

Applications of VLSA Surveys to Landscape Issues of the Rock Creek Watershed in Northeastern Nevada

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Watershed assessments and monitoring of resulting habitat restoration projects requires efficient, repeatable, and affordable processes. Additionally, collaborative watershed work is increasingly necessary in order to access a full spectrum of developing methodologies, expertise, and sustainable outcomes. The Northeastern Nevada Stewardship Group (NNSG), a community-based non-profit collaborative, is introducing the Elko County Sagebrush Ecosystem Conservation Strategy within the Tuscarora Population Management Unit (PMU)/Watershed Assessment process. In June 2005, NNSG contracted with Bitterroot Restoration Inc., Corvallis, MT, to test aspects of very large-scale aerial (VLSA) imagery on 25,000 acres managed by the Bureau of Land Management. This project is representative of NNSG's inclusive work, as private industry, citizen volunteers, agency professionals, UNR educators, and ARS researchers plan and carry out natural resource activities. The information acquired through this pilot project, conducted within the Rock Creek drainage, Elko County, Nevada, utilized methods developed by USDA-ARS researchers cooperating with the Bureau of Land Management. The project specific goals were to: (1) analyze VLSA and laser point frame (LPF) data and compare them for percent bare ground as a means of assessing the accuracy of VLSA-derived bare ground measurements in an ecosystem infested with cheatgrass; (2) attempt vegetation type identification from VLSA data and measure percent cover for identified species, followed by comparison of cover-by-species from VLSA imagery with LPF cover-by-species; and (3) examine the data by reference to topography, hydrology, soil type, fire history, roads, and land ownership to determine whether information extracted from VLSA data is correlated with these landscape features. Average bare ground measured from VLSA photographs using SamplePoint software was not different from measurements made using the LPF. Cover data did not show correlation with landscape features, except in the case of cheatgrass cover, which was much higher on southeast facing slopes and on recently burned areas. Both of these findings are consistent with documented cheatgrass ecology, but serve to reinforce the utility of the methods used in this aerial survey. Many plant species were readily identified in VLSA photography but technician confidence in their ability to consistently and correctly identify species in an assessment of cover by species was low for many species. Technician confidence was high for measuring cover by life form (grasses, forbs, shrubs, trees) from VLSA photographs. The aerial sampling conducted on this project yielded sufficient sample size and statistical power to predict that a similar subsequent survey would detect a change in bare ground of about 2.5%. That finding, as much as other results of this project, demonstrate the power of VLSA methods for relatively economical, statistically-adequate landscape ecological assessments. The final report will be referenced by professionals

contracted to coordinate NNSG's Tuscarora PMU watershed working group, and will be utilized as appropriate, in the production of the watershed assessment and eventual habitat restoration projects.