Decision Support for Sagebrush-Steppe Protection: Designing a Regional Network of Strategic Fuel Breaks to Benefit the Greater Sage-Grouse

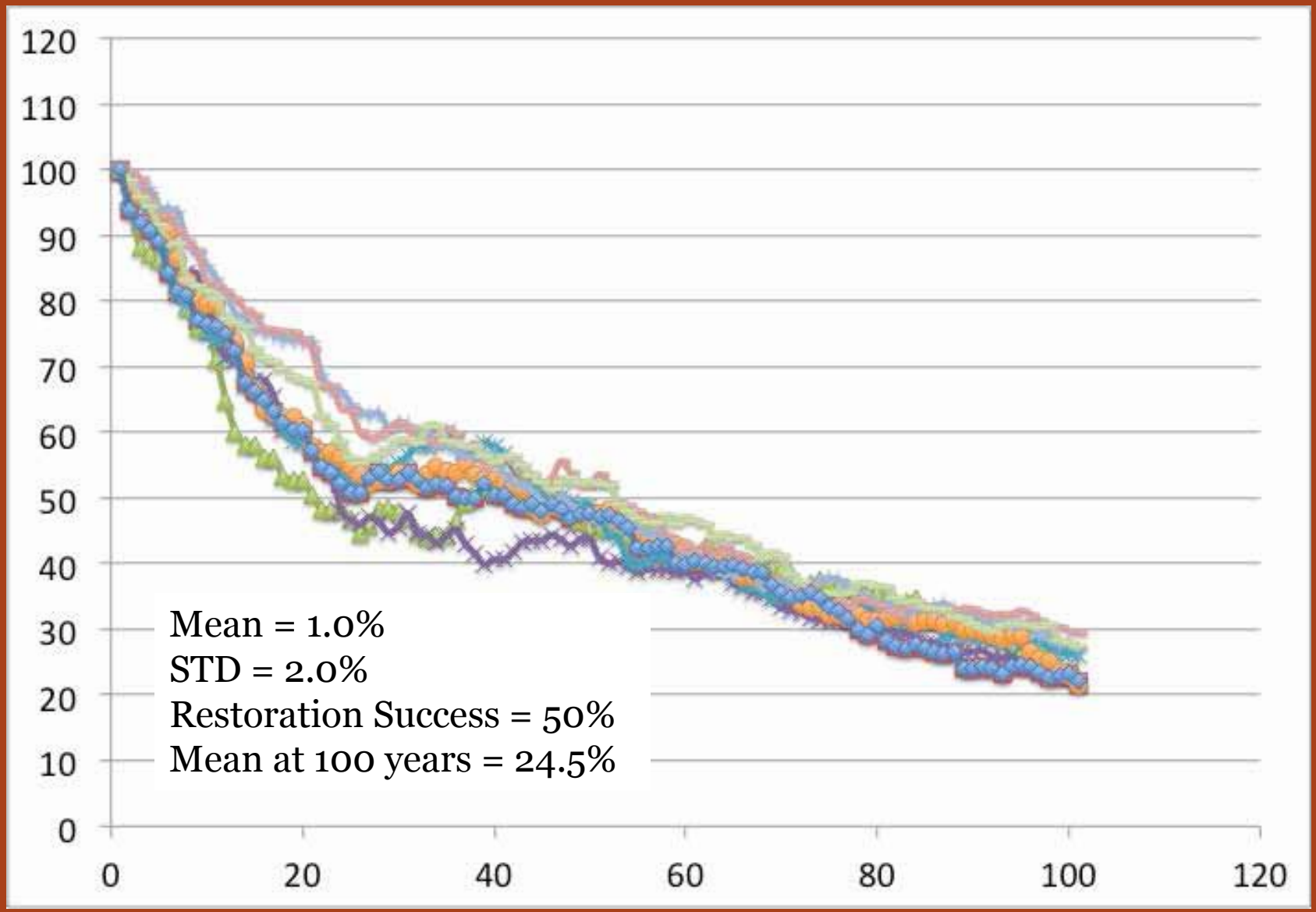
The Nature Conservancy
Protecting nature. Preserving life.™

Bob Unnasch, Louis Provencher,
Nathan Welch & Tanya Anderson

Challenge

- Greater Sage-grouse need large, interconnected expanses of sagebrush with healthy understories.
- Wildfire is a primary factor linked to the decline of sage-grouse populations in the western portion of the species' range.
- Few options exist to prevent or minimize large wildfires.

The Nature Conservancy
Protecting nature. Preserving life.™



The Nature Conservancy
Protecting nature. Preserving life.™

"Create and maintain effective fuel breaks in **strategic** locations that will modify fire behavior and increase fire suppression effectiveness...."

"Federal firefighters shall ensure close coordination with State firefighters, local fire departments and local expertise (i.e., livestock grazing permittees and road maintenance personnel) to **create the best possible network of strategic fuel breaks** and road access to minimize and reduce the size of a wildfire following ignition..."

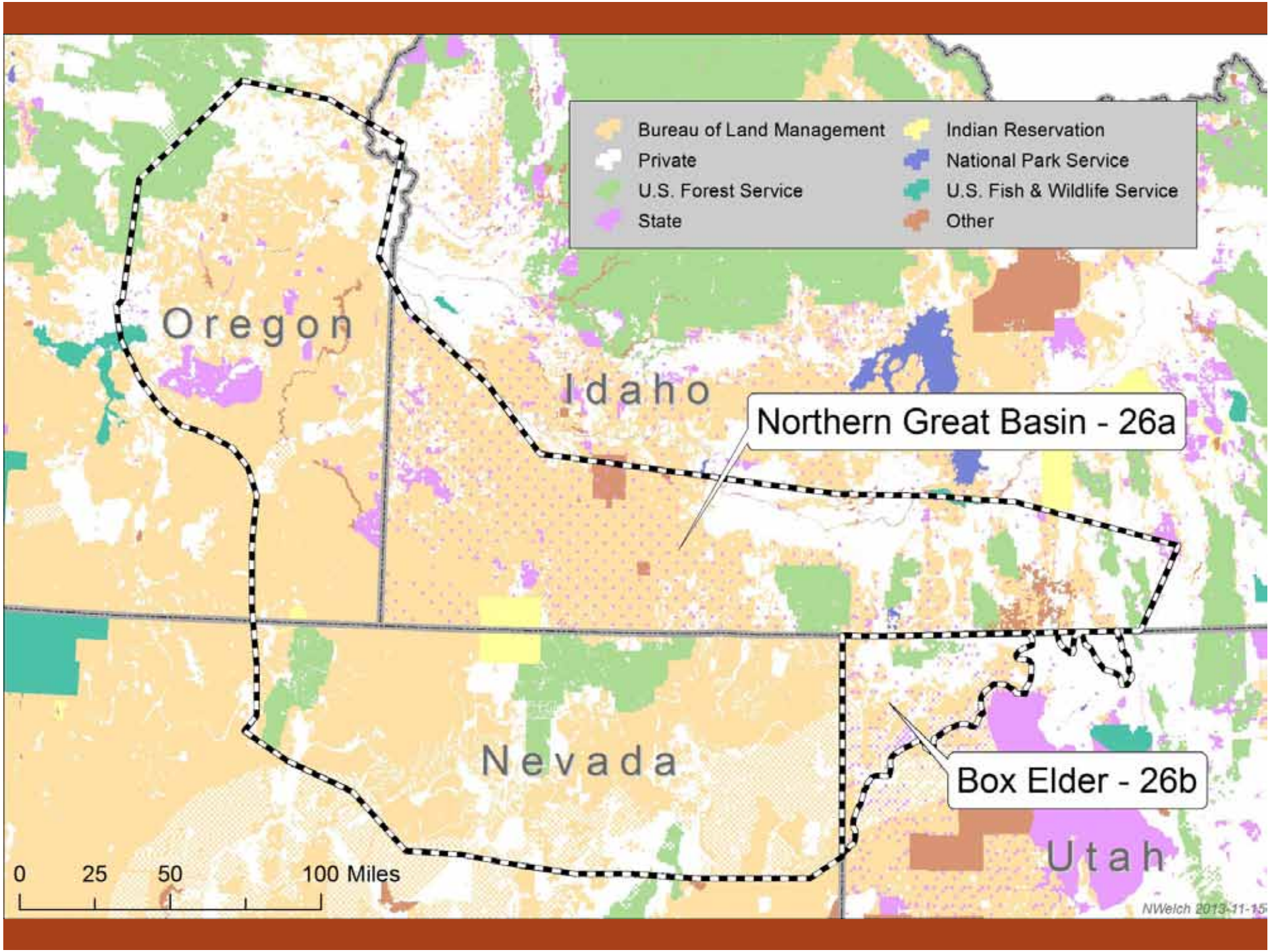
The Nature Conservancy
Protecting nature. Preserving life.™

