Meeting Army Training Requirements Using LANDFIRE
Interview with ITAM's Tim Christiansen

Tim Christiansen has devoted his 44-year career to pursuing interests in ecosystem ecology, fire ecology, ecological monitoring, and invertebrate ecology. A certified wildland firefighter, he has participated in 183 prescribed fires or wildfires, and has applied those skills and learned new ones while working at the University of Georgia's Savannah River Ecology Lab, Yellowstone National Park, and Eglin Air Base in Florida. At White Sands Missile Range (WSMR) in New Mexico, Tim joined the Army's Integrated Training and Area Management (ITAM) program, and has extended that connection to his current work for the Texas Army National Guard (TXARNG). He is responsible for helping the Army meet its training requirements through management of habitat sustainability outside of "live fire" ranges.*

Tim focuses on the Land Rehabilitation and Management (LRAM) program, the Range and Training Land Assessment (RTLA) program, and various other tasks. He holds a B.S. in Botany from Ohio State University and a PhD. in Entomology from the University of Wyoming. He has used LANDFIRE (LF) products practically since the project was launched in 2002. In our Q & A, Tim explains how LF products and tools help address land management concerns on military sites in the southwest United States.

Tell us about ITAM and why you're using LF products.

The Department of Defense (DOD) is responsible for just under 30 million acres of land comprising many ecosystems, fire regimes, and disturbed and undisturbed areas with high biodiversity. Much of the acreage has been closed to the public since at least 1940. We manage for threatened and endangered species that are protected, and because military sites are part of the landscape, they need to be included in assessments of land condition and fire information in a region.

Because fire management plans are required at military sites, they are usually produced by the Natural Resources section. Texas ITAM assists by providing LF data and information (along with other data sources) to help proactively manage for erosion and vegetation impacts.

Most ITAM and Natural Resources section programs have few personnel, making LF products valuable resources for developing fire and land management plans and identifying wildfire potential on large acreages.

I was employed by The Nature Conservancy (TNC) when it ran the ITAM program at WSMR (2000-2007) and learned about the LF project at that time. I became further involved when I attended several information-gathering workshops for the southwestern U.S. that were conducted by Wendel Hann, and then joined the TNC Fire Learning Network when Lynn Decker directed it. I developed several Biophysical Settings models and reviewed many others from across the country, during both the initial

stages of the project and in later model updates. In particular, I provided detailed data from central Texas when LF models were updated, including vegetation condition and structure monitoring of each of the four Texas training sites.

You have used LF products in many different aspects of your work. Tell us what you do and how LF fits in.

Four TXARNG training sites are scattered throughout central Texas, comprising 31,368 acres overall. Most of the forests, woodlands, shrublands, savannahs, and grasslands were not actively managed prior to 2015, but since then the ITAM program has done mulching, applied herbicides, and reseeded in coordination with TXARNG's Natural Resources Section. Natural Resources also uses prescribed fire on ITAM's managed sites. Many acres on the TXARNG training sites are used only for light training (foot traffic) or as safety zones. LF products fill in information gaps in those zones, aiding in the work of sustaining vegetation and soil conditions.

LF products provide regional (outside of Texas military boundaries) information to see if conditions outside the sites affect the ecosystems. We use that information to plan and implement management for invasive species, changes in ecosystems, and possible erosion issues that could affect training sites now and in the future. For example, because erodible land within several miles could someday cause problems on military sites, we manage for more grass undercover to slow possible erosion.

Typical woodland area where mechanical thinning would be applied

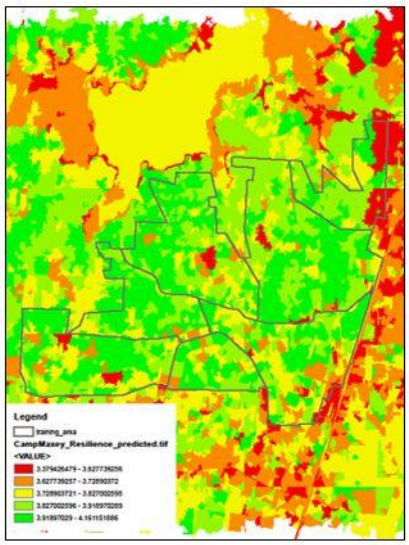
How do LF products, along with other datasets, help you assess habitat condition, monitor change over time, and prioritize management activities on DOD lands?

