

# The Science Behind Carbon & Climate Change in the Great Basin

**Global climate change** is caused by rising levels of carbon in the atmosphere that traps heat from the sun.

Levels of carbon in our atmosphere are 40% higher today than they were in 1750.

Some carbon comes from the way we live.

Some of it also comes from ecosystems that are out of balance.

**Before we started burning fossil fuels**, the carbon content of the air generally remained steady. It was put in the atmosphere by natural processes, and absorbed by others.

Smoke from fires put carbon into the atmosphere ...

... and plants reabsorbed and stored it underground.

**But now, these natural systems are changing.** Non-native plants like cheatgrass and expanding pinyon and juniper woodlands have taken over sagebrush lands.

Now, when a fire occurs, more of the landscape burns. Wildfires contribute enormous amounts of carbon to the atmosphere.

The disturbed land is an invitation for more cheatgrass to invade, and the cycle continues ... burning, invasion and more burning.

And worse, cheatgrass doesn't store much carbon underground. Any carbon it holds goes up in smoke during wildfire.

Scientists are working to restore sagebrush ecosystems. The key is native grasses ... ones that efficiently absorb carbon and store it underground. They are using mowing, herbicides, and tree cutting to take out cheatgrass, shrubs, and trees and make room for native plants to reestablish.



And they are carefully watching the long-term results to find the most effective ways to help native grasses recover.

## Carbon & Climate Change

### Quick Facts:

 Increasing carbon in the atmosphere traps energy from the sun and is the major factor in global climate change.

 Atmospheric carbon can come from human-caused pollution and natural and human-caused wildfire.



Natural environments in the Great Basin act like a giant sink for carbon, pulling it from the atmosphere. Native plants hold carbon in their leaves, stems, and

roots. When fires occur, carbon stored above the ground is released to the atmosphere, but the carbon underground typically remains where it is.



Cheatgrass is a non-native invasive plant that doesn't efficiently store carbon underground. Most carbon the plant holds returns to the atmosphere when it burns.



Pinyon-juniper woodlands are native, but have expanded beyond their historic boundaries. They are prone to burning during wildfire, and the disturbed land allows cheatgrass to invade.



Scientists are using herbicides, mowing, and cutting to help native grasses reestablish and compete against

cheatgrass. They are closely monitoring these techniques to understand the best way to restore native Great Basin environments.



## Sagebrush Steppe Ecosystems are at a Tipping Point

A great deal rests on the success of native plants for the health of the West, and for the planet as a whole.

For more information visit:

[www.SageSTEP.org](http://www.SageSTEP.org)