Strategic Fuel Breaks to Benefit the Greater Sage-Grouse
Dr. Bob Unnasch, Director of Science for Idaho, The Nature Conservancy

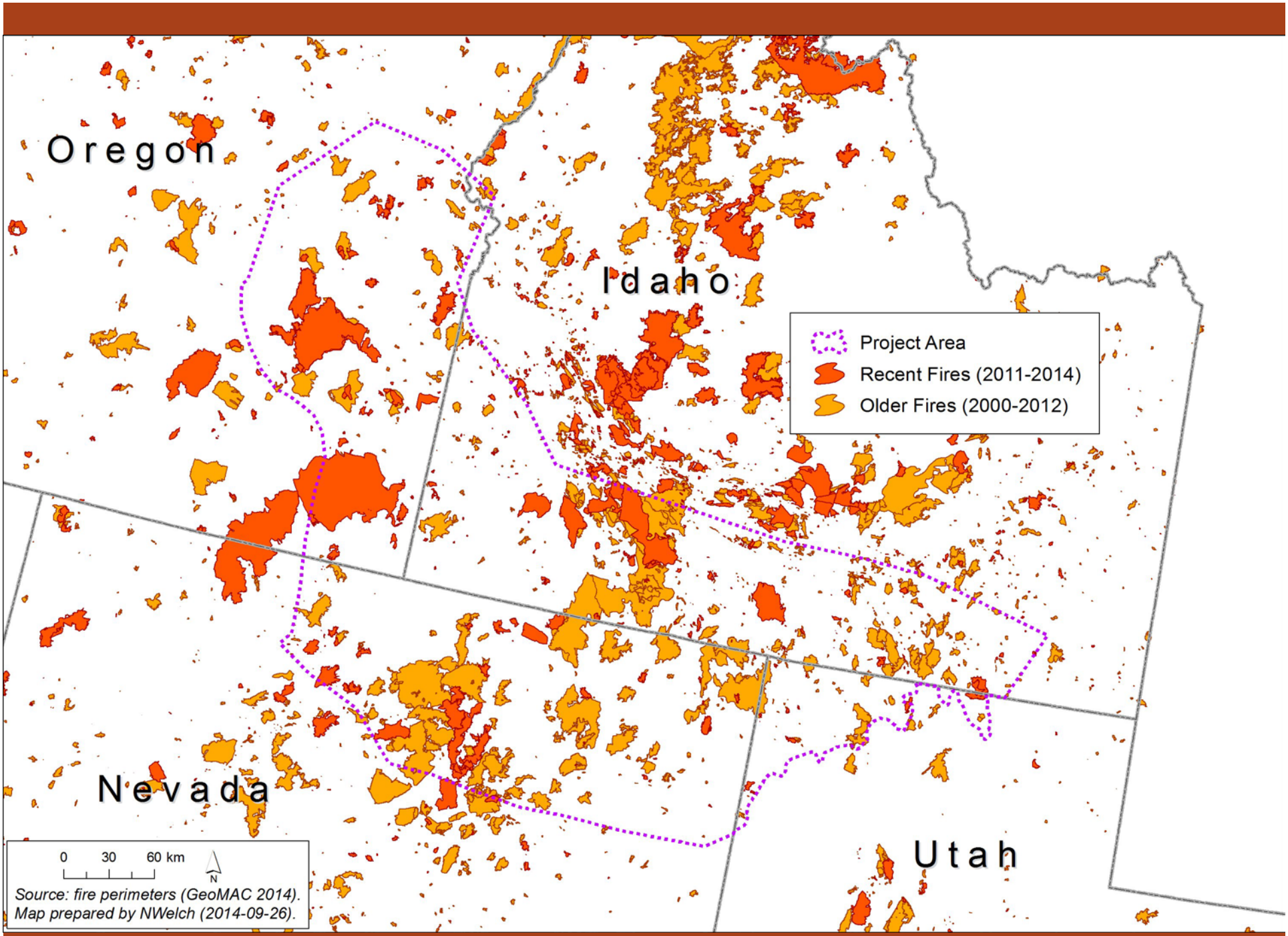
TNC's Response: Targeting Actions

- We are using existing data and GIS to design a regional network of strategically-located fuel breaks.
- Results can inform the placement of fuel breaks to minimize large fires in important sage-grouse habitat.

