FRIENDS of Great Salt Lake

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The Nature Conservancy's Great Salt Lake Shorelands Preserve by Larry Eifert

The mission of FRIENDS of Great Salt Lake is to preserve and protect the Great Salt Lake ecosystem and to increase public awareness and appreciation of the lake through education, research, and advocacy.

www.fogsl.org

Executive Director's Message

3,2,3-3,2,3-2,2,2-2,... Preserving the Future

"This pair of birds is committed to what they are doing."

-Bob Walters, Utah Division of Wildlife Resources, Watchable Wildlife Program

Early this March, a pair of American bald eagles that have been nesting along Great Salt Lake and the Jordan River in Davis County for almost 10 years, gave birth to their 24th eaglet. (Big round of applause here). The succession of eaglets produced by this couple is reflected in the series of numbers listed above. The eaglets are scheduled to fledge sometime around the middle of June.

This noteworthy and long term success has not gone without its challenges. Along with a passel of random disturbances occuring around the nesting site, their original nesting snag blew down three years ago during a severe April windstorm. It was replaced by an artificial nesting tower that Bob Walters described as "a fork that looks like it went through the disposal". But magically, the adults return, year after year, to the same spot; no doubt expecting to use the bent fork once again for nesting.

This bent fork and productive nest are in the heart of the Legacy Nature Preserve. The Preserve is a 2,100 acre mitigation site that was established by the Utah Department of Transportation as required by law under the Clean Water Act to meet specific terms of a 404 permit issued by the Army Corps of Engineers (Corps). According to the Clean Water Act, whenever wetlands are destroyed, mitigation is required. In this case, UDOT was proposing to directly destroy 114 acres of wetlands of the Great Salt Lake Ecosystem as part of the Legacy Highway project.

Regular readers of this newsletter already know our position on building the Legacy Highway. We are opposed. In our Winter 2005 issue, along with Utahns for Better Transportation, and the Utah Sierra Club, we endorsed the Citizens' Smart Growth Alternative (CSGA). We believe that this alternative will not only meet the transportation needs of Davis County, but will provide a compre-

Photo by Gary Crandall

hensive transportation package that includes more travel choices than Legacy. It has greater connectivity because of the Redwood Road widening and extension, and encourages economic development. The CSGA would retain the Preserve, and has far fewer impacts to wetlands because it's further to the east than UDOT's proposed Legacy route. Overall, the Citizens' Smart Growth Alternative is a better solution for the transportation future of our Great Salt Lake neighborhood.

But whatever the outcome, mitigation is still necessary, and the Preserve must remain. Recognizing this long term responsibility, as well as the educational potential that the Preserve can provide for the Lake's community, the UDOT Legacy Project Team (UDOT) has initiated a two pronged collaborative process it hopes will ensure the success of the future of the Preserve and overall public support.

In January of this year, UDOT with the assistance of SWCA Environmental Consultants, established a Collaborative Design Team (CDT) for the Legacy Nature Preserve. The charge of the CDT is to create a long term management plan that not only addresses the permit conditions required by the Corps for the Preserve as a mitigation site, but it must also be comprehensive enough to provide the overall management of the Preserve in perpetuity when handed off to an appropriate land management organization. The CDT consists of experts in a variety of fields, which include resource specialists, environmental groups, government agencies and other interested stakeholders. FRIENDS is a member of that team.

To educate the public about the Preserve and the efforts of the CDT, two Open Houses are planned, one this spring and one in the fall. There will be opportunities for the communities bordering the Great Salt Lake to share ideas about developing a vision for the Preserve. The CDT will consider this input in the formulation of the draft of the management plan, which is due to be completed by the Fall of 2005.

The great promise of the Legacy Nature Preserve is to restore wetlands lost to transportation facilities within the North Transportation Corridor. With the development of a long term management plan and the support of the Great Salt Lake community in recognizing this mitigation site as important habitat, and an education component, we can look forward to two gifts: a greater understanding about the Great Salt Lake Ecosystem, and the next generation of eaglets.

In saline,

Lynn de Freitas

What You Can Do

The Collaborative Design Team (CDT) invites you to:

Legacy Nature Preserve Open House on Tuesday, May 24th from 6-8 PM
at the Day Riverside Public Library (1575 West 1000 North) in Salt Lake City.

The purpose of the Open House is to highlight efforts of the CDT as
well as gain community input about the Legacy Nature Preserve.

For more information, contact Tracylee at SWCA 801-322-4307

FRIENDS ORGANIZATIONAL STATEMENT

The mission of FRIENDS of Great Salt Lake is to preserve and protect the Great Salt Lake Ecosystem and to increase public awareness and appreciation of the lake through education, research, and advocacy.

FRIENDS has a very active Board of Directors and an Advisory Board consisting of professionals in the scientific, political, literary, education, and broadcast communities. Founded in 1994, we have organized and sponsored an array of programs, activities, and materials in pursuit of our mission.

Since 1996, we have sponsored a biennial Great Salt Lake Issues Forum that provides a gathering for policy makers, researchers, planners, industry and other stakeholders who are involved in and concerned about the Great Salt Lake.

The goal of each Forum is to encourage constructive dialogue about the future of the lake's ecosystem and its resources, and to illuminate the complexities involved in research, management and planning for the lake.

In 1997, we hired Bruce Thompson as our Education Director and initiated a major regional education project designed to enhance both the knowledge about and care for the future of Great Salt Lake. Bruce wrote and produced a live-narrative slideshow program "The Lake Affect: Living Together Along the Shores of Something Great." Over 11,000 people in the five counties surrounding Great Salt Lake have seen the program.

