

Mass Timber: How to think about the carbon value proposition

Presented by Kathryn (Katie) Fernholz

April 2024



Overview

- **Forest carbon cycle**
- **Benefits of active management in our relationship with forests**
- **People Power**

HOW CARBON FLOWS THROUGH FORESTS & WOOD

In forests, carbon flows in an ongoing loop: this makes forest products part of a solution to climate change.

IN CONTRAST,
Burning fossil fuels is a
one-way system releasing
carbon into the atmosphere.



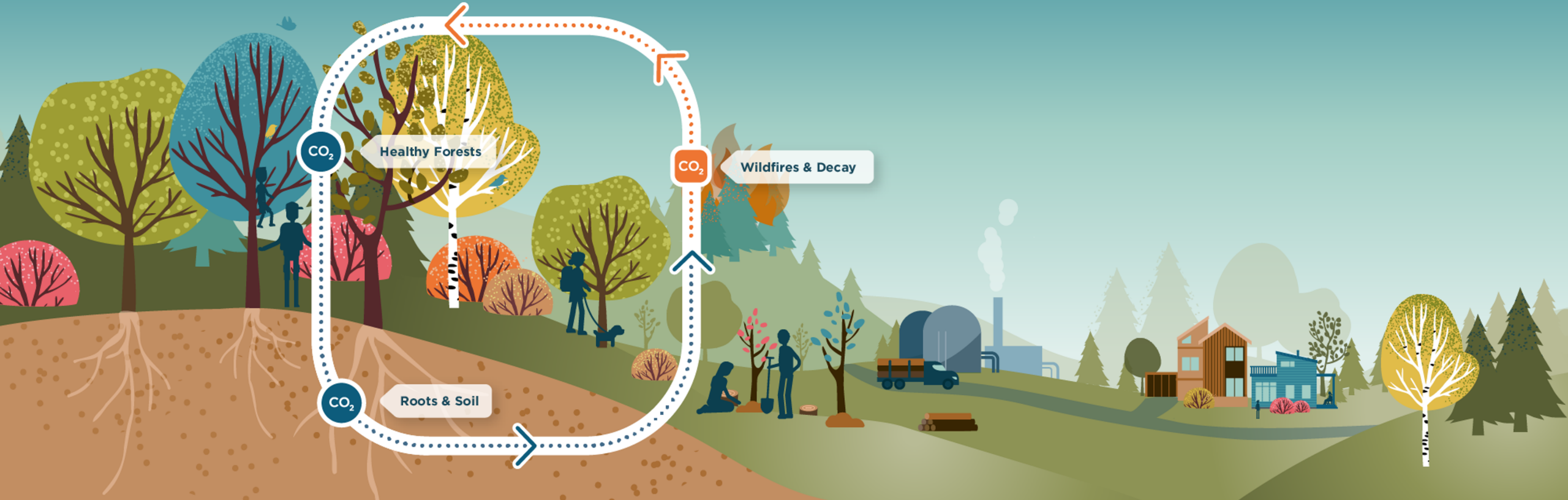
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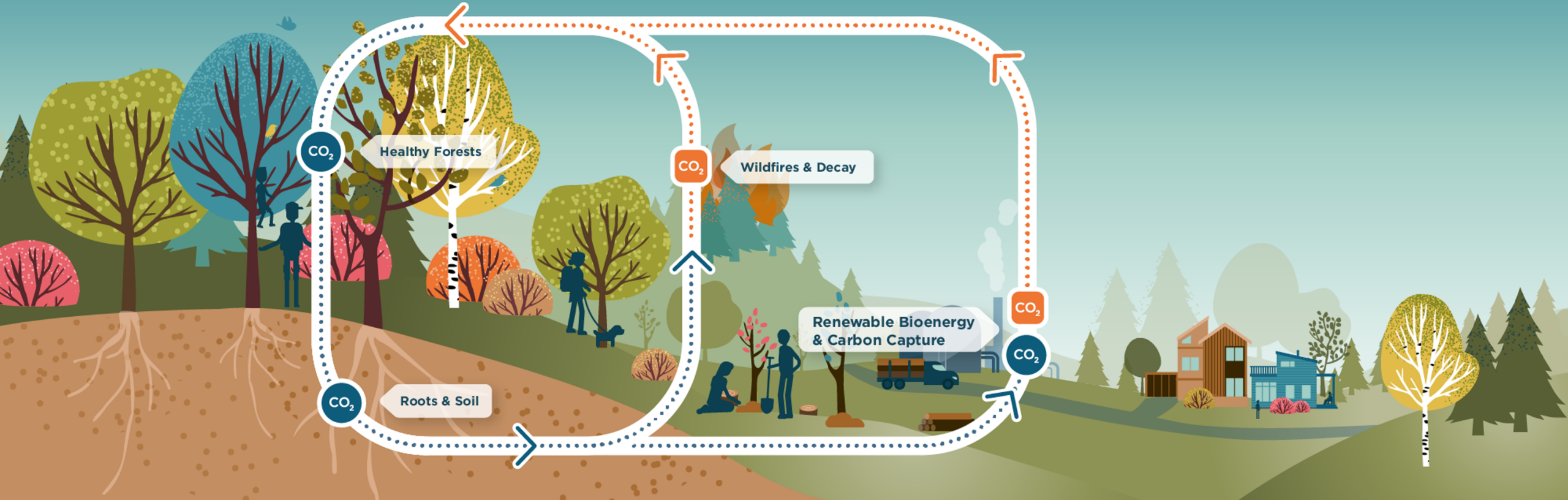
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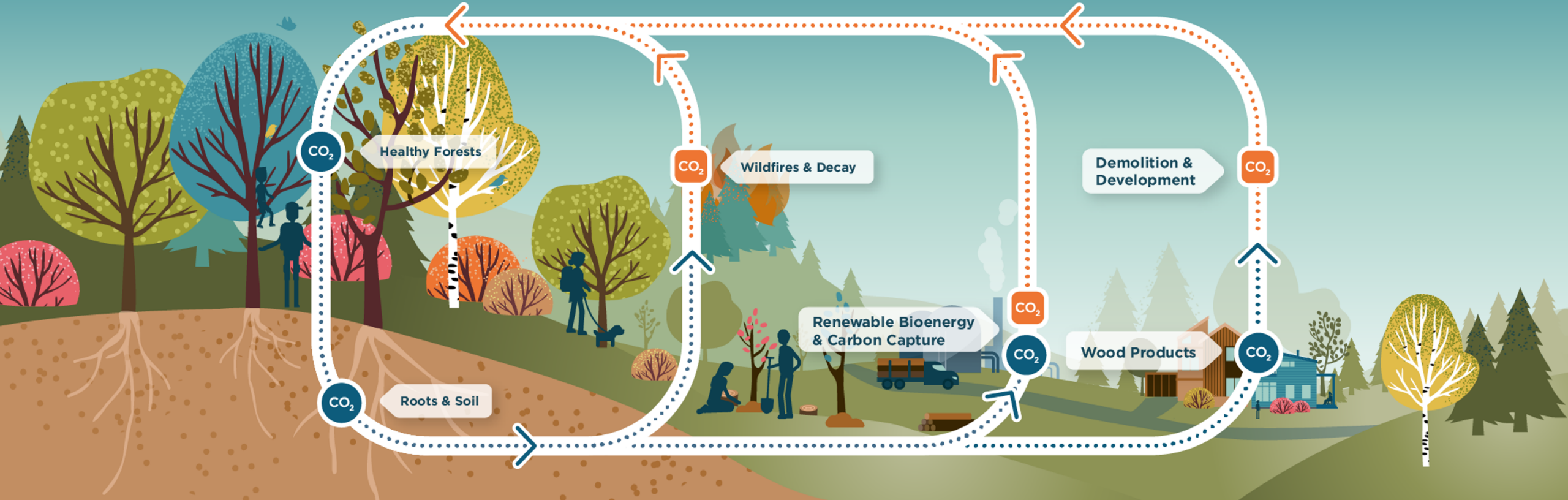
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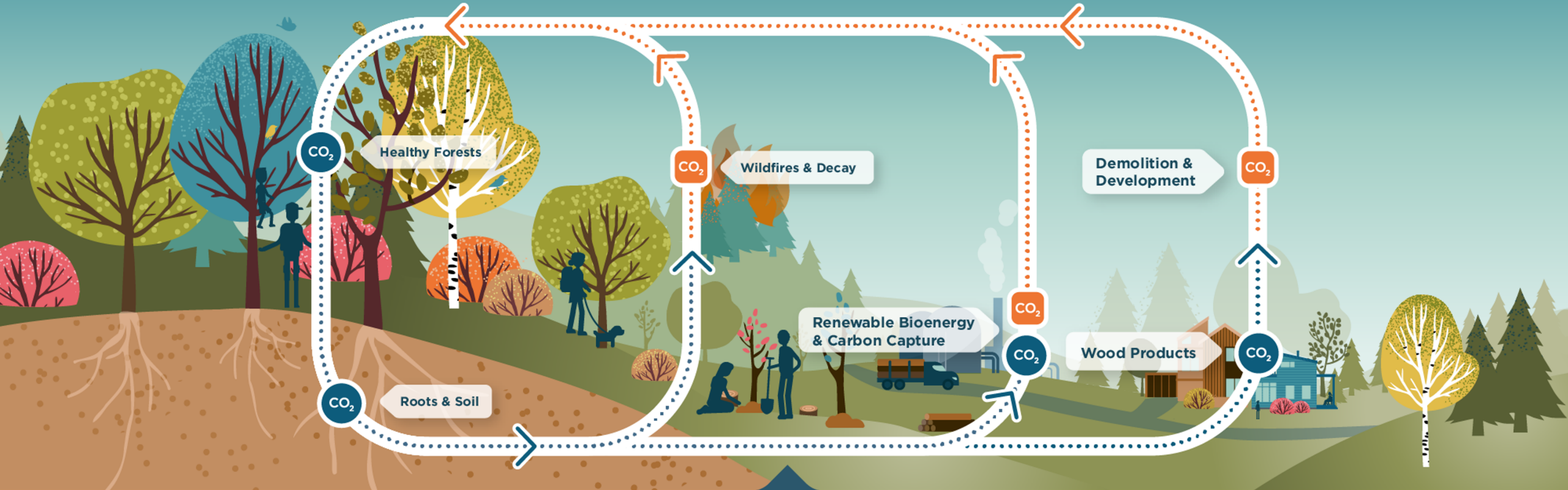
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People are stewards for healthy forests and maximize decarbonization through our choice of wood products.



