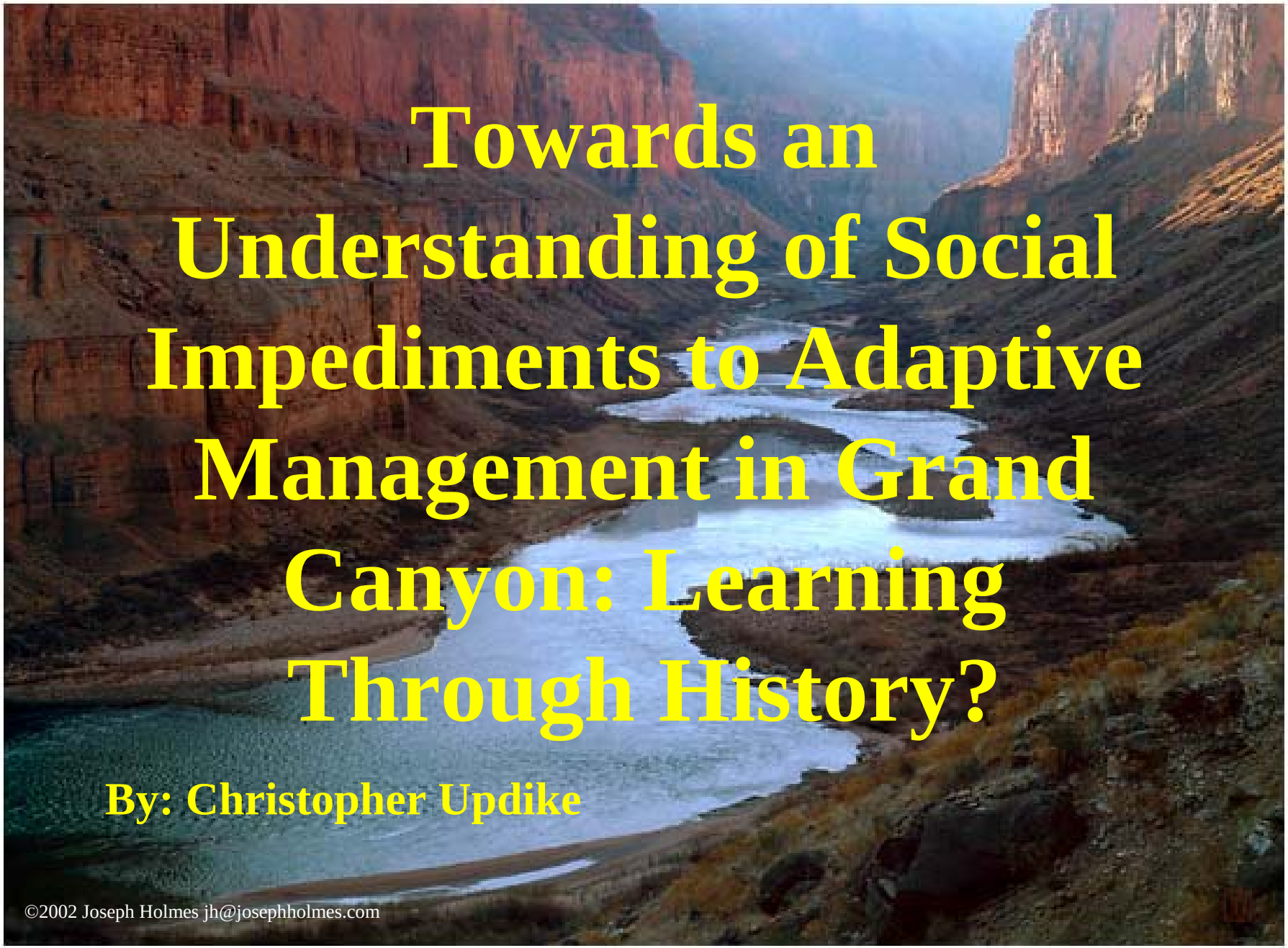

Towards an Understanding of Social Impediments to Adaptive Management in Grand Canyon: Learning Through History?

By: Christopher Updike

Summary for this presentation

Four parts:

- A brief post dam history of resource impacts
- Social perspectives in regard to the AMP
- Conflict between traditional stakeholders and non-traditional stakeholders
- Thoughts on resolution

The construction of large-scale water management projects and the introduction of non-native fish have resulted in a domain shift in the riverine environment below Glen Canyon Dam (Schmidt et al 1998).

http://www.gmfsh.state.nm.us/PageMill_TExt/Fishing/warmwaterfish.html

http://www.western-gift-ideas.com/prints.htm

http://www.gmfsh.state.nm.us/PageMill_TExt/Fishing/warmwaterfish.html

The cumulative impact of these anthropogenic changes is the loss of resilience to the Colorado River ecosystem. The totality of these impacts compromise the integrity of Grand Canyon National Park.