We hope that the video version of The Lake Affect, and Project SLICE, a 4th grade curriculum using Great Salt Lake as a system of study, will achieve a positive, long-lasting impact on the future of the Great Salt Lake and those who dwell upon its shores.

In 2003, FRIENDS awarded the first Doyle W. Stephens research scholarship. Until his death in May 2000, Stephens served as a research hydrologist for the U.S. Geological Survey. He is particularly remembered for his work toward increasing public awareness of the Great Salt Lake Ecosystem.

FRIENDS was awarded the Conservation Achievement Award by the Utah Chapter of the Wildlife Society in 1998.

On the Cover

The Nature Conservancy's Great Salt Lake Shorelands Preserve, Larry Eifert

Artwork by Larry Eifert, of Estuary Press, an artist who specializes in capturing America's National Parks, wildlife refuges, state parks and preserves. Online portfolio: www.eifert-art.com.

The Nature Conservancy's Great Salt Lake Shorelands Preserve and diverse birdlife inspired this original painting. Stretching roughly 11 miles along the Lake's eastern shore, the Great Salt Lake Shorelands Preserve protects nearly 4,000 acres of critical wetland and upland shorebird and waterfowl habitat. A visitor center, situated in the heart of the preserve, features a one-mile boardwalk trail, an observation tower and educational exhibits. The Conservancy welcomes visitors to the preserve to experience the wetlands and learn about the Lake's importance to millions of migratory birds.

For more information: visit www.nature.org/utah or call (801) 531-0999.

7TH ANNUAL
Great Salt Lake
BIRD FESTIVAL
May 12-17, 2005 Farmington, Utah!
www.greatsaltlakebirdfest.com
Keynote Speaker:
Radio & TV personality, storyteller, speaker
humorist and birder, Al Batt
Peregrine photo courtesy of Judd Patterson

Mercury Rising

Mercury in water and biota from Great Salt Lake
Reconnaissance-phase results

Photo by Dayle Record

Despite the ecologic and economic significance of Great Salt Lake (GSL), little is known about the concentration and biogeochemical cycling of mercury (Hg). Previous work (Tayler and others, 1980) suggests that GSL is a "natural disposal system" with respect to anthropogenic trace-element inputs. Although Hg has been a known environmental pollutant for several decades, its presence in freshwater and marine environments continues to generate concerns related to biological exposure (King and others, 2000). Like many environmental contaminants, Hg bioaccumulates in organisms. The lipophilic or "fat loving" nature of methylmercury (CH3Hg) makes it much more toxic to organisms than inorganic forms of Hg.

The chemical and physical conditions present in GSL may be ideal for high rates of Hg methylation. Previous work has shown that marine sediments rich in organic matter and dissolved sulfide have rapid CH3Hg production rates in conjunction with rapid rates of sulfate reduction (King and others, 2000). Sulfate reduction rates measured in water from GSL were higher than 6,000 nanomoles per cubic centimeter per day, one of the highest rates reported in a natural environment (Ingvorsen and Brandt, 2002). In laboratory experiments, King and others (2000) determined that sulfate reducing bacteria capable of acetate utilization in their metabolic pathways will methylate Hg the most efficiently. Acetate-utilizing bacteria (Desulfobacter halotolerans and Desulfocella halophila) capable of high Hg methylation rates have been isolated from sediments in the south arm of GSL (Ingvorsen and Brandt, 2002).

Atmospheric deposition is one of the major sources of Hg to aquatic environments (Krabbenhoft and Rickert, 1995). On the basis of statistics published in 1997, numerous local point sources for atmospheric Hg deposition to GSL exist. The large surface area (about 4,400 square kilometers) to depth (0 to 9 meters) ratio of GSL, coupled with no outflow, extensive boundary wetlands (162,000 hectares), and a location adjacent to numerous Hg sources, may make this ecosystem more susceptible to retention of Hg inputs and Hg methylation than other aquatic systems.

As part of an ongoing research program on GSL, the U.S. Geological Survey (USGS) (Utah Science Center) initiated a reconnaissance survey in 2003 to determine Hg concentrations in water samples from the lake. During August 2003, eight unfiltered water samples were collected from the south arm of GSL and Farmington Bay. Samples were analyzed for total Hg and CH3Hg concentrations by the USGS Mercury Research Laboratory in Middleton,

Wisconsin. Initial results indicate high levels of total Hg (exceeding 45 nanograms per liter (ng/L)) and CH3Hg (exceeding 25 ng/L) in selected anoxic regions of the lake where high rates of bacterially mediated sulfate reduction have been documented. The concentration of CH3Hg measured in GSL is among the highest ever in surface water measured by the USGS Mercury Laboratory. For comparison, CH3Hg in whole water samples collected from Maryland reservoirs ranged from 0.007 to 0.493 ng/L (Mason and Sveinsdottir, 2003).

In addition to the water sampling, the U.S. Fish and Wildlife Service (USFWS) conducted a series of reconnaissance-phase assessments of potential contaminants, including Hg, to biota in the GSL. The Hg concentration (dry weight) in both brine shrimp and eared grebe (Podiceps nigricollis) liver samples was determined intermittently from 1994 through 2000 in the south arm of GSL.

The migration and molting habits of eared grebes make them an ideal population for the reconnaissance evaluation of Hg bioaccumulation. A large population of eared grebes (1.5 million in 1997) from throughout North America utilize GSL during the molt migration beginning in August and continuing through December and January (Aldrich and Paul, 2002). A small population of eared grebes also breeds and nests in the GSL system; subsequently, there is a grebe population in all seasons except mid-winter. During the molt migration, grebes feed almost exclusively on brine shrimp; therefore, seasonal changes in the Hg concentration in brine shrimp and eared grebe livers from GSL were monitored to evaluate Hg bioaccumulation pathways.