Reduce Wildfires



Plant Trees



Harvest Sustainably



Choose Wood Products

FOREST CARBON CYCLE

Healthy forests are complex, dynamic ecosystems and people are helping forests thrive.

UNMANAGED FOREST



SUSTAINABLY MANAGED WORKING FOREST

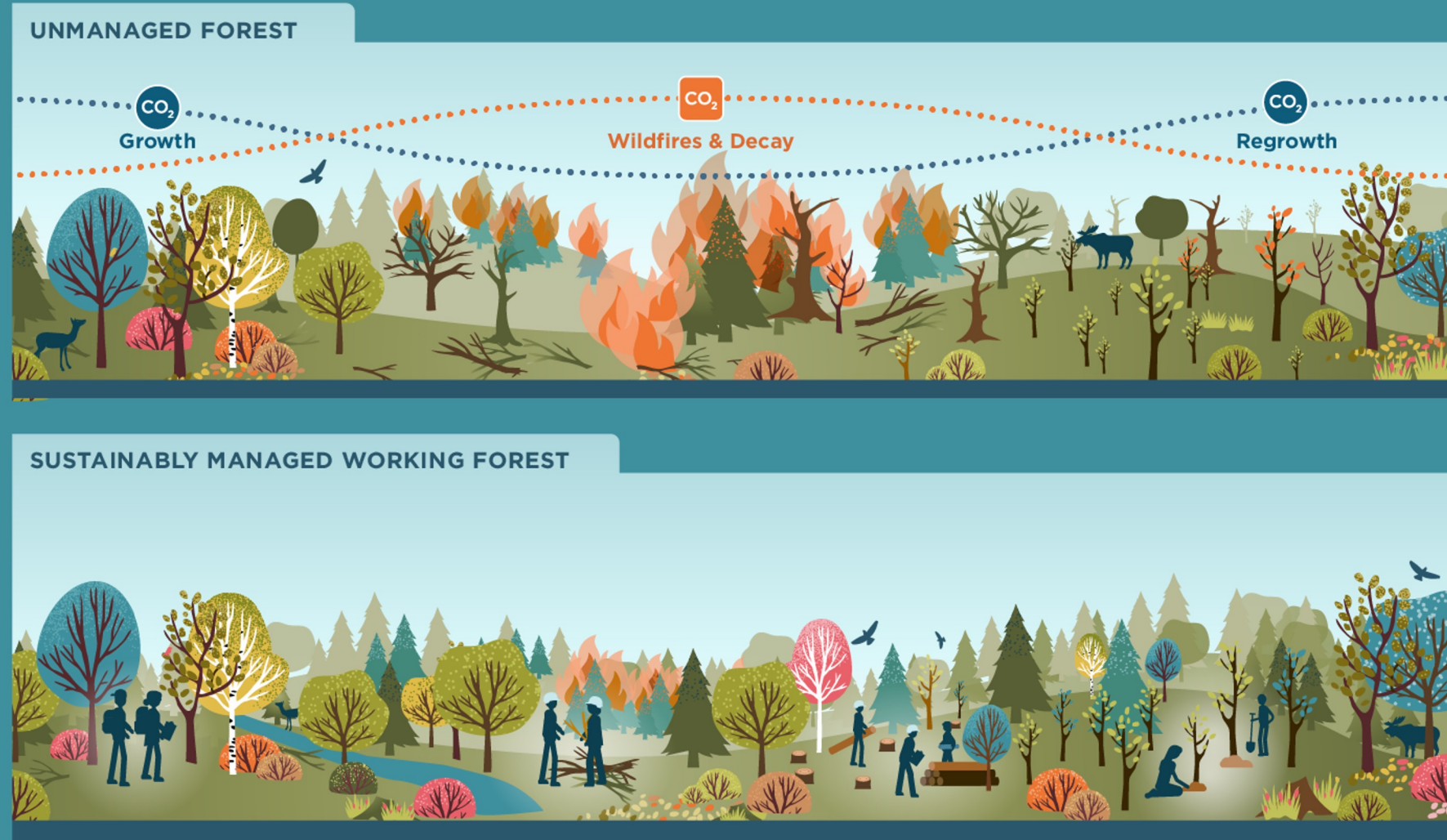


FOREST CARBON CYCLE

CO₂ These activities
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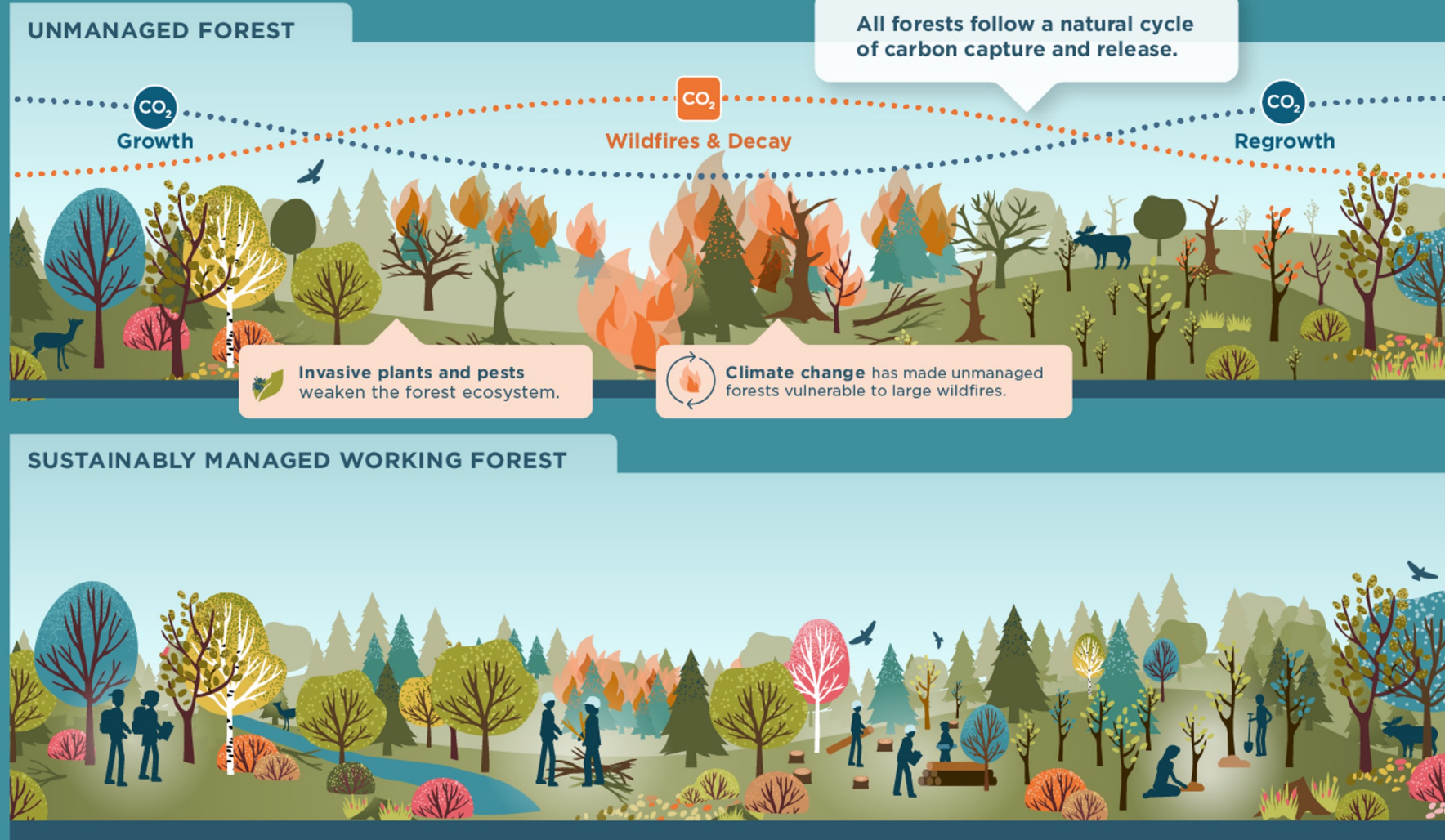


