Student Atlas of Oregon

A Classroom Atlas for Elementary and Middle Schools

2nd Edition

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A Classroom Atlas for Elementary and Middle Schools

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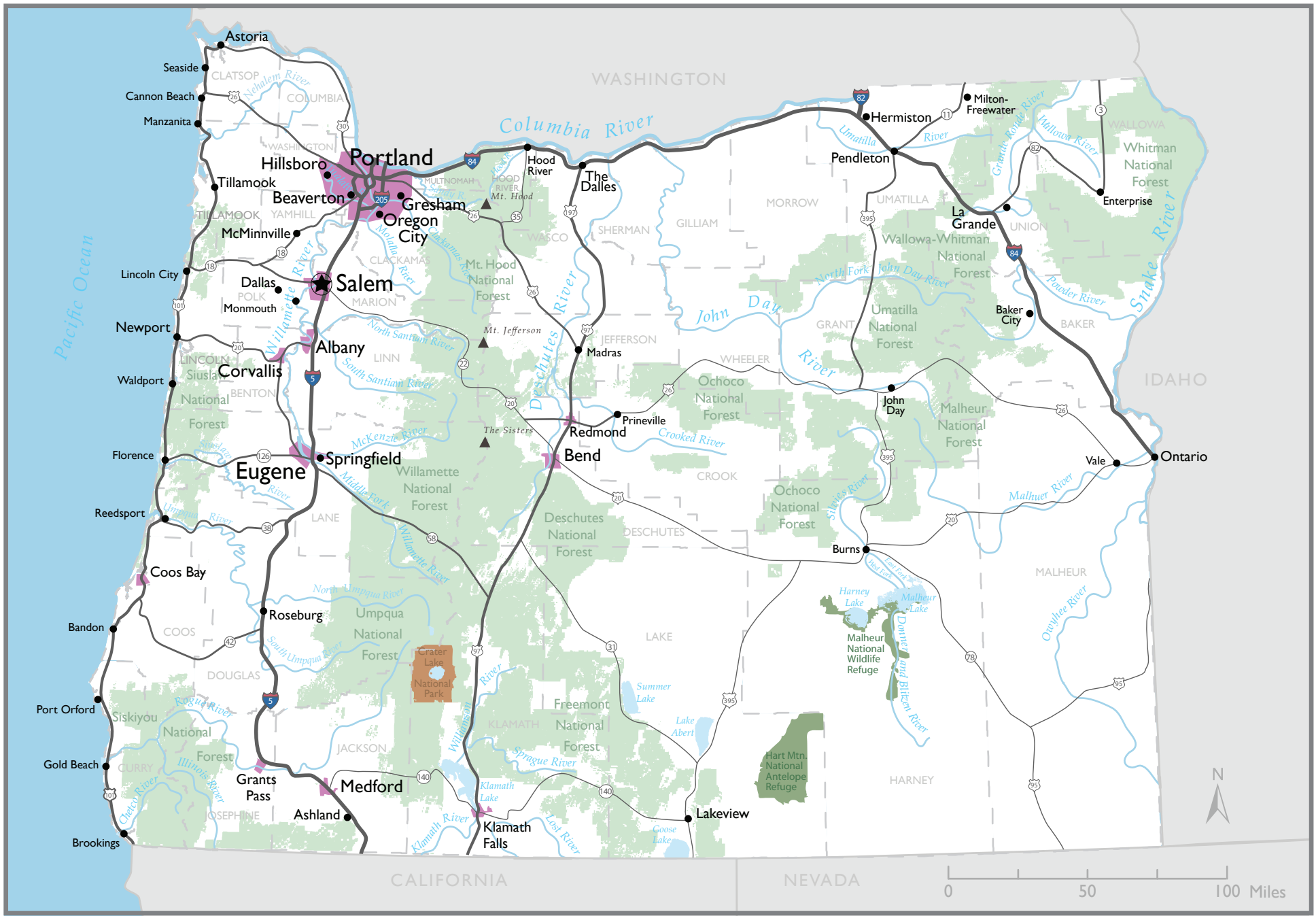
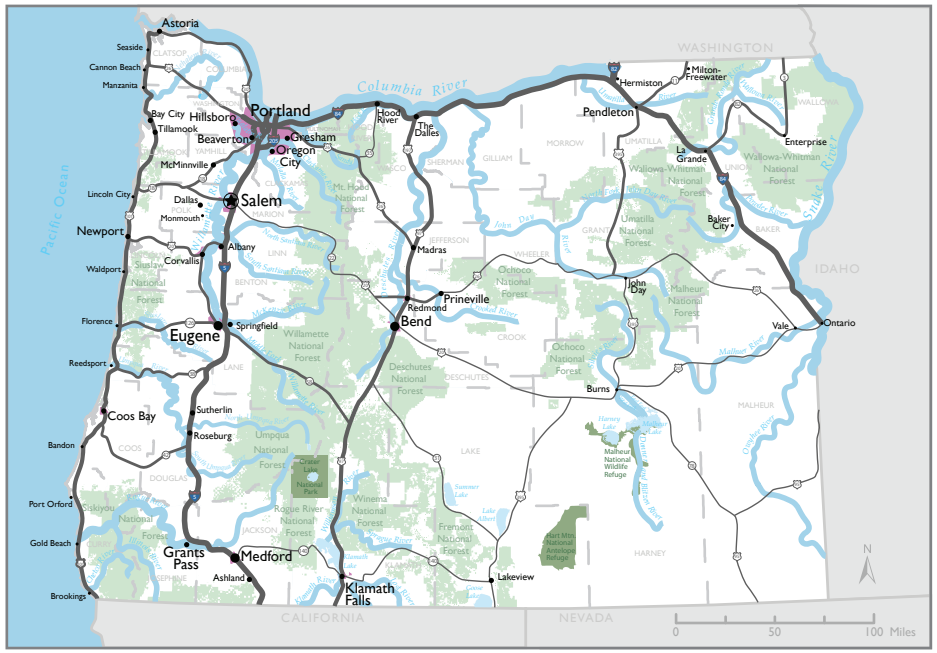
General Reference Map



Types of Maps

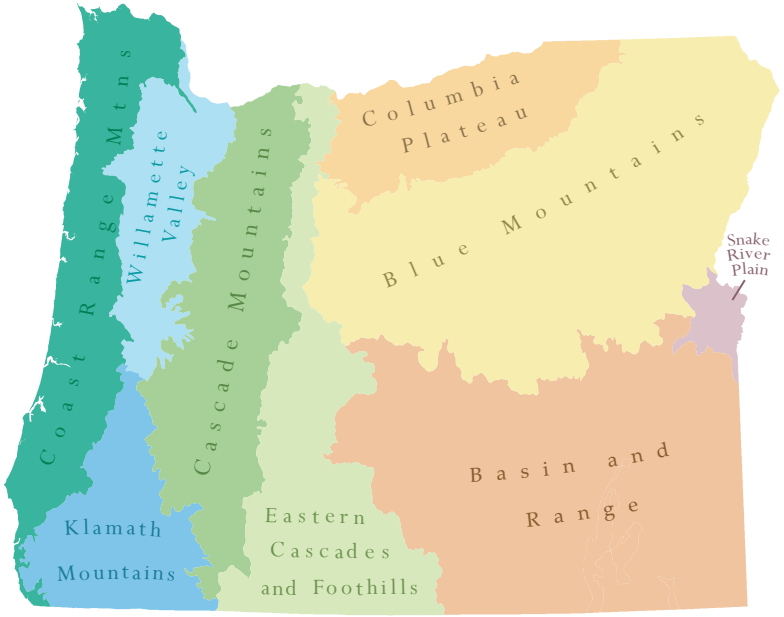
General Reference

General Reference Maps use symbols to show the exact location of things on the earth. For example, where the black line is drawn for the roads is where you can actually find the road in real life. The map of Oregon, below, is an example of a **general reference map**.



