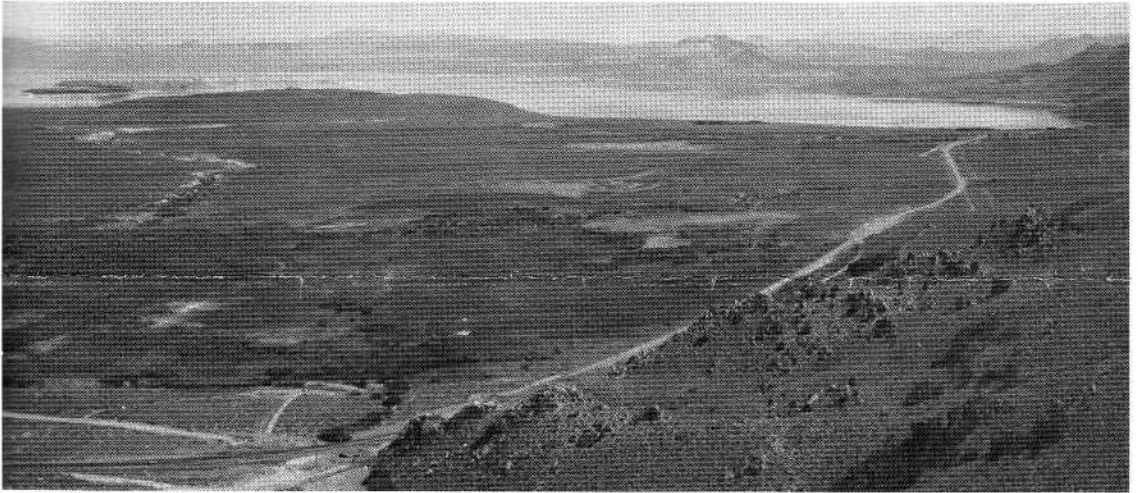


YOSEMITE

SEPTEMBER, 1978 VOLUME FORTY SEVEN, NUMBER 4

Published for members of Yosemite Natural History Association



MONO LAKE: IT'S UNCERTAIN FUTURE

EAST OF YOSEMITE NATIONAL PARK, a landscape of volcanoes, glacier-scoured canyons and snow-laden peaks is dominated by the blue expanse of Mono Lake. This awesomely beautiful region is unique in all the world. Its visual grandeur, spectacular bird concentrations and bizarre geological features are an irreplaceable part of our natural heritage.

Tragically, the Mono Lake environment is being jeopardized by the unrestricted diversion of water from its major tributary streams for use by the city of Los Angeles. Unless this diversion is curtailed, the lake will shrink to approximately 30 percent of its present volume by the middle of the next century. Its islands will become connected to the mainland. Its waters will become too salty for birds and other life-forms. Thousands of acres of white, barren shoreline will be exposed. On windy days clouds of alkali dust will obscure Sierran peaks and pose a definite threat, not only to vegetation, but also to human health.

The Mono Lake Committee of the Santa Monica Bay Audubon Society seeks to safeguard the scenic and wildlife resources of Mono Lake. A compromise must be reached between human water consumption and environmental preservation. We do not propose terminating diversions completely. We advocate maintaining Mono Lake at its 1976 level. This will still permit an average annual diversion of about 25,000 acre-feet for human use. The islands will still exist, millions of birds will still have a place to nest, rest and feed, and the eastern Sierra will not be plagued with air pollution. Our descendants will inherit, not a sterile wasteland, but a living lake set in the midst of natural splendour.

EARLY TRAVELERS WERE AWED by the magnificent panorama of peaks and volcanoes that grace Mono's shores. The lake is set at an elevation of over 6,000 feet where rolling, sagebrush-covered hills abut the steep, granitic escarpment of the Sierra Nevada. In 1881 this scene made a powerful impression on the pioneer geologist, Israel Russell. "There rests upon the desert plain," he wrote, "what appears to be a wide sheet of burnished metal, so brilliant and even is its surface. . . no prosaic description can portray the grandeur of fifty miles of rugged mountains, rising beyond a placid lake in which each sharply cut peak, each shadowy precipice, and each purple gorge is reflected."

