Digital cameras open new view of America's West

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A U.S. Department of Agriculture (USDA) aerial photography survey of 38,000 wildfire-burned acres in Idaho provided what is believed to be the first evidence that the invasive leafy spurge weed is displacing seedlings of native mountain big sagebrush.

Terry Booth, a rangeland specialist with the Agricultural Research Service (ARS) Rangeland Resources Research Unit in Cheyenne, Wyo., designed the survey using a technique he developed called Very Large Scale Aerial (VLSA) imagery. The survey of Idaho's "Deep Fire Burn" was done with two cameras at different resolutions aboard a Moyes-Bailey Dragonfly two-seat, light-sport airplane flying just over 300 feet over the area.

ARS is USDA's principal intramural scientific research agency.

Booth found the high-resolution aerial photography technique, usually using three cameras, a good way to sample large areas of the western United States. When supplemented by ground-based methods, it can be used for early detection of invasive species that might threaten native plant populations.

Pesticides and biological-control insects were used to control leafy spurge before and after the wildfire. But the survey, done three years after the fire, showed that leafy spurge still managed to expand in drainage areas and up canyon slopes.

One advantage of this type of aerial survey is that it can be routinely repeated, to keep checking on whether the pesticides or insects are working.

Booth received funding and technical assistance from the U.S. Department of the Interior's Bureau of Land Management (BLM).

The survey technique was made possible by advances in digital cameras, image sensors, storage media, and image processing.

Besides Idaho, Booth has also done aerial surveys in Colorado, Nevada, New Mexico, North Dakota, South Dakota, Oklahoma, and Wyoming, looking at a variety of vegetation, including invasive and native trees, Juniper woodlands, grasslands, and shrublands-on sites as diverse as gas pipeline rights-of-way and riverbanks.

More information: Booth published a paper on this research in the *Native Plants Journal.*

Provided by United States Department of Agriculture

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