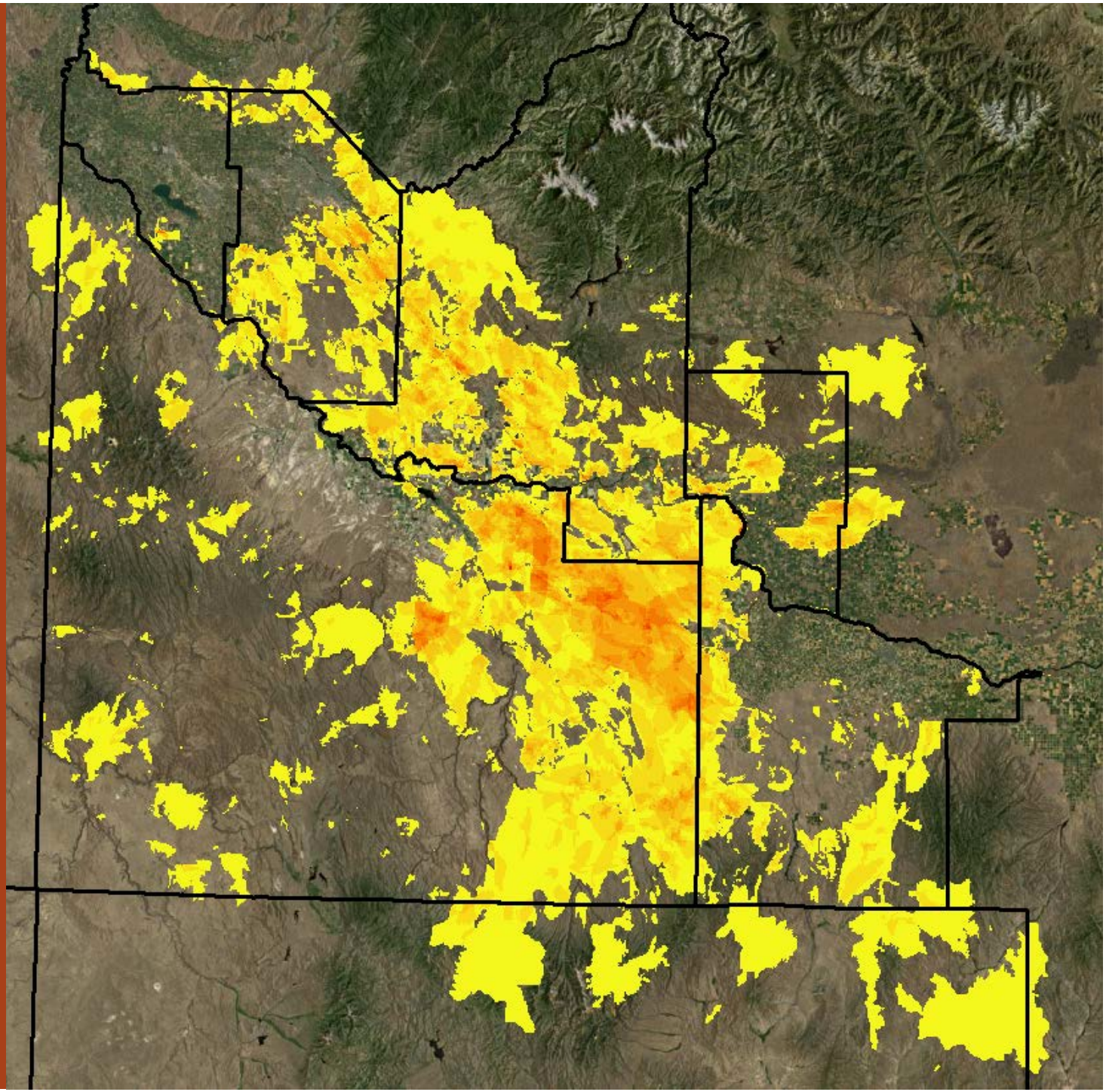
The Nature Conservancy
Protecting nature. Preserving life.™



Strategic Fuel Breaks to Benefit the Greater Sage-Grouse
Dr. Bob Unnasch, Director of Science for Idaho, The Nature Conservancy



Strategic Fuel Breaks to Benefit the Greater Sage-Grouse
Dr. Bob Unnasch, Director of Science for Idaho, The Nature Conservancy



The Nature Conservancy
Protecting nature. Preserving life.™

Strategic Fuel Breaks to Benefit the Greater Sage-Grouse
Dr. Bob Unnasch, Director of Science for Idaho, The Nature Conservancy

Methods

- Model wildfire likelihood across the study area.
- Identify areas of highest fire-likelihood.
- Investigate fuel-break configurations to protect priority habitat.

The Nature Conservancy
Protecting nature. Preserving life.™

Methods

Parameters include:

- Vegetation Type
- Fuel Loading
- Annual Grass Abundance
- Aspect
- Slope
- Prevailing Wind

