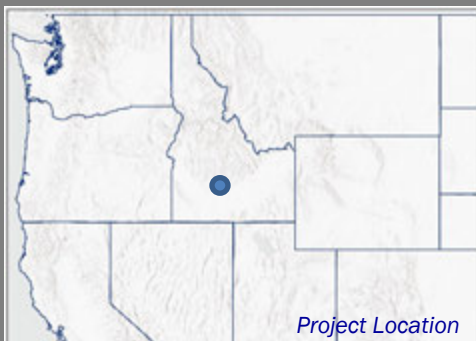


ACTIONABLE SCIENCE

The Land Treatment Exploration Tool and Adaptive Management Planning: Examples in Post-Fire Restoration



Land degradation is worsening, and the problems it creates are increasing in complexity. A lack of accessible information about landscape characteristics and past management methods can hinder future management efforts. Furthermore, not all land management offices have access to the necessary resources to wrangle complex data. Thus, the BLM and USGS developed the Land Treatment Exploration Tool (Exploration Tool) to synthesize complex datasets, making them accessible to management offices regardless of technical capabilities. Although its utility spans beyond the jurisdictional boundaries of the BLM, currently it's primarily used in emergency stabilization and rehabilitation (ESR) and post-fire recovery planning.



BUREAU OF RECLAMATION



View of Fire Severity at the Bray Fire, ID

KEY ISSUES ADDRESSED

Although the Land Treatment Digital Library (LDTL) resolved many data management issues for the BLM, the historical data within the LDTL can be cumbersome for land managers due to the complexity and size of the database, thus reducing planning efficiency. Data about landscape characteristics and past management methods have historically been scattered across multiple databases, or only exist as hard copies within offices. Data availability is often determined by location, funding, and resources. In certain locations, individual land managers serve as crucial sources of ecological knowledge and staff turnover, relocation, or retirement, can result in loss of critical data.

PROJECT GOALS

- Streamline the planning process to lessen the burden on resource managers
- Synthesize historical treatment and climate data
- Account for gaps in technical expertise across BLM offices
- Increase stakeholder collaboration via interconnected data management

HARD-COPY DIGITIZATION

USGS researchers went to BLM offices to obtain exclusively physical copies of historical data. They then digitized it, incorporating historical treatments into usable, Exploration Tool-compatible databases (LTDL).



View of Burn Severity at Wildhorse Fire, ID

PROJECT HIGHLIGHTS

Comprehensive Report Generation: Customized reports contain summary statistics from the LTDL and 60+ spatial data sources. Data include vegetation cover, wildfire history, treatment history, at-risk, threatened, or endangered species, and more.

Historical Data Availability: The Exploration Tool provides a historical treatment record and historical climate data surrounding the planned treatment area.

Holistic Ecological Data: The Exploration Tool lets managers easily access data about soils, at-risk species, vegetation, and other ecological factors.

At-Risk and Endangered Species: The Exploration Tool streamlines planning by linking to the Information for Planning and Consulting (IPaC) tool, automatically listing endangered and at-risk species within treatment boundaries. The Exploration Tool provides species' status, description, location, and links to Environmental Conservation Online System (ECOS) species profiles.

GIS Data Visualization: The Exploration Tool allows land managers who do not have access to GIS technology to benefit from GIS analyses. The only required input Exploration Tool users must provide is project boundaries. Color coded maps specific to individually selected datasets are automatically generated using GIS; land managers only have to select relevant inputs.

Collaborators

- Bureau of Land Management (BLM)
- U.S. Geological Survey (USGS)

CCAST Author: Olivia Weeden, American University. January 2023. Photos: Michelle Jefferies/USGS and Danelle Nance/BLM. For more information on CCAST, contact Genevieve Johnson (gjohnson@usbr.gov) or Matt Grabau (matthew_grabau@fws.gov).

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LESSONS LEARNED

The Exploration Tool streamlines adaptive management planning through increased data accessibility. In post-fire rehabilitation projects, managers applied relevant past treatment data from the Exploration Tool to inform management actions in future planning - the hallmark of adaptive management. For example, nearby treatment data (drill seedings, herbicide use, grazing closures, etc.) directly informed the 2022 Bray Fire restoration project; it was specifically helpful due to the complex landscape's lack of recent burn history. Stakeholder collaboration also increased due to the Exploration Tool's use in planning. Sharing the Exploration Tool's comprehensive report directly aids communication between stakeholders (managers, private landowners, etc.). This is one of the tool's most valuable contributions: there is no barrier in data sharing, while ensuring that all partners are reviewing the same public data. The USGS continues to release new features that meet stakeholders' specific needs, increasing the Exploration Tool's utility. When drought forecasting capabilities, AIM data summaries, and time series remote sensing cover data were integrated into the Exploration Tool, the tool's utility for landscape managers doing post-fire rehabilitation notably increased.

NEXT STEPS

- Expand the user base, geographic scope, and information contained in the Exploration Tool
- Meet evolving needs of tool users and expand the Seasonal Ecological Drought Forecast Tool to include additional species

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