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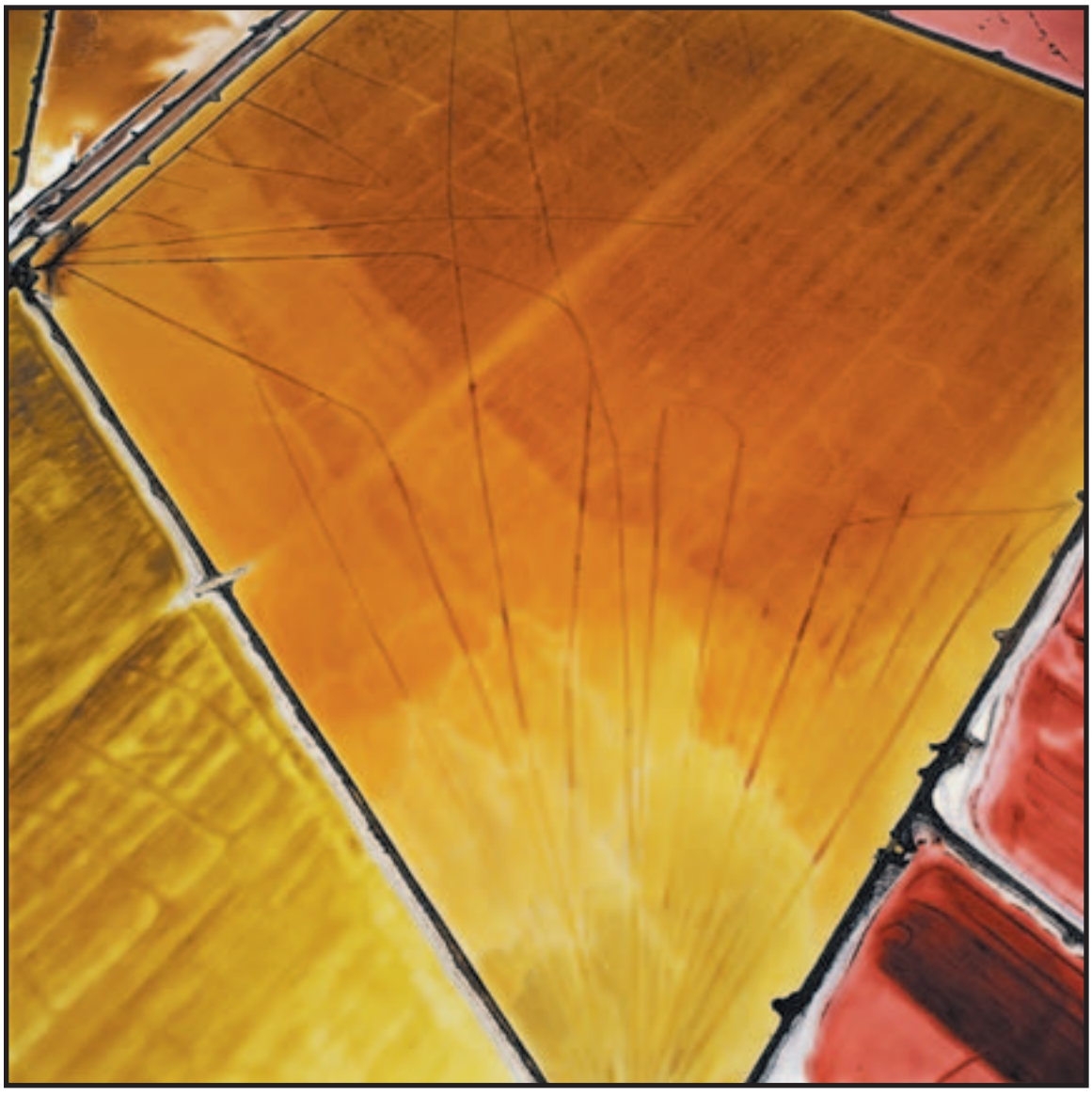


Terminal Mirage #247 - 3 by David Maisel, © 2003

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

Keeping the Wheels on the Wagon; or The Importance of Working Hard to Uphold the NEPA Process

"Future generations will know whether we answered the key questions. History will be our judge, but what's written will be up to us...We can't say our generation didn't know how to do it... We can't say our generation couldn't afford to do it. And we can't say our generation didn't have reason to do it. It's up to us!"

Bono

On Monday, November 14th, at about half past ten in the morning, in his East Office on Capital Hill, Governor Jon Huntsman, Jr. signed the Legacy Parkway Settlement Agreement into law. Five days earlier, November 9th, the Settlement Agreement was passed by a 2/3 majority vote during a Special Session of the Utah Legislature.

For a Monday, this was a pretty good day.

This ceremony confirmed the passage of the Legacy Parkway Settlement Agreement before the legislative and executive branches of the State of Utah. The next steps would be before the judiciary, but not before the public is given an opportunity to review the Final Supplemental Environmental Impact Statement scheduled for release on Friday, November 18th. And not before the Federal Highway Administration issues a Record of Decision, and the Army Corps of Engineers, also issues a Record of Decision as well as a 404 Permit to construct the Parkway.

When that happens, the parties to the Settlement Agreement will file with the United States District Court for the District of Utah a "Joint Notice and Request to Dissolve Injunction". This filing will ask the District Court to "lift, terminate, and dissolve the injunction that was entered against the construction of the Legacy Parkway" on November 2, 2001.

As I reflected on how much time has passed since this public process began; almost 9 years ago, I was surprised that my feelings were so mixed: somewhat numb and somewhat euphoric.

Flanked by John Njord, Executive Director of the Utah Department of Transportation and Lieutenant Governor Gary Herbert, I heard the governor not only speak to the significance of the substance of the Settlement Agreement but commend to the process as well. It was at that moment I realized how proud I really was.

Proud about the work that was achieved by such a talented and dedicated community that cared enough to work against great adversity in order to uphold the principles of the National Environmental Policy Act (NEPA) and the public process. Proud that even though none of us wanted to see a highway built, we were able to forge an agreement that sets a precedent for environmental protection, transportation planning and economic development that would not have happened otherwise. And proud because, as we had always hoped, the culmination of this effort will make tomorrow better than today in the State of Utah.