The Nature Conservancy
Protecting nature. Preserving life.™

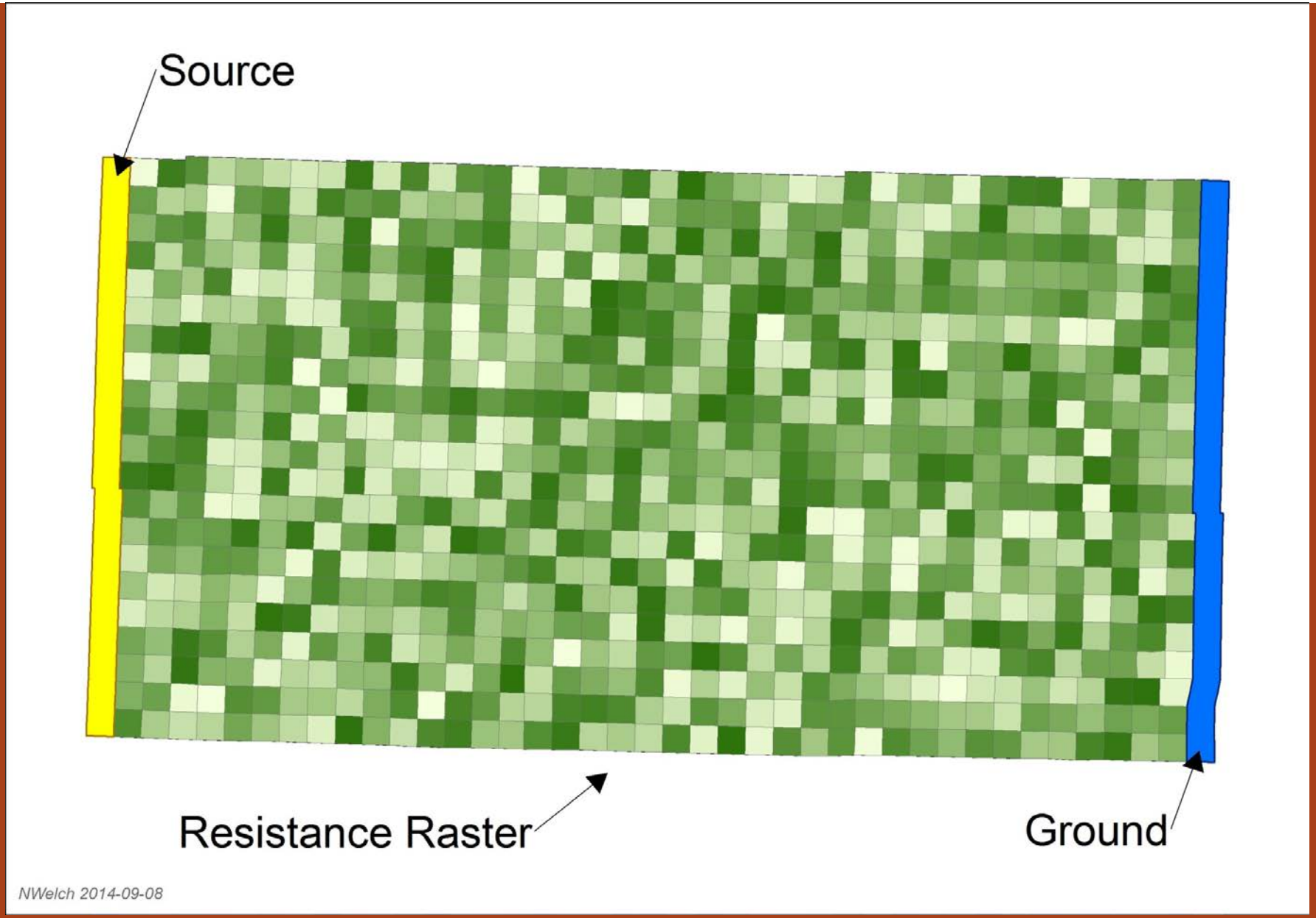
Methods

Circuitscape

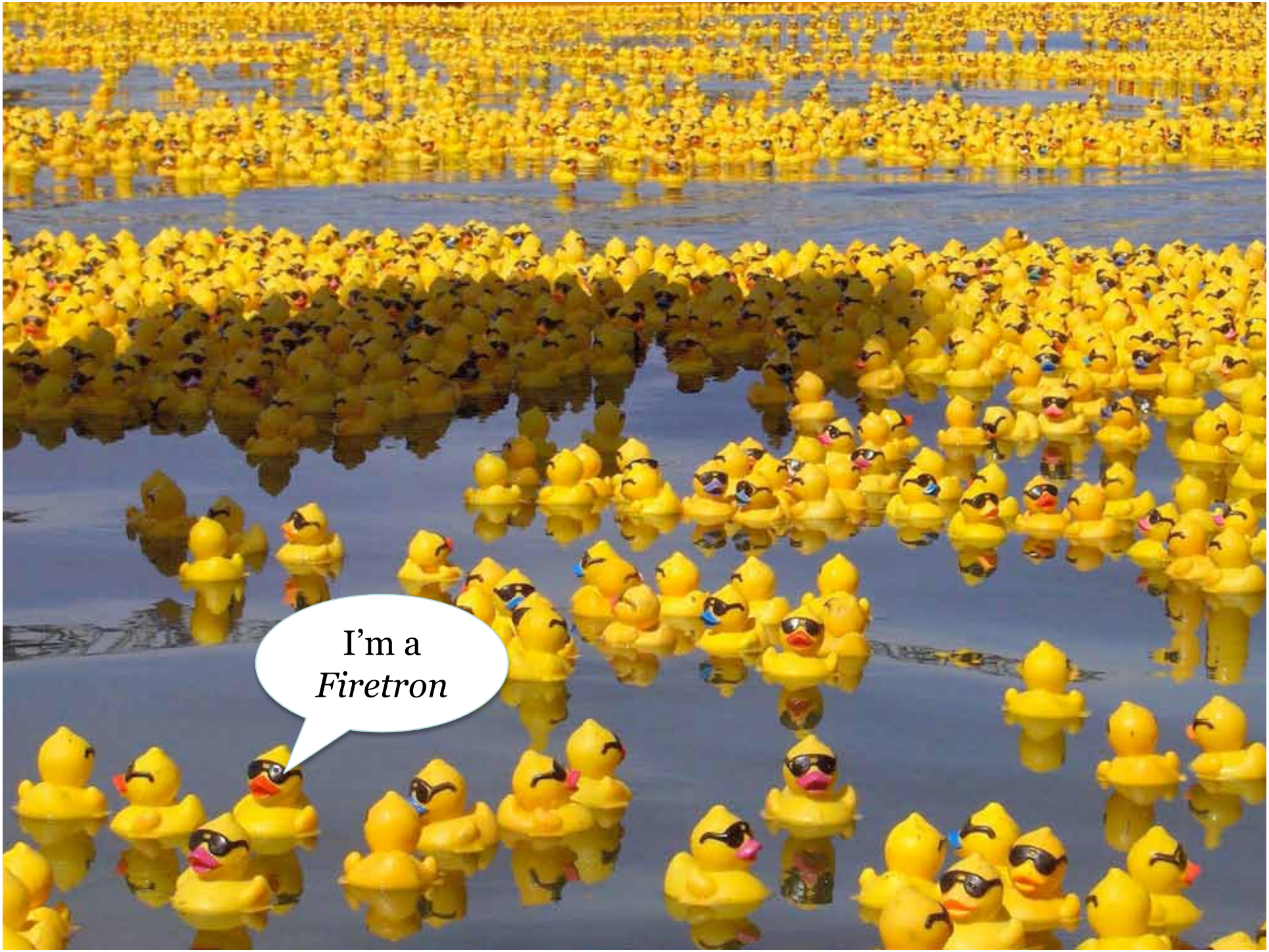
- Open source software that uses electrical circuit theory to model habitat connectivity.
- Quantifies the flow of electrical current across a resistance (1/conductive) surface.
  - » resistance of pixel = flammability
  - » resistance surface = landscape raster
  - » flow of current = fire likelihood

www.circuitscape.org

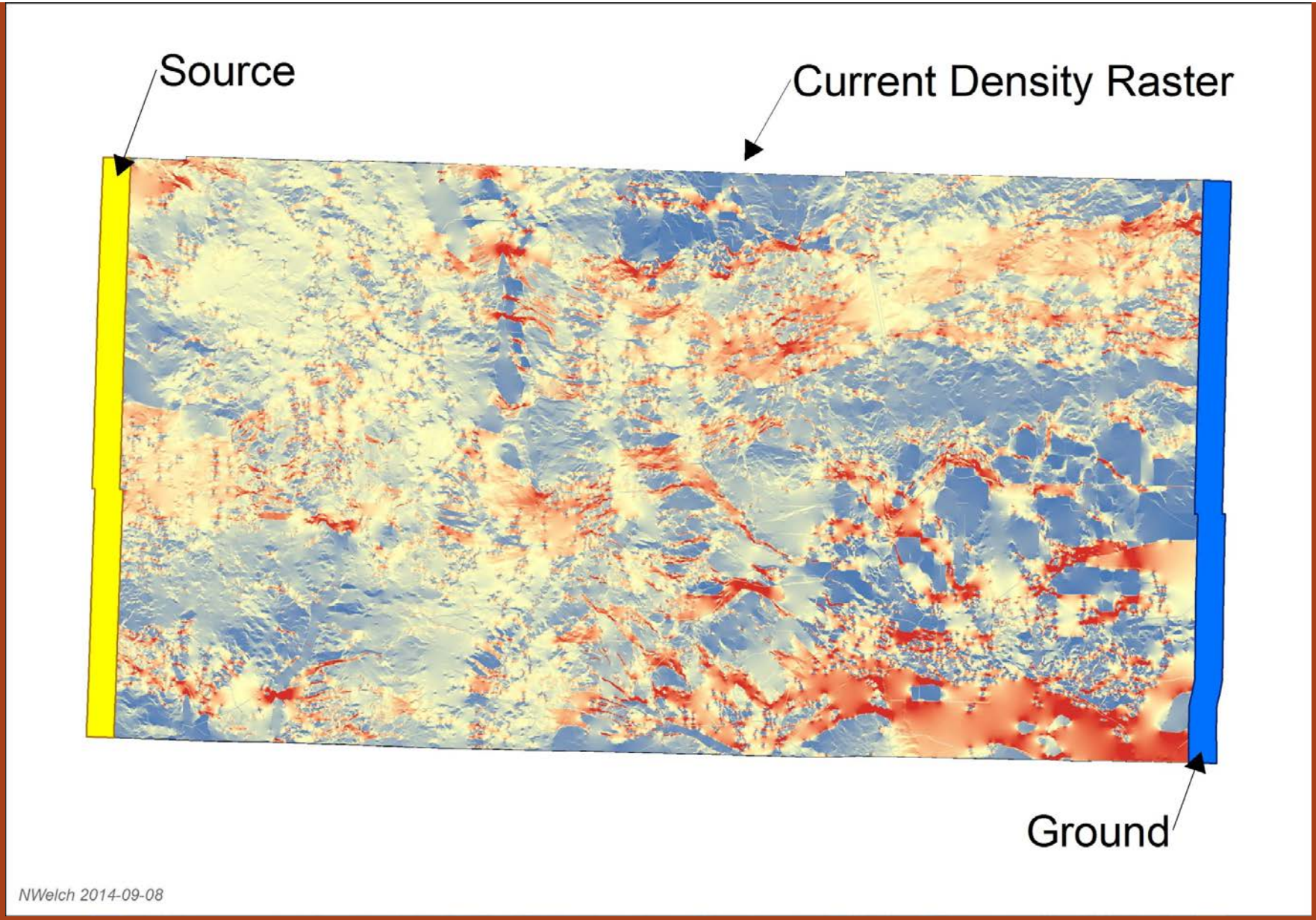
The Nature Conservancy
Protecting nature. Preserving life.™