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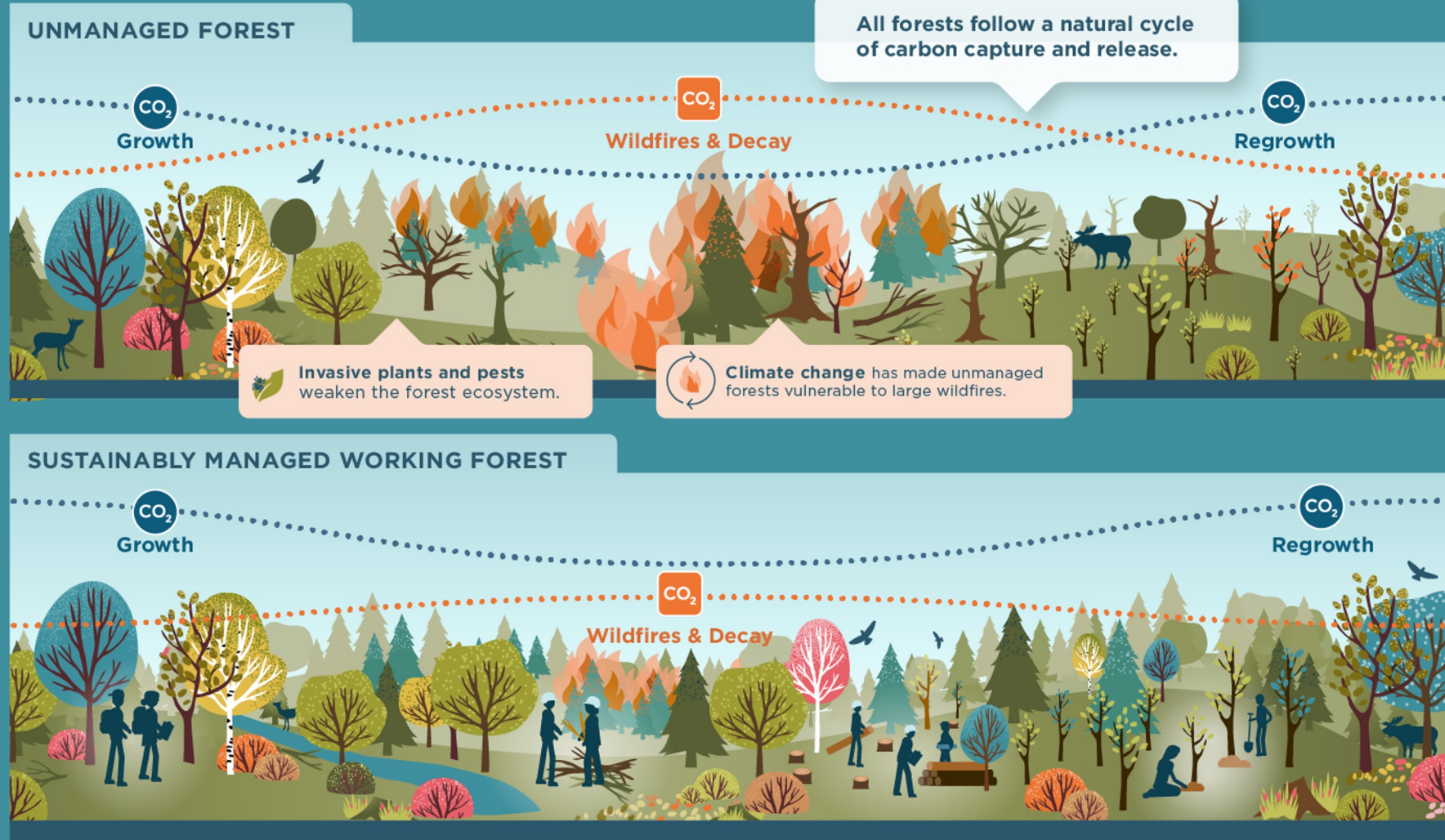


