

# Forests

## Preparing Washington for a Changing Climate



**Washington's climate is changing in ways that could have profound effects on forests and the economic, social, and environmental benefits they provide.**



### Larger and more intense wildfires

Rising temperatures, more frequent and longer lasting heat waves, and drier summers are expected to contribute to larger, more severe wildfires. Researchers project that the area burned by fire each year in the Columbia Basin will double or triple by the 2080s, from just over 0.4 million acres annually (1916-2006 average) to:

- 0.8 million acres in the 2020s,
- 1.1 million acres in the 2040s, and
- 2.0 million acres in the 2080s.



Wildfire risk to communities, the environment and wildlife and the costs of fighting those fires are expected to rise.



### More pests and diseases

Mountain pine beetle and other insect outbreaks are expected to increase as temperatures warm and forests experience more drought stress. Climate change allows beetles to spread rapidly and migrate to higher elevation trees. More beetles survive the warmer winters. Widespread areas of dead or damaged trees due to insect infestations make forests more vulnerable to large, severe forest fires.



### Changes in range, growth, and productivity

Climate change is altering the conditions favorable to certain tree species, causing trees to decline or die out in certain regions, shift northward in range, or shift into higher elevation areas.

- Warmer temperatures and drier conditions are projected to reduce the area suitable for Douglas fir. By the 2060s, 32 percent of the current habitat for Douglas fir is projected to be outside the suitable climate.
- Pine forests are also likely to face more stress from changing climate conditions. About 85 percent of the current habitat for pine is projected to shift outside the suitable range for one or more pine species.





## Forest Strategies to Prepare for a Changing Climate

Forests are critical to Washington's economy, and provide environmental and social benefits to Washington residents.

Washington State's Integrated Climate Response Strategy lays out a roadmap for state and local policymakers and planners to prepare for the unprecedented threats climate change poses to our forests. Preparation strategies include:

- Conserve and restore healthy forests and increase resistance to fire, pests, and disease.
- Reduce development pressures and protect forestlands from conversion to developed lands.
- Maintain and protect forest species and genetic diversity to ensure long-term conservation of forest resources and help buffer against climate impacts.
- Promote urban forests to help buffer communities from climate impacts, including urban heat island effects, increased pollution, higher water temperatures, severe rainfall, flooding, and erosion.
- Build capacity and partnerships to monitor and respond to climate hazards.

Taking action now can reduce climate risks, ensure healthy and resilient forests and help maintain Washington's forest revenues and the economic and environmental benefits they provide.

## Economic Costs to Forests

Forests and related industries contributed approximately \$16 billion to Washington's economy in 2005 and employed 45,000 people with a total payroll of \$2 billion. The economic costs to Washington's forests from climate-related stresses are likely to be significant.

- By 2040, the value of lost timber from increased wildfires could reach \$171 million per year, and the costs of suppressing wildfires could reach \$37 million per year.
- The infestation of bark beetles in Washington's forests could cost \$29 million per year by 2040 from lost timber revenue.
- Forests will also be less able to provide valuable goods and services, such as clean water and air, fish and wildlife habitat, renewable energy, and recreation opportunities.

## More information

See Ecology's Climate Change website:

[www.ecy.wa.gov/climatechange/ipa\\_responsestrategy.htm](http://www.ecy.wa.gov/climatechange/ipa_responsestrategy.htm)

## Contact

**Hedia Adelsman** | (360) 407-6222  
[hade461@ecy.wa.gov](mailto:hade461@ecy.wa.gov)

**Joanna Ekrem** | (360) 407-7144  
[jekr461@ecy.wa.gov](mailto:jekr461@ecy.wa.gov)

August 2012  
Publication No. 12-01-008

Photo credits:

See page 200 of the Response Strategy report.