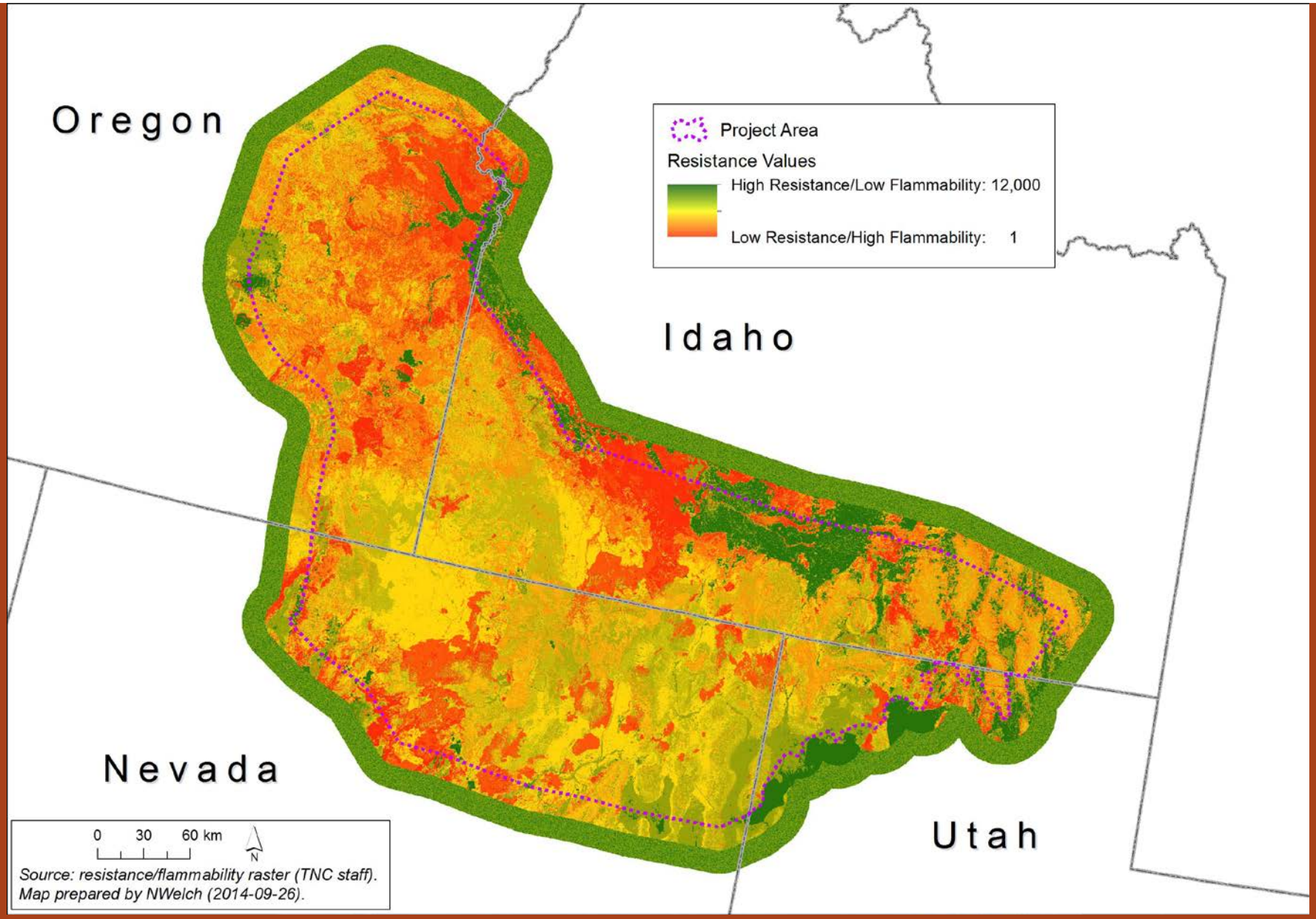
The Nature Conservancy
Protecting nature. Preserving life.™



Strategic Fuel Breaks to Benefit the Greater Sage-Grouse
Dr. Bob Unnasch, Director of Science for Idaho, The Nature Conservancy