Thematic

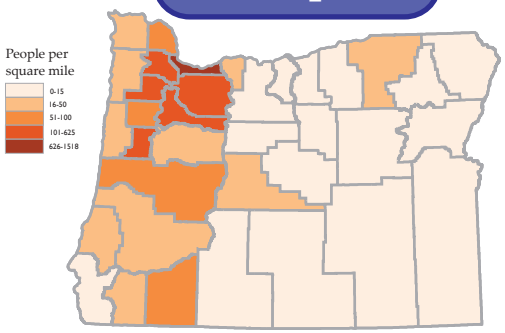
Thematic Maps use symbols to show a pattern or "theme." Usually, the symbols used on these maps are not in an exact location because the maps provide only general information about the theme or pattern. The map of Oregon's ecoregions, below, is an example of a **thematic map**.



Types of Thematic Maps

All five thematic maps show where people live in Oregon, but each map uses a different way to show that distribution.

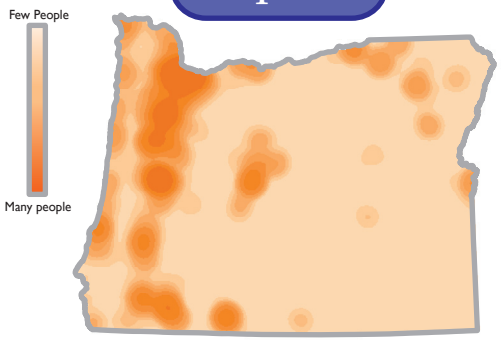
Choropleth



- Each county is shaded a color to show density or number of people per square mile

- The symbol covers an entire county, but it does not mean that people live everywhere inside the county

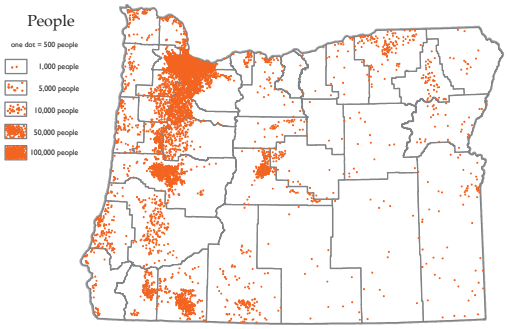
Isopleth



- This map shows a continuous distribution of population

- Because we do not know how many people live in every single place in Oregon, we take an average of two cities in an area to estimate the number of people in that area

Dot Density

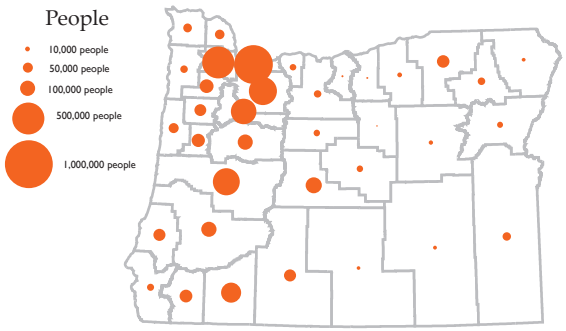


- One dot equals a certain number of people

- If dots are close together, lots of people live in one area

- If dots are spread out, not very many people live in one area

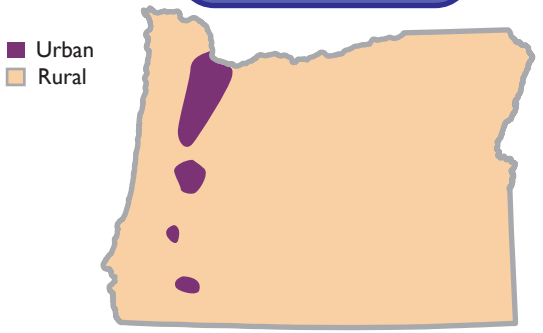
Graduated Circle



- One circle represents how many people live in that county

- The size of the circle is proportional to the number of people that live in a county - the more people that live in a county, the larger the circle

Color Patch



- This map draws boundaries around different groups of people (for example, urban residents and rural residents)

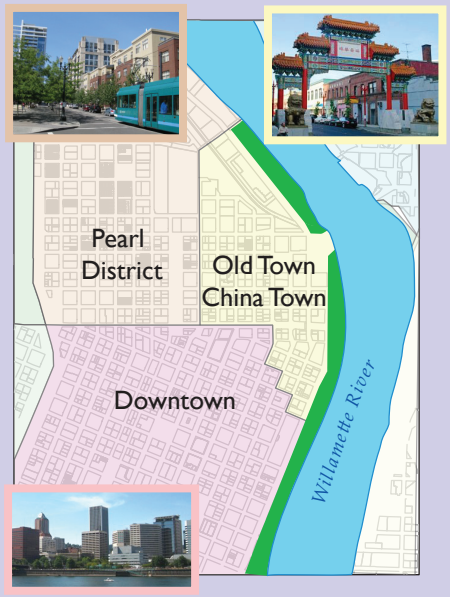
- The map does not show how many people are in each group, just where each group is located

How Geographers Use Maps

Geographers use maps to show distributions. The maps help us see patterns and relationships of things. What geographers map is related to the Six Essential Elements of Geography:

- The World in Spatial Terms
- Places and Regions
- Physical Systems
- Human Systems
- Environment and Society
- Uses of Geography

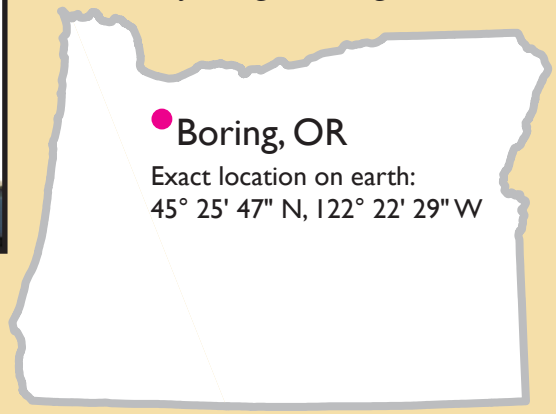
Places and Regions



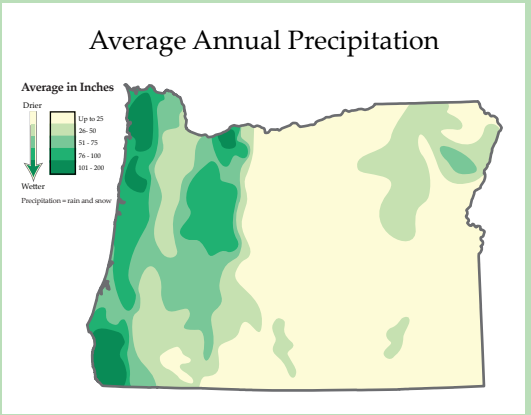
Places and regions are defined by the cultural and physical features found there. Geographers use maps to identify places and regions that share common characteristics, such as a "Downtown" region with skyscrapers, a "Pearl District" area with residential housing, and a "Chinatown" region with Chinese sculpture and art.

The World in Spatial Terms

Geographers use maps to show where things exist in the world so we can understand patterns and relationships of anything existing on earth.



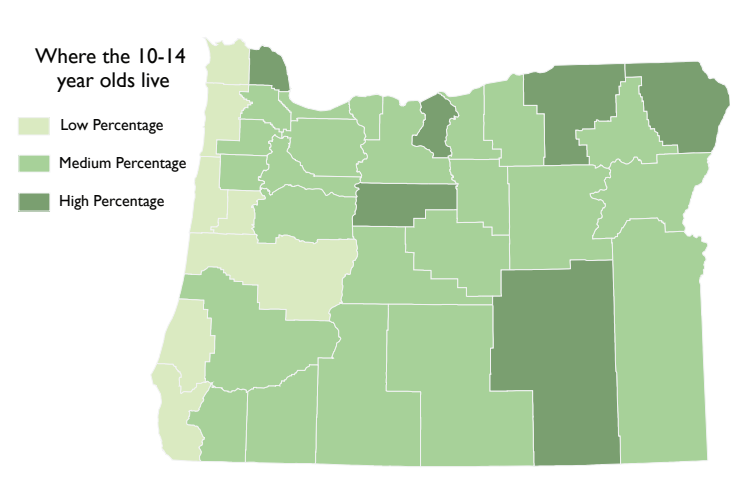
Physical Systems



Geographers use maps to help understand how the earth is affected by physical systems. This map shows where rain and snow fall in Oregon. We can look at the map to understand not only where precipitation falls but also where vegetation that depends on rain grows.

