



JUNE SUCKER RECOVERY
IMPLEMENTATION PROGRAM

Utilizing Ecosystem Services to Generate Support for Endangered Species Recovery

ACES 2014: December 10, 2014

Michael Mills, June Sucker Recovery Implementation Program

Gretchen Greene, Environ International Corporation

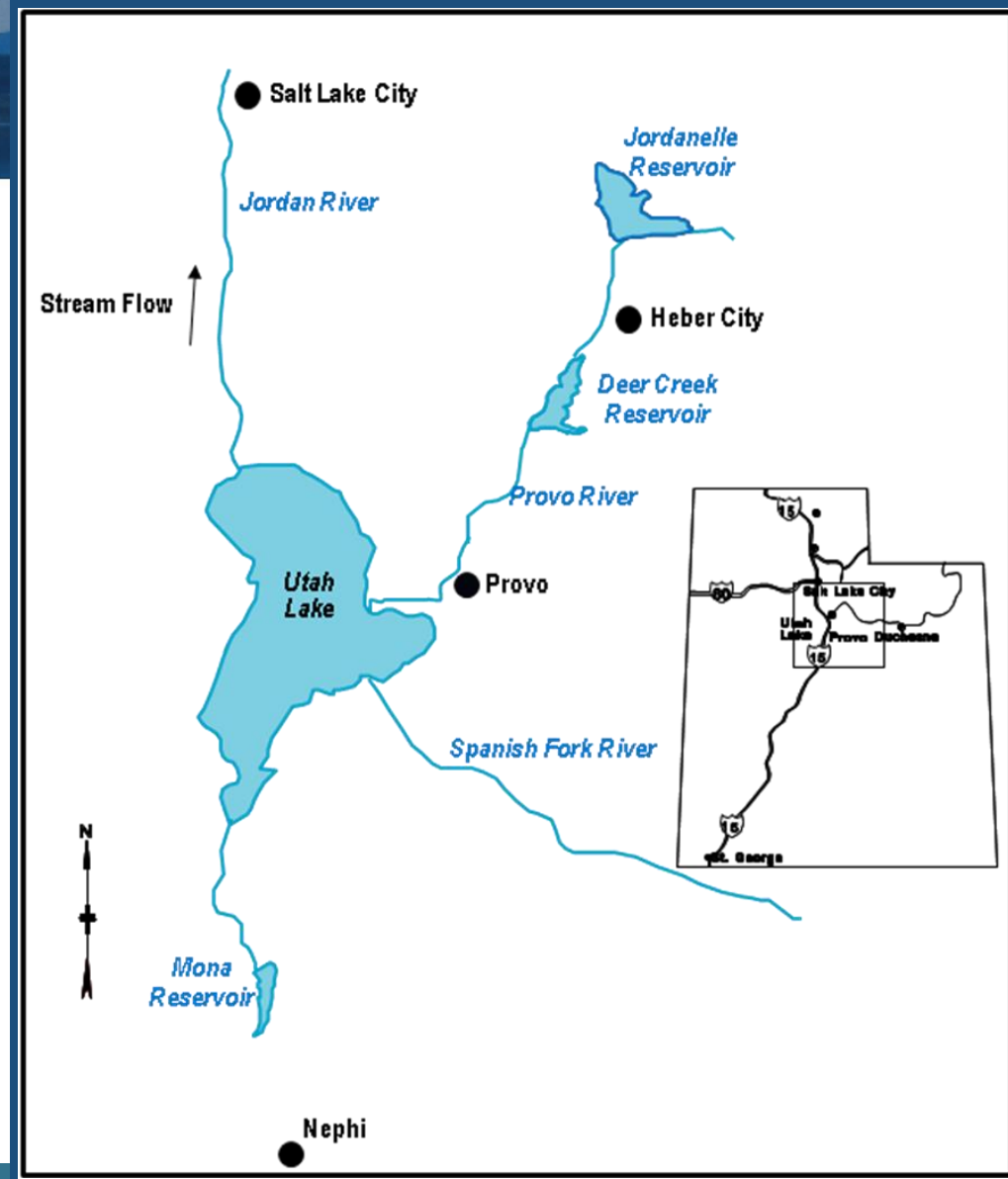


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Background

Utah Lake

- Large (96,000 acres)
- Shallow (Max Depth 14')
- Highly Productive
- Algae dominated system
- Natural habitat of the endangered June sucker





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Endangered June Sucker

- First described by Jordan in 1878
- Pelagic feeder
- Spawns in Utah Lake tributaries
- Listed as endangered in 1986
- Threats included:
 - Modifications to spawning habitat
 - Introduced species (predators and competitors)
 - Loss of aquatic vegetation