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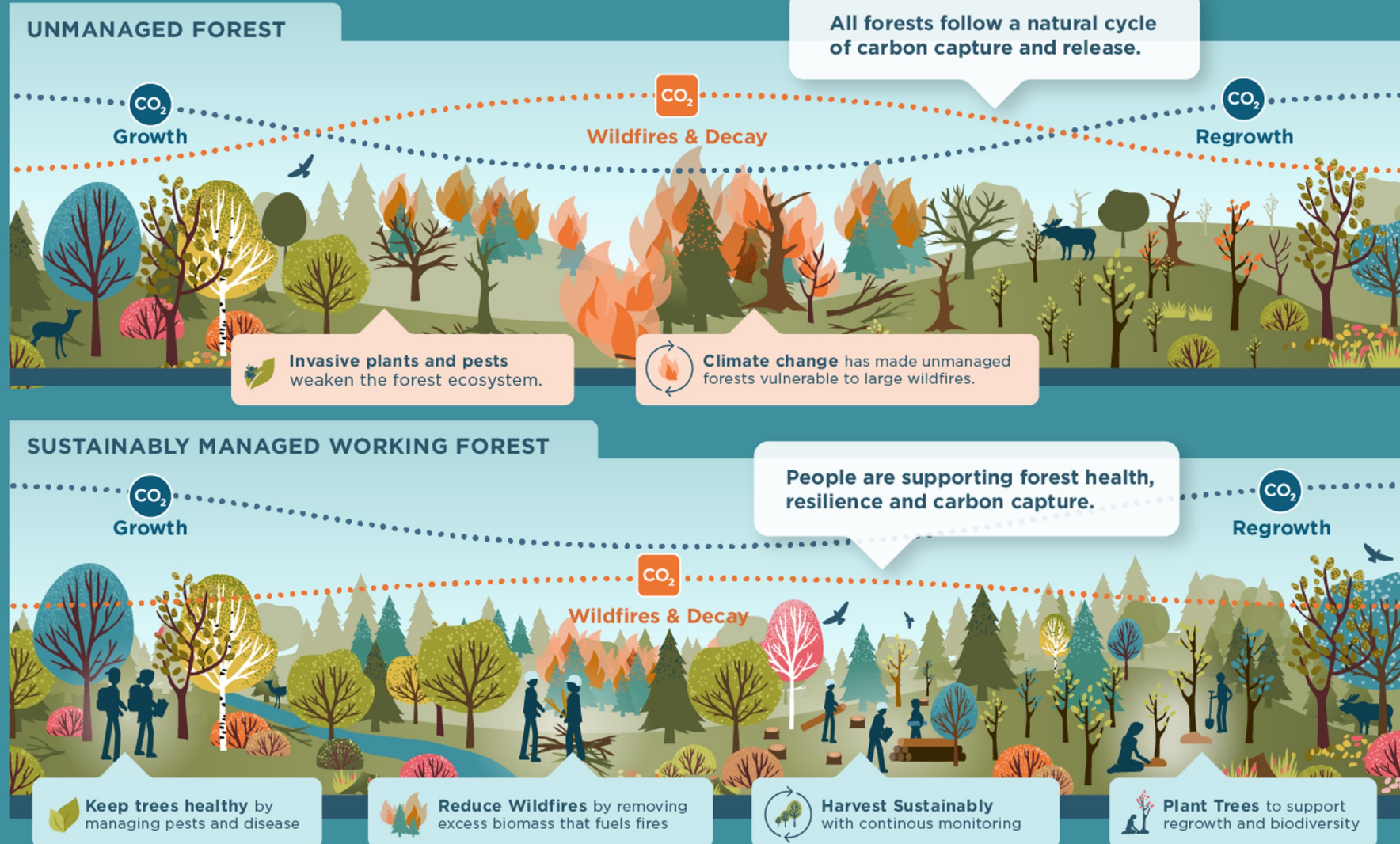


FOREST CARBON CYCLE

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Canada
United States of America
Estados Unidos Mexicanos

Three countries working together to map our shared environment.
 Tres países trabajando juntos para cartografiar nuestro medio ambiente.
 Trois pays s'unissent pour cartographier notre environnement à trois.

ECOLOGICAL REGIONS OF NORTH AMERICA
REGIONES ECOLÓGICAS DE AMÉRICA DEL NORTE
RÉGIONS ÉCOLOGIQUES DE L'AMÉRIQUE DU NORD

North America Atlas
 Atlas de América del Norte
 Atlas nord-américain

Produced in partnership with:



- 1.0 ARCTIC CORDILLERA
CORDILLERA ÁRTICA
CORDILLÈRE ARCTIQUE
- 2.0 TUNDRA
TUNDRA
TOUNDRA
- 3.0 TAIGA
TAIGA
TAIGA
- 4.0 HUDSON PLAIN
PLANICIE DE HUDSON
PLAINE D'HUDSON
- 5.0 NORTHERN FORESTS
BOSQUES SEPTENTRIONALES
FORÊTS SEPTENTRIONALES
- 6.0 NORTH-WESTERN FORESTED MOUNTAINS
MONTAÑAS BOSCOSAS NOROCCIDENTALES
MONTAGNES FORESTÈES DU NORD-OUEST
- 7.0 MARINE WEST COAST FOREST
BOSQUE COSTERO OCCIDENTAL
FORÊT MARITIME DE LA CÔTE OCCIDENTALE
- 8.0 EASTERN TEMPERATE FORESTS
BOSQUES TEMPLADOS DEL ESTE
FORÊTS TEMPÉRÉES DE L'EST
- 9.0 GREAT PLAINS
GRANDES PLANICIES
GRANDES PLAINES
- 10.0 NORTH AMERICAN DESERTS
DESERTOS DE NORTEAMERICA
DESERTS DE L'AMÉRIQUE DU NORD
- 11.0 MEDITERRANEAN CALIFORNIA
CALIFORNIE MÉDITERRANÉENNE
- 12.0 SOUTHERN SEMI-ARID HIGHLANDS
ELEVACIONES SEMI-ÁRIDAS MERIDIONALES
HAUTES TERRES SEMI-ARIDES MERIDIONALES
- 13.0 TEMPERATE SIERRAS
SIERRAS TEMPLADAS
SIERRAS TEMPÉRÉES
- 14.0 TROPICAL DRY FORESTS
SELVAS CALIDAS-SECAS
FORÊTS TROPICALES SÈCHES
- 15.0 TROPICAL WET FORESTS
SELVAS CALIDAS-HÚMEDAS
FORÊTS TROPICALES HUMIDES

Ecological regions are areas of general similarity in vegetation and in the type, quality, and quantity of environmental resources. They serve as a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components. They are effective for national and regional state of the environment reports, environmental resource inventories and assessments, setting regional resource management goals, determining national capacity, as well as developing biological criteria and water quality standards. The development of a clear understanding of regional and large continental ecosystems is critical for evaluating ecological risk, sustainability, and health.

- Ecological classification is based on biogeography—ecosystems are similar within continents or super-regions, although in reality, they may not always act so.
- Such classification integrates knowledge; it is not an overlay process.
- It recognizes that ecosystems are interactive—characteristics of one ecosystem lead with those of another.
- Map lines depicting ecological classification boundaries generally coincide with the location of zones of transition.