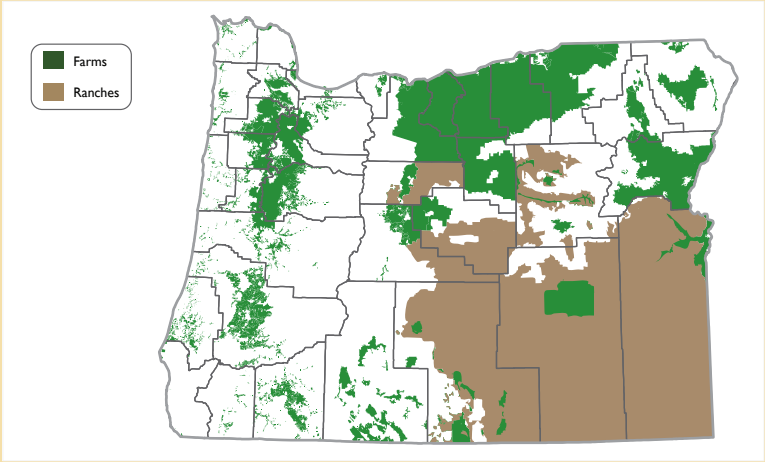
How Geographers Use Maps

Human Systems



Geographers study where people are located on the earth as well as the characteristics of people located in an area, such as age, religion, or education level. The map above shows where Oregonians who are 10-14 years old live.

Environment and Society



Geographers use maps to show relationships between humans and the environment. One example is where we farm and ranch. The places above that are in green show where we grow crops like fruits and vegetables. These areas are close to rivers so that the crops can be watered. Places where we ranch are large, open areas where ranchers graze cattle, such as in Southeast Oregon.

The Uses of Geography

Geographers use maps to help understand the past and plan for the future. Many people use maps regularly at their jobs to plan for the future. Some examples are:

City planners	Weather forecasters	Park rangers
Hydrologists	Pilots	Wetland managers
Tour guides	Delivery people	Police and firefighters

Satellite image of Hurrican Katrina

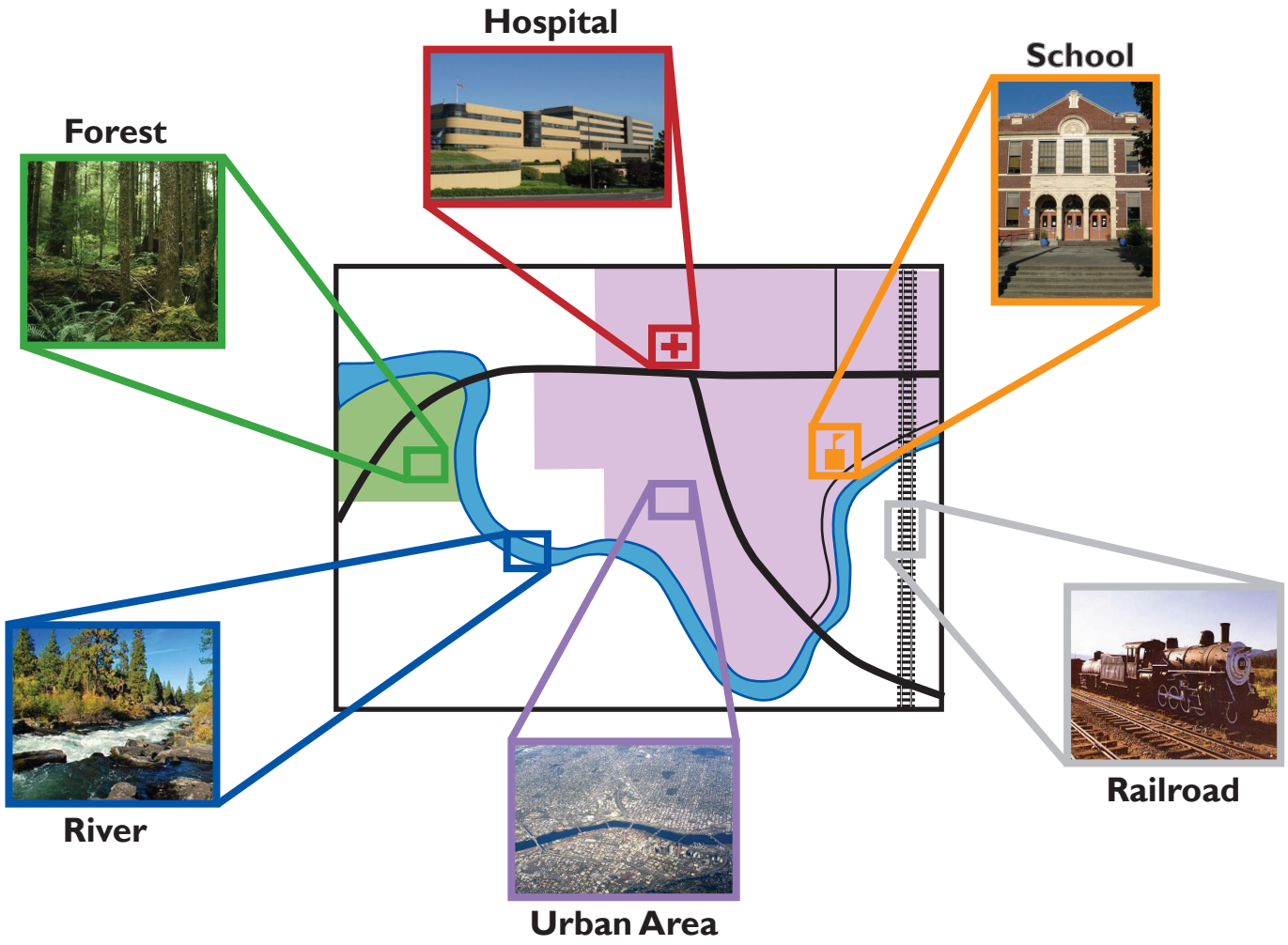
How Cartographers Use Symbols

Cartographers use different symbols on maps to represent real features from the world. Three common types of symbols are point symbols, line symbols and area symbols.

Cartographers use point symbols to show exactly where one thing (a school or a hospital) is located on the map. The symbol is usually a dot or a picture.

When a feature is long and in the shape of a line, cartographers use line symbols to represent these things. On the map, a blue line is used for a river and a black line is used for a road.

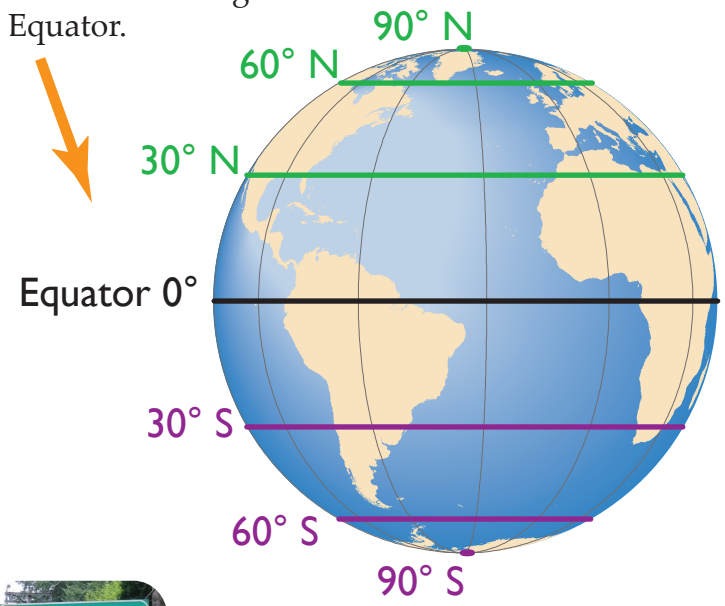
When something on a map is not a specific point, but rather a whole area, a cartographer uses an area symbol. These symbols shade an area to represent places such as forests, urban areas, and oceans.