After two years at Mono Lake, Russell began to understand its geological history. He realized that throughout most of its existence, Mono has been landlocked by peaks and volcanoes, a lake without an outlet. Its waters have lapped for three million years at the feet of the Sierra Nevada's eastern escarpment. When the glaciers advanced, it expanded to several times its present size and depth. As recently as 13,000 years ago tongues of ice reached its shores and icebergs drifted on its surface. For brief interludes it overflowed into Owens and ultimately Death Valleys. During interglacial periods it retreated into its closed drainage basin, but never fell much below its current level.

Mono is one of North America's oldest lakes. Its birth dates back to the uplift of the Sierra Nevada, the mountains that spawn its tributary streams. For hundreds of thousands of years clear, rushing torrents have flowed from the flanks of Dana, Conness and other Sierran peaks into its blue waters.

Even at its present low ebb, Mono is an immense lake. It is a conspicuous feature on maps of California, exceeded in volume by only one natural inland body of water. Roughly circular in outline, it extends 13 miles east-west by nine miles north-south.

Mono Lake's two major islands, Negit and Paoha, were formed by volcanic eruptions only 2,000 years ago. Indians probably witnessed their fiery birth. Negit, the black island, consists of symmetrical craters and basaltic lava flows. Paoha, in contrast, is composed primarily of white lake sediments uplifted by volcanism. A number of small islets lie to the northeast of Negit.

Evaporation leaves behind the salts and minerals carried into Mono Lake by its tributary streams. Through the eons its water has become twice as saline and ten times as alkaline as that of the sea. Nineteenth century travellers, such as Mark Twain, extolled its soap-like qualities and claimed a brief soaking could cleanse the dirtiest laundry.

Mono Lake has long been famous for the peculiar mineral formations, called *tufa*, scattered along its shores. Words cannot describe the singular shapes — sometimes delicate, sometimes bizarre — in which nature has fashioned these chalky white, calcareous mounds and towers. They owe their existence to freshwater springs bubbling up beneath the lake. When calcium-rich freshwater mixes with carbonates in the lake, a solid called calcium carbonate (CaCO_3) precipitates out, forming tufa. Over the course of many years, the deposits accumulate and, as the lake recedes, are sculptured by water and wind. The extraordinary variety of Mono's tufa is without comparison on the surface of the earth.

Although most of the tufa has been left high and dry by the shrinking lake, many of the lake's springs still flow. At several places along Mono's perimeter, water gushes from tufa-lined pools and runs through gardens of mosses, sedges and flowers into the lake. As we shall see, these freshwater springs and creeklets are of critical importance to birds.

THE LAKE WHICH MARK TWAIN CALLED "SOLEMN, SILENT, AND SAILLESS" and "the dead sea of California" is, in reality, neither dead nor silent. Although too saline for fish, Mono Lake is teeming with other forms of life. Brine shrimp swarm in its waters, and few places on earth host greater numbers of birds.

Of the organisms dwelling in the lake itself, only two are visible to the naked eye: the delicate brine shrimp (*Artemia salina*), and the brine fly (*Ephedra hians*). These tiny animals are able to flourish in Mono's briny waters, feeding on blooms of algae during the warm weather months. In the summertime, they reach unbelievable numbers. Brine flies crowd Mono's shores in solid mats a yard or more in width, and great clouds of brine shrimp drift in its waters. The 250 tons of brine shrimp harvested annually at a single site by a tropical fish food company — about 22 billion individuals — is an infinitesimally small fraction of the total population. This incredible fecundity compensates for the lake's small number of species. Mono's primary productivity, that is the quantity of solar energy stored as food by its photosynthesizing algae, ranks among the highest of any lake. The shrimp and fly populations nourish flocks of gulls, grebes, phalaropes, avocets and other water birds, and make Mono a mecca for birds and birdwatchers alike.

For thousands of years California gulls (*Larus californica*) have continued to cross the Sierra Nevada each spring to raise their young on Mono's islands. The colony of 50,000 is at least the second largest in the world, and comprises over 95 percent of California's breeding population. The gull nestlings are nourished on a diet of brine shrimp and brine flies. By August the young and their parents may be seen soaring westward over the Sierran crest on their journey to coastal wintering areas. About 85 percent of the gulls nest on Negit Island, the remainder on islets to the northeast.

