# Juniper, Fire & Wildlife

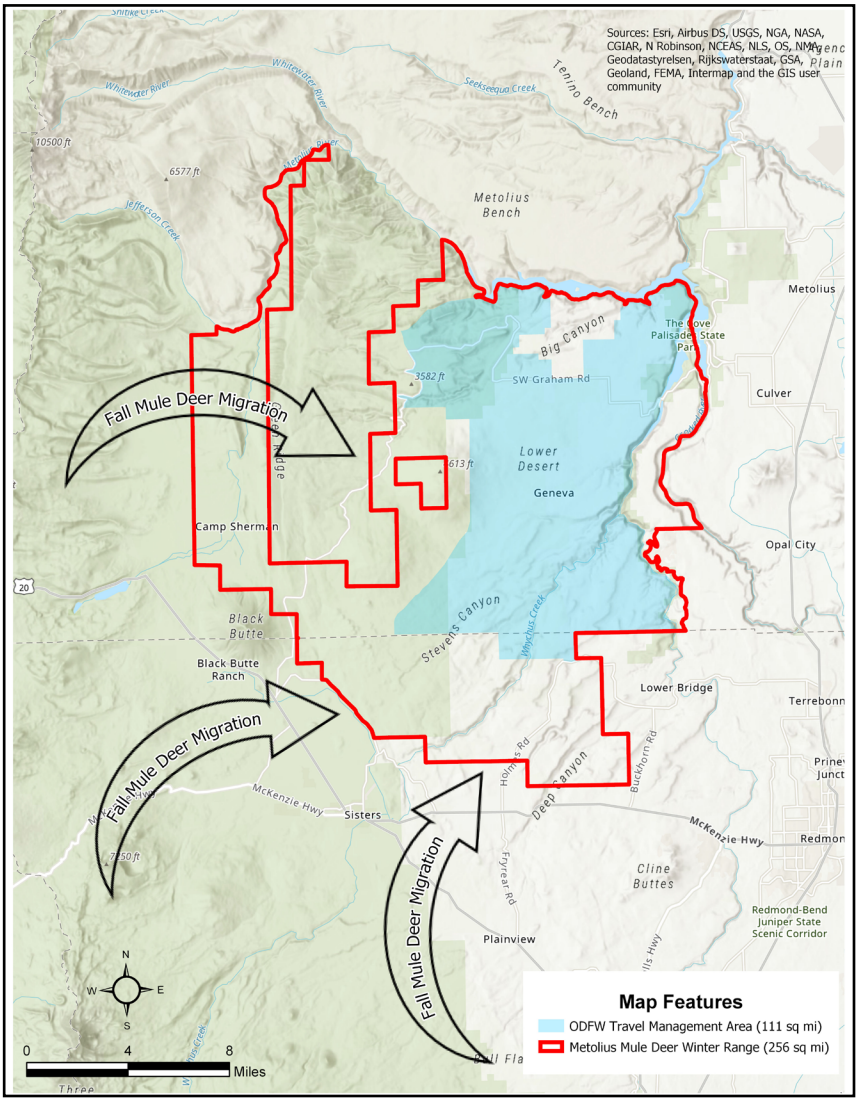
**Grades:** High School
**Suggested unit/objective:** 11.1 Ecodiversity & Biodiversity, Students explain how ecosystems respond to disturbances and interactions. Students explore how urban biodiversity is declining locally and globally.

## *Seeking shelter*

The Metolius Mule Deer Winter Range is a vast landscape in the Central Oregon high desert managed by several collaborating agencies, including the U.S. Forest Service, Oregon Department of Fish & Wildlife, Confederated Tribes of Warm Springs, Bureau of Land Management and Portland General Electric. These organizations work together to protect and enhance the area for the benefit of wildlife. In addition to providing homes for songbirds, eagles, elk and small mammals, the area also offers seasonal habitat for mule deer. These deer migrate to the Winter Range from their summer homes in the Cascade mountains, seeking shelter and food during the coldest months of the year.

### *Observe the map on the right.*

1. Why do you think mule deer seek shelter in the Winter Range? What would you expect to find in the Winter Range that makes it attractive winter habitat?



## *A spreading species*

### *What do you notice in this picture (above) of the Metolius Mule Deer Winter Range?*

While the blue sky or beautiful mountain view might first catch your eye, you'll also probably notice a dense sea of bushes and shrubs, primarily from a single plant species. This is the Western juniper tree (*Juniperus occidentalis*). Juniper, which can be easily identified by its red-brown bark, scaly leaves and berry-like cones, is one of the oldest and longest-living tree species in North America.

However, **about 95% of the junipers around today are less than 100 years old**. These trees spread with the rise of homesteading in the mid-1800s. To protect and expand their property, settlers suppressed wildfires and let livestock overgraze native grasses. These actions allowed young junipers to march freely across Central Oregon.

2. Why might an over-abundance of juniper be a problem? What negative effects can you anticipate?

Old growth, or "heritage," juniper trees like this one, are rare but vital. Mature trees provide nesting spots for birds and small mammals and offer shelter for deer during the winter.