The seasonal changes in Hg concentration in eared grebe livers indicate bioaccumulation during the fall molting period when the grebes feed exclusively on brine shrimp. The Hg concentration in 28 brine shrimp samples collected during the spring is less than the analytical reporting limit of 0.2 parts per million (ppm), dry weight (dw). Brine shrimp samples collected during the summer and fall time periods have a higher Hg concentration (median concentration = 0.34 ppm dw), with 51 out of 52 samples exceeding the average Hg concentration in shrimp of 0.16 ppm dw (U.S. Environmental Protection Agency, 1997; converted from wet weight data using 25 percent moisture). The median Hg concentration in eared grebe livers increases from 6.4 ppm dw in samples collected during September early molt period, to more than 17 ppm dw in samples collected during December near the end of the molting period.

In summary, the initial water and biota samples collected from GSL indicate elevated levels of total Hg and CH3Hg. Many questions remain to be answered regarding Hg cycling in the complex biogeochemical environment of GSL. A limited number of water and brine shrimp samples will be collected and analyzed for Hg during the upcoming 2005 field season.

by David Naftz, Bruce Waddell and David Krabbenhoft

Additional information on the results of this study can be found at www.fogsl.org.

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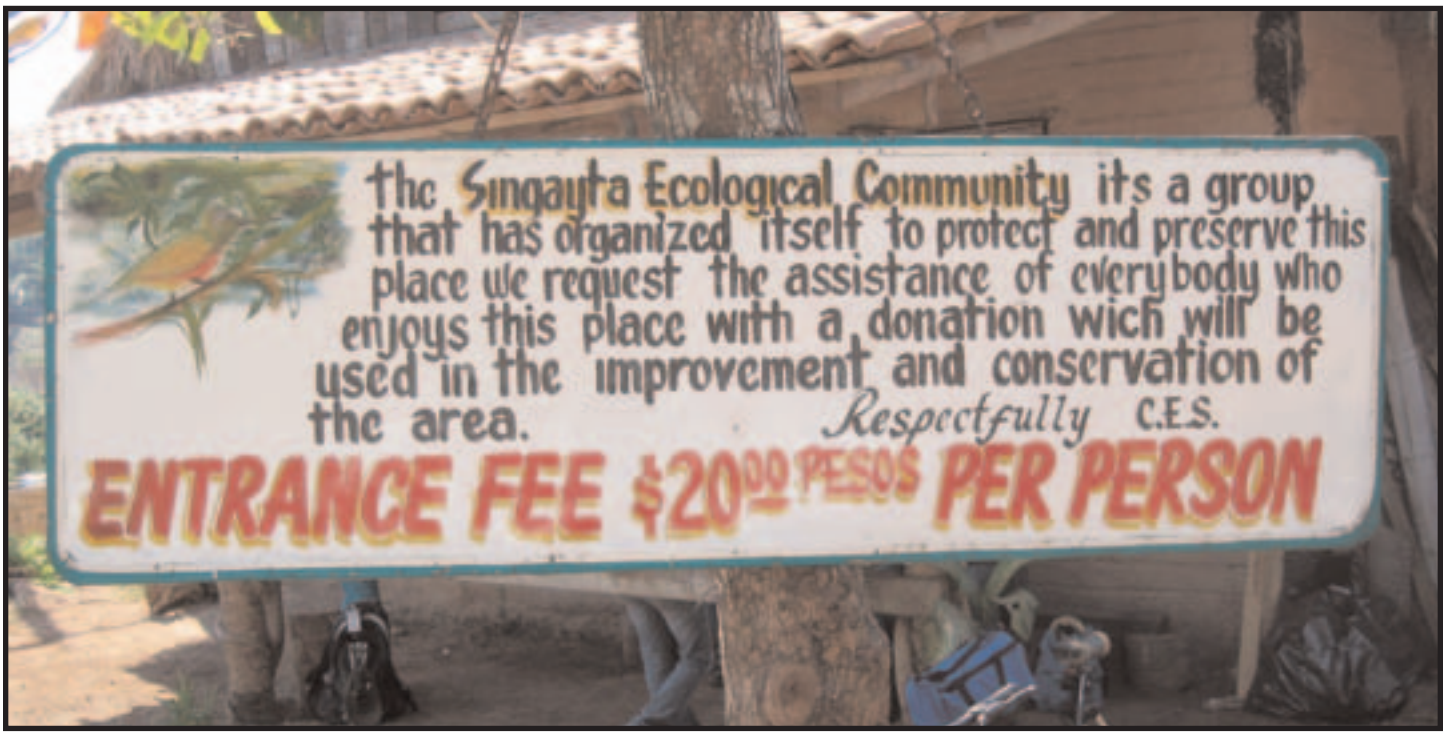
Range-Wide Conservation At Work

by Jim Woolf



Singayta Ecological Community by Lynn de Freitas

SAN BLAS, Mexico – We followed the path of the American white pelican again last January, leaving the snow and fog of the Great Salt Lake and flying due south to the tropical warmth of this historic port located between Puerto Vallarta and Mazatlan.

Eleven members of the Utah "Linking Communities, Migratory Birds and Wetlands" group traveled to San Blas for the first International Festival of Migratory Birds in the state of Nayarit.

We arrived on a warm evening with a full moon and sat outside for the opening ceremony. About 700 people enjoyed a program of dances, a puppet show, videos about birds, and speeches by the governor of Nayarit, the mayor of San Blas and other dignitaries.