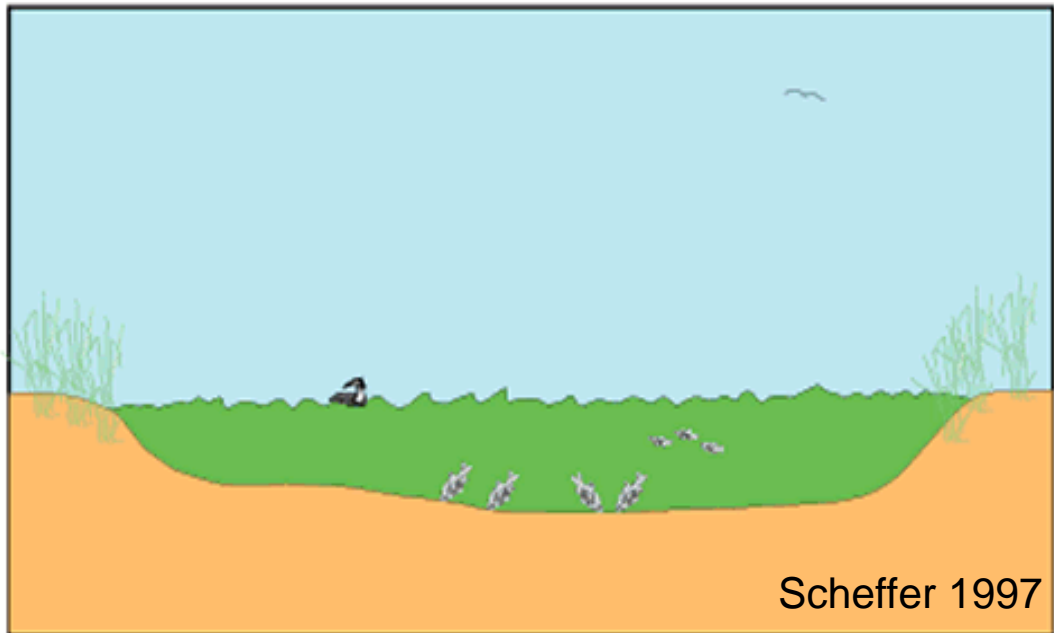
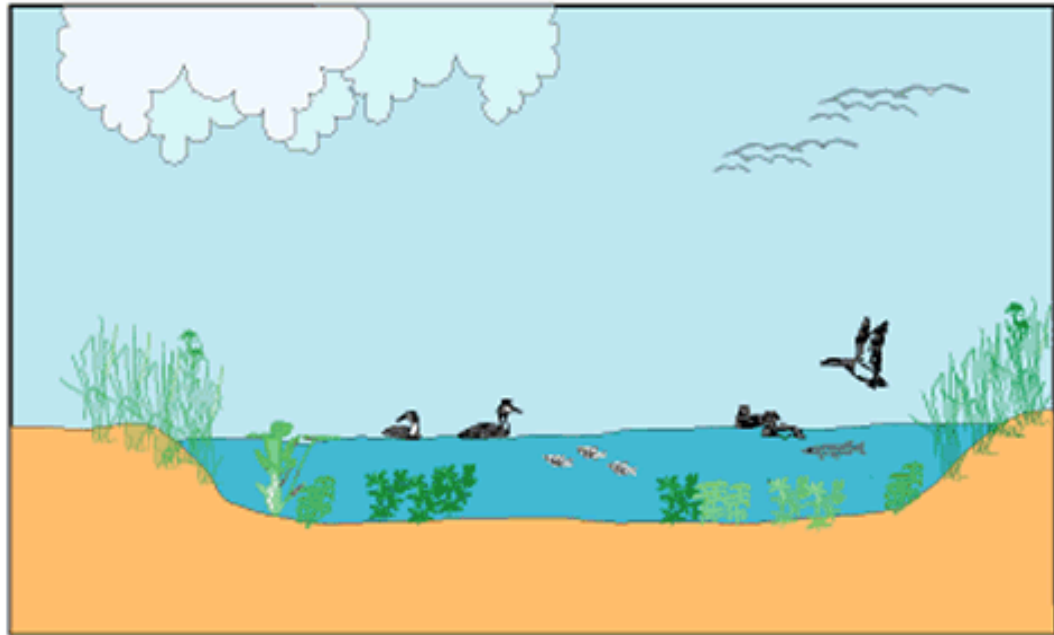