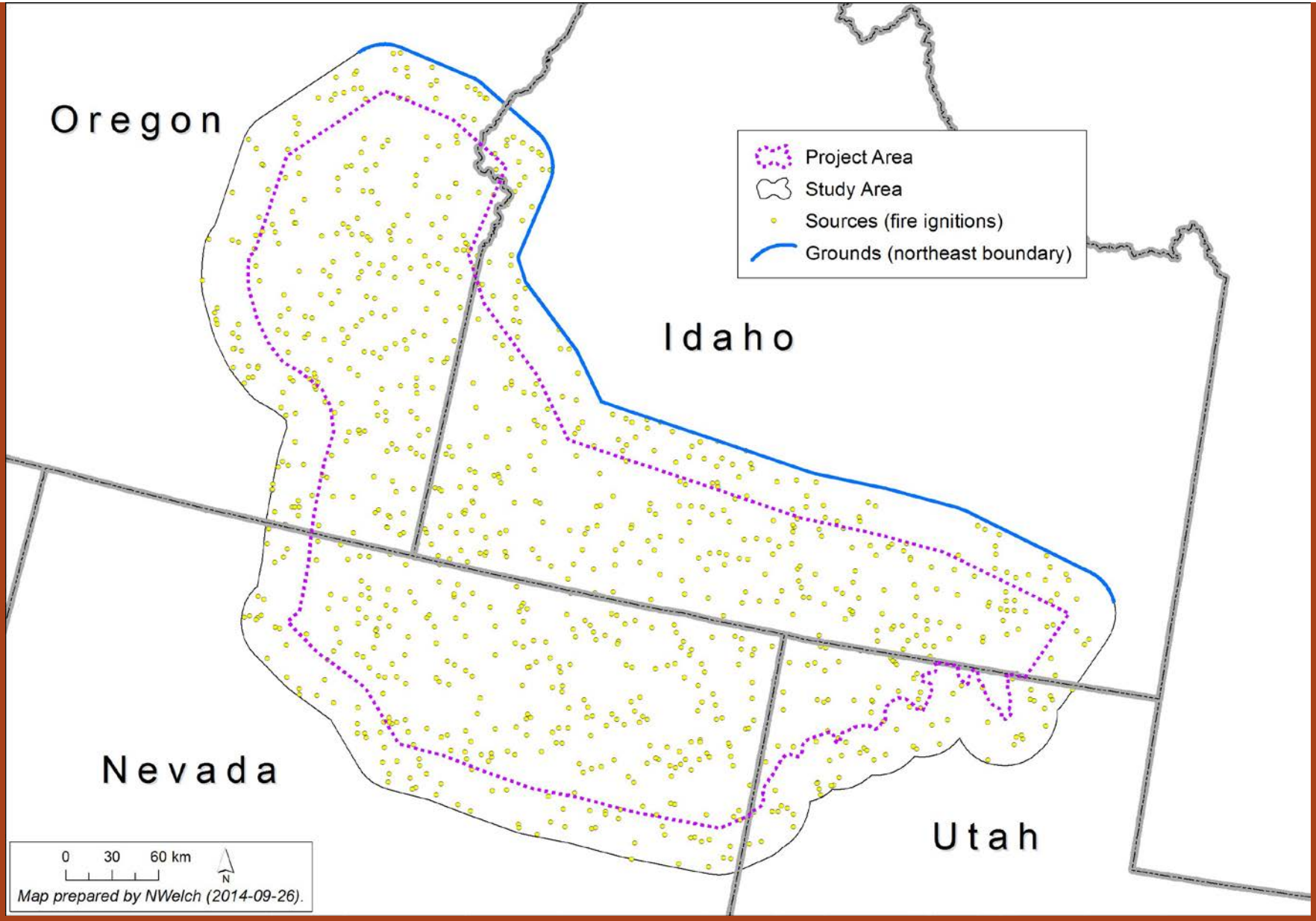


The Nature Conservancy
Protecting nature. Preserving life.™



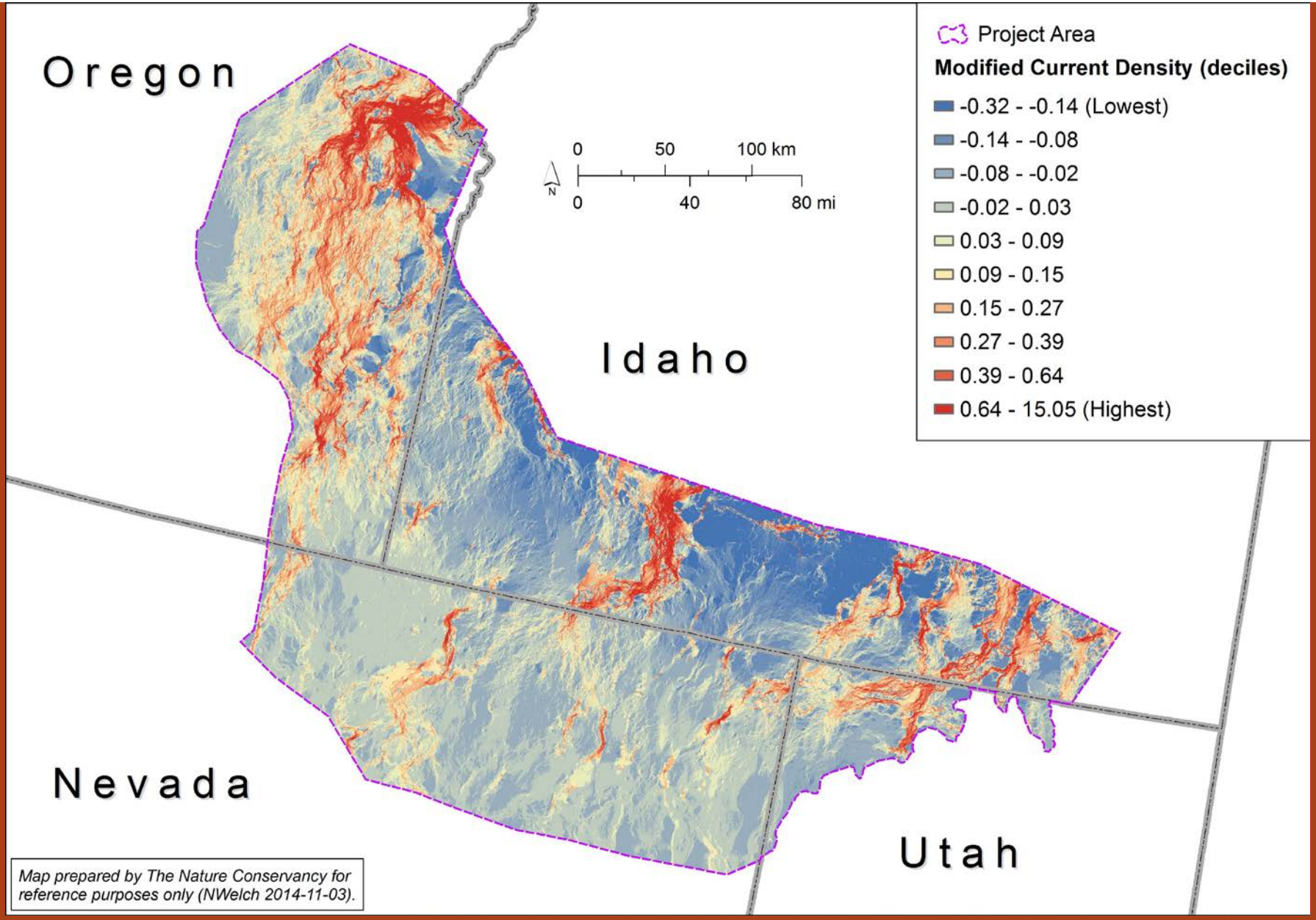
The Nature Conservancy
Protecting nature. Preserving life.™

Flammability



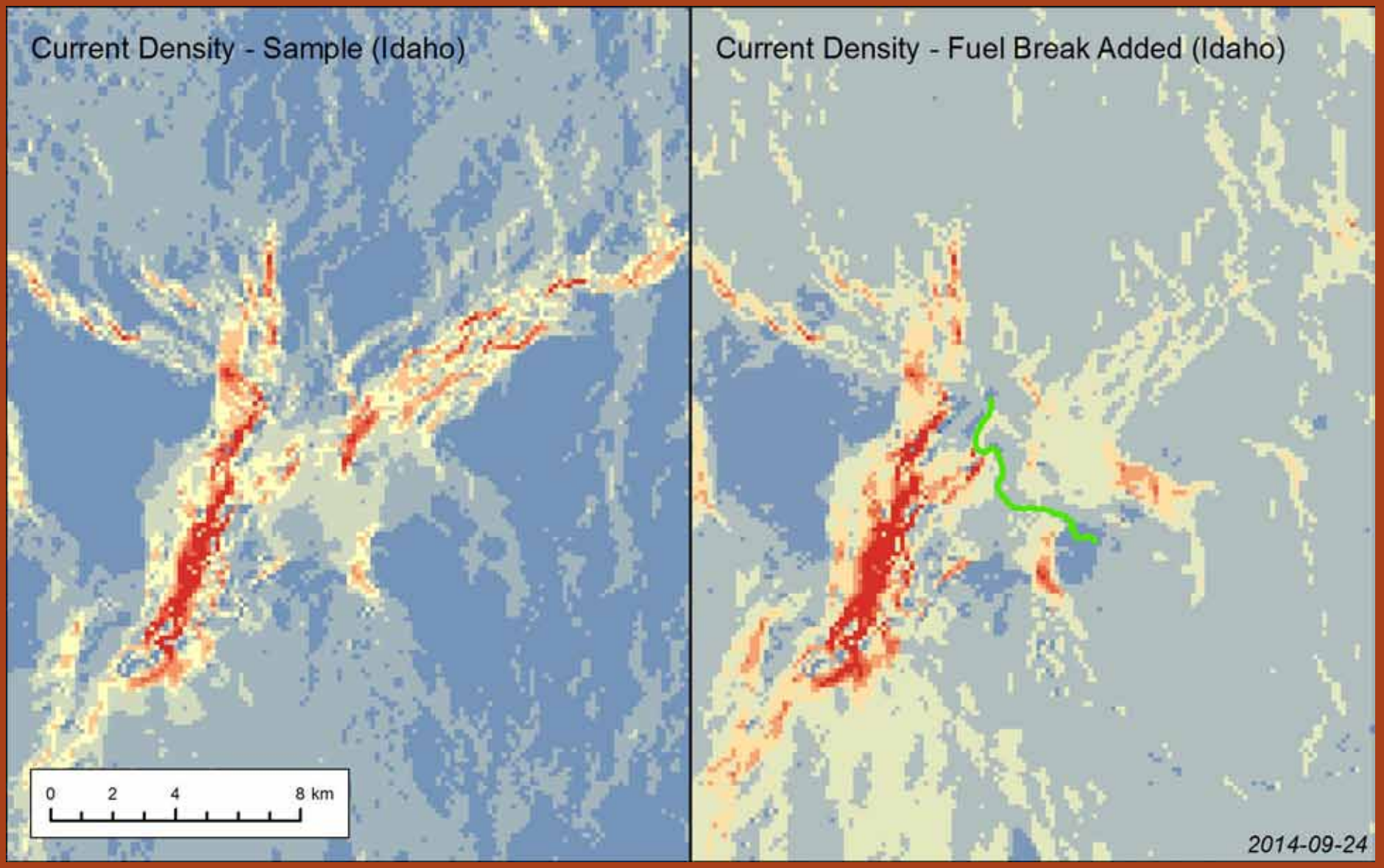
The Nature Conservancy
Protecting nature. Preserving life.™