The Utah visitors were given front row seats and treated as special guests. We were held up as examples of the type of international tourists the festival hopes to attract as it matures.

Then followed an intense week of bird watching and meetings in San Blas and Tepic, Nayarit's capitol city. We canoed through the vast mangrove swamps known as the Marismas Nacionales, hiked through the jungle, and a visited the caldera of a quiet but still active volcano.

The trip was the latest in a series of efforts by the "Linking" program to strengthen community ties along an important bird migration route. It begins at the Chaplin and Quill lakes in Saskatchewan, passes through the Great Salt Lake in Utah and ends in the Marismas Nacionales. Some of the best-known birds that follow this route are the American white pelican, American avocet, and black-necked stilt.

The Linking concept is based on the idea that preserving these migratory birds requires international cooperation to protect their nesting, staging and wintering habitats. The approach is called "range-wide conservation."

The Linking program can take at least partial credit for spawning the Nayarit bird festival. It was started after our Mexican Linking partners attended the Great Salt Bird Festival and saw how it raised public awareness of birds and helped boost tourism.

"Nayarit's first bird festival was successful," said Neka Roundy, who organizes the Great Salt Lake Bird Festival

and is a member of the group that traveled to San Blas. "I would like to think Great Salt Lake Bird Festival provided a format for the Nayarit festival." It is expected that several people from Nayarit will visit the Great Salt Lake Bird Festival again this year. It will be held May 12-17.

In addition to the bird festival, there were numerous meetings with Mexican partners to explore ideas that could be included in a grant application to strengthen the Linking program. Attending were federal, state and local government officials, representatives from the university in Nayarit, state education leaders, schoolteachers, hotel owners, tourism experts and community organizers.

There was strong support for continuing and expanding the Shorebird Sister Schools program. This teaches children living near wetlands about shorebirds and connects them with children in other countries. Several schools around the Great Salt Lake now are linked to schools in the Nayarit.

The Mexican Linking partners are trying to have the Shorebird Sister Schools program made a formal part of the fourth-grade curriculum for all students in the Marismas Nacionales. They also want to organize teacher exchanges between Nayarit and Utah.

Another idea being discussed is to band some of the American white pelicans that nest in Saskatchewan and Utah and train children in the Shorebird Sister Schools program to monitor their movements along the migration path.

A group in San Blas is seeking financial support for a shorebird visitor center/training facility/museum that could be built in the marshes near town. Visitors could stop there to learn about shorebirds and where to see them. It also could be used as a classroom for students and a place to train guides.

There also was strong interest in developing some type of a formal eco-tourism project for the Marismas Nacionales. David Nimkin, a member of the Utah Linking group who helped create an eco-tourism business in the Mexican state of Sonora, offered his perspective on the potential for similar ventures in Nayarit. The Mexicans will develop their priorities for ecotourism and likely request assistance in implementing them.

Nayarit and Utah are only two of the three critical pieces of the Linking project. Partners in Saskatchewan have been inactive during the last several years but that group there is being revived and is expected to reorganize soon.

Manuel Lomeli - Guide Extraordinaire by Lynn de Freitas

Wayne Martinson, Utah important bird areas coordinator for the National Audubon Society and a member of the group that visited San Blas, said watching birds during the Nayarit festival re-enforced the importance of the Linking effort.

"A large overlap of bird species exists between the states of Nayarit and Utah," said Martinson. "From the viewpoint of bird and habitat protection, the linkages between the two states are extremely important. But, also from the viewpoint of someone who likes to watch birds, there is a huge enjoyment that comes from seeing Utah summer birds in their Nayarit habitats."

For more information about "Linking Communities, Migratory Birds and Wetlands" organization contact:
Jim Woolf at Jwoolf@xmission.com
Don Paul at avocet@qwest.net.

Where Does Our Water Come From?

Building a Hydrologic Observatory to Monitor the Remodeling of the Great Salt Lake Basin Watershed