So how will this Legacy Parkway be different from the Legacy Parkway that was presented to the public in the Draft Supplemental Environmental Impact Statement?

For starters, this Legacy Parkway will not be a freeway. This four lane roadway will be much narrower than initially proposed. Speeds will be posted at 55 mph, instead of 65 mph. Meander and curvature of the travel lanes within the right of way and the entrance ramps will be used to protect wetlands and other sensitive habitats, while reinforcing slower speeds.

Noise reducing pavement, and design characteristics of the Parkway such as the landscaping, minimal lighting, native and xeric species of vegetation and shoulder treatments will provide a very distinctive feel for travellers coming from a freeway experience.

No billboards will be permitted within the state-owned right-of-way, within the Legacy Nature Preserve, or on state-owned property where the billboard would be visible from the main traveled way of the Parkway.

Ah yes - the trucks. Delivery trucks like Winder Dairy or UPS, which represent a large percentage of trucks travelling Utah roads, will be permitted. Throw in the standard pick up and 4 wheel drive vehicles too. But trucks with five or more axles or of 80,000 pounds or greater registered gross vehicle weight will not be allowed on the Parkway. Exceptions to this restriction would occur during an incident on I-15, and during reconstruction of I-15 as needed.

As you know, this issue was extremely contentious during both the negotiating phase that led up to the Settlement Agreement and the Special Session. We are extremely grateful to those legislatorss whose eloquence and expository prowess helped secure enough votes to pass the agreement during that session.

Increased environmental protection will be provided for the Legacy Nature Preserve through an additional 121.21 acres of land located on the west side of the right of way at 500 South in West Bountiful. This parcel was an inholding next to Preserve acreage and was slated for commercial development. The development would have generated 50,000 car trips daily. The acreage will be managed as part of the Preserve but is designated as mitigation property for future transportation projects.

You will recall when the Court of Appeals issued its opinion on September 16, 2002, it stated that the federal defendants had failed to meet certain legal requirements that included a wildlife impacts analysis beyond 1000' of the right of way.

The Settlement Agreement will provide substantial funding for a 5 year noise impact study on population density and population productivity of sample species of wildlife within the Legacy Nature Preserve. The result will be a definitive and site specific study that will be extremely beneficial to fulfilling the mission of the Preserve which is "to provide in perpetuity, quality wildlife habitats for mitigating impacts to wetlands and wildlife associated with the Legacy Parkway."

A Science Advisory Committee will be established to act as a resource to UDOT on the management of the Legacy Nature Preserve. Working in a consultative capacity, these experts will provide useful insights on scientific and technical assistance and research projects for the Preserve.

And there's still more to this outcome that requires reading in greater detail. You can do that by visiting our website: www.fogsl.org where the PDF of the Legacy Parkway Settlement Agreement awaits.

But as we look forward, it's important to be prepared to hear the outcome's "boos" and "cheers". There are many people in the Great Salt Lake neighborhood and beyond who are still not satisfied because we either didn't get enough or perhaps, got too much.

To me, the key point is that we kept the wheels on the wagon by seeing this public process through. We worked with integrity and in earnest. And we worked for the standard of professionalism and thoroughness that this Settlement Agreement reflects.

In saline,

Lynn de Freitas

"Democracy depends on engagement, a firsthand accounting of what one sees, what one feels, and what one thinks, followed by the artful practice of expressing the truth of our times through our own talents, gifts, and vocations."

Terry Tempest Williams - The Open Space of Democracy

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 DVD 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

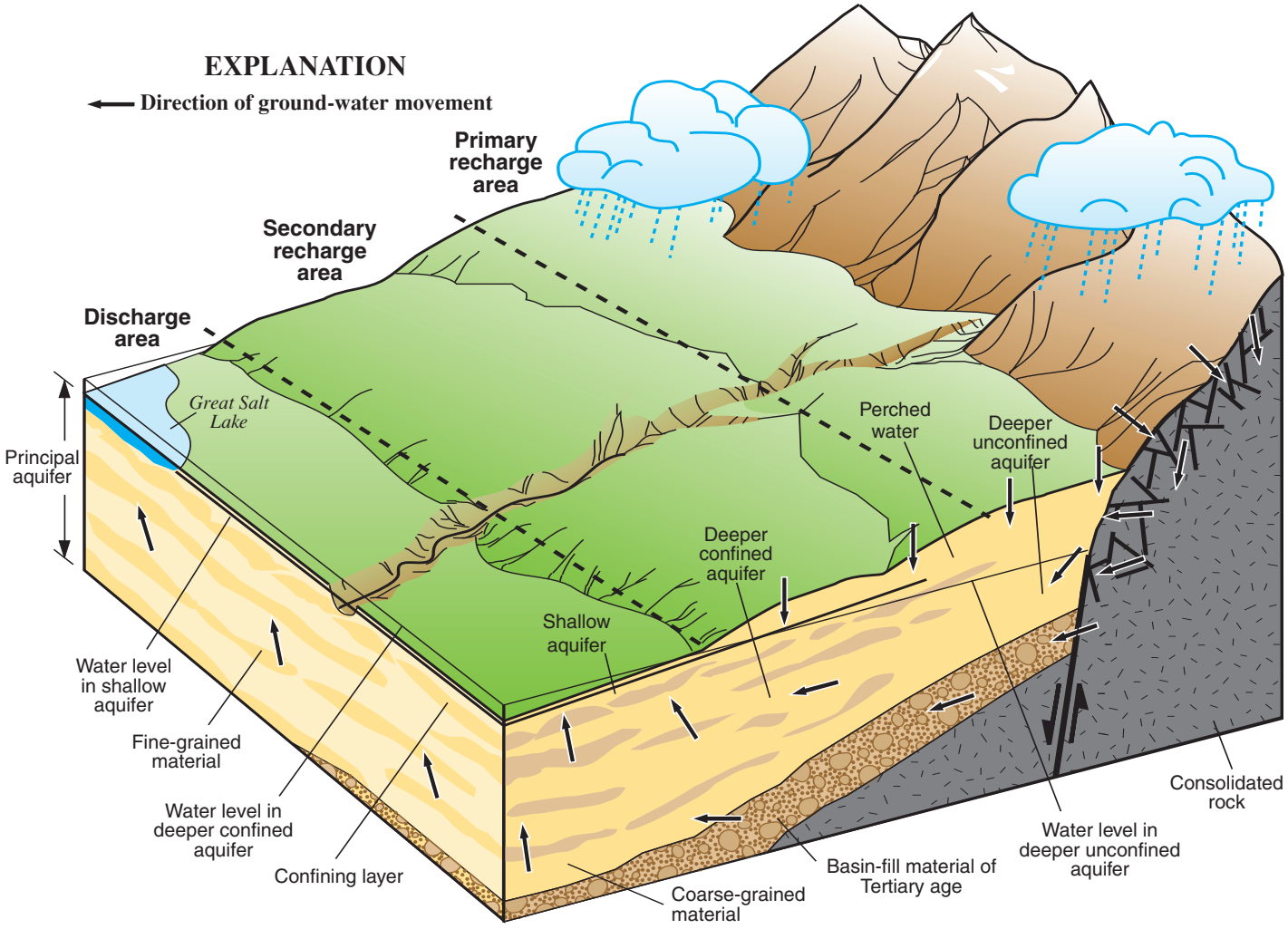
Terminal Mirage #247-3 by David Maisel, © 2003