Democratic society and the Public Trust Doctrine (Sax 1980)

Matching management at Glen Canyon Dam with contemporary social values

http://www.rockhounds.com/grand_hikes/hikes/

Illustration by Randell D. Babb http://www.usbr.gov/uc/news/fish_gc.html

cc.usu.edu/~bolo/CV.html

The Adaptive Management Program

- The 1992 Grand Canyon Protection Act instructs the Secretary of Interior to, in conjunction with existing legislation, to “protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established, including, but not limited to natural and cultural resources and visitor use” (Section 1802 of the 1992 GCPA).
- The Strategic Mission (2001) and the 1996 ROD instruct the AMP to be guided by the principles of adaptive environmental assessment and management (Holling 1978,Walters 1987, Lee 1993,Gunderson et al 1995)

Adaptive management

- Adaptive management sees “policies as experiments: learn from them” (Lee 1993).
- In theory, adaptive management recognizes the importance of matching social values with management (Gunderson et al 1995 and Lee 1993)
- Although adaptive management is conceptually sound, several attempts at implementation have failed (Lee 1999). Adaptive management is slow, expensive and a difficult to implement (Walters 1997).
- Sufficient flexibility in management and resources is a prerequisite to successful implementation (Gunderson 1999).

A “Wicked Problem”

- “Wicked Problems” can never be solved only re-solved over and over again (Rittel and Webber 1973).
- Why? Because in a pluralistic society there is never any certainty in the strength of social values over time.
- The simple presence of degraded ecological function does not necessitate resource conflict unless social values find such an appellation appropriate.
- Addressing “Wicked problems” demands inquiry into social values, subtexts and worldviews (Ludwig 2001)
- In other words “Wicked Problems” demand attention to sociological issues and collaboration.

Resource conflict is a social problem…

- No one is addressing the significant sociological aspects of this program. To date traditional methods of science and technology have still yielded no results that mitigate downstream degradation from dam operations.
- In the AMP traditional methods of science- biological, physical and engineering, have outweighed needed social research (Jacobs and Wescoat 2002).
- Stakeholders cannot ignore the a importance of understanding the conflicting values and the a priori social choices that have created conflict in Grand Canyon.
- The uncertainty surrounding how this social component of the AMP will resolve itself is at least as vexing as any uncertainty surrounding the ecological components of the ecosystem.

The Passing of the Sustained Yield Paradigm

- The 1992 Grand Canyon Protection Act, the 1995 Environmental Impact Statement, the 1996 Record of Decision and the creation of the Adaptive Management Program all are strong indicators of a shifting paradigm change in water resource management at Glen Canyon Dam.
- Previous operating criteria at the dam were structured in the short term to maximize hydroelectric power production and in the long term a sustained supply of water for delivery to the Lower Basin.
- “The Pathology of Natural Resource Management” (Holling and Meffe 1996)

A new paradigm for water resource management at Glen Canyon Dam

- “The maxim that rivers and watersheds should be managed solely for consumptive uses is slowly giving way to a belief that these resources should be managed for environmental values such as biodiversity and social and cultural values as the protection of indigenous rights” (Cortner and Moote 1994)
- The new paradigm for water resource management encompasses (i) ecosystem management and (ii) collaboration (Lee 1999)
- The AMP is the Secretary of Interior’s response to broad social values that have emerged to demand multiple use management in Grand Canyon. The stalling or breakdown of the AMP would represent a failure to embrace these new values.

Social impediments

- Shifting paradigms reshuffles political influence and control within the management process at GCD.
- Expanding multiple use values to management at GCD has resulted in a conflict over substantial transfers of economic rents to non traditional stakeholders (environmental, recreational and Native Nations) at the expense of traditional stakeholders (water, power and sport fishing).
- Traditional stakeholders use institutional barriers, often legal and political mechanisms, to slow or halt current and future transfers of rents to non-traditional stakeholders (Walters et al 2000).

Examples of Institutional barriers

- Hydrologic triggering criteria for flows in excess of power plant capacity, No flows in excess of 45000cfs, limits on programmatic and geographic scope: Lake Powell and LCR studies, legislated revenue caps, refusal to fund key studies for conserving endangered species
- These barriers limit fluid transition of adaptive management from theory to practice.