Latitude and Longitude Lines

Latitude

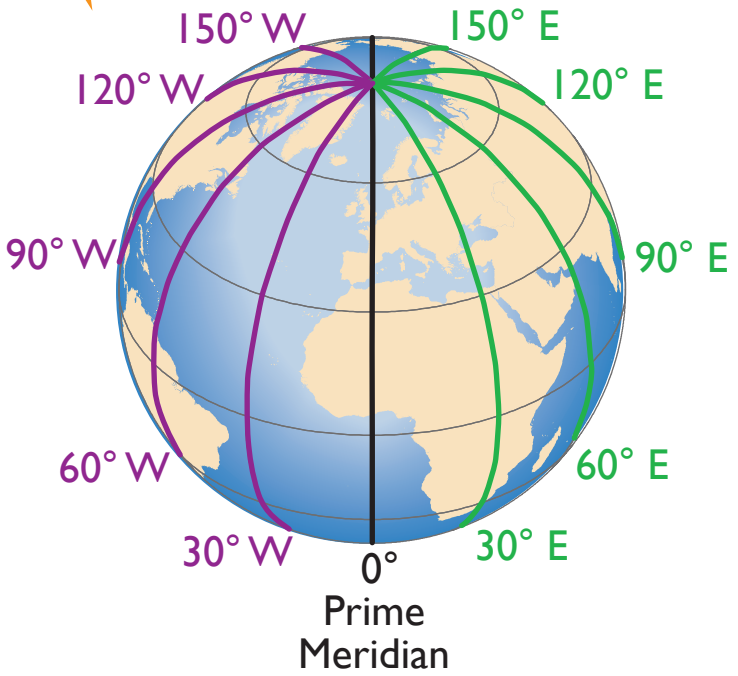
Lines of latitude go across the earth from East to West, but they measure the globe from North to South starting at the Equator.



In this picture, the sign marks the 45th parallel, but there is no line on the ground because the these lines are imaginary. We draw imaginary lines on the earth to help us find and explain exact locations of places on earth.

Longitude

Lines of longitude run across the globe from North to South, but measure East and West starting at the Prime Meridian.



To find a place exactly, we need crossing lines that create an intersection or grid system. One grid system used by cartographers is the Latitude and Longitude Grid. Each location on the globe touches a line of latitude and a line of longitude. The crossing of the latitude and longitude lines is called a **coordinate**. Latitude and longitude are measured in degrees represented by the symbol "°". The coordinates for Salem, Oregon are Latitude 45° North and Longitude 123° West.

Making a Globe Become a Map

How do you make something round become flat?

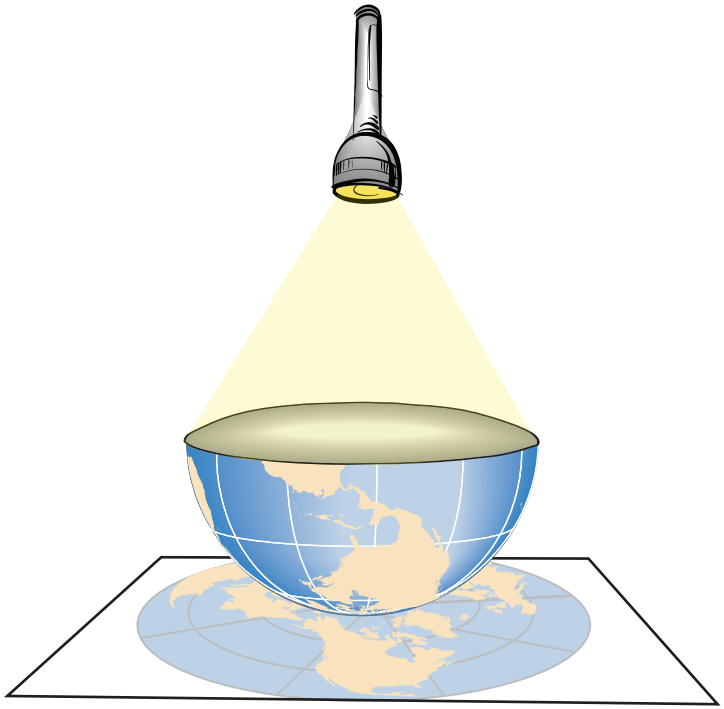
1. A globe is a best model of the earth because it is round like the earth. But it isn't easy to carry around with us.

2. Cartographers have to find a way make the round earth flat so we can carry it around.

3. Once we flatten the round globe out, it stretches and changes shapes and sizes of the continents as it does when you flatten cookie dough.

What is a Map Projection?

A map projection is how cartographers flatten the earth onto paper

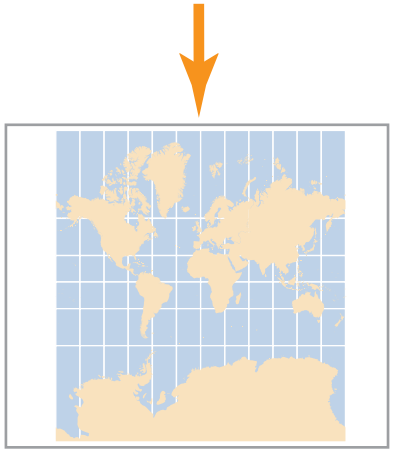


A map projection can be made by shining a flashlight into the middle of the globe and putting a piece of paper on the globe. Then, the flashlight shines onto the paper and you can trace the continents.

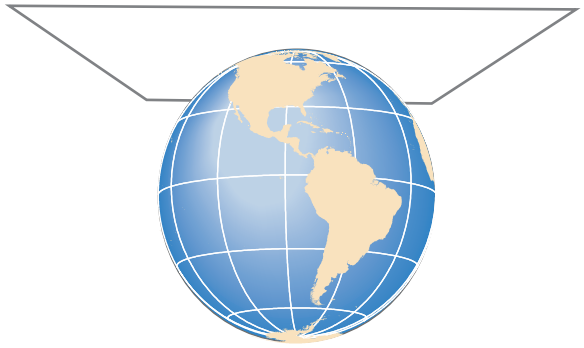
Types of Map Projections

Cylindrical

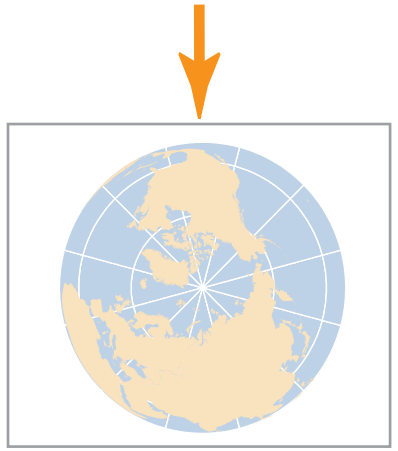
Wrap a piece of paper around the earth to **form a cylinder** that touches the equater all the way around the earth. Shine a light from the center of the earth, trace the image that is projected onto the paper, and then take the paper off for a **cylindrical projection**.



Planar/Azimuthal

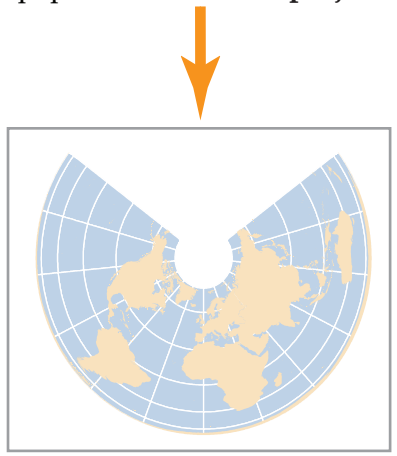


Place a piece of paper on a **single point** on the earth. Then shine a light from the center of the earth, trace the image that is projected onto the paper, and take the paper off for a **planar or azimuthal projection**.



Conic

Wrap a piece of paper around the globe to **form a cone**. Shine a light from the center of the earth, trace the image that is projected onto the paper, and then take the paper off for a **conic projection**.



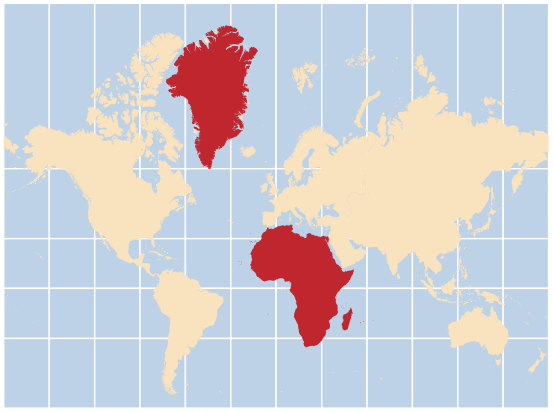
In each case, the projection is most accurate at the point where the paper touched the earth.