During late summer shorebirds, waterfowl and grebes descend on Mono Lake to rest and feed during their migratory journeys. The lake is especially important to the eared grebe (*Podiceps caspicus*), a duck-like diving bird, and the Wilson's phalarope (*Steganopus tricolor*), a colorful relative of the sandpipers. The birdwatcher surveying the scene may well imagine that all the eared grebes in western North America congregate on Mono's briny waters. Peak populations, which number at least three quarters of a million birds, mark the lake as the grebe's most important migratory stop-over in California. Over 90,000 Wilson's Phalaropes have been tallied in a single day, and approximately one-third of the world's population alights on Mono en route to their South American wintering grounds. Thousands of ducks and shorebirds, especially Pintail (*Anas acuta*), Shovelers (*Anas clypeata*) and American Avocets (*Recurvirostra americana*) visit Mono's shores during their migrations. The lake is more than a rest stop for these birds. Its bountiful food provides the energy they need to cross hundreds of miles of hostile desert.

Aquatic habitat is scarce in the arid interior of western North America, and water birds crossing this region are dependent on Mono, Great Salt, and a few other lakes for survival. Now that Owens Lake is dry, most migrants from Mono must fly south 350 miles to the Salton Sea or 500 miles to the Gulf of California. The nearest major stopover to the north, Abert Lake in Oregon, is 350 miles distant. Closer lakes, such as Walker and Pyramid in Nevada, lack large shrimp and fly populations, and are bypassed by most grebes, phalaropes and shorebirds.

Birds visiting Mono are faced with the problem of secreting salt solutions at least as concentrated as the water they ingest while feeding. Ionic concentrations in Mono's brine are beyond the maximum known salt-secreting capacity of any bird. Although the relatively low salt content of their shrimp and fly diets ameliorates the burden, most species still require freshwater. Large numbers of gulls, phalaropes, ducks, and other water birds drink and bathe at springs, ponds and creeklets along Mono's shores. Without these sources of freshwater, they would probably cease to visit the lake.

ENGINEERING SKILL has conspired with the water demands of a metropolis 300 miles distant to jeopardize the future of Mono Lake. Since 1941, water from Lee Vining, Walker, Parker and Rush Creeks, four of five major streams feeding the lake, has been diverted into the Los Angeles aqueduct. The consequence is strikingly apparent to the traveler surveying the scene from Highway 395. Mono's shores are marked by a conspicuous band of white, barren alkali-encrusted rocks and sand — a "bathtub ring" left by the shrinking lake.

To understand the involvement of the city of Los Angeles with Mono Basin water, we must look back to the turn of the century. A decade of drought had convinced the city fathers that Southern California's sparse water supply, less than two percent of the state's total, condemned their plans for the city's future growth. In 1904, the superintendent of the Los Angeles water system, William Mulholland, camped among the green fields and Sierra-fed streams of the Owens Valley, a burgeoning agricultural community 250 miles north of Los Angeles and 50 miles south of Mono Lake. Nine years later water from the Owens River was flowing through the newly completed Los Angeles aqueduct, and Owens Lake, a large saline sea similar to Mono, was turning into alkali dust.

Eventually the city's unquenchable growth led to a bitter, sometimes violent and devious struggle with Owens Valley farmers over water rights. Los Angeles triumphed, leaving a legacy of abandoned houses and barns, "dead trees, weed-grown fields, neglected fences, and empty ditches" as "poignant reminders of shattered hopes and dreams." Although the city invoked the "greatest good for the greatest number" as justification for its actions, critics claimed "the planners of the aqueduct, besides devastating the valley, bilked the citizens of Los Angeles in order to reap swollen profits on San Fernando real estate." Even before the struggle ended, the city cast its eyes on the waters which fed Mono Lake.