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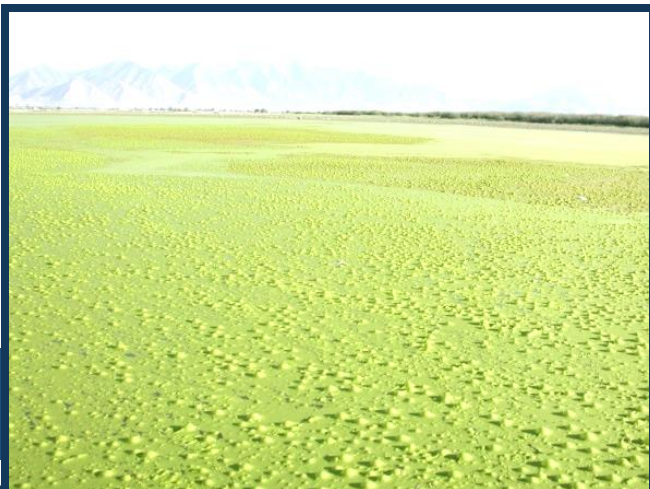
Background

Common Carp

- Introduced into the Utah Lake watershed
- Dominates the Utah Lake fish community
- Loss of refuge habitat
- Water quality issues



Scheffer 1997





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Deseret News: December 6, 1918

DECEMBER 6 1918

OF PETITION PRESIDENT FOR SETTLEMENT OF IRISH QUESTION

Prominent Utah citizens have prepared a petition to the president, asking his good offices in an endeavor, at the coming peace conference, to bring about a settlement of the Irish question. The petition reads:

"We wish to express to you our earnest good wishes for the success of the peace conference and to assure you of our hopes for the realization of the exalted ideals you have placed before the world. Your splendid efforts on behalf of the weak and oppressed and on behalf of the peoples deprived of the power of self-government and self-determination have found highest praise with the lovers of democracy. You will understand then our interest in the cause of Ireland. We invite you, Mr. President, to consider Ireland's continued and historic struggle for self-government, her national character and aspirations, her great natural wealth and the direct and repeatedly expressed will of her own people for self-determination. We beg you, therefore, Mr. President, to use your powerful influence to bring about a settlement of the Irish question—a settlement fair and just to the people of Ireland. With sentiments of highest esteem, we are, Mr. President, the undersigned citizens of the state of Utah:

Anthon H. Lund, first presidency
Church of Jesus Christ of Latter-day Saints.

Simon Bamberger, governor; Harden Bennion, secretary of state; F. C. Richmond, president of Commercial club; Noble Warrum, postmaster; L. H. Farnsworth, chairman state council of defense; J. Parley White, chief of police; John A. Widtsoe, president University of Utah; James P. Casey,

Great Da

BY WALT MASON (FOR THE D

THINGS march so fast these fateful day news; there's naught so strange it can in our shoes. We push ourselves a latest tidings there; some mighty king "Well, well," or "I declare!" We hear of captains on their bended knees, and hasten just what he asks for cheers. An ancient the news, and say, "By jings!" And then gasoline, and kindred things. We've heard streams of gore and wholesale death, the make us draw a longer breath. Perhaps in get our old time poise again, and learn once shudder at a tale of pain. We see the sceptres, thrones and crowns, and beef because for our handmedowns. We've no perspective the news we read; we sit around the Blue Fro go to seed.

VEGETARIAN CARP ROB DUCKS ON UTAH LAKE

"Plenty of wild ducks, and all in good condition," says Fish and Game Commissioner R. H. Siddoway, "with the exception of the Utah lake region." This condition promises to continue to the end of this season, the commissioner says, which closes with the month of December.

"Carp are responsible for the scarcity of ducks at Utah lake," Mr. Siddoway says. "Carp are vegetarians and they have eaten all the wild duck feed from the surface of the water. What is commonly called potato moss is the principal feed of ducks on Utah lake, and it is this that the swarms of carp have devoured almost to its complete extinction."

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Deseret News:
April 3, 1937

APRIL 3 1937



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| 1937 | | JUNE | | | | 1937 | |
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1937 SEPTEMBER 1937
Mo Tu We Th Fr Sa

Carp And Excess Drainage Bring Ruin To Angling In Utah Lake

Waters Ideal For Bass Before Carp Destroyed Spawning Beds

(This is the first of two authoritative articles on Utah Lake
as a past and future mecca for fishermen.)

BY DAVE MADSEN

(Former State Game Commissioner)

During the past two or three years, many people have asked me about the future of Utah Lake. These are the people who a few years ago enjoyed week ends at the lake with their families in the early spring, and returned sunburned and tired, with enough catfish to last the family several days. Naturally, they long for the return of these conditions, and naturally they would be interested to know if there is any hope in this direction.