Map Distortions

When we flatten a round earth onto a piece of paper, there will be problems with any projection we choose. Just as flattening a ball of cookie dough stretches and pulls the dough into a new surface, the map projection stretches and pulls the parts of the earth into a new surface so it all can lie flat on the paper.

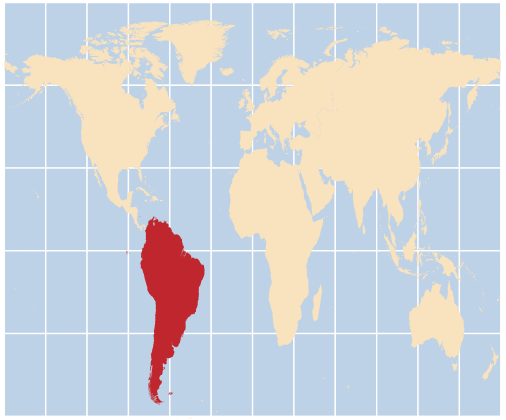
Since we know that all map projections have errors (distortions), we have to know what types of errors a map has so that we can pick the best projection to show the information we want to map. Maps will have distortions of one or more of these properties: **Distance**, **Direction**, **Area**, **Shape**, or **Scale**.

Mercator Projection



Greenland is the same size as Africa on this map. The Mercator Projection distorts **area**.

Gall-Peters Projection

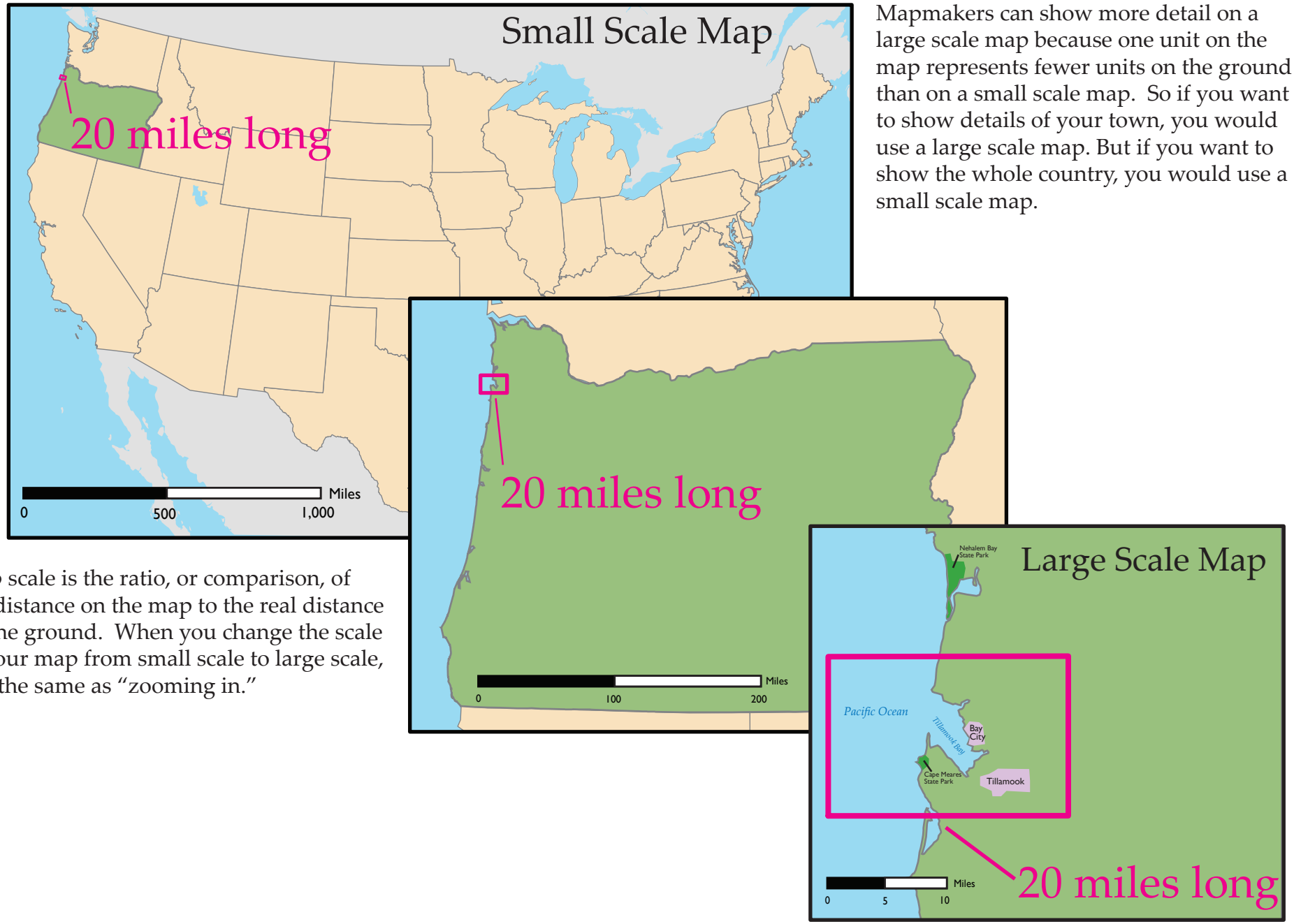


South America looks like it has been stretched. The Gall-Peters Projection distorts **shape**.

Winkel Tripel Projection: A Compromise

Some projections, known as compromise projections, have distortions but map makers try to make them as small as possible so that the map projection looks like what we are used to seeing on the globe. The Winkel Tripel Projection, for example, has distortions of area, direction, and distance, but they are small distortions.

Map Scale



Mapmakers can show more detail on a large scale map because one unit on the map represents fewer units on the ground than on a small scale map. So if you want to show details of your town, you would use a large scale map. But if you want to show the whole country, you would use a small scale map.

Map scale is the ratio, or comparison, of the distance on the map to the real distance on the ground. When you change the scale of your map from small scale to large scale, it is the same as "zooming in."

Using Scale Bars

Ways to Represent Scale

Graphic Scale

You can use the scale bar to measure distances on the map.

Verbal Scale

1 centimeter equals 1,000 meters

You can use a ruler to measure distances on the map and then multiply the distance by 1,000 to find out the distance on the ground.