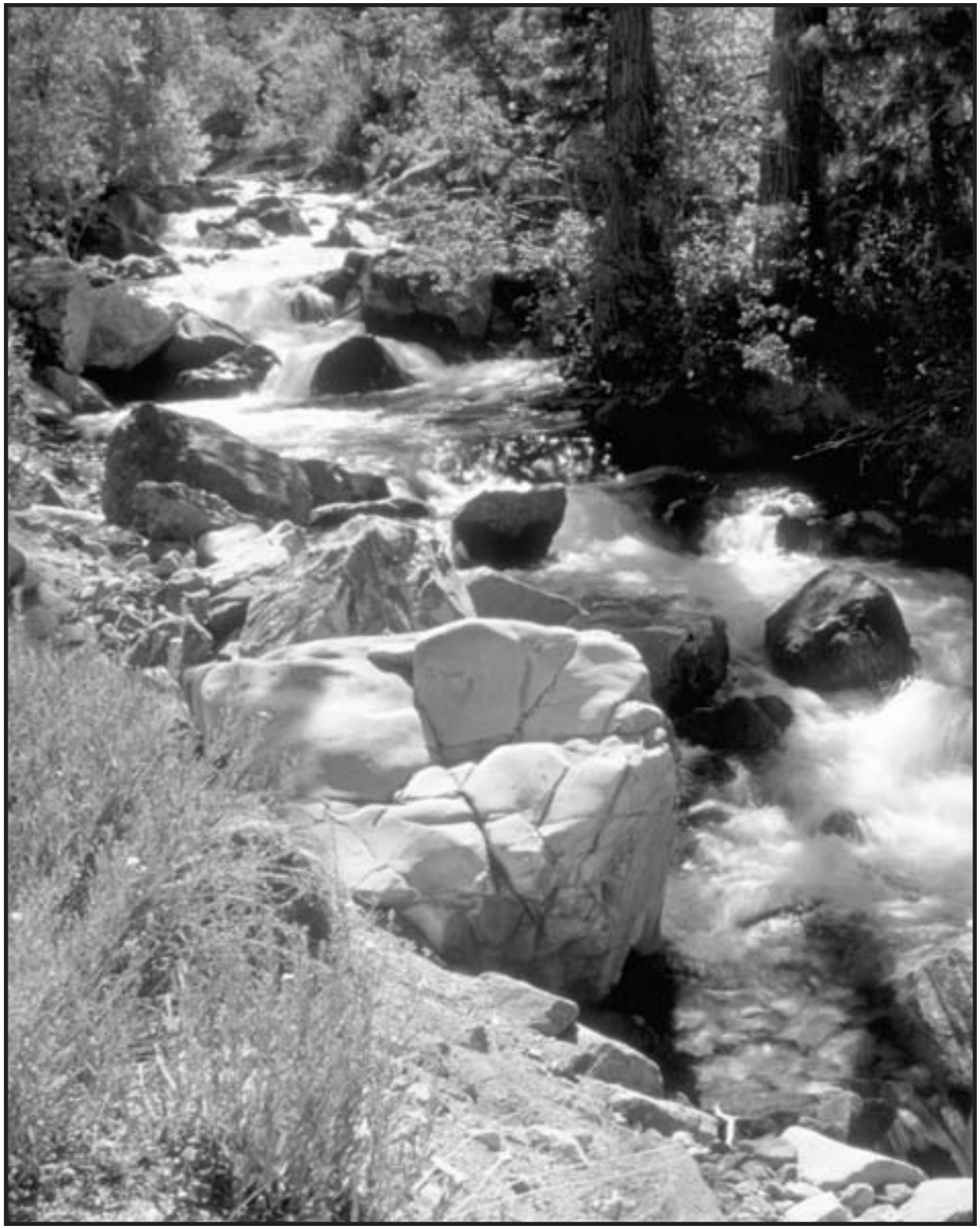


Photo by Bruce Thompson

Have you ever wondered where your household water comes from, how long the water stays in your piping system, what chemical and thermal changes cause your hot water heater to fail and the final destination of water disappearing down your drain? As you remodel your home you might wish that you knew more in order to design the water system to better fit your lifestyle. One approach is to map out the piping network then install instruments that continuously monitor water inflow /throughflow/outflow rates, water chemistry, and water temperature throughout the system. This household monitoring system is analogous to the hydrologic observatory currently being proposed, at a much grander scale, to monitor how human activity is changing the hydrologic system that operates in the eastern half of the Great Salt Lake Basin (GSLB).

Just as water moves through your home, water travels from mountain-top snowfields to the Great Salt Lake at rates ranging from less than a few feet per 1000s of years in sluggish groundwater systems to greater than one foot per second in fast moving rivers. Along the way, water temperatures vary while dissolved chemicals and suspended particles are collected, delivered to, and stored in: lakes, wetlands, groundwater aquifers and manmade reservoirs. Researchers from several universities in Utah (and elsewhere) are teaming with representatives of federal/municipal/state agencies, water conservancy districts, non-governmental organizations and other interested parties to develop a GSLB hydrologic observatory proposal for the National Science Foundation. If funded, the observatory would enable hydroscientists from around the U.S. to use a variety of instruments and techniques to map out water flow paths, flow rates and residence times in the atmospheric, surface water, groundwater and engineered components of the GSLB hydrologic system. Although watershed characteristics vary throughout the U.S., much of what can be learned in the GSLB is readily transferable to other urbanizing watersheds; particularly those in the western U.S.

So, why should tax dollars be used to build and operate a GSLB hydrologic observatory as one of a handful to be established across the U.S.? Throughout the U.S. we confront increased water demand by a growing population. Yet, confidently mapping out sustainable water futures requires that hydroscientists and engineers learn more about the ways that evolving hydrologic systems affect human activity (e.g., through flooding and drought) and the way that humans affect hydrologic systems (e.g., by using water in homes, damming rivers, irrigating landscapes and contributing to global climate change). Tradeoffs are constantly required as decisions are made to balance the water needs of farmers, householders, industry and ecoystems.

The GSLB provides a unique opportunity because evaporation is the primary process for water loss from this closed basin. The absence of a surface water outlet enables us to monitor how water, chemicals and sediments accumulate in the Great Salt Lake as a consequence of the various natural and human-related hydrologic processes operating in the GSLB. Like many watersheds in the western U.S., the GSLB contains rapidly growing urban communities where water supplies are delivered from reservoirs filled by mountain-derived snowmelt, often across watershed boundaries, through complex channel and pipe systems. To satisfy growing demand, water previously used in agriculture throughout the western U.S. is increasingly being transferred to urban uses. The GSLB provides a microcosm of the worldwide evolution in relationships between people and water and an excellent opportunity to observe a wide range of climate and human-induced land-surface changes affecting water availability, water quality, and water use.

If you want to learn more about the future of the Great Salt Lake Basin as a hydrologic observatory please review our web page http://www.greatsaltlake.utah.edu and contact me at 801-581-3864 or forster@arch.utah.edu .

By Craig Forster, Hydrogeologist with the College of Architecture+Planning at the University of Utah

Great Salt Lake Education

The Lake System

Great Salt Lake supports a rich and dynamic biological system of regional, national and global importance. Having no outlet, lake water varies in both level and salinity over time—the combined effects of freshwater inflow from three rivers, precipitation and evaporation rate. This variation influences the nutrient base and habitats for innumerable plants, invertebrates, reptiles, amphibians, mammals and birds. This mosaic of interdependent habitats includes wetlands ranging from freshwater to hypersaline, playas, shorelines and uplands.