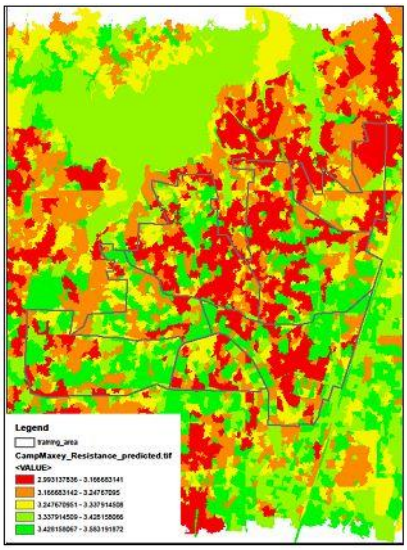
We work with the Center for Engineering Research, Corps of Engineers (CERL) in planning management projects by using ITAM on-site monitoring data for CERL GIS analysis of vegetation resistance and resilience in all the training site habitats. For example, our analysis for light foot traffic activity by small squad training, such as land/navigation, is used to develop management and recovery plans in each of the 60 subwatersheds for all the training sites.

Other land management resources include soil and hydrology maps and erosion potential data from Natural Resources Conservation Service (NRCS), as well as other studies of each training area. Weather data from 1900 to the present, along with other data from the National Centers for Environmental Information, identify trends in extreme precipitation events that may cause erosion problems, for example.

LF products are combined with other products to help us anticipate climate change effects and are used to help plan and implement projects to sustain good land and soil conditions in general. We are looking at adding additional erosion control methods, increasing grass undercover, changing forest/woodland structure, and rotating land use to better hold soil. LF provides a foundation for proactive management before conditions worsen, costs for erosion management increase, and even to decide where land cannot be used for further mission activities.

We use LF Existing Vegetation Types, Vegetation Transition Magnitude, National Vegetation Classification, Environmental Site Potential, Biophysical Setting Models, Vegetation Condition Class, Vegetation Departure, Succession Classes, and information on historic fire frequency to assist in planning management decisions.





Vegetation/habitat resistance to disturbance *Resilience of disturbance*

LF is also used in coordination with other remote sensing products to assist in land condition assessment and habitat health assessments; plan for where fire may occur and the intensity of fires at various locations; manage for sustainability for both the present and future (next 20-40 years) on training lands; detect changes in land and soil conditions; and inform an environmental request document such as Record of Environmental Considerations.

How does your work in a military context differ from how these activities would be performed in a civilian context -- for example, on a national forest or grassland?

One difference is that management of military lands is based on the premise that most land will continue to be used both for light and more intensive activities, so our planning and management includes type of use and how to manage to sustain the land for specific training issues. Sustainability management is for a projection of 10 years or more of vegetation and land condition changes due to training activities.

What advice would you offer other army units/DOD resource managers regarding the use of LF products?

DOD natural resources managers and ITAM staff should be more aware of the LF program. I'd advise them not to assume that LF is for "fire" use only. In fact, LF can be used for land management planning as well as fire management, including condition assessments and vegetation structure analysis. Also, LF is free – there is no cost for the LF data and products.

What makes LF work for you? Where could LF improve or make changes?

LF works for me because all the information can be used for management decisions and can be referenced as an outside source. Updates for the products are always useful.

***** The Integrated Training Area Management (ITAM) Program provides Army Range Officers with the capability to manage and maintain training land by integrating mission requirements with environmental requirements and sound land management practices. Objectives are to 1) achieve optimal sustained use of lands for the execution of realistic training and testing by providing a sustainable core capability that balances usage, condition, and level of maintenance; 2) implement a management and decision-making process that integrates Army training and other mission requirements for land use with sound natural resources management; and 3) advocate proactive conservation and land management practices by aligning Army training land management priorities with the Army training and readiness priorities.

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T Christiansen Publications

Other Resources

- Busby, R.R., D.L. Gebhart, S.J. Oxley, W.D. Tarantino and W.A. Wade. Estimating Resistance and Resilience of Military Lands Using Vegetation Indices. US Army ERDC-CERL. CERL ERDC/CERL TR-17-12.
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P. 3 Maps credit: Wade A Wall, US Army ERDC-CERL, Champaign, IL 61826-9005. Location: Camp Maxey near Paris, TX.