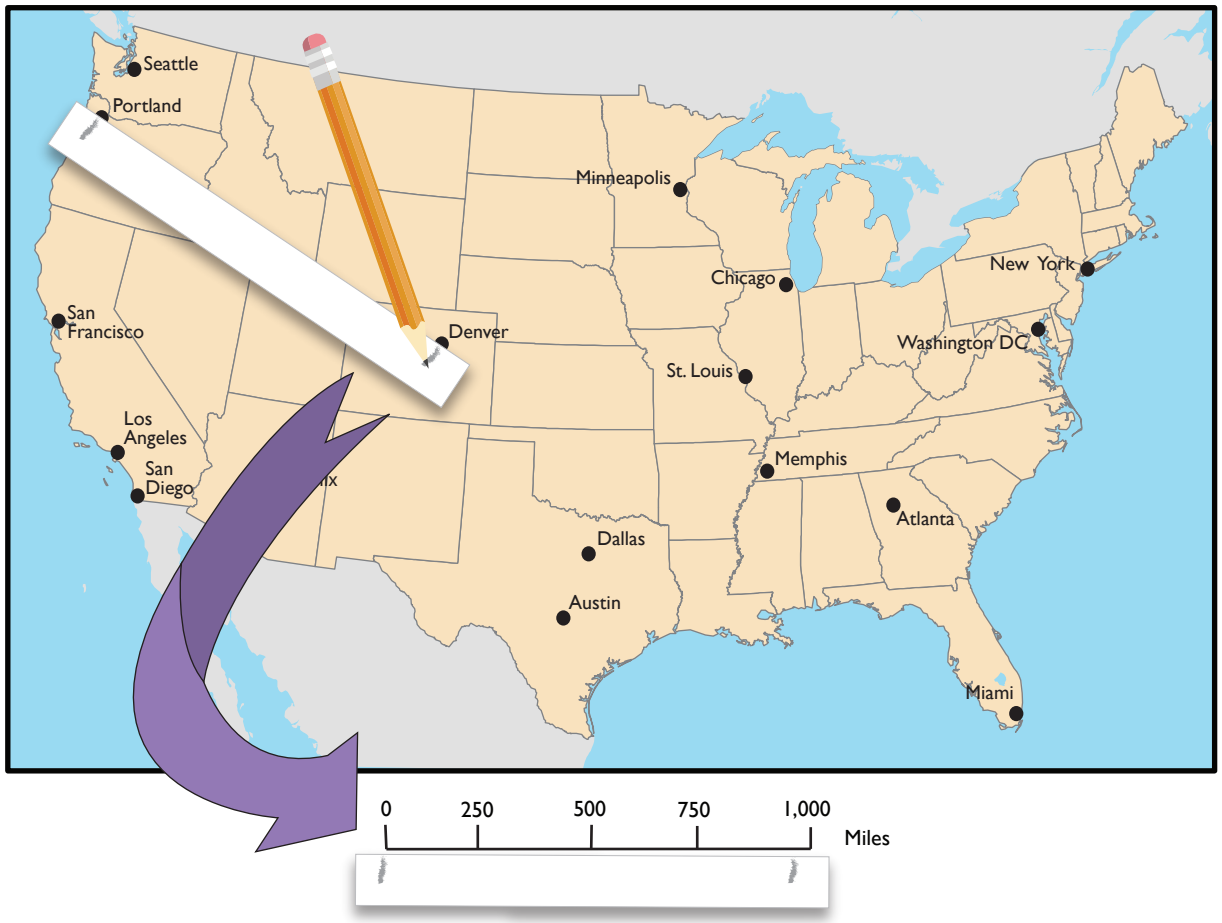
Representative Fraction

1:100,000

This ratio tells you that one unit (inch, centimeter, meter, etc.) on the map is equal to 100,000 of the same units on the ground. So if you found a distance of 5 centimeters on the map, you would know that it is equal to 500,000 centimeters on the ground.

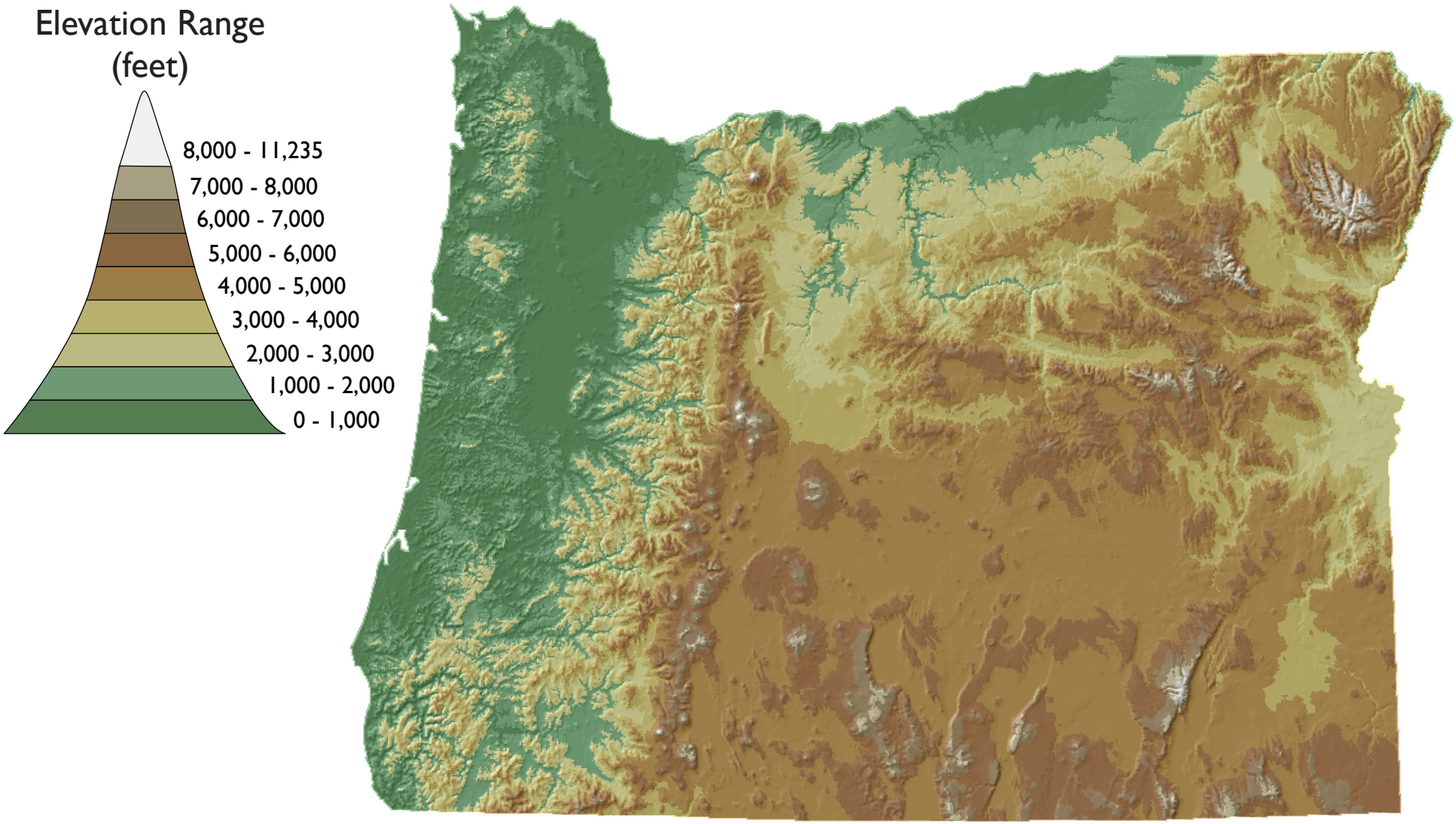
Using the map scale to measure from Portland, OR to Denver, CO:

1. Put a piece of paper on the map to connect Portland and Denver
2. Draw marks on the paper where the dots are
3. Place the paper under the map scale and determine how many miles it is from Portland to Denver



Physical Regions of the Pacific Northwest

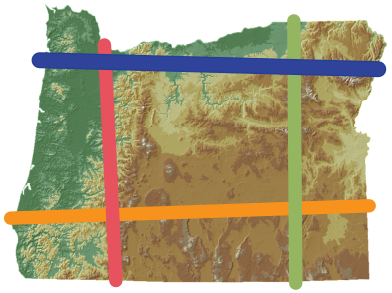
Topography


Elevation Range
(feet)
8,000 - 11,235
7,000 - 8,000
6,000 - 7,000
5,000 - 6,000
4,000 - 5,000
3,000 - 4,000
2,000 - 3,000
1,000 - 2,000
0 - 1,000

Elevation Cross Sections

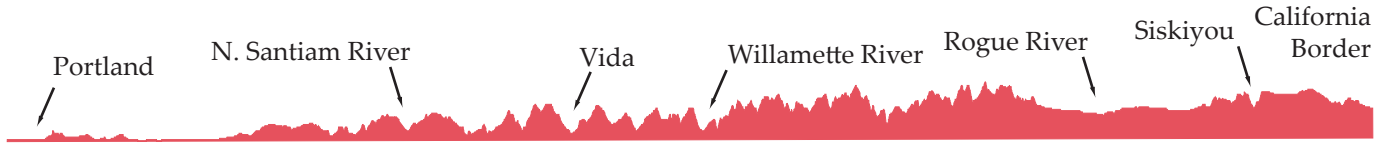
West to East (Northern Oregon)

These cross sections show differences in elevation in Oregon. For example, if you follow the blue line (Northern Oregon) from the west to the east you can see that the elevation is at sea level at the Pacific Coast, but is high at Mt. Hood and the Wallowa Mountains.



Because elevation changes are small compared to the horizontal distances, we have exaggerated the vertical scale (height) to better show the variation in the elevations.