For the past twenty years, I have been making aerial photographs of environmentally impacted landscapes, in a series called Black Maps. These images have as their subject matter the undoing of the natural world by the wide-scaled human intervention in the landscape.

The most recent chapter of this work is Terminal Mirage; inspired by Robert Smithson's apocalyptic writings on the Great Salt Lake. Thus far, at the project's outset, I have photographed at Smithson's Spiral Jetty, both from the air and on the ground. I have also made aerial images at the Tooele Army Depot, where 900 munitions storage igloos sprawl across the valley floor, and at the site of evaporation ponds covering some 17,000 acres along the eastern and southern shores of the lake.

David Maisel - david@davidmaisel.com

Diagram showing the basin-fill deposits and ground-water flow system in Salt Lake Valley, Utah



USGS; Water-Resources Investigations Report 02-4115

GROUNDWATER FLOW AND RECHARGE WITHIN THE WATERSHED

Approximately 1.5 million people (85% of Utah's population) currently live along the Wasatch Front where Utah's three largest cities are located. By 2020, the population is projected to increase to 2.5 million and by 2050, will double to 5 million people.

Water means life to Great Salt Lake wetlands and habitats upstream within the watershed. Understanding the relationship that exists between precipitation, surface water inflows and ground water recharge is important.

Below average precipitation and drought cycles influence the health of our surface and ground water resources. Development and diversion of water resources is becoming more commonplace as we grow.

Decisions we make about water resources should always consider potential impacts not only on riparian habitats upstream, but downstream where Great Salt Lake awaits.

Karl Kappe

Parting Thoughts on GSL Management

Lynn asked me to commit to writing a few parting thoughts as I muddle my way into retirement. I will write briefly from my perspective on the nature and extent of planning for Great Salt Lake.

The President's Message in the Fall 2004 newsletter concluded with a note of optimism for FRIENDS and protection of the Great Salt Lake Ecosystem. I echo that sentiment.

Karl Kappe by Lynn de Freitas

A lot has changed over the last 40 years regarding planning for the lake. In 1965, a preliminary master plan for development of Great Salt Lake over the next 75 years was submitted to the Great Salt Lake Authority. That plan highlighted "utilizing surplus waters from the Bear River, Weber River and Jordan River drainage areas and using Kennecott tailing material for the construction of dikes, highways and land reclamation within Farmington Bay." The plan identified a subdivided agricultural and industrial complex on 40,000 acres in Farmington Bay. Roads to this complex and a fresh water impoundment in the bay were included. Dikes and/or roads for the following were in the plan: Bird Island to Promontory; Promontory to Fremont Island; Antelope Island to Fremont Island; and south access to Antelope Island State Park. Some of those ideas carried forward to the 1990s and will sound familiar to long-time lake watchers.

Hopefully, the 2000 Comprehensive Management Plan and other plans that follow will drive nails into the coffin of bad ideas for the lake. I freely admit a bias in favor of the 2000 plan. Thanks to public comments from the Great Salt Lake Alliance and others, the public trust doctrine has emerged in prominence over the list of multiple use policies for management of the lake by making those policies subject to consistency with the public trust doctrine. This contributes to my optimistic outlook for the lake. I expect that subsequent plans will emphasize natural systems over manipulation.

The Fall 2004 newsletter mentioned shoreland plans and numeric water quality standards as examples of activities likely to have a positive influence on the lake and lands adjacent to the lake. I believe Davis County was first to tackle shorelands issues, followed by Box Elder, Salt Lake and Tooele counties. Much remains to be done regarding water quality standards, but the Department of Environmental Quality is off to a very good start.

Another reason for optimism is funding for implementing the 2000 plan. Thanks to the budget recommendations by the Forestry, Fire and State Lands Advisory Council, and public support voiced during legislative budget committee meetings, funding for the Division of Forestry, Fire and State Lands increased substantially. Search and rescue capability in the north arm increased with construction of a new ramp at the Little Valley harbor. Funds are available to contribute annually toward water quality and open space protection. One time funding is available for reducing navigation hazards, developing a salt balance for the lake, studying declining flows at Locomotive Springs WMA, studying north arm bathymetry to complement south arm studies recently completed, and improving access to Rozel Point and the Spiral Jetty. Funds appropriated for resolving the dispute over ownership within the Bear River Migratory Bird Refuge may not be needed if our federal partners favor negotiation over litigation. Forestry, Fire and State Lands received funding for studies related to studying anthropogenic changes within the lake's watershed. This will be done in cooperation with USU.

One very minor note on the downside: During an ad-lib moment following a news story on water storage at the mouth of Weber Canyon (4/21/05), one of your Advisory Board members implied that water reaching the lake is wasted. You may have some work to do on that subject.

The Fall 2004 newsletter asked, Could it be that the time for the Great Salt Lake has finally come? From my perspective, the answer is a resounding yes. Planning for the lake is spreading to the uplands and tributaries.