The plans of the water seekers were grandiose: diversion of all but one of Mono Lake's major tributary streams into the Owens River via an eleven mile tunnel under the Mono Craters. In 1930 the people of Los Angeles approved a \$38,000,000 bond to finance the project. Public Law 864, passed by Congress on March 4, 1931, withdrew public lands in the Mono Basin "from settlement, location, filing, entry, or disposal under the land laws of the United States for the protection of the watershed supplying the city of Los Angeles." Suits were brought to condemn property and water rights in the basin, a maneuver to force ranch owners to sell to the city for lower prices. Eventually over five million dollars was spent by Los Angeles on land and water rights. In 1934 construction of the Mono Craters tunnel was begun, but difficulties with steam, hot water, volcanic gases and ground caving delayed completion of the project until 1940. One year later the first Mono Basin water was diverted into Owens River, thereby extending the aqueduct system to an intake 338 miles from Los Angeles, farther north than San Francisco. But for Mono Lake, the worst was yet to come.

In 1963, the city of Los Angeles announced plans to construct a second Owens Valley aqueduct. According to the Department of Water and Power, the water for this aqueduct would derive from "further utilization of the ground water resources of the Owens Valley by increased pumping" and "salvage of the water in Mono Basin being lost into the saline water of Mono Lake." Since the completion of this aqueduct in 1970, mean annual export of water from the Mono Basin has increased from 56,000 acre-feet per year (1941-1970) to approximately 100,000. Releases into Mono Lake have fallen from approximately 40,000 acre-feet per year to practically zero.

SINCE 1941, WHEN WATER DIVERSIONS BEGAN, Mono Lake has fallen at an average rate of one to two feet per year. By 1978 this rate of decline had caused more than a 30 foot drop in the lake's surface elevation. As a consequence, salinity has almost doubled, about 10,000 acres of alkali-encrusted lake-bottom has been exposed, and Negit Island, home of over three-fourths of California's nesting California gulls, has become connected to the mainland. Unless diversions are reduced, the lake will continue to shrink until the middle of the next century. When it

finally stabilizes, it will have truly become a "dead sea" — a birdless chemical broth six times more saline and thirty times more alkaline than the ocean.

In immediate jeopardy are the Negit Island gull rookeries. Gulls, like other colonial water birds, are highly susceptible to predators. Until this year, Mono's briny water protected Negit's gulls from coyotes, weasels, racoons, snakes and even rats and mice. Now the emergence of a land-bridge has breached their sanctuary. No major rookery exists on a peninsula. Unless Negit is restored as an island, it is only a matter of time until predators scatter its gulls.

Fortunately Negit's gulls have received a brief reprieve. The Bureau of Land Management, which manages the island as a natural area, is cooperating with the California Department of Fish and Game and the United States National Guard in blasting a channel through the land-bridge. But this is only a short-term solution. Within five years or less, the island will once again be connected to the mainland. Unless the lake's level is stabilized, the blasting will prove a futile gesture.

Even if the gulls move to Paoha, an unlikely event because of the island's feral goats and blowing sand, their future is bleak. If diversions continue unabated, Paoha will be part of the mainland within 30 years. By this time blasting will probably be pointless. Rising salinities will likely have doomed not only gulls, but all of Mono's birdlife as well.

As Mono Lake falls, its concentrations of dissolved ions will increase. This poses two threats to birds: greater and greater stress on their already taxed capacities to secrete salts, and eventually the reduction or elimination of their major food sources, brine shrimp and brine flies. In the short-term birds may stave off disaster by drinking freshwater at ever more frequent intervals. But the salts will nonetheless become an intolerable burden by the end of the century. Based on the best available studies, shrimp and flies will begin to disappear before Paoha Island is connected to the mainland. Without these sources of sustenance, Mono will become a birdless lake.

In place of birds we will have the dust. Already, windswept alkali clouds have been mistaken by airline pilots for volcanic eruptions. As Mono recedes, it will expose another 20,000 acres of fine-textured lake-bottom sediment to the sun and the wind. Especially insidious is the dust's alkaline chemistry, which threatens the health of both plants and humans. Nor will the dust remain in the immediate vicinity of the lake. The Owens Valley serves as an example. There alkali from the dry Owens Lake bed "commonly reduces horizontal visual range to less than one mile some 60 miles from its source," and has even coated pine trees 5000 feet above the lake-bed. The "number and mass concentrations of the particulates... are a hazard to health."