Fire Starts



The Nature Conservancy
Protecting nature. Preserving life.™

Fire Likelihood



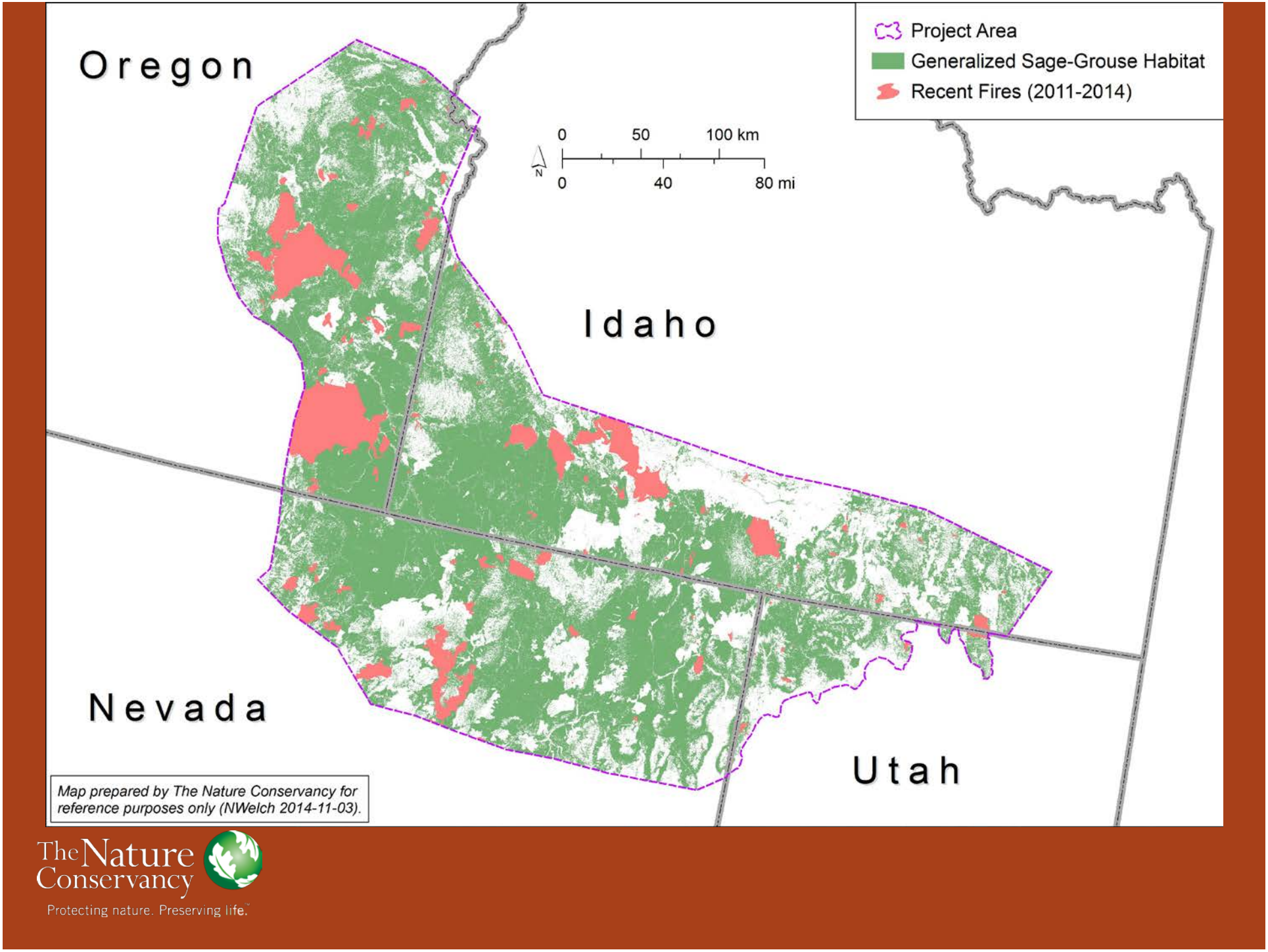
The Nature Conservancy
Protecting nature. Preserving life.™

Strategic Fuel Breaks to Benefit the Greater Sage-Grouse
Dr. Bob Unnasch, Director of Science for Idaho, The Nature Conservancy