I have enjoyed working with representatives of FRIENDS on a variety of issues in different forums over the years. Your leaders serve you well. I wish you continued success in pursuit of your mission.

Kappe
Strategic Planner for the Division of Forestry,
Fire and State Lands

Bear River Development

Unnecessary to Meet Projected Water Needs of 2050

More proposals to fund Bear River water development have recently surfaced and are gaining momentum for consideration during the 2006 Utah Legislative Session. The projects, consisting of more dams and more diversions to bring water south to the Wasatch Front, are not only unnecessary and fiscally irresponsible, but would also create significant impacts to Great Salt Lake and its wetlands.

The Bear River provides 40 percent of the surface water inflow to the Great Salt Lake. In its descent from the High Unita Mountains, the Bear flows through three states; Wyoming, Idaho and Utah where it finally enters the Lake. At this delta lies one of the nation's most important, and yet most threatened, wetland ecosystems.

Great Salt Lake's 400,000 acres of wetlands are hemispherically important and provide habitat for more than 250 bird species that rely on the Lake for resting, nesting and staging. Because the Lake is so shallow, relatively small changes in inflow result in enormous changes in surface area. These changes create problems for wetland habitat and the birds that rely on the habitat.

Water suppliers that include the Jordan Valley Water Conservancy District (JVWCD) and Weber Basin Water Conservancy District (WBWCD) are proposing a massive diversion of 220,000 acre feet of water from the Bear River to the south to support already over watered lawns along the Wasatch Front. Development would reduce the average annual outflow of the Bear by 18 percent. In a low water year, the diversions would take as much as 70 percent of the river's flow.

At a cost of $680 million, this development threatens the Bear River delta; would impair water quality and dry up highly productive wetlands, and would create drastic changes in lake levels, salinity and habitat viability along Great Salt Lake.

Readily available facts indicate that cheaper alternatives exist, and that such development is totally unnecessary.

A report released last August by the Utah Division of Water Resources, confirmed that this development was not needed-even as far out as 2050. The report shows a water surplus in 2050 for Cache County, Davis County, Summit County and Salt Lake County. Box Elder, Weber, and Morgan Counties show small shortfalls in 2050, but these total less than 20,000 acre-feet – nowhere near the 220,000 acre-feet developed by the Bear River proposals.

It's worth noting that these numbers do not include any agricultural water transfers – water that moves from agricultural to residential use as our growth changes the land use. As an example of the enormity of this issue, the state predicts that in Salt Lake County alone 85,000 acre-feet of agricultural water will become available through agricultural water transfers by 2050. While not every drop of that water can directly transfer to municipal use, there is still an enormous pool of "new" water on its way.

The current discussions about how to fund Bear River development all focus on fundamentally unfair approaches. The ideas rely on tax dollars from taxpayers statewide, even though only about half of the state's population could possibly receive the water. So, people who live in Salt Lake City, Provo, Orem, Moab – the list goes on – will all pay for the project but receive no water. Even people who do receive water will be paying the bill twice; through their taxes and again in their water bill. It appears that the only interests to benefit from this development are the water suppliers and the state.

So although the state's water conservation goal (a 25% reduction by 2050) is incorporated into planning numbers, our elected officials continue to ignore the alternatives of stronger conservation efforts, agricultural water transfers and other creative ideas.

For example, if Weber County reduced their water demand by an additional 6% through conservation, their predicted deficit would disappear. Alternatively, 82,000 acre-feet of water would become available in the Weber Basin through agricultural water transfers by 2050 – if just 8% of that water is transferred to municipal use, the Weber County shortfall disappears.

Remember: the total predicted 2050 shortfall for the counties of concern is less than 20,000 acre-feet and yet JVWCD and WBWCD, and our state legislators want to build a $680 million dollar project to deliver 220,000 acre-feet of water to address this problem, while cheaper and more efficient alternatives exist. Something is wrong with this picture.

These funding proposals will be debated and decided during the 2006 legislative session. If you would like more information about the development proposals, please contact me at 801-486-4776.

Merritt Fry
Executive Director, Utah Rivers Council

A Progress Report

Farmington Bay Beneficial Use Assessment Program

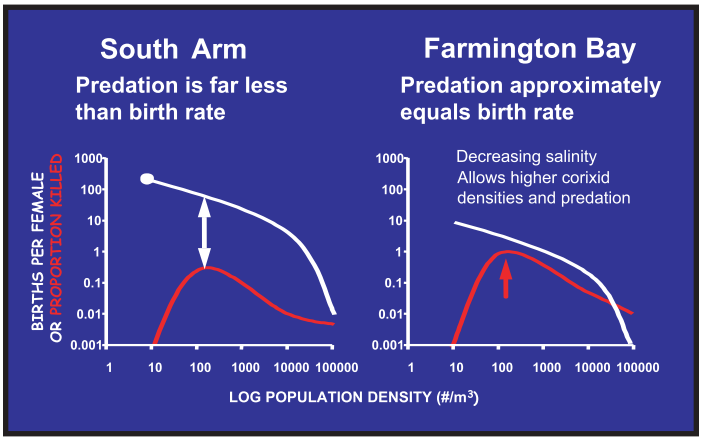
In an earlier edition of the FRIENDS Newsletter, (Summer 2003), I provided a brief description of Great Salt Lake, its salinity ranges among the different areas and the Division of Water Quality's plans in embarking upon a program to develop and perform a beneficial use assessment of Farmington Bay and its wetlands.

Our plans outlined an ambitious effort to characterize the aquatic ecosystems in both the open water and in the wetlands. We received no direct funding from EPA to conduct studies on the open water. However, we acquired funds from Central Davis Sewer District via a special arrangement with the State Revolving Loan Program.