North to South (Eastern Oregon)



North to South (Western Oregon)

West to East (Southern Oregon)

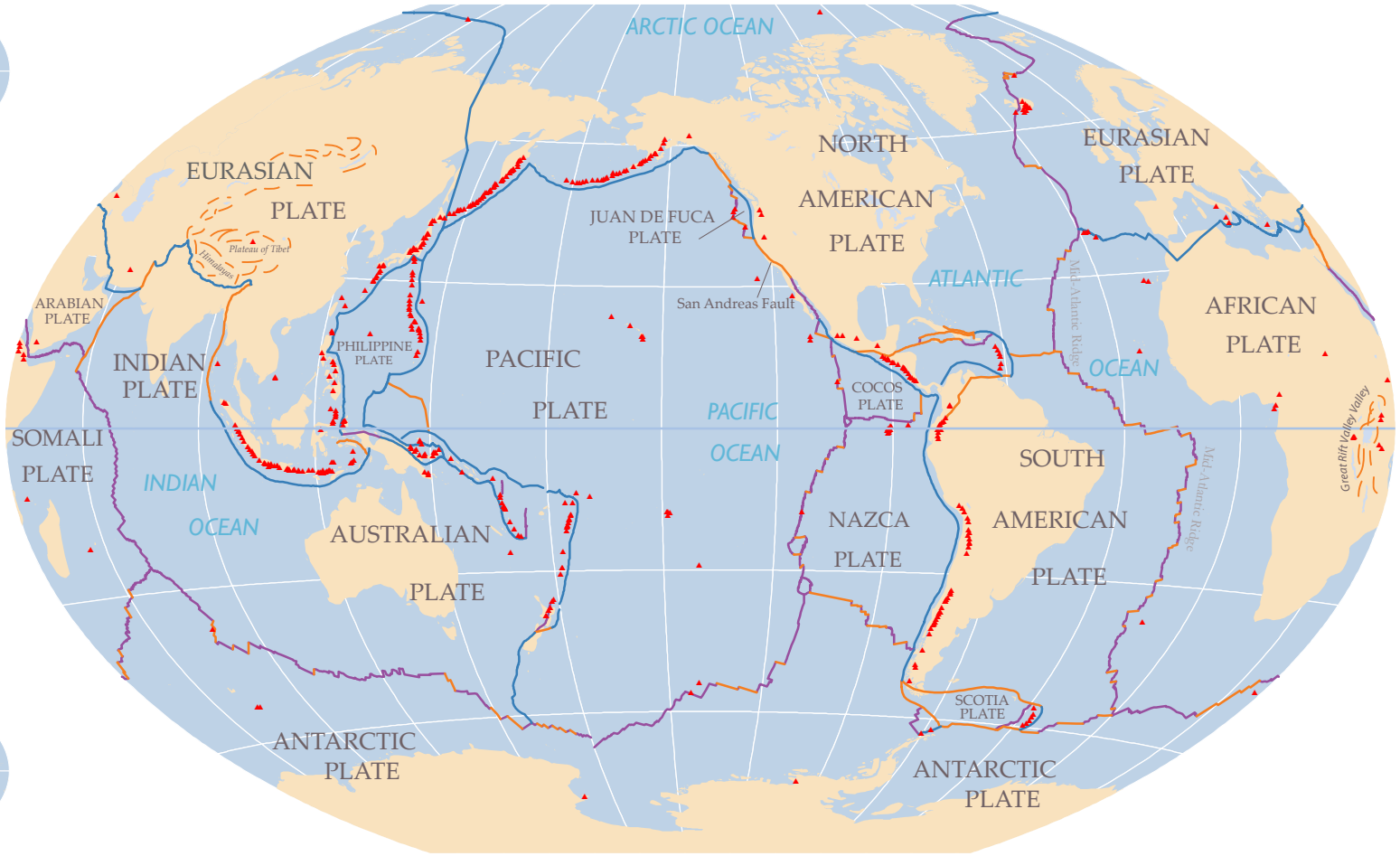
Plate Tectonics

PERMIAN
225 million years ago

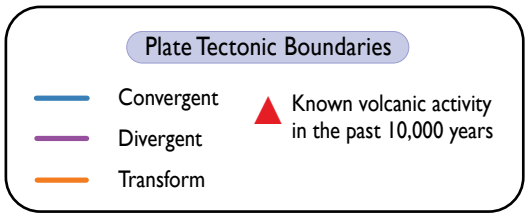
TRIASSIC
200 million years ago

JURASSIC
135 million years ago

CRETACEOUS
65 million years ago



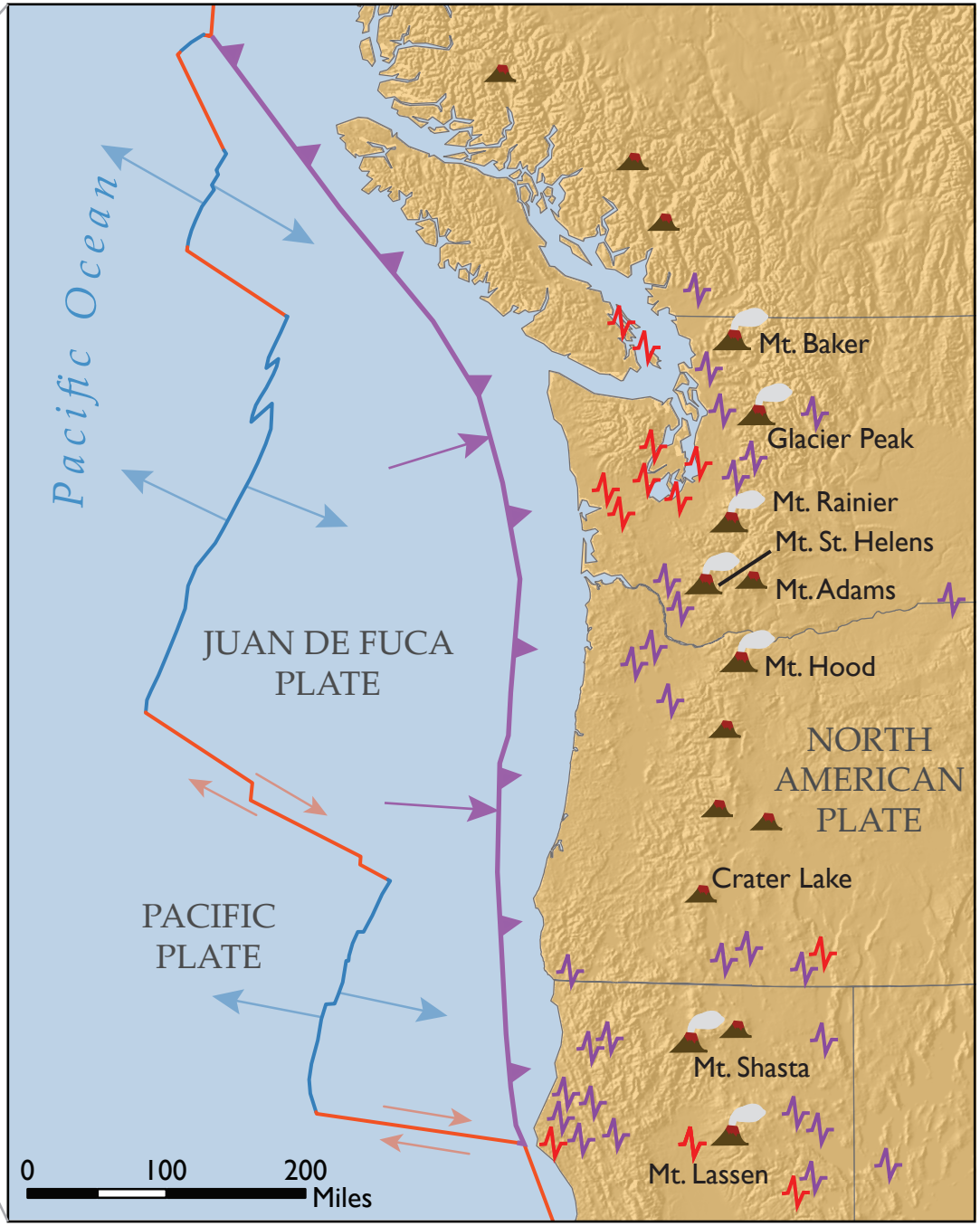
PRESENT POSITIONS



The outer surface of the globe is made up of a group of shifting plates. In some areas, such as the Himalayas, the plates converge (come together); in other areas, such as the mid-Atlantic Ocean, they diverge (pull apart); and in some areas, such as along California, they move side-by-side. Areas where the plates meet are often areas of high volcanic activity. The small maps show how plate movement has caused the continents to move over time and reach their present positions.

