



NORTH AMERICA'S **GREAT**

CO₂

carbon ocean

PROTECTING PRAIRIE GRASSLANDS KEEPS CARBON IN THE SOIL
AND SLOWS THE PACE OF CLIMATE CHANGE.

BY John H. Davidson



LAND AND CONSERVATION PRIORITIES HAVE FAVORED visually dramatic resources—mountains, lakes, forests and shores. As a result, we enjoy national seashores, public forests and parks in every mountain range, along with an industry-sized effort built around protecting rainforests. These conservation achievements have, however, overshadowed a more visually humble but no less vital resource in meeting the challenge of global climate change: grasslands of the North American prairie.

Prairie is one of the most subtle and complex of ecosystems, and to those who have taken the time to get to know it, there is nothing comparable. What to the untrained eye may seem to be a simple monoculture is in fact one of our most diverse sources of plant, soil, insect and animal life. Untold numbers of prairie species have evolved to take advantage of a massive continuum of habitat, and are, as a result, especially vulnerable as prairie is fragmented and converted to cropland and other land uses. Prairie is also home to a rich traditional culture and economy based on cattle grazing. But in today’s world, prairie needs to be recognized for its capacity to help reduce climate change by sequestering heat-trapping carbon from the atmosphere.

Native grasses are a stable repository of carbon (see Figure 1). They create organic carbon below ground, much as trees create it above. Grasses store carbon quickly, providing an immediate mitigation against global warming, and the carbon is safely underground, secure from catastrophic events such as fire. Plowing releases carbon, however, adding significantly to greenhouse gas concentrations while eliminating habitat used by hundreds of species.

When prairies and other grasslands such as rangeland are protected, however, an “ocean of carbon” is secured. We must ask whether it makes sense to spend fortunes on attempts to control releases of carbon from coal-based energy plants and cutting of tropical forests while simultaneously releasing an immeasurable ocean of carbon by plowing up our prairie.

Going Fast

One of the most daunting challenges is being met in the middle of the country, where our remaining native grasslands are in peril. In Nebraska and South Dakota, less than 2% of tallgrass prairie remains, and the mixed and shortgrass prairies that lie to the west of it are now being plowed up at an alarming pace. *continued on page 22*

KEEPING CARBON WHERE IT SHOULD BE

QUICK TAKE

- 1 | Soils and plant biomass are the two largest biologically active stores of terrestrial carbon, together containing [as much as] 2.7 times more carbon than the atmosphere.*
- 2 | It is estimated that a loss of only 1% of the soil organic carbon in the top 10 cm of private grazing lands would be equivalent to the total annual carbon emission from all cropland in the U.S.**
- 3 | Experts suggest that clearing prairies and other carbon-rich habitats, even for production of biofuels, will have a net effect of increasing carbon emissions for decades or centuries.*

*JOSEPH FARGIONE ET AL., “LAND CLEARING AND THE BIOFUEL CARBON DEBT,” 319 SCIENCE 1235 (2008)
 **RONALD F. FOLLETT ET AL., THE POTENTIAL OF U.S. GRAZING LANDS TO SEQUESTER CARBON AND MITIGATE THE GREENHOUSE EFFECT, LEWIS PUBLISHERS, 401-430 (2001)