How impediments impact the AMP

- Stakeholders suffer from “scientism” and “technocracy”. Too much science and technology results from fear of uncertainty. (social and ecological)
- When traditional stakeholders use institutional barriers they are restraining learning as well as the possibility of managers to act adaptively in the pursuit to restore resilience to a declining ecosystem.
- Current operations at GCD still degrade socially important downstream biological, physical and cultural components.
- Inaction or lack of sufficient action at this point not only hurts management flexibility but also resource flexibility.

The AMP is awash in ideas but adrift in course

- Without making social choices the AMP is left with minor tinkering of dam operations (Schmidt et al 1998). This will likely not to fulfill the AMP's mission.
- To date success in the AMP has been more a measure of crossing political hurdles than actually mitigating conflict.

The AMP is at a Rubicon:

(i) it can continue to pursue consensus over conservation risking the spurious certitude of process.

(ii) or it can move forward with progressive institutional reform and aggressive management actions that do more than just cross political hurdles but actually fulfill the AMP's mission of rebuilding resilience and mitigating downstream impacts from Glen Canyon Dam.

Recommendations to the AMP

- Stakeholders embedded in the FACA process need to recognize their responsibility to ensure flexibility, innovation, and ultimately the success of the AMP, rather than an inordinate reliance on science and technology solutions.
- Embrace and recommit to the principle of AM, implicit here is a willingness to learn about and participate actively in the process, not just attend meetings as “the cost of doing business”.
- Confront and embrace experimentation, recognizing that management experiments are not policy, i.e. there is a responsibility to explore and learn from experiments beyond the boundaries of current river management. Ultimately transferring the results of these experiments into management policy is the responsibility of the Secretary- not the AMP.

…Recommendations

- Acknowledge that there are no panaceas to conflict in the AMP. Stakeholders need to confront the AMP's social problems like its ecological problems.
- Revisit the 2001 Strategic Plan and resolve contradictory social values and resource or management endpoints.
- Take risks. There is an opportunity to progress beyond the traditional management paradigms of the past and create a truly innovative model of AM here that could be used elsewhere.

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References

•Caldwell, L. K. 1990. *Between two worlds: science, the environmental movement and policy choice*. Cambridge University Press, Cambridge, England

•Cortner, H. J. and M. A. Moote. 1994. Trends and issues in land and water resource management: setting the agenda for change. *Environmental Management* vol.18 no.2 p.167-173.

•Gunderson, L. 1999. Resilience, flexibility and adaptive management- - antidotes for spurious certitude? *Journal of Conservation Ecology* vol.3 no.1 [online] URL: http://www.consecol.org/vol3/iss1/art7

•Gunderson, L. H., C. S. Holling, S. S. Light, editors. 1995. *Barriers and Bridges to the Renewal of Ecosystems and Institutions*. Columbia University Press, New York, New York, USA.

•Holling, C.S., editor. 1978. *Adaptive Environmental Assessment and Management*. John Wiley, New York, New York, USA.

•Holling, C. S., G. K. Meffe. 1996. Command and Control and the Pathology of Natural Resource Management. *Journal of Conservation Biology* vol.10 no.2 p.382-337.

• Jacobs, J. W. and J. L. Wescoat Jr. 2002. Managing river resources: Lessons from Glen Canyon Dam. *Environment* vol.42 no.2 p.8-19

•Lee, K. N. 1993. *Compass and Gyroscope: Integrating Science and Politics for the Environment*. Island Press, Washington, D. C., USA.

•Lee, K. N. 1999. Appraising adaptive management. *Journal of Conservation Ecology* vol.3 no.2 [online] URL: http://www.consecol.org/vol3/iss2/art2

•Ludwig, D. 2001. The era of management is over. *Ecosystems* vol.4 p.758-764

•Rittel H. and M. Webber. 1973. Dilemmas in a general theory of planning. *Policy Sciences* vol.4 155-169

•Sax, J. L. 1980. Liberating the public trust doctrine from its historical shackles. *U. C. Davis Law Review*

•Walters, C. J. 1986. *Adaptive Management of Renewable Resources*. McMillan, New York, New York, USA.

•Walters, C. 1997. Challenges in adaptive management of riparian and coastal ecosystems. *Journal of Conservation Ecology* vol.1 no.2 [online] URL: http://www.consecol.org/vol1/iss2/art1.

•Walters, C., J. Korman, L. E. Stevens, B. Gold. 2000. Ecosystem modeling for evaluation of adaptive management policies in the Grand Canyon. *Journal of Conservation Ecology* vol. 4 no.2 [online] http://www.consecol.org/vol4/iss2/art1.