

Stream Restoration: Reach-Scale Effectiveness Monitoring

Tetra Tech's Unique Process to Monitor Stream Restoration Effectiveness

Rationale for the Monitoring Program

- Washington State Salmon Recovery Funding Board (SRFB) - created in 1999 to provide grant and loans for salmon habitat programs and recovery activities
- Funding has included more than 963 projects and more than \$358 million in funding

Reach Scale Effectiveness Monitoring Program began in 2004; Coordinated Monitoring Program with Oregon Watershed Enhancement Board (OWEB) began in 2006.

Monitoring Program Goals:

- Has habitat targeted for restoration been improved?
- Has local stream reach salmon and steelhead abundance increased?



Methods and Data Analysis

- 7 categories of habitat restoration projects evaluated using Before After Control Impact (BACI) experimental design
- Duration ranges from 5 to 12 years post-implementation
- Field sampling indicators and techniques adapted with specific protocols to detect changes in habitat, fish populations or ecological status
- Protocols tied to specific objectives associated with each monitoring category



In-stream Habitat



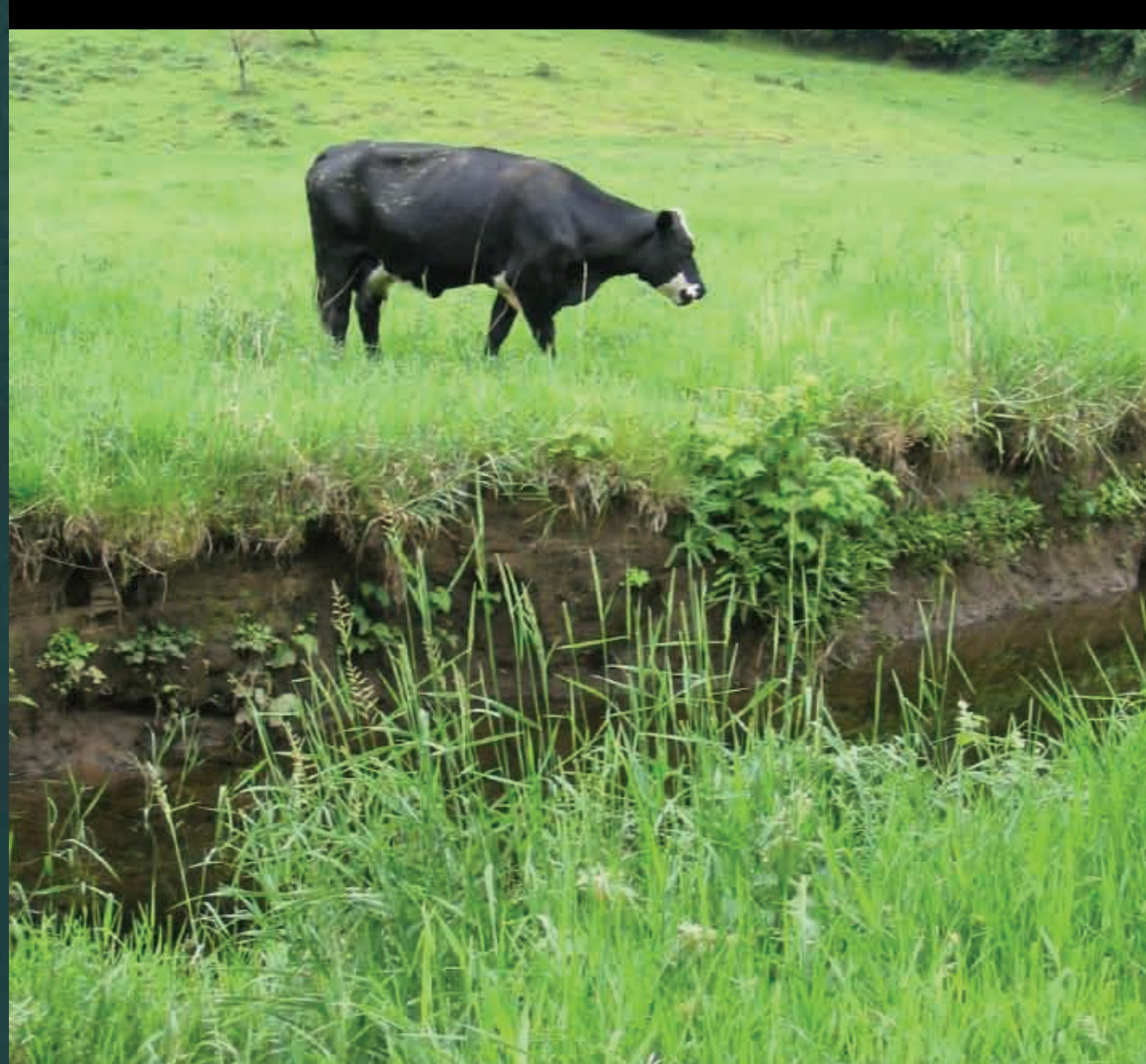
Fish Passage



Monitoring Categories Include the Following:

- Fish passage
- In-stream habitat
- Riparian plantings
- Livestock exclusions
- Constrained channels
- Channel connectivity
- Gravel placement
- Diversion screening restoration

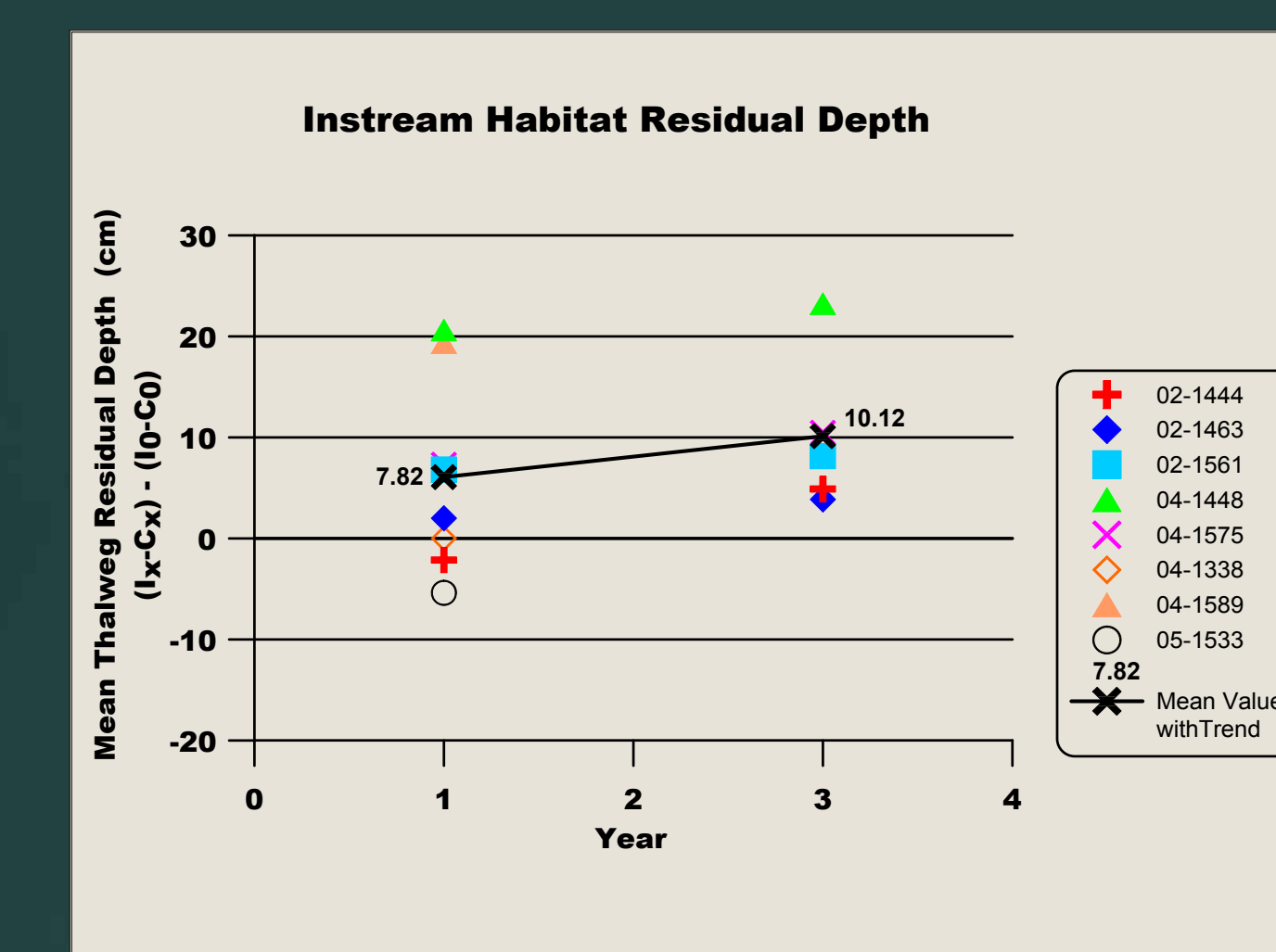
Livestock Exclusions



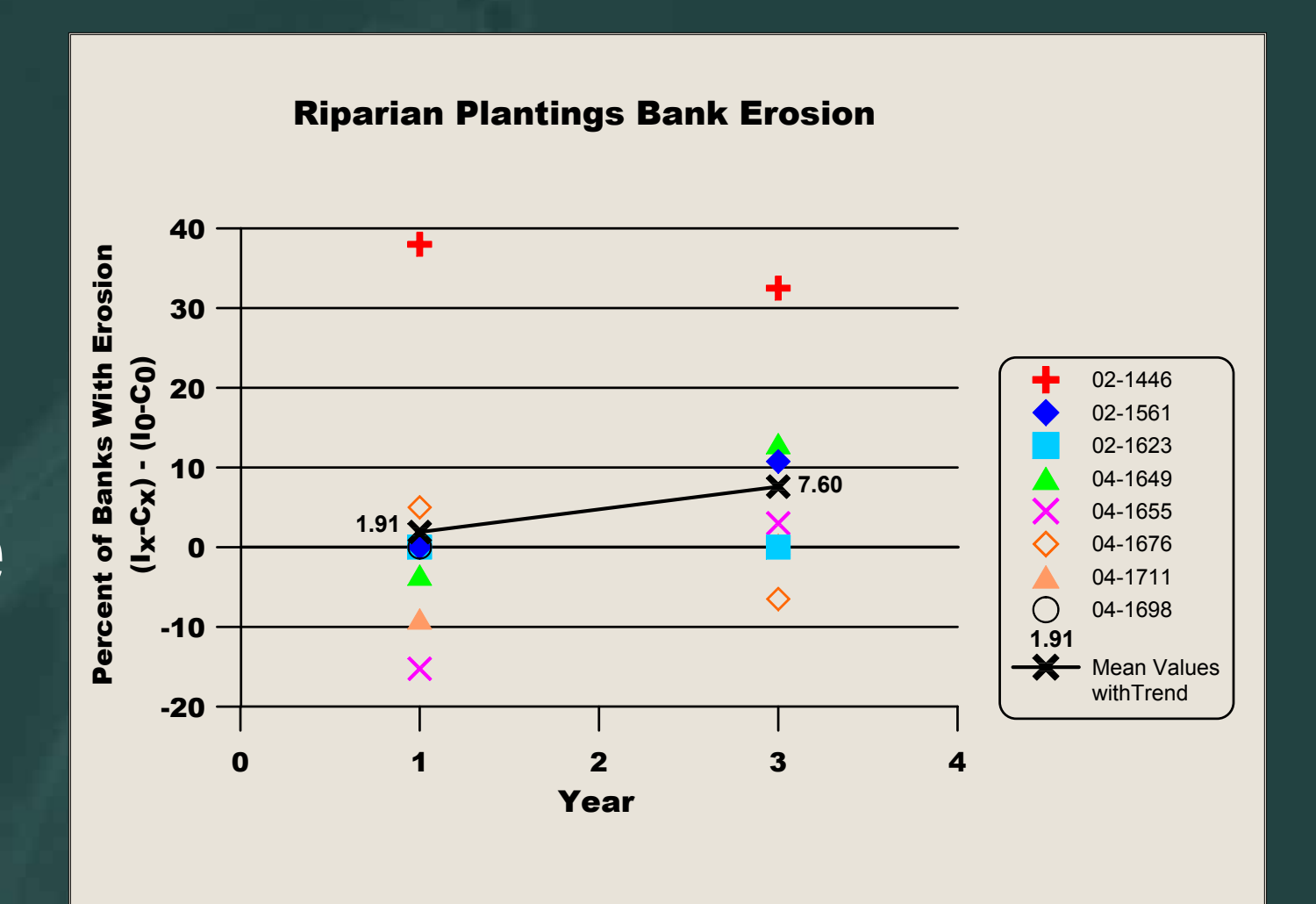
Program Results

Results from monitoring provide data on successful project approaches and lessons learned from project implementation. This information can be used to improve future project planning, and to prioritize funding.

Initial results show that Fish Passage Projects are significantly increasing adult coho densities upstream of the passage point. In-Stream Habitat and Channel Connectivity Projects are significantly improving geomorphology by increasing mean vertical pool profile area and mean residual depth. Livestock Exclusion



Projects are effectively decreasing bank erosion. Data from Riparian Planting Projects are showing a significant increase in bank erosion, indicating a need for further investigation of project implementation conditions. Economic analyses are also conducted to evaluate the cost effectiveness of each project type.



SRFB monitoring reports can be found at <http://www.rco.wa.gov/srfb/docs.htm>

Measure Effectiveness ■ Maximize Return on Investment

