SERDP
Strategic Environmental Research and Development Program
Improving Mission Readiness Through Environmental Research

Diagnostic Tools and Reclamation Technology for Mitigating Impacts of DoD/DOE Activities on Arid Areas

Conservation
CS-1131

Background:

Seventy percent of Department of Defense (DoD) training and testing areas are on arid and semi-arid land. Testing and training activities can be devastating to land sustainability and consequently, can threaten the continuation of military testing and training operations. Current gaps exist in diagnostic capabilities to distinguish between various degrees of sustainable and non-sustainable impacts from earth-disturbing activities in desert ecosystems.

Objective:

This project is designed to develop innovative diagnostics that will rapidly characterize sustainable and non-sustainable impacts of military training and testing. Based on the diagnostic capabilities, appropriate rehabilitation and restoration techniques will be identified.

Summary of Process/Technology:

The project approach focuses on specific problems at Fort Irwin, California, the Army's National Training Center located in the Mojave Desert, but is suitable for other DoD and Department of Energy facilities in arid and semi-arid areas. Diagnostic tools to be developed also will be applicable to wetter areas of the U.S. The technologies being evaluated and tested are divided into two principal areas -- diagnostics and restoration techniques. The diagnostic techniques further are divided into image collection and image processing techniques. Image collection techniques include a new rapid detection method that uses hand held digital cameras and Hi-8 camcorders. Some of the new image processing techniques include processing helicopter images using computer technologies to provide rapid assessment of vegetation. Another new image processing technology will be tested at Fort Irwin to detect the condition of stressed plants. Several restoration techniques focusing on revegetation have been used by project personnel to accelerate the recovery process in desert environments.

Benefit:

New and cost-effective techniques for rehabilitation and restoration of disturbed habitats are examined based on the diagnostic capability available. These diagnostic tools will enable installation managers to rapidly assess site erosion potential, provide effective revegetation techniques, and effectively use limited military training and testing environments.

Accomplishments:

A detailed management plan was developed. The research team visited Fort Irwin and acquired information regarding the levels of disturbance from military activities. The team scanned selected images for preliminary evaluation of photo scale to assess floral species determination, and preliminary software for diagnostics was secured.

Vegetation Reclamation of Military Training Sites at Fort Irwin

Contact Information:

Dr. W. Kent Ostler
Bechtel Nevada
P.O. Box 98521
Las Vegas, NV 89193-8521
Phone: (702) 295-0393
Fax: (702) 295-0373
E-mail: ostler_wk@nv.doe.gov