For some years we have watched the level of Mono Lake drop lower and lower. It's a disturbing experience each time we see that the land bridge on the north is nearly complete and that the shore line is becoming ever wider. So, when David Gaines handed us this "position paper" put out by the Mono Lake Committee of the Santa Monica Audubon Society, we decided to pass along its contents to YNHA members. Not included in the story are a number of charts and graphs and statistical data. The entire paper (19 pp) is available from the Mono Lake Committee, PO Box 2764, Oakland, CA 94602. We first got to know David Gaines when he began to conduct birding seminars for us three years ago. He's taking time off from his ornithological pursuits to espouse the cause of saving Mono Lake. We wish him well.

UPDATE ON MUYBRIDGE PORTFOLIO: We told you in the Members Bulletin of November, 1976 that we were in the midst of co-publishing a portfolio of facsimile prints made from Edward Muybridge's 1872 photos of Yosemite. The undertaking has been fairly monumental — and time consuming.

The portfolios have been available for some time. However, because our co-publisher, the Chicago Albumen Works, was obliged to prepare the portfolios ahead of the illustrated descriptive brochure, we've just received the latter. We'd be pleased to mail you a copy if you'll drop us a card.

Sales of the portfolio, of which only 300 will be printed, have been satisfactory. There aren't purchasers for a \$1500 item (originally \$1250) behind every tree, but we're convinced that the project will bring a good return on our investment. A substantial share of the net proceeds will be donated to the National Park Service for the acquisition of historic artifacts and for other appropriate purposes.

YOSEMITE STAMPS: The following piece was sent to us by Marvin Carlberg of Huntington Beach. Marvin reports that he's thirteen years old, collects stamps, enjoys Yosemite, and is a YNHA student member. We thank him for his article.

A one-cent U.S. stamp was issued July 16, 1934 as part of a set (one cent to ten cents) showing scenes of the national parks, in commemoration of National Parks Year. This rectangular stamp is arranged vertically, and is printed in green ink. It shows a scene in Yosemite National Park with famous El Capitan on the right. Along the bottom is the inscription "U.S. Postage," and in a curved line along the upper edge is the title "Yosemite" in white.



This stamp (Scotts #740) was also part of a special printing. A special printing is: "a stamp issued for a limited time, the full sheets as printed, or in blocks thereof, to meet the requirements of collectors and others who may be interested" (from Postal Bulletin 70782.) Issuance of complete sheets of stamps, including this one-cent Yosemite stamp, resulted from the protest of collectors and others over the practice of presenting to certain government officials (including President F.D. Roosevelt) complete sheets of unsevered panes, mostly imperforate, and generally ungummed. These are known as "Farley's Follies," as they were issued under Postmaster General James A. Farley.



A five-cent U.S. stamp in honor of the outstanding naturalist John Muir was first placed on sale at Martinez California April 29, 1964. John Muir was born in 1838 at Dunbar, Scotland. He moved with his family to Wisconsin at an early age, and later attended the University of Wisconsin. Muir spent most of his adult life in California, and a large part of his fame rests on his successful crusade to save California's giant redwoods, and his exploration of the Sierras, including Yosemite.

The vertical Muir stamp (Scotts #1245) was designed by Roudolph Wendelin of the Department of Agriculture, Washington, D.C. It shows the bearded face of John Muir in the foreground, and in the background a shaft of sunlight through the redwoods shines on a small figure of Muir with his trusty staff. This stamp was printed in green and brown on the Giori Presses, and was issued in panes of 50. Over 120,000,000 sheets were sold.

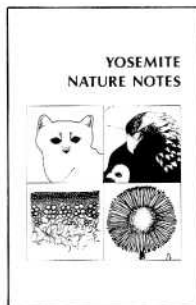
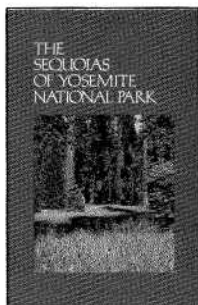
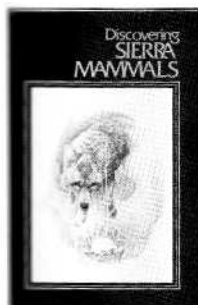
An eighteen-cent "vignette" in red and orange was issued May 3, 1932 in the Philippines (then a U.S. territory) intending to show Pagsanjan Falls in Laguna, Central Luzon, as it is labeled. Through error, discovered by a visitor from the United States in the Philippines who saw the stamp, the picture on the stamp actually shows Vernal Falls and Mt. Broderick in Yosemite.

