Controlled Burning at Sycan Marsh: A Win for Training and Collaboration
Sycan Marsh Preserve, Oregon
October 2017

After years of planning, coordination and preparations by fire practitioners and researchers, The Nature Conservancy's Sycan Preserve Steward and Burn Boss Katie Sauerbrey led controlled burns on over 900 acres at Sycan Marsh Preserve. Working with Oregon Fire Management Officer Amanda Stamper, the "fire sisters" led two weeks of burning that provided training at all position task book levels for the cadre made up of federal, state and private fire practitioners—including a Burn Boss trainee from the Oregon Department of Forestry, an integral partner in cross-boundary fire management. In addition to providing training opportunities, burning on the preserve addressed ecological objectives: decreasing the threat of high-intensity, high-severity wildfires; increasing the health of trees; reducing the risk of insect and disease outbreak; recycling nutrients that increase soil productivity; and improving wildlife habitat.

Preserve Steward and Burn Boss Katie Sauerbrey directed the fire cadre and research scientists during controlled burns at the Sycan Marsh Preserve.   © *TNC (Craig Bienz)*

A burn with a scientific turn

This burn also supported an intensive fire behavior research project. The project's lead scientists included Nancy Grulke (U.S. Forest Service, Western Wildlands Environmental Threats Assessment Center), Lloyd Queen (University of Montana, National Center for Landscape Fire Analysis) and Russ Parson and Brett Butler (U.S. Forest Service, Fire Research Center). In addition to those fire research teams, Brian Gullett led a team of six from the U.S. Environmental Protection Agency in Research Triangle Park, North Carolina). In all, more than thirty scientists took part in the work at Sycan Marsh.

The experiments were designed, in part, to collect datasets suitable for evaluating coupled fire-atmosphere models, smoke production and dispersion models, and fire effects models. Coordinated research provides increased value enhanced by the coupled fire-atmosphere models in use today. Coupled models are simply those that join two or more models so that each model influences the other's results—as, for example, when a model of the atmosphere is joined to a model of a wildland fire so the fire alters atmospheric temperatures, moisture and winds, which in turn influence the evolution of the fire.

This multi-agency group of scientists at the Jim Castles Applied Research Station was joined by more than 30 fire managers; this facilitated important cross-specialty sharing of experience and knowledge, while providing training for new cadre. The application of controlled fire in this context provided everyone with a new appreciation of how fire frequency influences fire severity. The new relationships between the Conservancy's forest restoration practitioners and fire scientists may also be a first step in developing a long-term training, management and science facility.

Paving the way for cooperation

On March 28, 2017, the U.S. Forest Service and The Nature Conservancy signed a Master Participating Agreement to support their ongoing cooperation in performing prescribed burns on or affecting National Forest System lands, with a focus on training of personnel from both parties. The first Supplemental Project Agreement under that agreement was signed on October 20, between the Oregon Chapter of the Conservancy and the Fremont-Winema National Forest. This agreement will enable cross-boundary controlled burns on over 10,000 acres of Forest Service and Sycan Marsh Preserve land. Such

Mark Stern assisted the team of scientists from the University of Montana W.A. Franke College of Forestry & Conservation in installing instruments to collect data on thermal flux, temperature and rate of fire spread. GoPro cameras also took video of fire conditions. In addition to the instruments installed on the pole, similar instruments were placed the boxes (seen here, wrapped in what looks like aluminum foil) and 38 anemometers measured wind speed and direction in and around the burn areas.   *© TNC (Craig Bienz)*

Russ Parsons, project coordinator for fire and fuels modeling with the U.S. Forest Service, described how thermal images collected by drone are calibrated with data collected by fire monitors to assess fire severity, thermal flux and rate of spread. These physics-based data are used to quantify and validate fire behavior models.

Planning for this effort—coordinated between The Nature Conservancy, USFS Fire Research Laboratory (Missoula), University of Montana and Environmental Protection Agency—took two years. The scientists involved were extremely pleased with the quality of data collected, and for this unique opportunity to conduct research in a controlled experimental design. This research will increase the accuracy of fire behavior models, reducing wildfire risks and potentially saving lives.

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burning in partnership with state and federal agencies can achieve a more efficient, effective and integrated interagency fire management program for all parties and their lands.

The culmination of the fire training and learning exchange came on October 18, when the Forest Service Regional Vegetation Management Team spent the afternoon with Conservancy staff discussing their mutual efforts to increase the resiliency of forests in the Upper Klamath Basin. Both organizations have long recognized that excluding wildland fire from fire adapted ecosystems—once thought to protect valuable natural resources as well as people and communities—has instead often had detrimental effects. The lack of fire as a natural disturbance has often contributed to uncharacteristic fuel loadings and fuel profiles. These conditions, coupled with management activities, changing climatic conditions and drought, as well as the ever-increasing wildland

urban interface, likely contribute to higher complexity fires and more extreme fire behavior. As a result, many fires are having devastating effects. With a formal agreement now in place—and a successful burning and research project completed—a new way lies ahead.

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