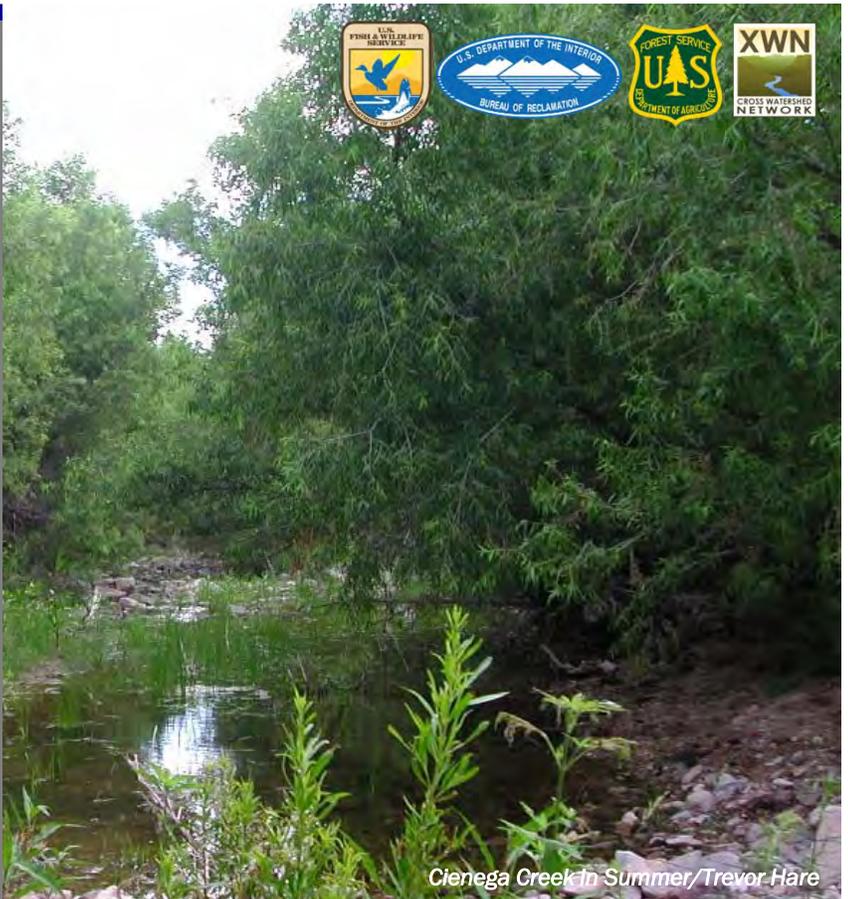


ACTIONABLE SCIENCE

Cienega Watershed Erosion Management & Restoration Plan



Cienega Creek is located in the Tucson Basin of southeastern Arizona. This rare shallow-groundwater area harbors a rich diversity of plants and animals within a mosaic of habitats. Cienega Watershed Partnership (CWP) brings together local landowners, public land users, and over twenty local conservation organizations and government agencies to sustain the ecological health and cultural richness of the Cienega Creek region. The Erosion Management and Restoration plan was created in 2016-17 to provide stakeholders with a method of prioritizing erosion restoration projects in the Cienega Watershed and surrounding communities.



Cienega Creek in Summer/Trevor Hare



KEY ISSUES ADDRESSED

The Cienega Creek watershed supports extensive riparian forests and stands of sacaton grasslands, along with species of high conservation concern. Accelerated erosion due to historic overgrazing, linear infrastructure, and landform manipulation poses a major risk to the natural resources of the Creek. Evidence of headcutting in the mainstem channel and in upland areas is widespread throughout the watershed. This erosion results in channelization, lower water tables, and eventual die-off of sensitive riparian vegetation and habitat. Furthermore, accelerated erosion can negatively impact rangeland conditions and affect livestock production, the primary land use in the watershed.

PROJECT GOALS

- Assess existing data and expert knowledge of watershed conditions through stakeholder engagement workshops
- Develop a long term, regionally coordinated plan for restoration of eroded riparian habitats and grasslands
- Provide a geospatial tool for decision-making that will enable end-users to make decisions independently while working in the same collaborative framework

INTEGRATING INFORMATION

The Site Sensitivity and Capability Analysis tool enables the user to understand complicated problems involve many types of data and find solutions meeting multiple criteria.



Cienega Creek / Trevor Hare

PROJECT HIGHLIGHTS

Stakeholder Engagement Workshops: In summer 2016, four CWP stakeholder engagement workshops were conducted to record knowledge of current conditions in the watershed. In these workshops, local experts reviewed data, criteria and provided input on implementation strategies.

Geospatial Site Sensitivity and Capability Analysis: The SSCA combines a series of weighted quantitative and qualitative data to establish site prioritization ranking. The overlays include biophysical factors that contribute to erosion such as soil type, slope and proximity of linear infrastructure. The knowledge of known erosion sites recorded in the workshops were used to verify the results from the analysis.

Near-term Implementation: 10 sites have been identified as priority restoration sites to be assessed in the near term. At each site, CWP collaborators will assess watershed condition and physical characteristics, and identify the type of erosion occurring. Restoration techniques will use low-technology tools and the simplest design necessary to slow and sink the flow. Native materials and natural designs will mimic the natural system as much as possible.

Collaborators

- Watershed Management Group
- Bureau of Land Management
- Cienega Watershed Partnership
- See online for full list of collaborators

Funding Partners

- Las Cienegas National Conservation Area Healthy Landscapes Program

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LESSONS LEARNED

Engaging stakeholders across the landscape helped ensure a spectrum of values and knowledge was incorporated into the planning process. Additionally, involving stakeholders in the process helps encourage long-term commitment to project outcomes.

The SSCA modeling tool for site prioritization could be improved by incorporating state and transition models of ecosystem dynamics. Understanding ecological and biophysical dynamics over a longer time frame can inform restoration planning and implementation by allowing managers to assess site potential based on both past and current conditions.

Ongoing efforts must budget time and money for ground-truthing. The SSCA decision-making tool can help with site prioritization, but on-the-ground assessments must occur before planning and implementing restoration activities.

NEXT STEPS

- Implement erosion restoration and assessment of 10 near-term priority sites
- Improve the SSCA models' ability to accurately predict current conditions and identify future restoration sites. Refinements of the models will incorporate field observations from sites selected for near-term restoration

PROJECT RESOURCES

For more information on this project, contact Trevor Hare: thare@watershedmg.org

For additional project resources and case studies, visit the Collaborative Conservation and Adaptation Strategy Toolbox: WWW.DESERTLCC.ORG/RESOURCE/CCAST



An Incised Channel in the Cienega Creek Watershed / David Tuggle