

Conservationists enlist Trimble technology to foil wildfires

Customer
Student Conservation
Association

Project
LANDFIRE

Project Date
2004



It starts with a flicker and an appetite. Controlled, it eats only what it's given—a few logs, maybe some pine cones—and emits a pleasant heat and welcome light. But one log too many or five minutes of neglect and a harmless flame can become a destructive force. It's a wildfire.

Fire is a force of nature still not well understood. Today, the United States Geological Survey (USGS) EROS Data Center and the United States Department of Agriculture (USDA) Forest Service Fire Sciences Laboratory are collaborating on a five-year, nationwide project. The LANDFIRE Field Reference Data Collection Project is designed to map and understand natural fire fuels with the goal of discovering more about precisely what it is in the make-up of the land that can feed a flame. By the end of this project, these two research centers will be able to provide fire managers with the information they need to better assess the risk of wildfires throughout the United States.

Mapping the hazard

In order to understand the country's fire fuel make-up, the LANDFIRE project managers first must figure out exactly what's out there. For that task—a painstaking, on-the-ground survey of the diverse vegetation across the U.S.—the group turned to the Student Conservation Association (SCA), a leading conservation service organization for young people. They also sought help from Trimble, a world-renowned innovator of Global Positioning System (GPS) and Geographic Information System (GIS) technology.

To fill the project's needs, SCA recruited undergraduate and graduate student interns from around the country with backgrounds in botany and GPS/GIS to staff the field teams that collect the raw data. After a comprehensive two-week training, the students are sent out in pairs to different parts of the U.S. on 6- to 12-month assignments with little more than some camping equipment, a few reference books and a Trimble® Recon® handheld with a GPS Pathfinder® Pocket receiver—the Trimble Recon GPS system. Using the Recon as their compass, map and data entry point all in one, the SCA interns mapped each new area and recorded the field data they collected.

Whether noting a previously undocumented shrub species or a pile of trash in the middle of a gorge, the meticulous land inventories created by the SCA interns are proving useful, even more so because of the streamlined data collection process and the speed with which the information is made available to scientists. After a day's work examining the terrain, interns return to their base camp to upload the information into an enterprise database, from which



data is sent to different laboratories around the U.S. So, even as field teams continue to collect data, LANDFIRE project managers can study the information and get one step closer to understanding the fire fuel loads and can then clearly identify high-risk areas.

SCA Intern Emily Nguyen, a senior at Mississippi State University, spent a month on her hands and knees in the Snake River Plateau area of Southern Idaho. In an arid, dusty area and with little knowledge of the native plants and shrubs, she found she was able to spend more time examining the vegetation and less time recording her findings. Data was collected using a Recon handheld with ESRI® ArcPad® software.

Paper maps redundant

"The Recon is saving me from having to stop my work and write down notes while in the field," says Nguyen. "It's nice not to have to enter data by hand. It's also nice not to have to carry around large paper maps. It's all stored in the Recon."

Nguyen and other SCA interns working in the Snake River Plateau have appreciated the durability of the Recon, a characteristic that traditional data-recording tools—a cumbersome paper map and a clunky three-ring notebook—aren't typically known for. When they go digging through the dust and dirt in extreme temperatures, and also working in the rain, the Recon goes right along with them.

As SCA interns are clawing their way through the bush, examining and documenting the details of trees, shrubs, grasses and other vegetation, it can be easy to lose sight of the broader perspective on what the LANDFIRE project means for the country as a whole.

PROJECT HIGHLIGHTS

- Extensive research project for the USGS and USDA Forest Service Fire Sciences Laboratory to assess wildfire risk which burned 5 million acres in 2003
- SCA students embark on 6- to 12-month assignments to map natural fire fuels throughout the U.S.
- Rugged Trimble Recon handheld is ideal for harsh conditions such as the arid Snake River Plateau in the Western U.S.
- Students upload data collected each day to enterprise database that is automatically distributed to labs throughout the U.S.



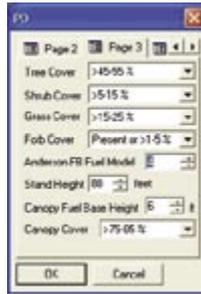
According to a U.S. Government interagency survey, in 2003, the United States suffered nearly 86,000 fires that burned close to five million acres and cost more than \$1.3 billion to suppress. Year after year, fires burn homes, take lives and devastate communities. Eventually, the findings that come out of LANDFIRE will enable people to foresee the threat and take precautions to prevent fire in their communities.

Mobile GIS technologies

The integration of Trimble equipment has not only made recording data more efficient, it has also exposed a new generation to the possibilities of scientific advancement through the use of state-of-the-art GPS and mobile GIS technologies. As more field teams become familiar with the advantages of GPS and GIS, more data can be collected and, hence, more progress made in rapid assessment and response.

Using the Recon handheld in the LANDFIRE project provides an opportunity for interns to master efficient field data collection techniques, and for project managers to use the data more effectively. For an SCA volunteer, it means that the painstaking process of field inspection is worth the trouble.

In the end, it makes no difference to a wildfire what kind of fuel it uses to nourish its blaze. It will burn whatever is in its path. But together with Trimble and the SCA, the USGS and USDA are closer to understanding how to starve a hungry fire. Before long, any chance for a wildfire to cause widespread destruction will be practically extinguished.



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The equipment used on this project includes:

- Trimble Recon GPS system with Microsoft® Windows Mobile™ 2003 software for Pocket PCs
- ESRI ArcPad 6.0.3
- ESRI ArcGIS® 8.3
- Microsoft Active Sync® 3.7.1



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