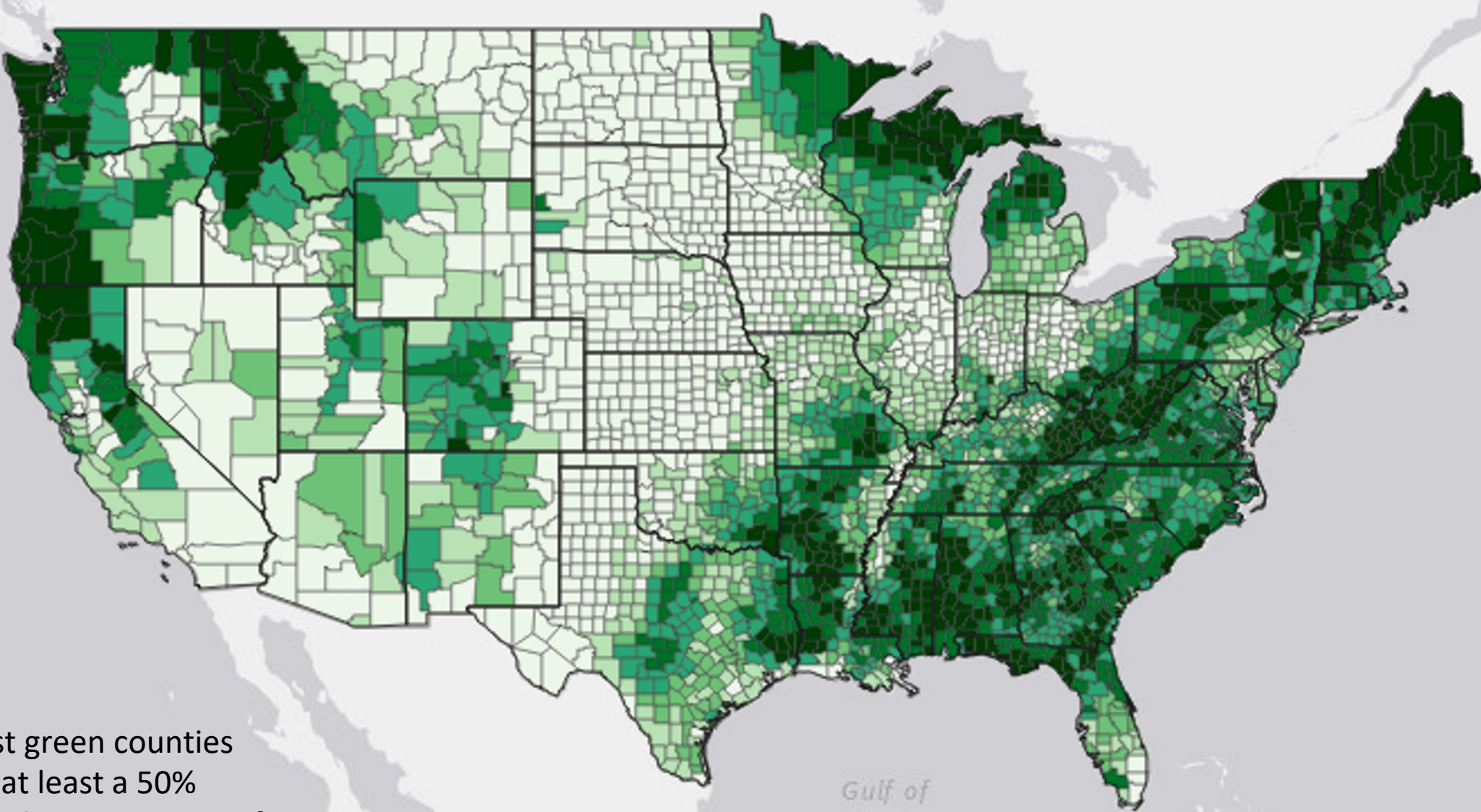
The maps shown here represent a second attempt to biologically classify and map ecological regions across the North American continent. (Commission for Environmental Cooperation Working Group, 1997). The mapping from 1997 and 2004 was built upon earlier efforts that had begun individually in all three countries (e.g., Wilson 1986, Ousekoff 1987). These approaches recognized the need to consider a full range of physical and biotic characteristics to explain ecosystem regions (Ousekoff 2004). Equally, they recognized that the relative importance of such characteristics to control a given ecological region is variable regardless of the hierarchical level. In describing macroclimatology in Canada, Wilson (1986) stated:

Ecological land classification is a process of delimiting and describing ecologically distinctive areas of the Earth's surface. Each area can be viewed as a discrete system which has resulted from the match and interplay of the geologic, landform, soil, vegetation, climate, biotic, water and human factors which may be present. The delineation of any one or a number of these components varies with the given ecological land unit. The biotic approach to land classification can be applied internationally on a scale ranging from very site-specific ecosystems to very broad ecoregions.

Delineating ecological regions at a continental level is a challenging task. It is difficult, in part, because North America is ecologically diverse and because a nation's territorial boundaries can be a hindrance to seeing and appreciating the perspective across the land-mass of these ecological boundaries and defining a framework of North American ecological regions has been the product of research and contact between biologists, geographers, and ecologists. These agencies were often government departments, but the initiative also involved environmental groups, scientists and business. The Commission for Environmental Cooperation (CEC) was instrumental in bringing these groups together. The CEC was established in 1978 by Canada, Mexico, and the United States to address specific environmental concerns to the three countries. The CEC defines its formal mandate from the "North American Agreement on Environmental Cooperation (NAAEC), the agreement site according to the North American Free Trade Agreement (NAFTA).

These maps represent the working group's best consensus on the distribution and characteristics of major ecosystems on all three levels throughout the three North American countries. The methodology incorporated these points in mapping ecological regions:

- Ecological classification incorporates all major components of ecosystems: air, water, land, and biota, including humans.
- It is holistic ("the whole is greater than the sum of its parts").
- The number and relative importance of factors that are included in the delineation process vary from one area to another, regardless of the level of generalization.



The darkest green counties have seen at least a 50% increase in the percentage of forestland area since 1997.

