National Digital Trails Network Project

Briefing and Demonstration

10/15/2019

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U.S. Geological Survey
Agenda

Topics

■ Project background and overall goals
■ Demonstration of TRAILS
■ Next Steps
■ Questions/Discussion
Vision

Connect trails systems to expand recreational opportunities on the Nation’s public lands
**Proof of Concept - Decision Support Tool**

### USGS Proposed Trails Dashboard

<table>
<thead>
<tr>
<th>Trail Name</th>
<th>Surface Class</th>
<th>Length</th>
<th>New Length</th>
<th>Manager</th>
<th>Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second Thoughts, First Flats</td>
<td>1</td>
<td>0.66</td>
<td>52.01</td>
<td>FED</td>
<td>BLM</td>
</tr>
<tr>
<td>Ribbon Trail, Old Garden Trail</td>
<td>1</td>
<td>0.51</td>
<td>57.62</td>
<td>FED</td>
<td>BLM</td>
</tr>
<tr>
<td>Roll Over Ridge, Mica Mine Trail</td>
<td>1</td>
<td>0.62</td>
<td>7.20</td>
<td>FED</td>
<td>BLM</td>
</tr>
</tbody>
</table>

### Terrain Accessibility

![Terrain Accessibility Chart]

**Last updated a few seconds ago**

**USGS The National Map, National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information**

**The National Map**
Your Source for Topographic Information
2-Year Goals to Support the Vision

❖ **Goal 1**: Create a decision support tool (TRAILS) to assist land managers in identifying connections between existing trails and trail systems.
  ➢ Beta TRAILS decision support tool released 8/2019
  ■ User testing and proof of concept pilots ongoing

❖ **Goal 2**: Create a robust national digital trails database
  ➢ ~200,000 miles of trails aggregated
  ➢ New trail schema implemented

❖ **Goal 3**: Develop a mobile responsive editor for maintaining trails
  ➢ Review of existing applications ongoing
TRAILS Decision Support Tool
TRAILS Decision Support Tool

[Image of a map interface with various tools and features highlighted, including:
- Find address or place
- Search by address or place
- Zoom in and out with + or - or just use the roller on your mouse
- Collapse or Expand this window
- Highlight a project above, then use the tools below to manage the project
- Click to zoom to your current location
- Click and hold left mouse button to drag the map
- Scale bar
- Latitude/Longitude
- Data Credit]

[USGS and The National Map logos]
Create a New Project

[Image of a screenshot from the USGS TRAILS system showing a table of project names, descriptions, and dates, with a callout pointing to a 'New Project' button]

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Modified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Junction Area</td>
<td>Looking for better connections in</td>
<td>8/16/2019</td>
</tr>
<tr>
<td>July Heat Test</td>
<td>Pre-Test</td>
<td>7/30/2019</td>
</tr>
<tr>
<td>Elizabeth's Trails</td>
<td>Finding shortcuts...</td>
<td>6/14/2019</td>
</tr>
<tr>
<td>June Trails</td>
<td>June bugs</td>
<td>6/11/2019</td>
</tr>
<tr>
<td>Great Smokey Mountains National Park</td>
<td>Trails</td>
<td>5/30/2019</td>
</tr>
<tr>
<td>Finder's Keepers</td>
<td>Natural Treasures</td>
<td>5/9/2019</td>
</tr>
</tbody>
</table>

Click here to create a new project
Define Area of Interest (AOI)

1. Zoom to an area of interest
2. Click to begin digitizing AOI
3. Double-click to start and end.
4. Click to continue

Stay within the black hash marks for faster analysis and access to higher resolutions.

Zoom with mouse or + and - or search for a place.

Once you've created your AOI, you can move or reshape as needed.

Toggle Warnings On/Off

Additional Tools
<table>
<thead>
<tr>
<th>Analysis Resolution</th>
<th>Max AOI Extent Dimensions (km)</th>
<th>Max AOI Extent Dimensions (mi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 m</td>
<td>8 km x 8 km</td>
<td>4.97 mi x 4.97 mi</td>
</tr>
<tr>
<td>3.4 m</td>
<td>27.2 km x 27.2 km</td>
<td>16.9 mi x 16.9 mi</td>
</tr>
<tr>
<td>5 m (Alaska only)</td>
<td>40 km x 40 km</td>
<td>24.85 mi x 24.85 mi</td>
</tr>
<tr>
<td>10 m</td>
<td>80 km x 80 km</td>
<td>49.71 mi x 49.71 mi</td>
</tr>
<tr>
<td>30 m</td>
<td>240 km x 240 km</td>
<td>149.12 mi x 149.12 mi</td>
</tr>
<tr>
<td>60 m</td>
<td>480 km x 480 km</td>
<td>298.26 mi x 298.26 mi</td>
</tr>
<tr>
<td>90 m</td>
<td>720 km x 720 km</td>
<td>447 mi x 447 mi</td>
</tr>
</tbody>
</table>

**Note:** Max AOI Extent Dimension calculations assume 8,000 x 8,000 3DEP max image height

**Assumption:** If multiple DEM resolutions cover an AOI, we will default to coarsest resolution that covers the entire AOI

**Assumption:** We will display above Analysis Resolutions (which are the 3DEP native resolutions) in the dropdown in the application.
Generate Trails - All Existing Trails
Generate Trails - Add Waypoints

1. Click to define waypoints
2. Click to begin adding waypoints
3. Click here when finished (Note: the "Add" and "Stop" toggle on/off)
4. Generate all connectors
5. Connect Trails

Add a more meaningful name if desired
Add more meaningful names if desired
Check out the Advanced Settings to see default or change terrain analysis criteria