Strategic Network of Fuel Breaks

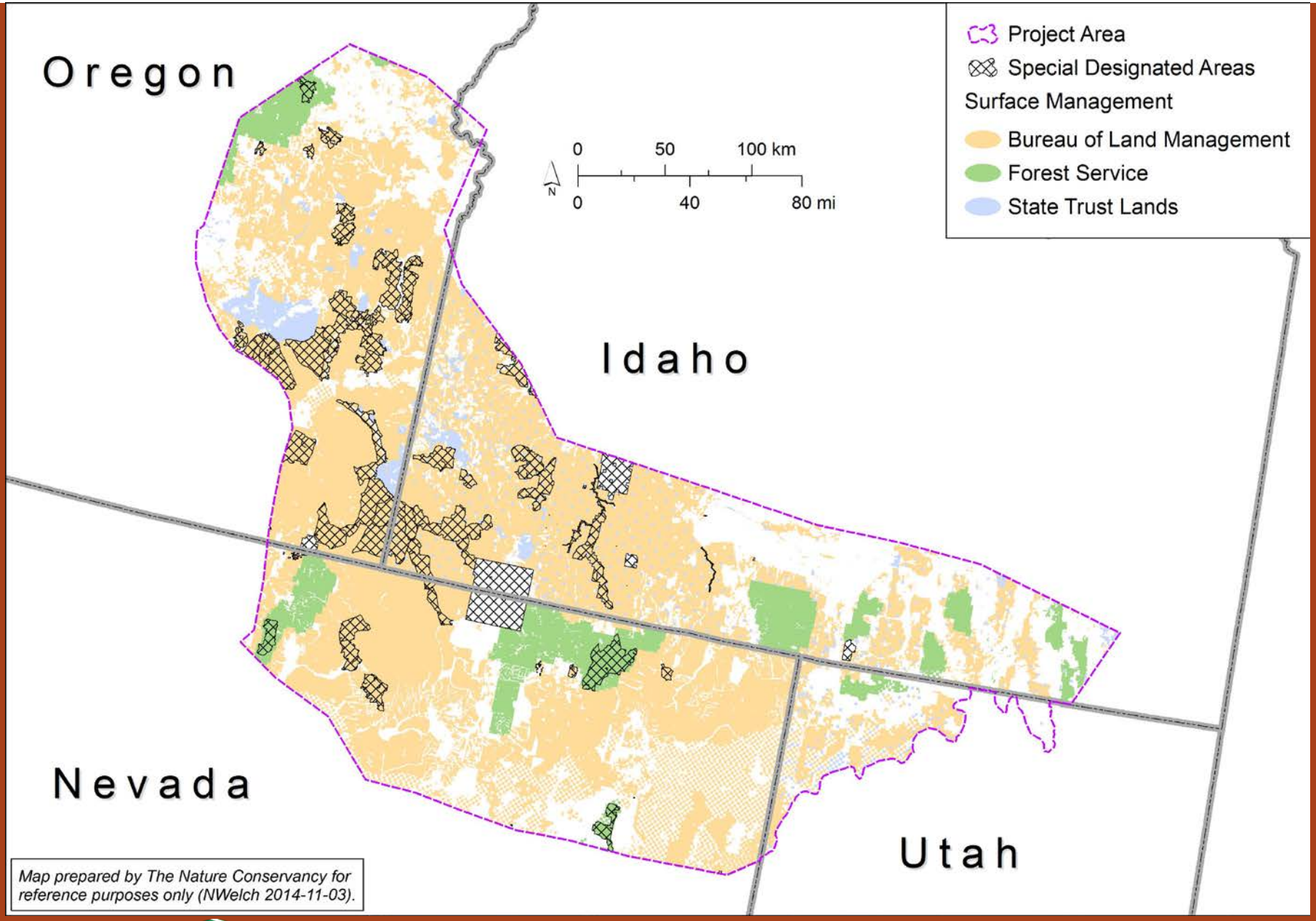
- Protect large, intact patches of sagebrush-steppe habitat.
- Protect important areas for Greater Sage-Grouse (e.g., Core Areas).
- Do not encroach on "special" areas (e.g., Wilderness).
- Take advantage of existing roads, firebreaks, and areas of low fire-likelihood

The Nature Conservancy
Protecting nature. Preserving life.™



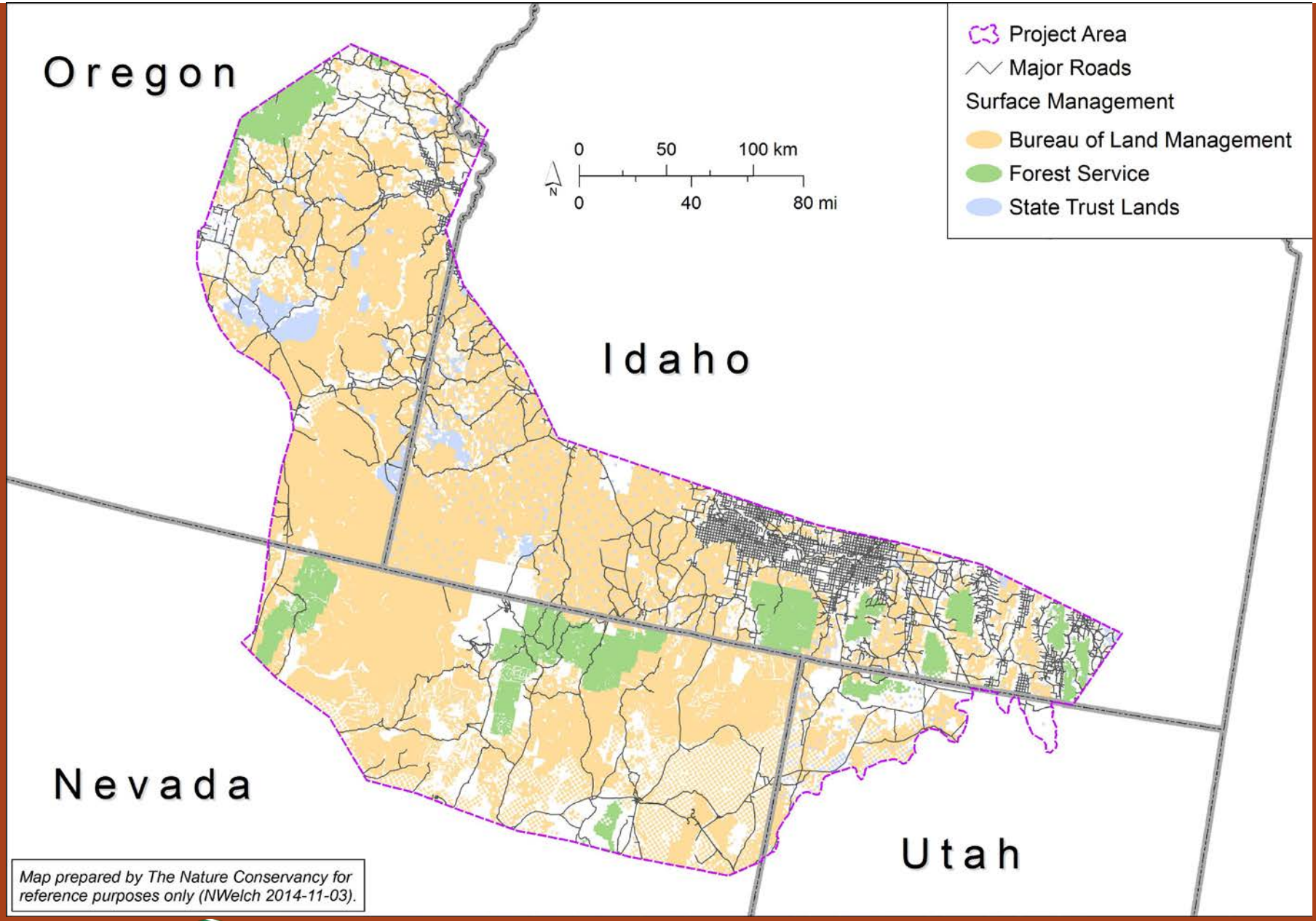
The Nature Conservancy
Protecting nature. Preserving life.™

Strategic Fuel Breaks to Benefit the Greater Sage-Grouse
Dr. Bob Unnasch, Director of Science for Idaho, The Nature Conservancy



The Nature Conservancy
Protecting nature. Preserving life.™

Areas to Avoid



The Nature Conservancy
Protecting nature. Preserving life.™

Major Roads

Questions?

The Nature Conservancy
Protecting nature. Preserving life.™