MÉXICO

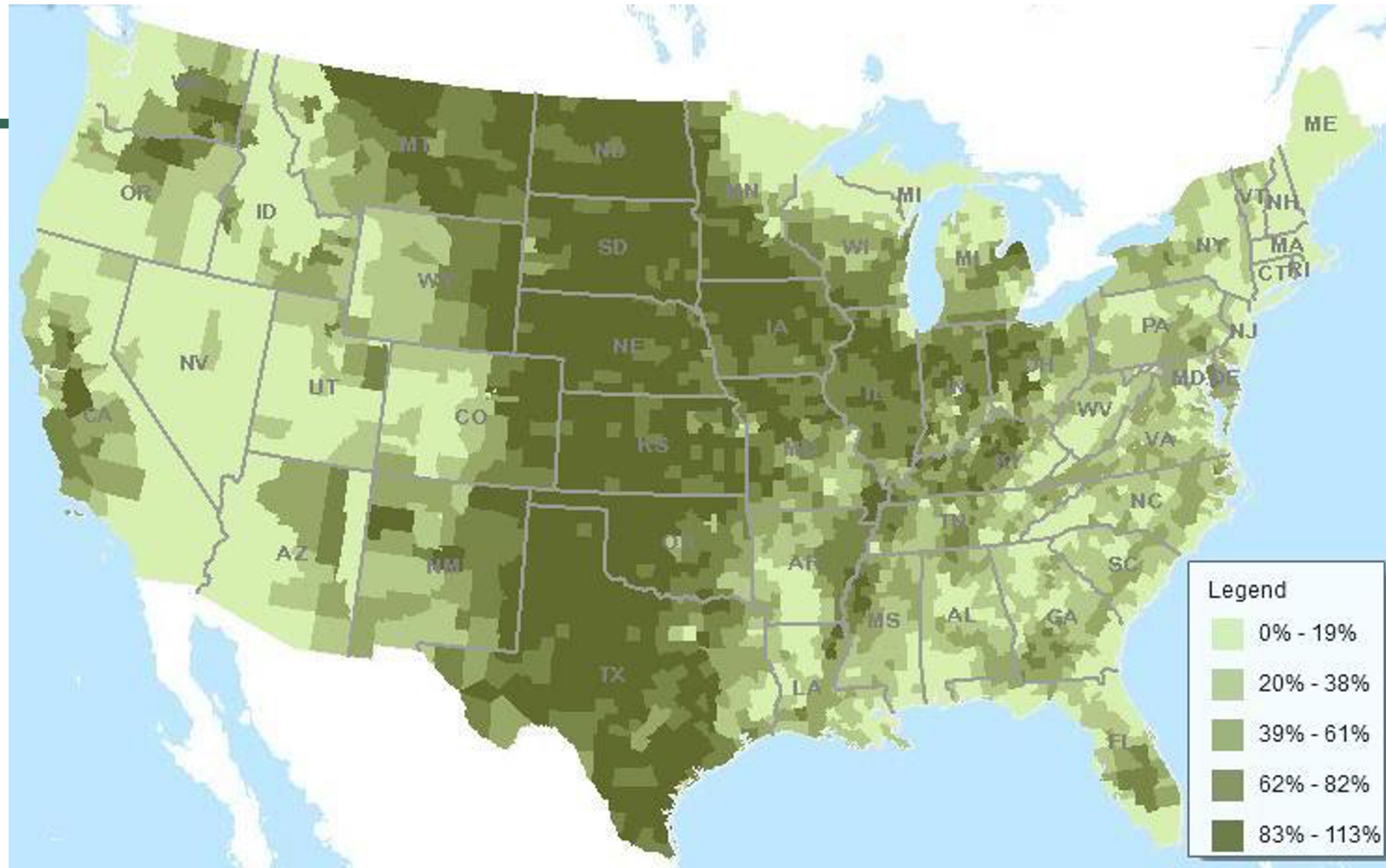
Gulf of Mexico

CUBA

usaforests.org

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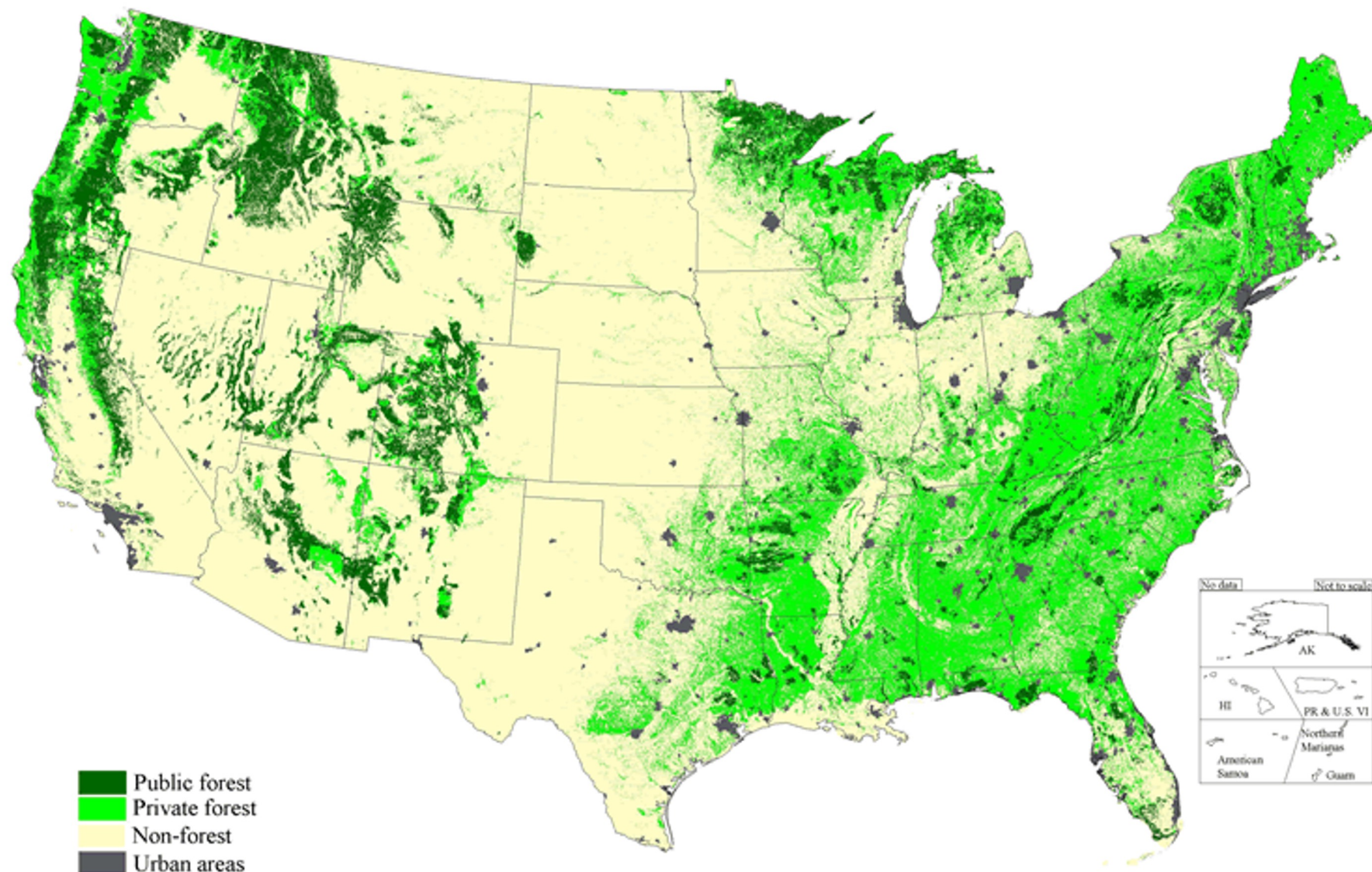
U.S. Land in Farms