The breadth and abundance of bird life at Great Salt Lake have earned its designation as a "Western Hemisphere Shorebird Reserve." Birds of regional, national and international significance are drawn to its 15,000 square miles of water environment, remote islands and shoreline, and 400,000 acres of wetlands. Five *million* birds representing 257 species rely on the lake for resident feeding and sanctuary, breeding or migratory stopover. The ecology of life at Great Salt Lake is an extraordinary example of our planet's rich web of relationships between land and water, food and survival.

S. L. I. C. E.
Friends of Great Salt Lake
Salt Lake Initiative for Conservation Education

The Need for Education

Three significant and interrelated needs exist for Great Salt Lake:

1. Great Salt Lake presents incomparable opportunities for relevant place-based educational experiences in biology, chemistry, geography, geology and weather, as well as in history, language arts and career motivation.
2. Teacher familiarity with the Great Salt Lake Ecosystem is very limited, yet educators at focus groups, workshops and presentations demonstrate a fervent desire to infuse Great Salt Lake into their instruction, but lack materials and knowhow.
3. Record human populations in northern Utah are encroaching upon the lake, while public attitudes remain indifferent at best. To provide for a citizenry that better understand the fragile Great Salt Lake Ecosystem and their relationship to it, an urgent need exists to educate about the workings, wonders and threats to the lake, thus ensuring informed decisionmaking.

The Project

Project SLICE—a *Salt Lake Initiative for Conservation Education*—is designed to assist teachers with matching the wealth of scientific, cultural and economic attributes of Great Salt Lake to their own standards-based instructional needs. A concurrent outcome will be a citizenry that better understand and appreciate the fragile Great Salt Lake Ecosystem to which we are all connected.

Project SLICE targets Teaching Skills, Community Issues and Career Development as key educational priorities.

SLICE services shall include:

- Standards-based Science lessons & activities Curriculum
- Teacher Training Institute
- SpeakersNet in-class and on-site expertise from the region
- Lakeside Learning field trip support services
- Slide & Video Presentations of *The Lake Affect*

The Organization

Friends of Great Salt Lake is a membership organization lead by an active Board of Directors and an Advisory Board consisting of professionals in the scientific, political, literary and broadcast communities.

To date, funding for our Project SLICE efforts has been generously provided by Cultural Vision Fund, Dr. Ezekiel S. and Edna Wattis Dumke Foundation, George S. and Dolores Doré Eccles Foundation, JEPS Foundation, Patagonia Outlet, Tides Foundation, Utah Wetlands Foundation, Walbridge Fund and Wilburforce Foundation.

Additional support has come from our contributing members, teachers, Antelope Island State Park, Fox 13 Television, The Nature Conservancy of Utah, Utah Society for Environmental Education, Utah Museum of Natural History, University of Utah and Westminster College.

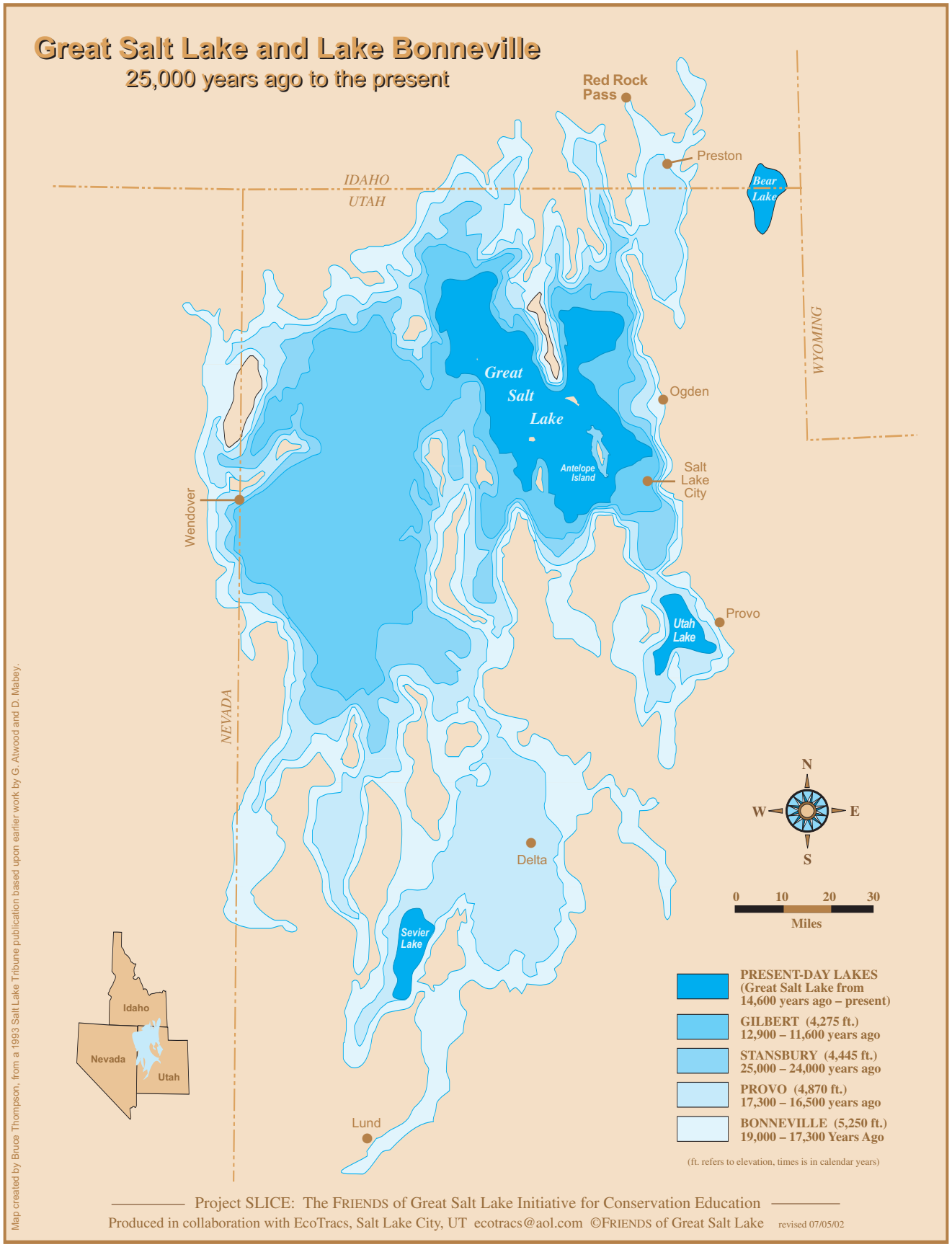
Lake Fact:

#1: How much energy is derived from a single brine shrimp?

#2: How much energy is required for an eared grebe to digest one brine shrimp?

Answer #1: 5.46 joules Answer #2: 4.77 joules

A Slice of SLICE



Doyle W. Stephens Research Scholarship

Celebrate the Legacy

Come join us as we celebrate the legacy of Doyle Stephens and award the 2005 Doyle W. Stephens Research Assistance Scholarship.

The Doyle W. Stephens Research Assistance Scholarship celebrates Doyle's scientific contributions towards understanding of the Great Salt Lake Ecosystem by helping young researchers who are following in his footsteps. This scholarship provides support to undergraduate and graduate students engaged in new or on-going research that focuses on the Great Salt Lake and its surrounding ecosystem.

The first scholarship was awarded in 2003 to Mr. Hyochang Lee, whose doctoral work focuses on the economics of the brine shrimp resource in Great Salt Lake.

The 2004 scholarship was awarded to Ashlee Allred. Ashlee is a native Utahn who is conducting independent undergraduate research examining the microbial diversity of Great Salt Lake.

The 2005 scholarship winner will be announced during a general meeting of FRIENDS on Friday, April 22 at 7pm. The meeting will be held on the Westminster College campus, in the Gore Auditorium. A link to a Westminster campus map is: http://www.westminstercollege.edu/campus_map/

Program Outline:

- Pat Lambert, USGS District Chief, will remark about Doyle Stephens and his contributions to our scientific understanding of GSL.

- Awarding of the 2005 scholarship.

- Bonnie Baxter, Associate Professor of Biology at Westminster College and advisor of last year's scholarship winner Ashlee Allred, will speak about Microbial communities of the North Arm of Great Salt Lake.

- Dave Naftz, USGS Research Hydrologist will speak about Mercury in water and biota from Great Salt Lake, Utah: Reconnaissance-phase results.

Refreshments will be served.

DR. EPHYDRA - WE WELCOME YOUR QUESTIONS VIA EMAIL OR PHONE

E•phy'•dra, a noun; a genus of two species of brine flies that live on the bottom of the Great Salt Lake as larvae and pupae, and along the shores of the Lake as adults.

Brought to you by the Science Committee to help explain the science surrounding Great Salt Lake. We welcome your questions via email or phone. Contact Amy Marcarelli at amym@cc.usu.edu

Spring Runoff - What the future holds

Because a large amount of snow fell in the Wasatch mountains this winter, spring runoff to the Great Salt Lake will be high and may affect the Lake in dramatic ways. In general, increased water supply will raise the lake surface level and decrease the salinity of the water. The decreased salinity, in turn, can affect the physical and biological characteristics of the Lake. However, the specific effects of increased runoff will differ between the different bays of the lake.

In Gilbert Bay, the increased runoff will certainly decrease salinity from last year's high of 17%. However, the magnitude of the decrease will depend on how much water reaches the lake and is not likely to be more than a few percentage points. Salinity will not likely drop low enough to affect the brine shrimp life cycle, and therefore the biological effects in this part of the lake may not be obvious.

In Gunnison Bay, where the salinity is constant at 28% and the salts in the water are supersaturated, we will likely see little effect of runoff and continued domination of the unique microbes that thrive in this part of the lake.

Farmington Bay, which receives most of the freshwater inflow to the lake, will experience dramatic seasonal shifts in salinity with increased runoff. In February the salinity in Farmington Bay had already decreased to 0.5%. At this salinity fish could thrive! Noxious algae that cannot normally survive in the Lake could thrive at low salinities, and brine shrimp would be unable to complete their life cycle. Other zooplankton species found in freshwater lakes have already been observed in Farmington Bay. As the water supply from the melting snow disappears and the dry summer weather arrives salinities in Farmington Bay will increase, and could be back at levels where brine shrimp can thrive by the end of the summer. It will be interesting to visit the Lake throughout the upcoming year and see the changes that this increased water supply will bring to our inland sea.

Bear Lake courtesy of Amy Marcarelli

Discovering Our Lake

Education and Inspiration on the Frary Peak Trail

Upper Frary Peak Trail photo by Bruce Thompson

This Lake Affects Us All!