**Did you know?** *The oldest individual tree found in Oregon was a 1600-year-old juniper.*

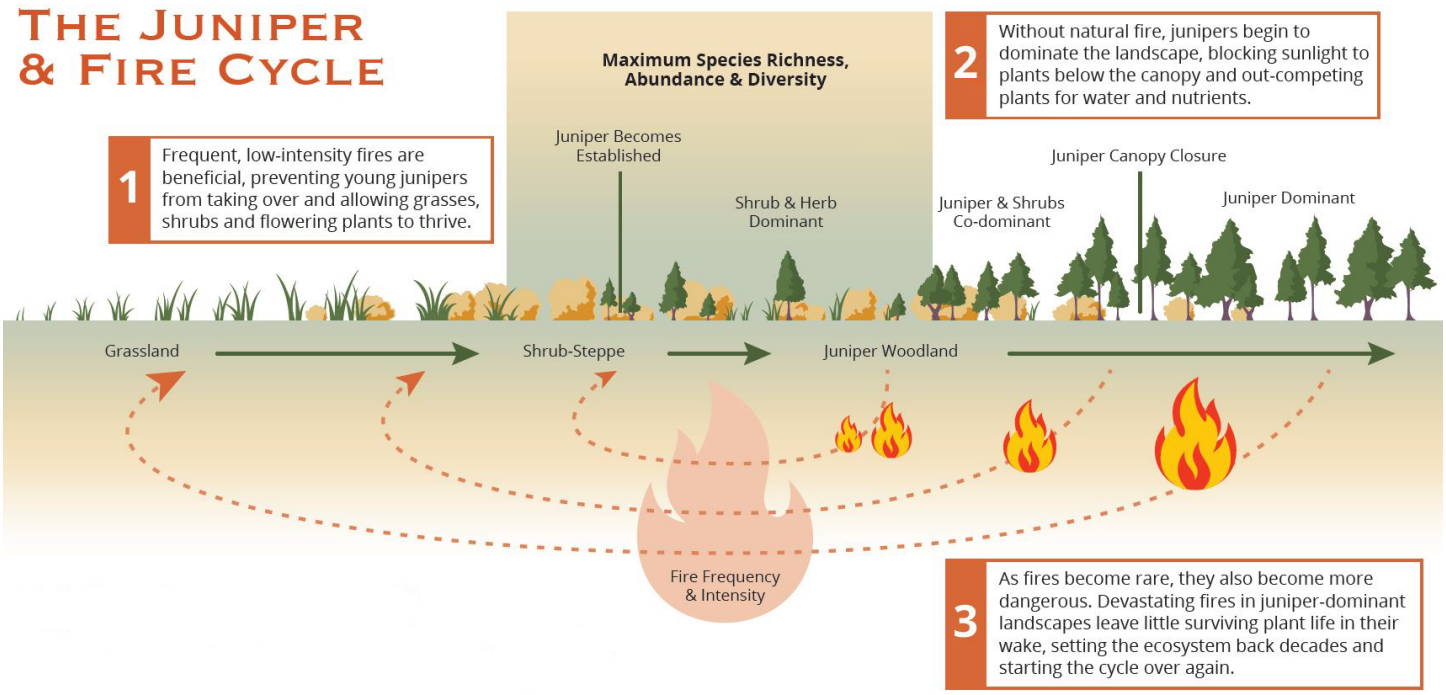
## *Growing threats*

The high desert sees less than 16 inches of precipitation per year. A single juniper can use 20 to 40 gallons of water per day! So, as junipers take over, they deplete water and nutrients from the soil. If enough junipers are allowed to grow in an area, they can also create a dense canopy, blocking out the sun to plants below. Plants like antelope bitterbrush – a favorite source of food for mule deer – cannot compete, leaving animals struggling to find nutritious food.

Antelope Bitterbrush *(Purshia tridentata)*

Wherever they spread, junipers bring another serious threat familiar to many Oregonians: intense wildfires. Healthy ecosystems benefit from regular, low-intensity fires, which thin out young junipers and give other native plants a chance to thrive. But wildfires in areas with dense juniper can burn extremely hot, scorching the landscape and leaving room for the invasion of harmful weeds.

Photos by Linda Larson



3. In your own words, describe the relationship between fire and juniper. How does fire change the ecosystem, and how does a juniper-dominant ecosystem change the frequency/intensity of fire?

## *Habitat loss*

Despite protections, the Metolius mule deer population is in trouble. Unfortunately, this story of decline isn't unique – mule deer are facing challenges across the Western United States. Disease, predation, human disturbance, poaching and climate change have all contributed to population decline. But the primary threat to mule deer is loss of habitat.

*Even small developments can interrupt the landscape and reduce the amount of habitat available for wildlife. This is known as* ***habitat fragmentation****.*

In addition to suppressing wildfires and facilitating the spread of invasive or aggressive species, like juniper, humans have also allowed livestock to overgraze native plants, extracted natural resources and developed the land in other ways. These activities have created conditions where nutritious food is scarce, wildfires can be devastating, and large stretches of uninterrupted landscape are few and far between.

While it may be difficult to turn back the clock on some of these impacts, there are steps we can take to reduce stress on mule deer.