We contracted to Dr. Wayne Wurtsbaugh of Utah State University to perform monthly sampling of the phytoplankton (algal) and zooplankton communities within the open water and both Dr. Gary Belovski, of Notre Dame University, and Dr. Wurtsbaugh performed laboratory bioassays to determine nutrient and salinity limitation and predator-prey relationships between Corixidae (a small predacious aquatic bug) and brine shrimp. These results indicate that the bay is very complex and dramatically different from other portions of Great Salt Lake. For example, it has been known that while corixids flourish in the bay, they occur at very low densities in the south and north arms. Their threshold for survival appears to be about 8% salinity. The bay is most often below this value while the lake is always above. This helps to explain Figure 1 where corixid populations are too low to present any impact on brine shrimp reproduction in the lake proper. However, in the bay, there are both much higher corixid densities as well as reduced brine shrimp reproduction due to lower salinity. Therefore, corixid predation may have a significant impact on brine shrimp populations.

The bay also has episodes of very low dissolved oxygen and elevated hydrogen sulfide. We do not yet know if these two constituents play a role in brine shrimp survivability. Indeed, it is difficult to perform in situ (caged) studies or control these constituents in a laboratory setting. This remains one of our challenges.

Another important observation is the presence of nitrogen-fixing Cyanobacteria in Farmington Bay, but not in the lake proper. Both the bay and the lake proper are severely nitrogen limited. This favors organisms that are able to fix their own nitrogen. Yet, as with corixids, Cyanobacteria can't tolerate salinities above about 8%. Hence, low salinities in Farmington Bay in spring and early summer in 2004 and particularly in 2005 allowed substantial blooms of the Cyanobacterium Nodularia.



Corixid Predation on Brine Shrimp Reproduction

Many Cyanobacteria, including Nodularia, produce toxins that are known to impact fish populations and even wildlife, livestock and pets (remember the cattle that died after drinking Matt Warner Reservoir water this past winter?). However, we do not know if the Nodularia in Farmington Bay have any impact on the aquatic life or waterbirds. There is no evidence for this thus far. There are many important questions about the Farmington Bay ecosystem that remain unanswered.

In a recent article in the Ogden Standard Examiner, Leland Myers, Manager of the Central Davis Sewer District posed other important questions about the management of Farmington Bay. For example, he performed sediment assays that showed that placement of clean water (from the tap or from Kay's Creek) over Farmington Bay sediments allowed substantial quantities of phosphorus to re-dissolve into the water column. Further, extremely high phosphorus concentrations occur within at least the last 150 years of sediment deposits in the Bay. This is not unusual among terminal lake systems such as Great Salt Lake. Mr. Myers has suggested that the typical chemical phosphorus removal accomplished by expensive tertiary treatment of municipal wastewater may result in little overall improvement to Farmington Bay Water Quality. We will certainly perform more testing in order to understand these relationships.

Another alternative, creating more breaches in the Syracuse causeway, thereby allowing mixing of more saline lake water with Farmington Bay may eliminate the noxious Cyanobacteria blooms. However, we do not understand how mixing the nutrient-enriched Farmington Bay water will affect the brine shrimp and other comonents of the aquatic ecosystem of the lake.
Farmington Bay wetlands have received even greater attention than the open water of Farmington Bay. We completed preliminary sampling in 2004 and used these results to design intensive and

multi-seasonal sampling during 2005. We identified reference (control) sites in both impounded (refuge and duck club ponds), and in sheet-flow environments. We have identified sharp gradients in nutrients as Jordan River water passes through the series of various duck ponds or as we sample wastewater discharges across the mudflats. As is commonly reported in the technical literature, wetlands can be very effective in removing nutrients. For example, during summer, in a series of four ponds located in the Ambassador Duck Club, total phosphorus declined from a mean of about 4 parts per million (the approximate phosphorus concentration in 100% secondary sewage effluent), in the upstream pond to about 0.04 ppm in the downstream pond. For comparison, many of our mountain lakes and streams contain more phosphorus than Jordan River water that has passed through these ponds.

Similarly, the vegetation and aquatic macroinvertebrate communities respond accordingly. For example, exotic and/or more invasive plants generally dominate locations near the mouth of Jordan River or sewage discharge points. Farther downstream, however, both plant and invertebrate communities assume characteristics more similar to our reference or control sites.

How do we interpret these results? Keep in mind that our primary goal is to determine whether beneficial uses are impaired. In the case of wetlands, we have identified beneficial use as supporting waterfowl and shorebirds and the aquatic life in their food chain. We generally define "support" as: the ability of the environment to provide for the life-history needs of the aquatic life (or waterfowl and shorebirds). This includes the ability to provide for reproductive success (i.e., success rates comparable to a reference site), and to provide adequate food and habitat for juvenile through adult stages.

I don't believe anyone would dispute the fact that Farmington Bay is hyper-eutrophic, including episodes of cyanobacterial blooms, low dissolved oxygen and generation of hydrogen sulfide and lower densities of brine shrimp than the lake proper. However, other aquatic organisms do flourish in the Bay. So what would be appropriate indicator species to monitor for the determination of beneficial use support? Brine shrimp is certainly appropriate for the lake proper. But reduced salinity and the concurrent predatory pressure by corixids likely contributes to suppressed brine shrimp populations in the Bay. Similarly, eared grebe, a common resident of the lake during fall, selects brine shrimp for 99.7% of their diet. Hence, eared grebes are much more abundant in the lake proper than in the Bay. On the other hand, shorebirds such as American avocets, blacknecked stilts, Wilson's phalaropes, and whitefaced ibis, congregate around the open spaces where discharged water sheet-flows across the mudflats and meets the standing water of the Bay. Here, many tens, or even hundreds of thousands of birds, in a single flock, engage in an unparalleled feeding frenzy. Interestingly, what is one of their favorite prey? Corixids. But, let's throw one more hypothetical twist into this conundrum. If the salinity was higher in the bay, precluding corixid occupation, would brine shrimp populations be sufficiently high and of sufficient preference to provide the necessary food base for shorebirds? These are just a few examples illustrating the ecological complexity and variation among Great Salt Lake and Farmington Bay ecosystems.

What are the appropriate questions that must be answered in order to determine whether these systems are impaired, or threatened?

Is waterfowl and shorebird reproduction successful?

YES.

Are juveniles surviving to adulthood?

YES.

Are adequate food and habitat resources available?

It appears so, thus far. (Reproductive success of American avocets and blacknecked stilts is at least equal to that in the National Bear River Migratory Bird Refuge near Brigham City). Also, the greatest concentration of Wilson's phalaropes, in the entire US, "refuels" in Farmington Bay wetlands each fall.

