

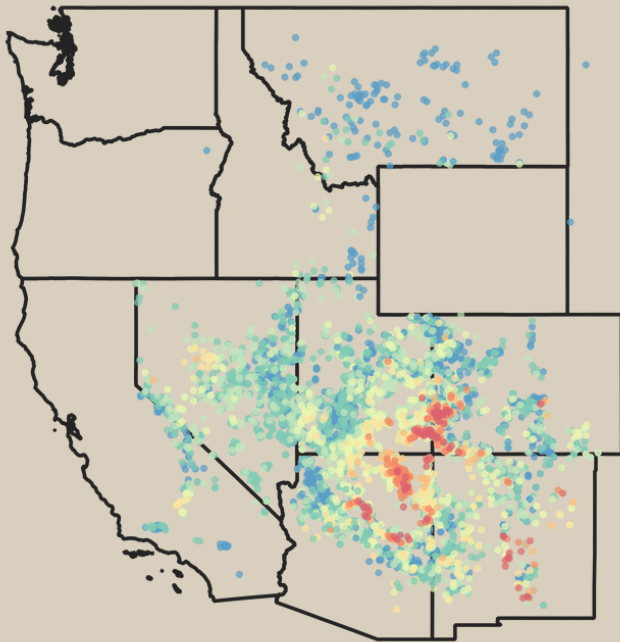


INTERMOUNTAIN WEST
JOINT VENTURE

INTERMOUNTAIN INSIGHTS:

Inspiring Conservation Action Through Science

IMPROVING CLIMATE RESILIENCE OF PERSISTENT PINYON- JUNIPER WOODLANDS



Pinyon-juniper woodlands are experiencing localized population declines. Data from [new research](#) led by Dr. Robert Shriver at the University of Nevada, Reno shows where populations of five common pinyon and juniper species are growing (blues) and declining (reds). Here, we've overlaid data from all five species to highlight local population trends. Declines in the four corners region are primarily driven by two-needle pinyon, while declines in the Great Basin are primary driven by single-leaf pinyon. For more information on this data and to see population trends by species, see our [full report](#).

PINYON-JUNIPER WOODLANDS: A CLIMATE CHANGE STORY

Pinyon-juniper woodlands cover 100 million acres across the Intermountain West and are important to many, from Tribal Nations and recreationists to pinyon jays and mule deer. As the climate warms and dries, managers and researchers are increasingly concerned about the climate resilience of these persistent pinyon-juniper woodlands, where pinyon pine and juniper trees have been growing for hundreds to thousands of years. These woodlands contain millions of acres of old-growth and mature forests that are important for wildlife habitat, recreation opportunities, rural livelihoods, and ecosystem services. In some places, these values are at risk because of climate change and dense forest structure.



This Intermountain Insight provides key takeaways a report of the same name, created by the Intermountain West Joint Venture in partnership with the Bureau of Land Management and the U.S. Fish and Wildlife Service. Please find the full report with citations [here](#) or scan the QR Code.

WHAT'S HAPPENING TO PERSISTENT PINYON-JUNIPER WOODLANDS?

- Although pinyon-juniper woodlands are expanding their footprint at the biome scale, local mortality as a result of wildfire, drought, and insect attacks has contributed to local population declines for some species.
- High woodland density may contribute to mortality risk for some species. It is also hypothesized to reduce habitat quality for wildlife like the pinyon jay.

WHICH SPECIES ARE DECLINING AND WHERE?

- New research shows that between 2000 and 2017 some populations of two-needle pinyon and single-leaf pinyon have declined (although other populations are stable or growing). Declines were also seen in some populations of one seed and Rocky Mountain juniper.
- Two-needle pinyon shows the greatest proportion of sampled populations declining, about 24%.
- Declines are mostly occurring in the Colorado Plateau region, generally in the warmest and driest portions of the species' ranges, while populations are more likely to be growing or stable in cooler and wetter areas.
- Declines likely occur when poor regeneration limits recruitment of new trees following mortality.

HOW DO DENSE WOODLANDS IMPACT CLIMATE RESILIENCE?

- Like other Western forest types, many of today's woodlands are much more dense than historic woodlands. Patterns of change vary spatially and causes are not fully known.
- For two-needle pinyon, single-leaf pinyon, one-seed juniper, and Rocky Mountain juniper, high tree densities can increase climate- and drought-related mortality, making them more vulnerable to climate-driven disturbances.
- High tree density is also thought to decrease habitat quality for pinyon-juniper obligate species like the pinyon jay, whose decline is one of the steepest of any North American bird despite biome-wide increases in habitat quantity.

REACH OUT TO LEARN MORE

This report was produced by the Intermountain West Joint Venture in collaboration with the Bureau of Land Management and the U.S. Fish and Wildlife Service. Please reach out for more information.

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Photos courtesy of: Paul Buraw (Humboldt-Toiyabe National Forest pinyon-juniper landscape, pg. 1), Kaibab National Forest (Bert Fire, pg. 2), U.S. Forest Service Southwest Region (dead pinyon trees, pg. 2).

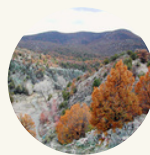
WHAT CAN MANAGERS DO TO INCREASE RESILIENCE OF PERSISTENT PINYON-JUNIPER WOODLANDS?

Despite large gaps in our knowledge, the urgency of climate change may necessitate that land managers begin to take action with the best available information.



Work with partners on prioritization of treatments aiming to improve persistent woodland climate resilience.

Working at the landscape scale, efforts should aim to balance a multitude of uses and benefits.



Partner with researchers to learn from management efforts.

As we implement treatments in persistent pinyon-juniper woodlands, it is more important than ever to learn from these efforts, tracking impacts on woodland resilience to fire and drought, wildlife populations and habitat, fuels, human use, and more.



Evaluate outcomes of treatments for pinyon jays.

Management of woodlands for pinyon jays is poorly understood. To help address this information gap, treatments within the range and especially within core areas of pinyon jays should consider evaluating outcomes for this species. Contact the Pinyon Jay Working Group to learn about opportunities.

FIND MORE DETAILS ON HOW MANAGERS CAN IMPROVE WOODLAND CLIMATE RESILIENCE AND EXAMPLES OF EFFORTS AT THE FRONTIER OF SCIENCE AND IMPLEMENTATION IN OUR FULL REPORT.