



Colorado Science and Engineering Fair

2025 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: Gaining Ground: Effectiveness of Zeedyk Structures on Herbaceous Establishment and Moisture Retention Within Waterways

Finalist's Name: Reagan Futrell

School and City: Monte Vista High School, Monte Vista

Sponsor's Name: Loree' A. Harvey

Category: Earth & Environmental Sciences

Division: Senior (grades 9 - 12)

Abstract (250 words or less):

Physical soil erosion is triggered by many natural or man-made factors, such as wind/water, animal impaction, or mechanical disturbances (IPCC, 2024). Water-caused erosion can cut deeply into riverbeds and stream banks, particularly in soils that are unvegetated due to drought or overgrazing, creating a non-functional riparian zone and degraded wildlife habitat. Numerous methods have been utilized to reduce erosion and restore native habitats. The goal of this study was to examine the effectiveness of Zeedyk structures, which are man-made rock structures designed to slow fast moving water and trap moisture (Maestas et al., 2018). Zeedyk structures installed on federal land near Poncha Pass, CO in the fall of 2023 and the summer of 2024 were examined to determine vegetation establishment, specific plant recruitment, and moisture retention. It was found that the Zeedyk structures installed in October of 2023 had a greater vegetative/live base coverage than Zeedyk structures installed more than a year later, in July of 2024. Findings on moisture retention suggest that Zeedyk structures installed in July of 2024 within the connecting tributary hold more moisture than areas of the tributary without these structures. After just months of installation, a high moisture content underneath the Zeedyk structures suggests that this erosion method makes a positive impact quickly. This method is a cost-effective solution when compared to other soil erosion prevention methods, and demonstrates the effectiveness of zero-maintenance Zeedyk structures in retaining moisture, stabilizing erosive soils, and restoring riparian habitat, which consequently benefits wildlife species utilizing the area.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature:

Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**