BUT, could we make it better? In other words, would reducing nutrient loads improve the ecological quality of Farmington Bay and its wetlands?

We don't know.

As you can see from these few examples, this remains one of the most elusive and challenging questions facing the Division today. Stand by. We continue searching for answers and certainly welcome input from all interested parties.

Theron Miller, Ph.D.
Utah Division of Water Quality

The Power of Partnerships

Community-based Conservation in the American West

Those who settled and still live in the American West are defined, in part, by a sense of independence and self-reliance. Self-determination of pioneers and early settlers built and shaped the landscape that surrounds us. Today, though, that characterization of the American West, and those that live here, is shifting, as a paradigm of partnerships, collaboration, and cooperation emerges.

Ed Marston, Publisher Emeritus of High Country News, summarized this change succinctly, "The ranchers know that if they are to continue to use the public's land, they need public support. The environmentalists recognize that if they want open space and habitat and a healthy watershed, the ranchers have to stay in business."

These efforts have been given many names: community-based collaboration, local working groups, cooperative conservation, and community-based conservation. Although there are nuanced differences, the underlying themes of these endeavors are largely the same: (1) to bring together people with diverse perspectives, interests, and values and (2) to understand and develop solutions to complex problems. Community-based conservation, in particular, implies heightened participation at the local level in problem identification, deliberation, and the development of solutions.

In Utah, community-based conservation is establishing a strong foothold. Adaptive Resource Management Local Working Groups have been established in eleven areas of the state to address declining sage-grouse populations, four Special Area Management Plans are underway to preserve wetlands in the Great Salt Lake Ecosystem, and several other partnerships have been developed to tackle a variety of natural resources issues from clean water to the desert tortoise.

Ranchers, farmers, recreationists, local governments, environmentalists, Native American Tribes, universities, and state and federal agencies are among the players now sitting together at the table and working together.

There is power in these partnerships. According to Cassandra Moseley of the Institute for a Sustainable Environment, "Community-based conservation rejects the privileged position that professionals and scientists have had in earlier paradigms." Rather, community-based conservation relies on both the first-hand knowledge of local stakeholders and the expertise of managers and academics.

Local decision-making has the power to revitalize our connection with each other and our sense of place on the landscape and in the local community. Through deliberation and discussion we learn more about the challenges each partner may face. Playing an active role in natural resources decision-making gives citizens a deeper understanding of democracy and governance that is the foundation of our Nation. By taking ownership in the process and being accountable for the outcomes, we further a sense of stewardship for the landscape we are a part of.

In a time when it seems as though other forms of natural resources management have failed, community-based conservation is being heralded as a return to the fundamental democratic process that builds on and develops a sense of place, recognizes economic constraints, and believes in the capacity of citizens to make intelligent, sound decisions for the natural places they are a part of.

The fundamental success of community-based conservation is not necessarily the biological and ecological outcomes of the process, but the process itself. As Aldo Leopold wrote, "We shall never achieve harmony with land, any more than we shall achieve absolute justice or liberty for people. In these higher aspirations the important thing is not to achieve, but to strive."

Sarah G. Lupis
Community-based Conservation Specialist
Utah State University Extension

Looking East from GSL by Dayle Record

Ghost Dust from Great Salt Lake

Maurine Haltiner

Each night Selene slipped
above the desert landscape.
In crocodile phase, her teeth
scraped the skin of the sky.
In rounder guises, she dropped
the image of her pocked face
onto a lake saturated
with salt crystals.

For eons that was all. Then snow
and rain failed. The lake receded.

Now, frequently, suddenly, out
of nowhere, like a colossal Lazarus
recovered, garments flapping
in the wind, ghost dust
rushes across barren ground
and climbs the sky. Or sand breezes
dot the landscape like distant
pickup puffs, roll from south
to north over the desert
floor, mushroom into a frenzy
of white, their fierce
energy belied by a refined
blessing of copper sunlight.

That, too, could be all – exposed
lakebed simply sunstruck, salt
bright, sometimes poised in airy flight.

But toxic shades
of selenium, cold as iron, ride
those winds. Released from lake
limbo, where they waited
harmless in jade water,
they rise up and cast off
their metallic lustre.
In each wind's wake,
lungs cry for elemental
air, yearn for storms
fragrant with sweet
cedar, sagebrush,
and balm
of moonlit
pine.

Moonrise Over Gunnison Bay by Dayle Record

Call for Volunteers

Your Friends need YOU!

Katie, Jean and Yae during a Lakeside Learning Field Trip

You know the importance of Great Salt Lake and you know how important it is to build awareness and appreciation of the Lake.

Put your time where your mind is and turn knowledge into action. Become a volunteer!

We need help with the the following programs.

Great Salt Lake Issues Forum

On May 5 & 6, 2006, we will be hosting our 6th Biennial Great Salt Lake Issues Forum. The program will be "Range-wide Bird Conservation and the Great Salt Lake's Role in Linking Partnerships Within the Western Hemisphere." Presenters will be coming from Canada, Mexico and around the nation to participate in this two day celebration. There's always lots to do to prepare for this event.