This stamp (Scotts #357) is in a set of seven (two thirty-two cents) commemorating various points of interest and landmarks in the Philippines.

It is interesting to note that this foreign stamp showed Yosemite two years prior to the issuance of the U.S. commemorative in 1934 described above. Thus the Philippine stamp must be considered the first stamp to include a scene from Yosemite National Park, even if this wasn't intended.

If any other stamps depicting Yosemite are found, please contact the Yosemite Natural History Association.

PUBLICATIONS: We've mentioned earlier that we have three new publications ready for distribution: *DISCOVERING SIERRA MAMMALS*, *NATURE NOTES — 1978*, and *YOSEMITE'S GIANT SEQUOIAS* (four color). We're pleased with each of these and offer them to members at a 25% discount.



Prices to members including tax,
Postage, handling:
MAMMALS — \$4.50
SEQUOIAS — \$2.90
NATURE NOTES — \$3.15

NEW MEMBERS. We welcome to membership in Y.N.H.A. the following good people.

Edwin Orrett	Sidney Poss	Christine Bunk	Susan Poage
Kathy Kramer	Corrine Elwart	Mrs. Wayne Harrison	Bruce Montgomery
Patricia Schulz	John Heckzo	Clara Elliott	James Sellers
Dorothy Krivancik	Susan Walcutt	Lisa Denton	Robin Bennett
Martha Coulton	Jane Krueger	Wes Luther	Shirley Mraz
James Bollingmo	Kay Schweitzer	Katherine McCarville	Charles Cole
Ken Tak Wu	Barbara Ore	Art Chan (L)	Stan Logan
Mary Shaw	Diane Buckman	Roger Smith	Ronel Weiser
Suzan Rockwell	Jay Grover	Jean-Marie Spoelman	Robert Patton
Ray Rausch	Elizabeth King (L)	Marjorie Cummins	Ann Hoskins
Nelie White	Bruce Bingham	Lawrence Voesack	Vivian Paiva
Susan McClintock	Dale Graham	Gloria Perucca	Dr. & Mrs. H. Stoutz (L)
Marjorie Hynes	Suzanne Bohan	Ron Hudson	Steve Woodcock
Michael Moreno	Thomas Griffiths	Stephen Mason	Van & Sue Schultz
Thelma Douglas	Karen Wells	Tom Borchardt	Donna Sayle
Kelley Kobayashi	Linda Erickson	Tallman Family	Marion Kelty
Allison Smith	Lana Ali	G. Grimm	Miriam Chernoff
Steven Sheets	Irene Martin	S. Moreland	Tom Veatch
Patricia Hornung	Brian Gulliver	John Eng (L)	Janice Taylor
Mr. & Mrs. H. Gilliam	Nancy Reitz	Wayne Mallouf	Harold Mountan
Gale Choffin	Ron Ratto	Julie Rubin	Marcy Wright
Laureen Irwin	Michael Parmalee	Mr. & Mrs. Albert Ghiorso	Isobel Campbell
G & J. West-Justice	Michael Adams	Jeri Holman	Martin Barman, MD
B. J. Pollan	George & Louise Weamer	Mary Davis	Charles Cramer
Robert Hansen	Bill Cooper	Holly Burke	Carl Feldman (L)

A NEW LIFE MEMBER: A chap named Art Chan has worked for us this summer as a salesperson and a jack-of-all-trades. In addition to the hours he works for us, he's a "spieler" on the Curry Co. Valley Tour bus. So his days are filled. Art's an enthusiastic fellow, willing and able to do most anything asked of him. After he'd been with us perhaps a month, he walked into the office and said "I think what you people do is pretty good. I want to join YNHA." With which he plunked down \$100 for a life membership. Art, welcome to the true believer's club.

And speaking of Life members — — — YNHA now has 101 Life members! Many of our members choose to increase their membership contribution at the time they renew their membership. Dr. David Korchek of Los Angeles became our 100th Life member when he renewed his membership in August. We welcome him as a Life member and thank him, as well as all of the YNHA members, for their continued support of the association.



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Dan Anderson