We don't need to tell fellow lake fans how richly rewarding visiting the lake's diverse treasures can be. But there are probably a few remnant members of the "Big, Salty, Buggy, Stinky Club" in our very own ranks who haven't yet "found the cure" to valley apathy and chronic lake ignorance. We hope this page will serve as a prescription to those of you in the "undecideds," as well as to the rest who just need a reminder of what's waiting for you out there.

Inspiration

We think you'll agree that these and future picture stories will attest that our lake ecosystem affords countless opportunities for science, geology, history, photography, painting, sketching, wildlife viewing and just plan exploration and recreation. There is just something about the color, sound and taste of that Great Basin air...

Education

On 12 March, FoGSL Assistant Director Katie Pearce and Education Consultant Bruce Thompson were accompanied by Patti and Roland Allen, Pam Sanders, Jan Floor and Katie's son, Nicholas to explore Antelope Island's Frary Peak Trail. Their purpose was to explore the potential for a trail-based outdoor classroom for a Lakeside Learning destination site, but as always happens at the lake, education and inspiration are difficult to distinguish.

Perhaps one of the finest and most treasured blessings of being a teacher is the experiences I accrue while searching for new and interesting ways to present information to my students. After taking a teacher training class with Bruce Thompson a few years ago I met a new and precious friend: the Great Salt Lake Ecosystem.

Each year since then my fourth graders have traveled to Antelope Island to experience the beauty and life on the island and its surrounding lake. I find that learning about Great Salt Lake is contagious. As a result of our class field trips, I have been told by many parents how visiting the lake evolved into a valued part of their family outings.

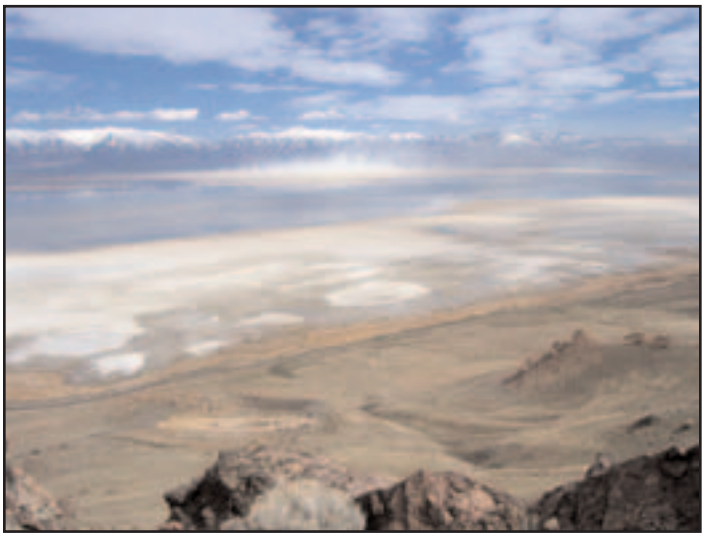
It was for the purpose of enhancing the FoGSL Project SLICE curriculum that on March 12th I took part in a pilot test hike on Frary Peak and Dooly Knob Trails. Developing this kind of learning experience for my fourth graders about the largest island on Great Salt Lake had been discussed the past few months, and now our purpose was to evaluate the potential for Frary Peak Trail to generate meaningful hands-on learning experiences.

Our group of seven were awed by spectacular vistas. We were greeted with soaring pelicans and observed bighorn sheep and many beautiful bison. Just before lunch we were surprised with the smell of sweet onions only to find wild onion growing right next to us. With "bird's eye" views of the lake from all directions, the reflection of the snow-capped Wasatch Mountains and glimpses of breath-taking wildlife, we all returned to our homes with a deeper gratitude for Antelope Island and Great Salt Lake.

While the full 3.6-mile trail to Frary Peak was beyond the scope of a classroom fieldtrip, we discovered a newly opened spur trail with the curious name, "Dooly Knob." It brought us to an enchanting peak with pristine vistas. Far below us were a few bikers and horseback explorers, as well as distant bison and bighorn sheep. Delicate and colorful wildflowers were coming into bloom, and the newly blossoming ephemeral leaves of the sage suggested a captivating lesson for my students.

The pilot hike for a field trip for my class was a success, but I can't help but think that I am the one who benefited most. Once again I am eager to bring students, parents and friends here to share our discoveries. Thank you, dear friend, for letting me know you better and for the beauty and life you share with us, your neighbors.

by Patti Allen
Fourth Grade Teacher
St. Sophia Greek School, Salt Lake City



The View East photo by Bruce Thompson

Desert Parsley photo by Bruce Thompson

Wild Onion photo by Bruce Thompson

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Deadlines: Sept. 16 (Fall), Dec. 16 (Winter), Mar. 16 (Spring), and June 16 (Summer). Submit articles and images for consideration to Lynn de Freitas ldefreitas@ earthlink.net or call 801-583-5593.

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This scholarship supports undergraduate or graduate research examining various aspects of the Great Salt Lake ecosystem. It encourages inquiry and contributes to the protection, preservation and understanding of our Great Salt Lake.

Lakeside Learning Field trips
Low-cost field trips are currently offered to area schools. Our trips Antelope Island State Park provide fantastic staging for discussions of food webs, bird migration, desert vegetation, and animal adaptations. For many kids, this is their first time at the lake and the field trip is the highlight of the year. What an opportunity to plant the seed for future support for our lake!

Project SLICE
We are looking forward to a successful year in our education department. Plans are underway to complete our SLICE curriculum. The Salt Lake Initiative for Conservation Education meets science core requirements for Utah schools. It is a unique program because it is "place-based" and provides students with the opportunity to make a personal connection between the abstract idea of the "environment" and their own community. That connection is the key to the formation of a community consciousness and to the creation of personal responsibility and connectivity.

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