Lakeside Learning Field Trips

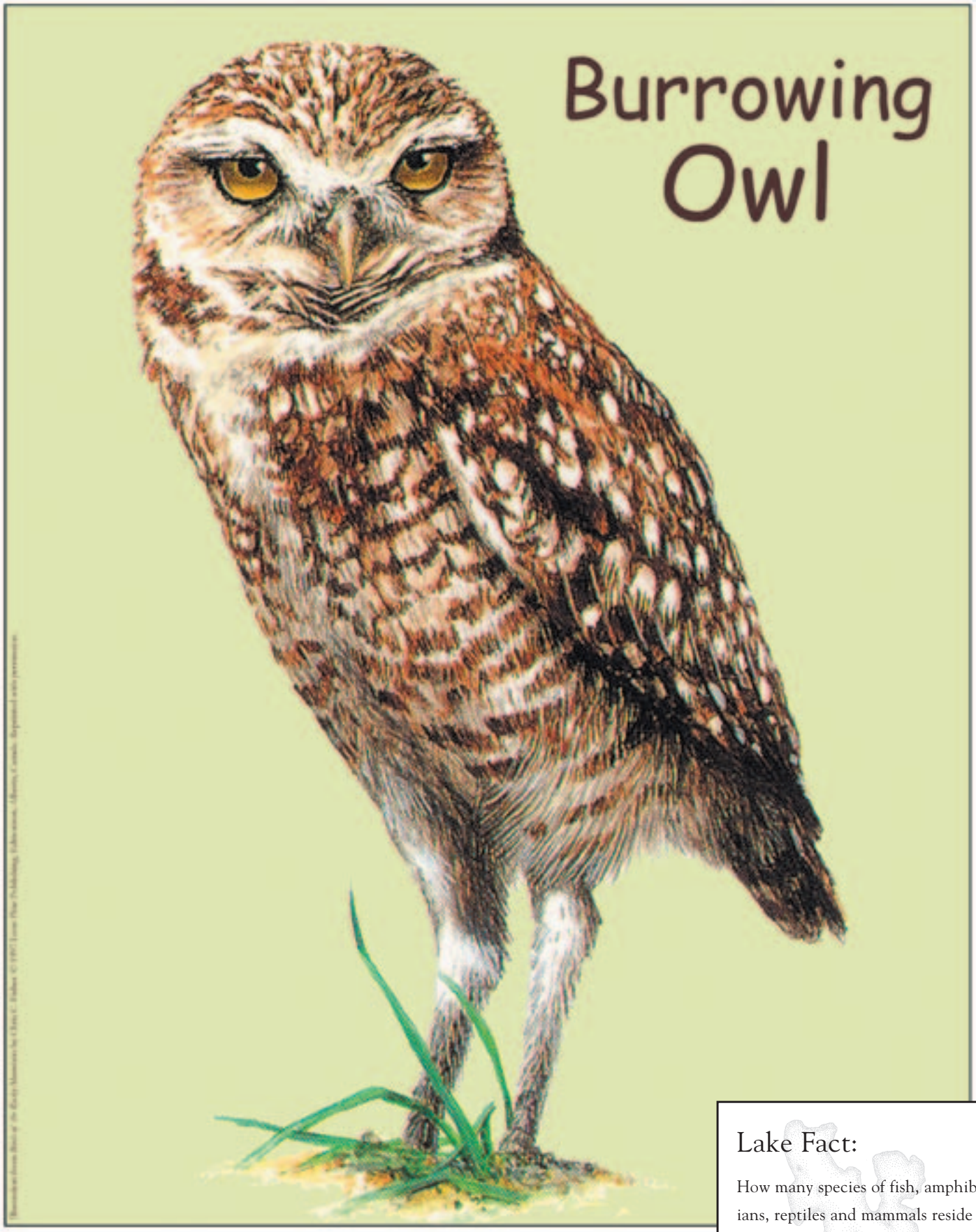
Become a Lakeside Learning facilitator. After a short training period, you can become qualified to co-facilitate our award-winning field trip program. We have seven trips planned for Spring 2006. Volunteers must commit at least 3 field trips per year. Each field trip lasts about 5 hours, including travel time to Antelope Island State Park.

The Lake Affect Presentation

If you enjoy public speaking, you can help us spread the word about the mysterious, beautiful and unique Great Salt Lake Ecosystem. Once trained, volunteers must commit to at least four 90 minute presentations throughout the year. It's a great opportunity to get out and make a difference as a member of the Great Salt Lake neighborhood. You must be able to provide your own transportation.

Make an impact in our Great Salt Lake neighborhood by volunteering today!
Call Katie at 801-322-3216 or download a Volunteer application at www.fogsl.org

A Slice of SLICE



Lake Fact:

How many species of fish, amphibians, reptiles and mammals reside at Great Salt Lake?

Answer: 23 fish, 8 amphibians, 19 reptiles, 64 mammals

Doyle W. Stephens Research Scholarship

Celebrate the Legacy

The Doyle W. Stephens Scholarship celebrates Doyle's scientific contributions towards understanding of the Great Salt Lake ecosystem by helping young researchers who are following in his footsteps. The Scholarship was established in 2002 to provide support to undergraduate and graduate student engaged in new or on-going research that focuses on Great Salt Lake. In the past the award had been awarded to students studying such diverse topics as economics of the brine shrimp harvest and characteristics of unique microbes in Gunnison Bay.

This year's award winner is Carla Koons Trentelman. Carla has a Bachelors of Science from Weber State in sociology and a Masters of Science from USU also in sociology. Currently she is studying for a doctorate at Utah State University with Dr. Richard Krannich. Her dissertation research is examining place attachment among the people who live closest to the lake – within one mile of the lake's high water mark of 4215 feet. She will study the beliefs and attitudes about the GSL ecosystem among these residents, and also how they differ between rural and urban residents. Carla will use the scholarship award for a pilot study using focus groups to collect preliminary data on place attachment among these residents.

The initial goal for this program was to build an endowment that would allow us to give one $500 scholarship per year. The endowment reached the initial target amount in 2003, largely by donations from FRIENDS members and from people who knew and worked with Doyle. Now we are trying to build that endowment further, with the future goal of expanding the size of scholarships or the number of scholarships given in any one year.

If you're interested in contributing to our effort, please contact Katie Pearce, our Assistant Director at 801-322-3216.

Applications for the 2006 Doyle Stephens scholarship will be distributed in December 2005, and applications will be due March 3, 2006. Applications will be judged on probability of successful completion of the proposed research project and potential contribution of the proposed research to the protection, preservation or understanding of the Great Salt Lake ecosystem.

The award recipient will be announced at the 2006 FRIENDS Great Salt Lake Issues Forum, on May 5 & 6.

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

Autumn for Brine Shrimp - From Eggs to Cysts

In the fall, when water temperatures decrease, salinities increase, and food supplies disappear, Brine Shrimp (Artemia franciscana) switch from producing eggs to producing cysts. Cysts are very small, have a thick protective wall, and contain a dormant brine shrimp embryo.