Perhaps a guess at the future, based on the history of the lake in the past, may be interesting. The truth is, nature is building

35 States



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Sad Reputation

- Lack of use despite proximity to large population
- History of abuse
- Reputation of being dirty, contaminated and unsafe

Deseret News 29-Apr-71

Deseret News
20-Sep-69









- Removal efforts have been effective
- Funding concerns have jeopardized program





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Value of a “Healthy” Utah Lake

- Goes beyond endangered species recovery
- Effective way to communicate benefits of carp removal

Ecological



Fish and wildlife habitat
Soil conservation
Sediment stabilization
Water quality maintenance
Water quantity balance

Passive Use



Existence value
Aesthetic value
Preservation of diversity
Endangered species

Direct Human Uses (Recreation or Commercial)



Consumptive
Uses
Agriculture
Bird Watching
Fishing
Drinking Water





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• Recreational Angling

- Estimated number of trips (2005 creel): 147,542
- Estimated change in catch rate from carp removal (Denner, 1997): 350%
- Estimated change in recreational trips given 1% change in catch rate (Samples, 1985): 1.48%
- Estimated value of recreational angling (Rosenberger's database): \$37.05
- Benefits start to accrue at year 6 of project
- 3% discount rate

| Ecosystem Service | Estimated Change in Value per Year | Estimated Value (20 years) | Estimated Value (perpetuity) |
|--------------------------------------|------------------------------------|----------------------------|------------------------------|
| Change in Recreational Angling Value | \$283,129 | \$2,915,592 | \$8,140,971 |



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- **Willingness-to-Pay for Water Quality Improvement**
 - County population (Census Bureau): 540,504
 - Estimated WTP for a 1-unit water quality improvement (Van Houtven, 2007): \$5.33
 - Benefits start to accrue at year 6 of project
 - 3% discount rate

| Ecosystem Service | Estimated Change in Value per Year | Estimated Value (20 years) | Estimated Value (perpetuity) |
|--|------------------------------------|----------------------------|------------------------------|
| WTP for a 1-unit water quality improvement | \$2,880,886 | \$29,666,698 | \$82,835,928 |

• Property Value

- Estimated number of single family homes bordering Utah Lake: 33
- Estimated number of single family homes within an addition 1,500 feet of Utah Lake: 1,324
- Estimated change in home value given water quality improvement for lakefront homes (Gibbs, 2002): 6.64%
- Estimated change in home value given water quality improvement for additional homes within 1,500 feet (Lansford, 1995): 60% of lakefront or 3.98%

| Proximity to Utah Lake | Current Total Market Value | Total Change in Market Value |
|------------------------|----------------------------|------------------------------|
| Lakefront | \$14,294,700 | \$2,847,504 |
| 1,500 feet | \$296,070,750 | \$11,795,459 |
| Total | \$310,365,450 | \$14,642,963 |



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Ecosystem Services Results

| Ecosystem Service | Estimated Change in Value per Year | Total Present Value in 20 Years |
|------------------------|------------------------------------|---------------------------------|
| Recreational Fishing | \$3,846,573 | \$38,045,733 |
| Non-Fishing Recreation | \$421,301 | \$5,511,667 |
| Passive Use Values | \$3,846,573 | \$50,707,247 |
| Total Economic Value | \$8,114,447 | \$94,264,647 |

- Carp removal benefits more than June sucker
- Huge economic potential for Utah County and State of Utah



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Presentation of Results

- Primary target were State Legislators
 - Asking for ~\$1.1 Million annually (\$5 Million total)
 - Night at the Lake, targeted key legislators, printed materials
- Also communicated results to local stakeholders
- News release detailing the benefits (\$\$) of a healthy Utah Lake

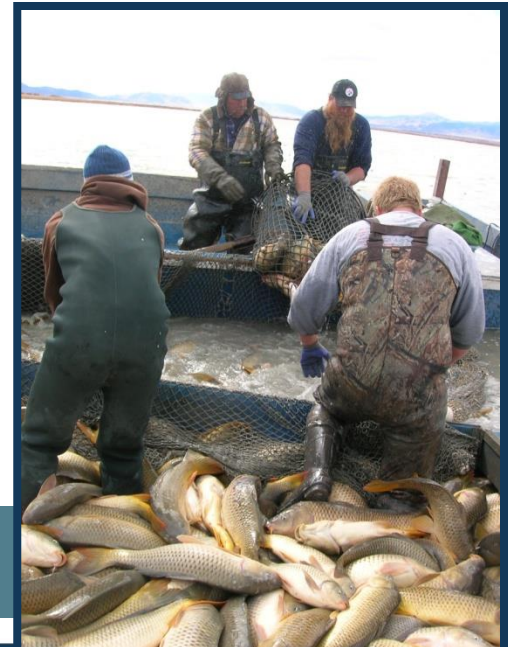




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Were We Successful?

- Increased awareness of Utah Lake and its potential
- State legislature gave us \$500K and asked for local match
 - Localized benefit
- Media and public questioned the validity of the numbers
- Concept of ecosystem services not familiar





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Final Thoughts

- Method should be used more frequently to evaluate recovery actions
 - Introduction to new audiences
- Broadened thinking about benefits of recovery
- Don't focus on overall monetary benefit
 - Aided us in communicating far reaching effects of carp removal





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Questions???