Connecting trails... Cancel
Show detailed status messages

The process may take awhile...
Generate Trails - Advanced Settings

- **Analysis Resolution**: 30 meters
- **PAD-US Weight**
  - Detailed Cost Scores
- **NHD Weight**
  - Detailed Cost Scores
- **Transportation Weight**
  - Detailed Cost Scores

**Slope Weight**

**Masking Parameters**
- **Existing Trails Cost Factor (0-100%)**: 50
- **Include 4x4 roads**
- **Include local roads**

Connect Trails ➔

Connecting trails...  Cancel

Show detailed status messages
Explore Trails
Share Trails

Trail Routing, Analysis, and Information Linkage System (TRAILS) Beta

Edit Project | Close
---|---
1. Project Information
2. Define Area of Interest
3. Refine Scenarios and Explore Results
4. Share Project

4. Share Project

Dashboard  File Geodatabase


Copy URL  Open in New Window
Dashboard
Short-Term Tasks from Acting DOI Deputy Director Kate MacGregor

- Identify management lead & technical POCs for pilots
- Provide data to USGS to populate the National Trails Database
- Work with bureau agencies to learn the TRAILS tool and evaluate trail-connection candidates
- Report progress to the Secretary’s office and other stakeholders
Overview of Bureau Pilot Projects

USFWS: McNary Wildlife Refuge in Washington
BLM: Fruits, West of Grand Junction, Colorado
BLM: Red Rocks Canyon National Conservation Area, West of Las Vegas, Nevada
NPS: The Delaware Water Gap in Pennsylvania
NPS: Mammoth Cave National Park in Kentucky
USFWS: The Kenai National Wildlife Refuge in Alaska

Hawaii
Alaska
U.S. Virgin Islands
Puerto Rico
BLM - Fruita to McInnis Canyons National Conservation Area, Near Grand Junction Colorado

- Partners: CO BLM, City of Fruita, Grand Valley Trail Alliance, CO Plateau Mountain Bike Trail Association, and Mesa County
- Primary goal: Work with a variety of partners to provide better trails connectivity for long distance recreational experiences.
NPS - Mammoth Cave National Park, KY

❖ Increase connectivity within the existing trail systems
❖ Long-term plan to explore connectivity to the adjacent City of Brownsville, recently designated as a Trail Town
USFWS - Kenai National Wildlife Refuge, AK

- ~Two million acres, 80 miles of trails
- Tourism - major economic driver
- Rebuilding trails as a result of this summer's Swan Lake fire
Next Steps...Goal 1 - TRAILS Decision Support Tool

- Initial focus DOI; future expansion to other Federal agencies and advocacy groups

- Launch of operational prototype on GeoPlatform - December 2019

- Work with stakeholders to identify additional groups/people for feedback

- Prioritize and incorporate additional requirements

- Future maintenance and update plans
Next steps Goal 2 - National Digital Trails Database

- USGS has aggregated 199,067 miles of trails as of 9/24/19
- Continue to build partnerships with Federal, state, and other organizations
- Continue work with Federal partners to standardize trail schema

Trails Explorer: https://usgs.maps.arcgis.com/apps/webappviewer
State Trail Contributions to USGS National Trails Database

This status map shows state trails contributions to the U.S. Geological Survey, National Geospatial Program. Currently, the U.S. Geological Survey is focused on Federal land management agency partnerships as a top priority but as these mature and require less time, staff will focus on aggregating this additional trails data. Where the data meets program quality needs, and is available as Public Domain, partnerships are built to include states trails data into our national trails database.

<table>
<thead>
<tr>
<th>State</th>
<th>Year</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>AK</td>
<td>2014</td>
<td>684</td>
</tr>
<tr>
<td>MI</td>
<td>2016</td>
<td>8938</td>
</tr>
<tr>
<td>WV</td>
<td>2016</td>
<td>2277</td>
</tr>
<tr>
<td>CA</td>
<td>2018</td>
<td>1708</td>
</tr>
<tr>
<td>TX</td>
<td>2018</td>
<td>1305</td>
</tr>
<tr>
<td>CO</td>
<td>2019</td>
<td>5846</td>
</tr>
<tr>
<td>IN</td>
<td>2019</td>
<td>3574</td>
</tr>
<tr>
<td>TN</td>
<td>2019</td>
<td>1083</td>
</tr>
<tr>
<td>KY</td>
<td>2019</td>
<td>1135</td>
</tr>
<tr>
<td><strong>Total Miles</strong></td>
<td><strong>26,550</strong></td>
<td></td>
</tr>
</tbody>
</table>
Next Steps Goal 3 - Develop a mobile responsive editor for maintaining trails

- Work with DOI partners and others to identify existing maintenance applications
- Evaluate existing mobile-friendly applications
Future Work - Recreational Points of Interest

Features

The following recreation POIs have been approved by the USGS, FS, NPS, BLM, & FWS and will be added to US Topo quads:

- Trailheads
- Visitors Centers
- Campgrounds
- Shelters

These POIs are in the process of being approved and acquired:

- Ranger Stations
- Park Headquarters
- Cabins
- Picnic Facilities
Future Work - Project Outreach/Communication

First meeting is TBD.

NDT-WG Areas for Interest

1. Trails Decision Support Tool. Provide technical and strategic guidance on the development of this tool.
2. Data Aggregation. Develop a vision and eventually a product that better aggregates trails data from multiple agencies. Goals may include:
   - Adopting a common schema where core attributes are the same or very similar across agency.
   - Striving toward using service endpoints for data sharing/distribution.
   - Establishing agreed upon snap points on agencies boundaries where trail jurisdiction changes. Business rules would state who is responsible for what.
3. Crowdsourcing. Work with partners to establish a mobile friendly application that will allow trails stewards, including employees of land management agencies as well as members of the public to maintain trails information.

Meeting Minutes and Presentations *(coming soon)*
Questions?

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