Citizen Science-Based Monitoring and Stewardship for the Jordan River–A Pilot Program at the Big Bend

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Introduction & Overview

• The Big Bend Nature Park Restoration Project
• What’s NRDAR and what does it have to do with the Jordan River?
• Why Monitor?
• Natural Resource Services - measuring restoration
• Why Citizen Science?
• Citizen Science & Stewardship Framework for the Big Bend - a Pilot Project for the Jordan River
• What’s Next, How to Get Involved
The Big Bend Nature Park Restoration Project

• 68-acre site north of 90th South in West Jordan

• Major partners include City of West Jordan, Utah Reclamation, Mitigation & Conservation Commission, State of Utah and U.S. Fish and Wildlife Service

• Focus on “Connecting People with Nature”: half recreation-oriented, half wildlife (migratory bird) oriented

• Features: restored river channel (about 0.8 mi), urban fishery (about 4 ac), trails & interpretive features
It takes a village…
Why is the U.S. Fish & Wildlife Service Involved?

- Sharon Steel Natural Resource Damages Settlement- $2.3 million in 1991
- Obtained by USFWS and the State of Utah as Co-Trustees for “Trust Resources“
  - Migratory Birds & their Habitat (FWS)
  - Surface Water, Soils, Groundwater (State of Utah)
- Recovered under the Natural Resource Damage Assessment and Restoration (NRDAR) provisions of the Clean Water Act and CERCLA (Superfund)
- Funds used to restore natural resources injured by releases of hazardous materials (mining & milling wastes)
- “Restoration” defined (in NRDAR) as the recovery or replacement of “Natural Resource Services” provided to and/or by Trust Resources
What are “Natural Resource Services”

- The physical and biological functions performed by the resource including the human uses of those functions*. These services are the result of the physical, chemical, or biological quality of the resource.

- Also includes services that natural resources provide to other natural resources, such as providing food, shelter or nesting, as well as services directly benefiting humans and the human use of those services*, such as flood control, water treatment, and recreational activities such as fishing, hunting, bird watching, etc.

* These are sometimes also referred to as “ecosystem services”
**Sharon Steel Restoration Plan**

• **Goals:**
  • “restore, replace, enhance or acquire appropriate natural, functioning habitats along the Jordan River corridor for the benefit of trust resources” (wetland and riparian migratory birds and their habitats, incorporating surface water, soil & groundwater)
  • Ensure the funds are utilized to provide maximum benefit to trust resources
  • Ensure the provision of benefits to trust resources in perpetuity

• **Other key objectives:**
  • Focus on **restoration targets:**
    • Wetland and riparian migratory bird species,
    • Native wetland and riparian plant species
    • Improved hydrology to support native plant communities
  • Cooperate with other groups and agencies working to restore and conserve Jordan River habitats
  • Monitor to evaluate and document achievement of restoration goals
Why Monitor?

- FWS Commitment made in the SSRP
- To evaluate and document restoration measured as *increases in natural resource services*
- To provide input for site management
  - Habitat and population response to management actions
  - “Eyes-on” early warning system
- To evaluate and document whether resources are receiving “maximum benefit” for dollars spent
  - Statutory responsibility
  - Good Government
- To document and communicate lessons learned in restoring natural resources to other restoration practitioners and the public
How do you measure “restoration of natural resources,” then?

• Start with key restoration targets
  • wetland and riparian migratory bird species,
  • Native wetland and riparian plant species
  • Improved hydrology to support native plant communities

• Identify services performed by targets that are ecologically and/or socially important
  • Riparian forest canopy: nesting and foraging habitat for birds, shading and temperature modulation
  • Functional floodplain: downstream flood attenuation, sediment capture from high flows, floodplain water storage & release

• Develop measures that allow you to characterize these targets and services, and that can show change over time
  • Migratory birds: numbers, species diversity, correlation with habitat types, appearance of “specialist” or sensitive species
  • Plant community: percent ground/canopy cover provided, canopy height, complexity, invasive species occurrence & cover
  • Hydrology: channel morphology & stability, water quality (temp., D.O.), groundwater elevation,

• Develop goals that define “restored” and evaluation criteria that are based on measurement of targets

• Evaluate restoration goals against criteria, using observed data of acceptable quality
Why Citizen Science?

• SSRP called for involvement with the community as well as agencies

• Can accomplish the objectives of many potential community partners, and create new partnerships
  • Other programs- e.g. Non-Point Source 319 Program
  • Jordan River Commission Citizen Science Initiative

• Is already working, and providing good information to Sharon Steel projects
  • Baseline (pre-restoration) bird monitoring at the Big Bend
  • Utah Water Watch- hydrologic & water quality monitoring

• Because the more people know about and understand the value of the natural resources that the SSRP set out to restore “in perpetuity”, the more likely it is they will value and take care of them—Stewardship
Why Stewardship? Whose Responsibility is it?

• Essential with managed/modified habitats and changing environmental conditions

• Successful restoration starts with the identification of stewards—**who is going to take care of it?**

• Local governments & NGOs often have responsibility, but may struggle with upkeep
  • Limited budgets
  • Other high priority work
  • “Busy seasons”

• Volunteer groups ideal to provide “people power”
  • Limited time commitment (one-time is helpful)
  • Provides gratification, connection with others and with the environment
  • Can be difficult to retain volunteers from year to year- always recruiting

*Photo Credit: West Jordan Journal*
Citizen Science linked Stewardship

- Monitoring evaluations can help guide stewardship
  - Help land managers understand their site better

- Citizen Science provides links to volunteers
  - A source of recruitment
  - A consistent resource from year to year
  - Extended networks of friends & family beyond monitoring volunteers
  - Stewardship provides involvement for people not interested in monitoring

- Assistance with recruiting, placing and retaining volunteers from a variety of “sources”
What is the overall approach?

• Develop a monitoring plan that ties observation (data) to evaluation of restoration success criteria
  • Not just collecting “data for data’s sake”
  • Incorporating data needs of different programs (e.g., 319 NPS funds)

• Determine which citizen science groups are appropriate to collect which data
  • Incorporate groups with specific monitoring protocols into monitoring plan (e.g., Tracy Aviary)
  • Work with other groups to develop appropriate monitoring protocols to implement at the site

• Conduct training & oversight to ensure data quality

• Coordinate monitoring activities– when and where

• Create opportunities for stewardship, particularly for “experiential” monitors
Beyond Big Bend- Monitoring & Stewardship

• Many potential locations along the river
  • Allows Citizen Scientists & Stewards to work locally

• Many objectives- different projects can have different targets

• Jordan River Commission is working to develop a river-wide program
  • Using lessons learned from other programs- e.g., Legacy Nature Preserve, Great Salt Lake Audubon

• Big Bend can be a test case–
  • develop monitoring plans & approaches,
  • understand how to work with citizen science groups (capabilities, limitations)

• Develop an approach that can be replicated on the River
What’s next?

• Identify stakeholders and interested partners
• Complete Draft Monitoring Plan
• Stakeholder meeting to discuss draft plan, path going forward
• Develop Management Structure, Leadership
• Identify funding needs, sources
  • Sharon Steel NRDAR funds to develop plan, support development of partnership, initiate monitoring, interpret & publish results
  • Intended to be matched with other funding sources
• Complete Monitoring Plan with Input from Monitoring Partners
• Implement pilot monitoring projects
• Tailor and fine-tune, bring Stewardship in as program is developed
Questions?

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