The Winter Range managers are working to bring balance back to the ecosystem by thinning young junipers to mimic the effects of small fires and reduce the risk of powerful, dangerous ones. We also plant native vegetation like bunchgrasses and bitterbrush to slow the spread of weeds and provide food for wildlife. In time, we hope to restore the Winter Range to the diverse and resilient landscape it once was.

## *Crossword puzzle*

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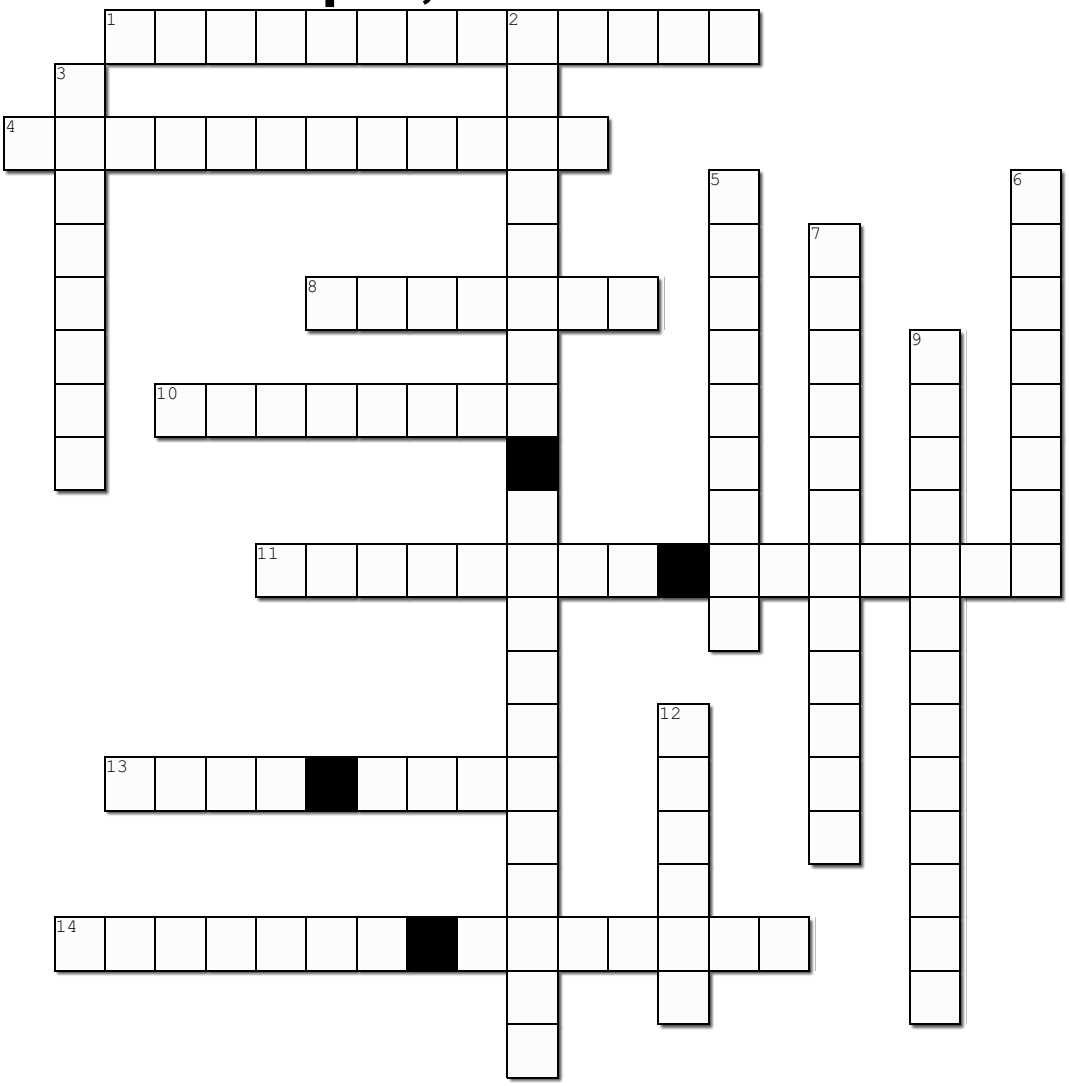

Created using the Crossword Maker on TheTeachersCorner.net

## Across

**1.** The disruption of continuous habitat in a landscape as a result of development
**4.** The variety and variability of life in an ecosystem
**8.** The branch of science that studies the relationship between organisms and their environments
**10.** Another word for 'mature,' when describing an old-growth tree
**11.** Plants that are aggressive, spread rapidly, and out-compete others
**13.** A mammal species that finds refuge in the Metolius Winter Range
**14.** An aggressive tree species commonly found in the high desert

## Down

**2.** A favorite source of food for mule deer
**3.** A large, unplanned fire that can spread quickly
**5.** A scientist who studies living organisms
**6.** A major mountain range in Western North America, where mule deer spend their summers
**7.** The act of settling and developing land in a rural area
**9.** Rain and snowfall
**12.** The upper layer of habitat in a forested area, formed by the tops of trees