While each female brine shrimp can produce hundreds of eggs in each brood, they can only form a few dozen cysts. When the female dies, the cysts are released into the water column, where they float to the water surface and can form large red slicks that are visible from the air. These slicks are harvested by brine shrimpers, who dry the cysts, can them, and sell them as a food source for aquaculture.

Over wintering cysts courtesy FoGSL

Once dry, the cysts can remain viable for many years. The cyst harvest industry contributes about $80 million dollars per year to the Utah Economy, and operates from mid-September through November, depending on the number of cysts in the lake that year. Cysts that don't float to the water surface may sink and be buried in the sediment, forming a historic record of brine shrimp occupation known as an "egg bank." Studies of cysts in the sediment cores collected from Great Salt Lake show that Brine Shrimp have lived in the lake for at least 600,000 years.

Last year, researchers at Utah State University hatched cysts from a sediment core that were estimated to be 360 years old, pre-dating western settlement of Salt Lake Valley. These old cysts provide an opportunity to study how long organisms can remain dormant in nature, and how organisms have adapted to changing environmental conditions over time.

Brine shrimp are not the only plankton species that forms cysts; freshwater crustacean plankton such as Daphnia sp. also form cysts. The study of cysts stored in sediments is a growing field of aquatic ecology.

References:

Clegg JS and SA Jackson. 2002. Brine shrimp in antiquity. In JW Gwynn, ed. Great Salt Lake: an overview of change. DNR special publication, Salt Lake City, UT.

Markland, K. 2005. Cryptobiology, paleolimnology and selenium sensitivity of brine shrimp from the Great Salt Lake, Utah, USA. In AM Marcarelli, WA Wurtsbaugh, J Horrocks, RS Jensen, KB Markland, JN Parker, J Robinson and E VanDyke. Ecological analyses of nutrient, plankton and benthic communities in Farmington Bay and the Great Salt Lake, Utah (2004). College of Natural Resources, Utah State University, Logan UT.

USGS. 2001. Brine shrimp and ecology of Great Salt Lake. website url: http://ut.water.usgs.gov/shrimp. accessed 2 Oct 2005.

Discovering Our Lake

The Nature Conservancy's Great Salt Lake Shorelands Preserve

Every time we take a group of school children on the Wings & Water field trip at the Great Salt Lake Shorelands Preserve Visitor Center, there are a few things I can count on. The first: At least one wrinkled nose and war cry of "ewwww...it smells funny out here!" The second: a squeal of "this place is so cool! I'm bringing my family out here!" This last revelation usually occurs as we are investigating a mysterious rustling under a canopy of bulrush, spotting white and black pelicans as they ride the thermals to fish for dinner, or examining a wooly-bear caterpillar as it slinks across the boardwalk.

Those exciting moments of discovery are the purpose of the Great Salt Lake Shorelands Preserve. The Nature Conservancy's award-winning visitor center immerses Utahns of all ages in the sights, sounds, and smells of the wetlands. With a boardwalk trail through the heart of the towering marshes, a 30-foot observation tower and informative exhibits, the center is the perfect outdoor classroom for children AND adults.

But it's also a place that touches hearts. The center helps Utahns see a whole new side of the Great Salt Lake, which is perhaps our state's most misunderstood and underappreciated natural treasure. The preserve is a place of mystery, life and beauty. It is a place where everyone can experience the emotional thrill of exploring a natural landscape that's full of the unexpected. Don't be surprised if you find yourself exclaiming, more than once, "This place is so cool!"

The Great Salt Lake Shorelands Preserve Visitor Center is free and open to the public year-round, seven days a week. The Wings & Water Wetlands Education Program is targeted for 4th graders, and offers field trips in fall and spring. You can learn more about the Wings & Water program, the preserve and the visitor center at www.nature.org/utah. If you are planning to bring a group of larger than 10, please contact KaRyn Daley at (801) 238-2339 to schedule.

From SLC and points South - Exit Northbound I-15 at Layton exit #330. Turn left at the bottom of the off-ramp onto Main Street. Travel NW to the first stop-light at Gentile Street and turn Left. Travel west toward GSL to 3200 West and turn Left.

From points North – Exit southbound I-15 at Layton exit #332. Turn right at the bottom of the off ramp onto Hill Field Road. Then make an immediate left onto Main Street. Travel South to Gentile Street and turn right. Travel West toward GSL to 3200 West and turn Left.

KaRyn Daley
Philanthropy & Outreach Coordinator
The Nature Conservancy of Utah

The Boardwalk by Bruce Thompson © Pangraphics

At the Pavilion by Lynn de Freitas

Interpretive Panels by Lynn de Freitas

HOW TO REACH US

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John Aldrich
Mark and Suzanne Atencio
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SUBMITTING MATERIAL FOR PUBLICATION

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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Making A Difference

Special Thanks

to the following for special support of our programs

General Fund
Mr. and Mrs. Ezekiel R. Dumke Jr.
Christian Fonnesbeck
Sarah George
Rick Ford
Naomi Franklin
Phyllis Geldzahler
Pedro and Susan Loffler
Spin Martin
Connie and James Nelson
Chip and Mandy Self

Project SLICE
Sarah George
Rick Ford
Spin Martin

Lakeside Learning
Sarah George
Rick Ford
Mary Johnson
Spin Martin
M. Daine Picard
Carla and Charlie Trentlemen

Doyle Stephens Scholarship
Bill Adams
Edna and Jim Ehleringer
E.T. and Barbara Fearn
Joel Frandsen
Sarah George
Rick Ford
Don Mabey
Spin Martin
Ann and John O'Connell
Maunsel and Ann Pearce
Liz Rank

Programs in Need

Please pledge to these programs when you renew your membership.

Doyle Stephens Scholarship Fund
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 to 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.

General Fund
Our general fund is crucial to the day-to-day functioning of our organization. Your donations help cover our costs for newsletter production and postage, website maintenance, administrative costs and supplies, and countless additional support services. It is the financial foundation of our organization and enables us to meet and exceed our goals.

HELP WANTED!

FRIENDS is looking for new Directors for our Board.
Visit www.fogsl.org for a job description.

Help us Help the Lake

Your donations go directly to the preservation and protection of Great Salt Lake. We can't do it without you. Please check the back cover to see if it's time to renew your membership. Thank you.