

Ecological Dynamics Simulation Model A Restoration Tool



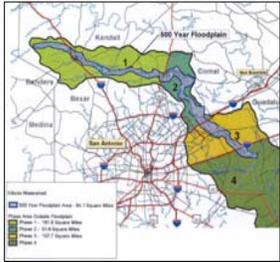
US Army Corps
of Engineers®

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PROBLEM

- Watershed management and ecological restoration on public lands is hindered by a lack of predictive tools
- Especially problematic on watersheds subjected to multiple uses, stakeholders, and regulatory constraints



•Endpoint variables

- Annual water budget
- Water quality
- Soil loss
- Vegetation Change
- Juniper:oak ratio
- Forage production
- Wildlife populations
- Habitat quality
- Evaporation, transpiration, runoff, yield
- Nitrogen content, sediments
- Areas losing & gaining, watershed net
- Amount of trees, amount of grasses
- Deer, turkey, quail, dove
- Game animals, songbirds

IMPACT

Allows user to quickly evaluate complex restoration and management alternatives

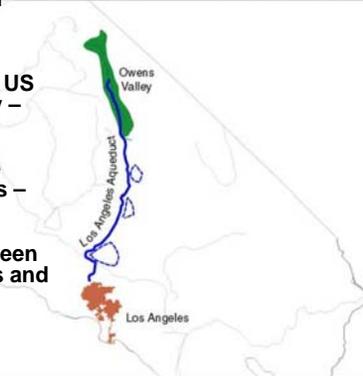
Dry detention structures from \$1M to \$10M as opposed to BMP's

Buy in by US Fish & Wildlife on brush management strategy

Continued training US Air Force Academy – Prebles Mouse

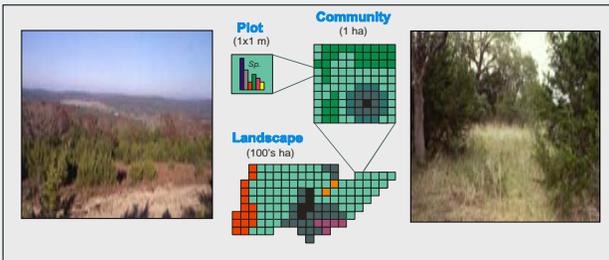
More cost effective spoil cover designs – Mineral Hill

Collaboration between city of Los Angeles and Inyo County

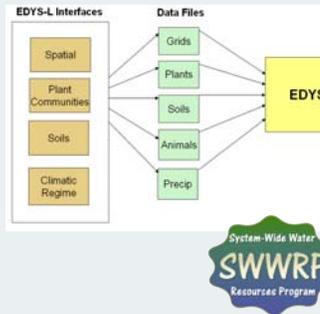


SOLUTION

- EDYS is science based and designed to mechanistically simulate complex dynamics across a range of spatial scales



•EDYS-Light with GIS/Visualization



Apply to virtually any area within the United States

Maintain the ecological processes in EDYS

Short run-times

Screening-level ecological tool

Less computer resource requirements

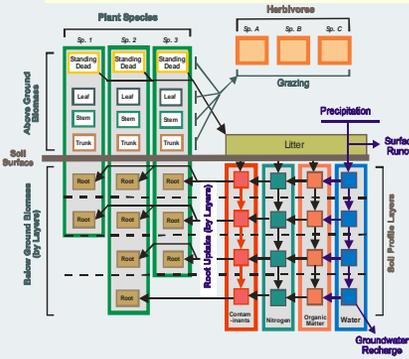
Minimum training required



PRODUCTS

- 19 peer reviewed publications
- 20 technical reports
- 14 invited presentations
- 12 volunteer presentations
- Full EDYS for Cibolo Creek
- EDYS-L for Western US

•Modules include



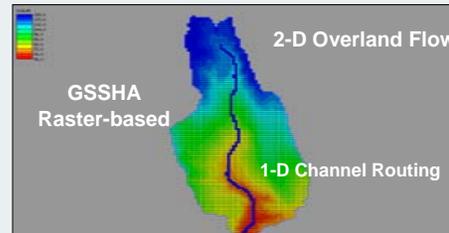
•Management options

- Livestock grazing
- Brush management
- Cultivation
- Improved pasture
- Fertilization
- Herbicides
- Reseeding
- Hunting
- Urbanization
- Irrigation

Applications

- Verification
- Validation
- Sensitivity
- Accuracy
- Publications
- Model Linkage
- EDYS/EDYS-L

- side-by-side comparison
- Parameterized for Western Region
- Parameterization for Eastern Region in progress



COLLABORATORS

- Commonwealth Scientific Industrial Research Organization
- Natural Resources Conservation Service
- US Geological Survey
- San Antonio River Authority
- San Antonio Water System
- Guadalupe Blanco River Authority
- Corps of Engineers Fort Worth District
- Los Angeles Department of Water & Power
- Southern Nevada Water Authority, Raven LLC

FUNDING

- Military R&D, Military reimbursable
- Civil R&D, Civil reimbursable,
- CSIRO, NRCS, LADWP