Source: <http://www.bigpictureagriculture.com/2011/05/us-farm-data-maps-density-farm-payments.html>

Forest Land Ownership

This map displays the basic vegetation (forest vs. non-forest) of the conterminous United States as well as ownership (private vs. public). The lands displayed as "public" include Federal and State lands but do not generally include lands owned by local governments and municipalities.



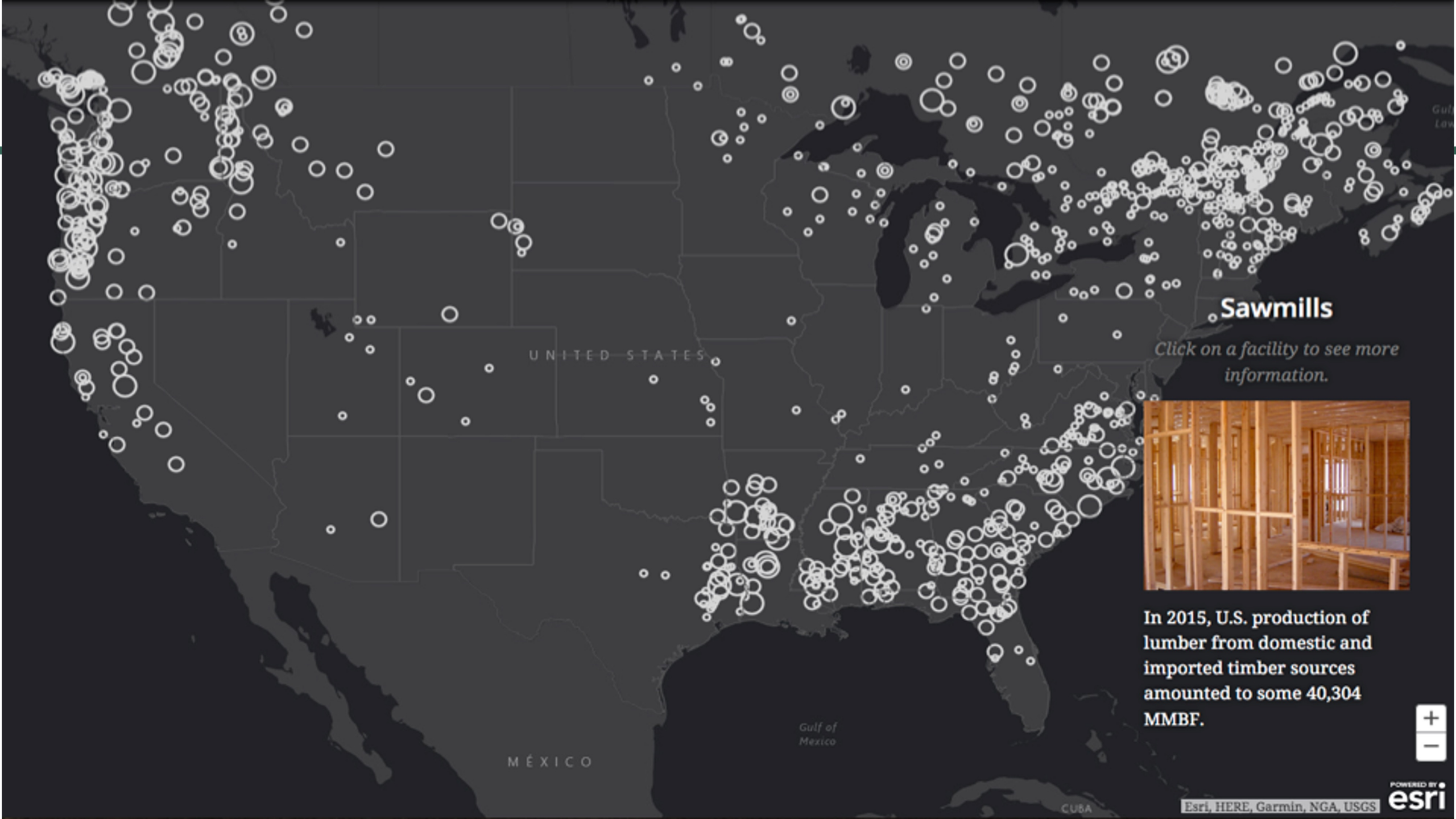
- Public forest
- Private forest
- Non-forest
- Urban areas

USDA Forest Service, State and Private Forestry,
Cooperative Forestry Staff, Washington Office.



100 0 100 200 300 400 500 Miles

Data sources:
Forest: NLCD (1992)
Ownership: PAD (2001)
States: ESRI Data & Maps 2002
Urban areas: DCW (1998)



Sawmills

Click on a facility to see more information.



In 2015, U.S. production of lumber from domestic and imported timber sources amounted to some 40,304 MMBF.



Scarcity Mindset toward Forests

- Trees would live forever if people didn't cut them down.
- Wood is the only building material that causes trees to be cut and forests cleared.
- Forests would be better off without us.

Growth Mindset for Resiliency & Sustainability

- Trees have life cycles for us to learn about, respect, and be a part of.
- Wood is the building material that causes us to plant trees and grow forests.
- Forests and people belong together.

QUESTIONS?

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