Pacific Northwest Plate Tectonics

Off the coast of Oregon the North American plate meets the Pacific plate and the Juan de Fuca plate. As these plates move against each other they influence the location and development of earthquakes and volcanoes.



Strong Earthquakes

- Shallow (depth <15 Miles)
- Deep (depth >15 Miles)

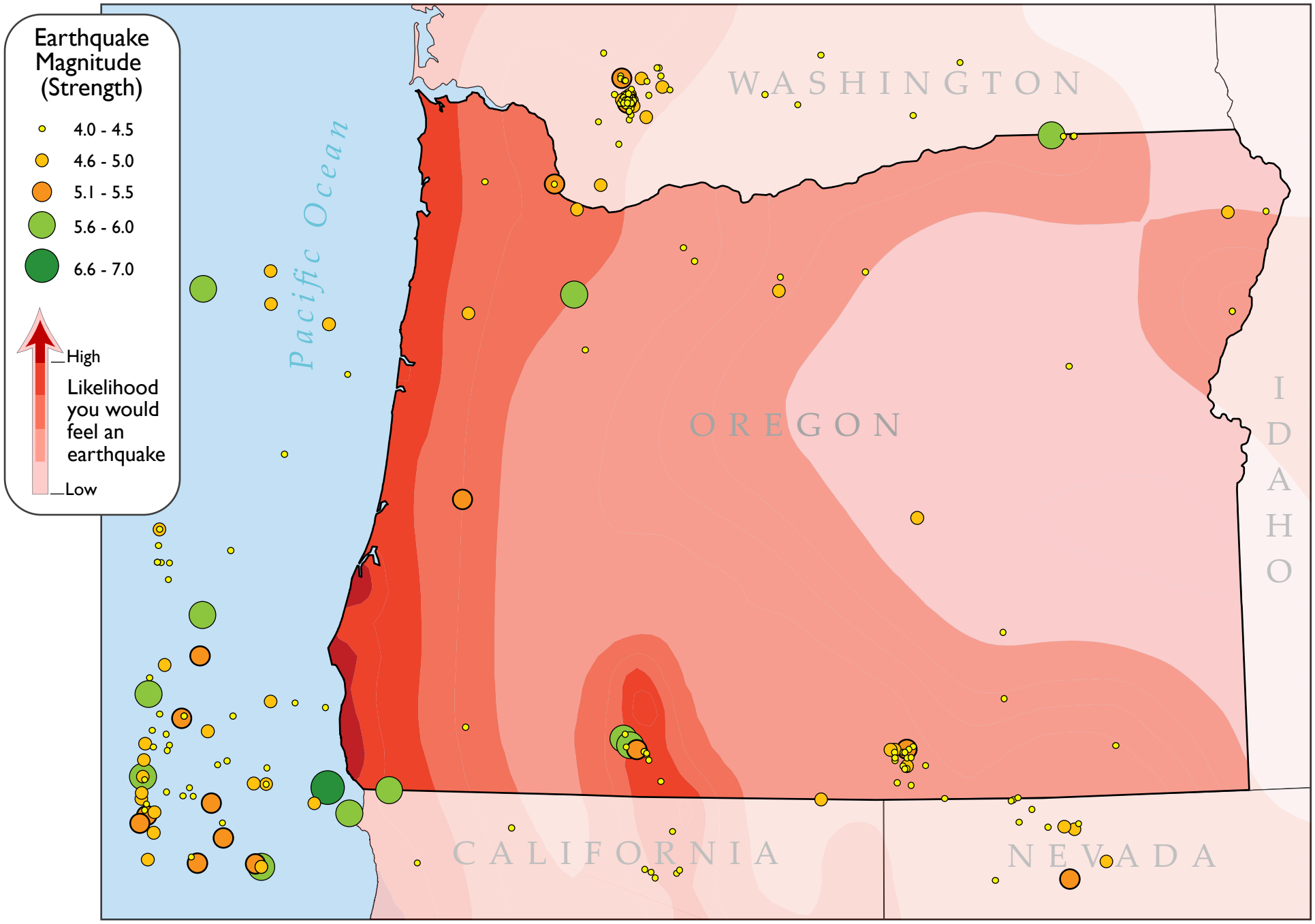
Plate Boundaries

- Convergent
- Divergent
- Transform

Volcanoes

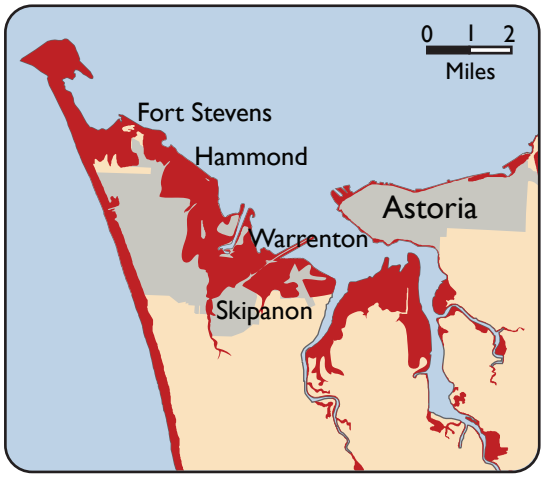
- Erupted in past 100 yrs.
- Historic eruptions

Natural Hazards: Earthquakes

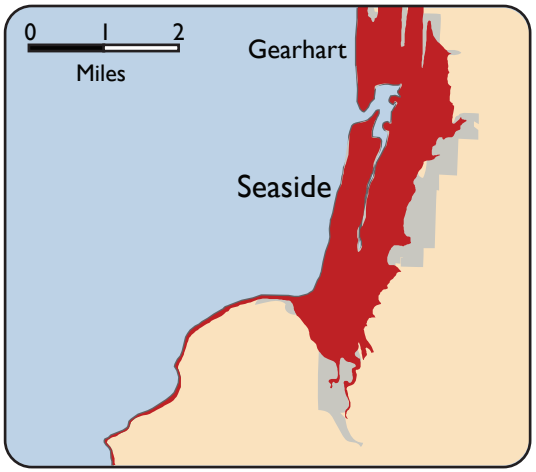


Natural Hazards: Tsunamis

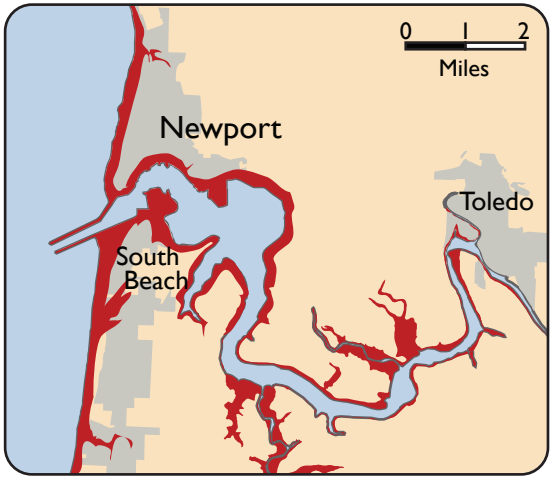
Astoria



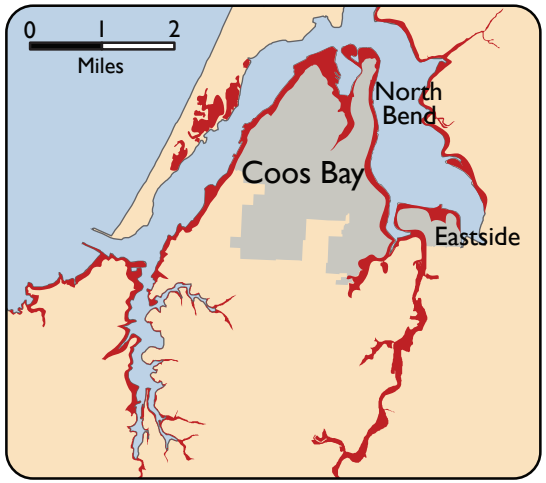
Seaside



Newport

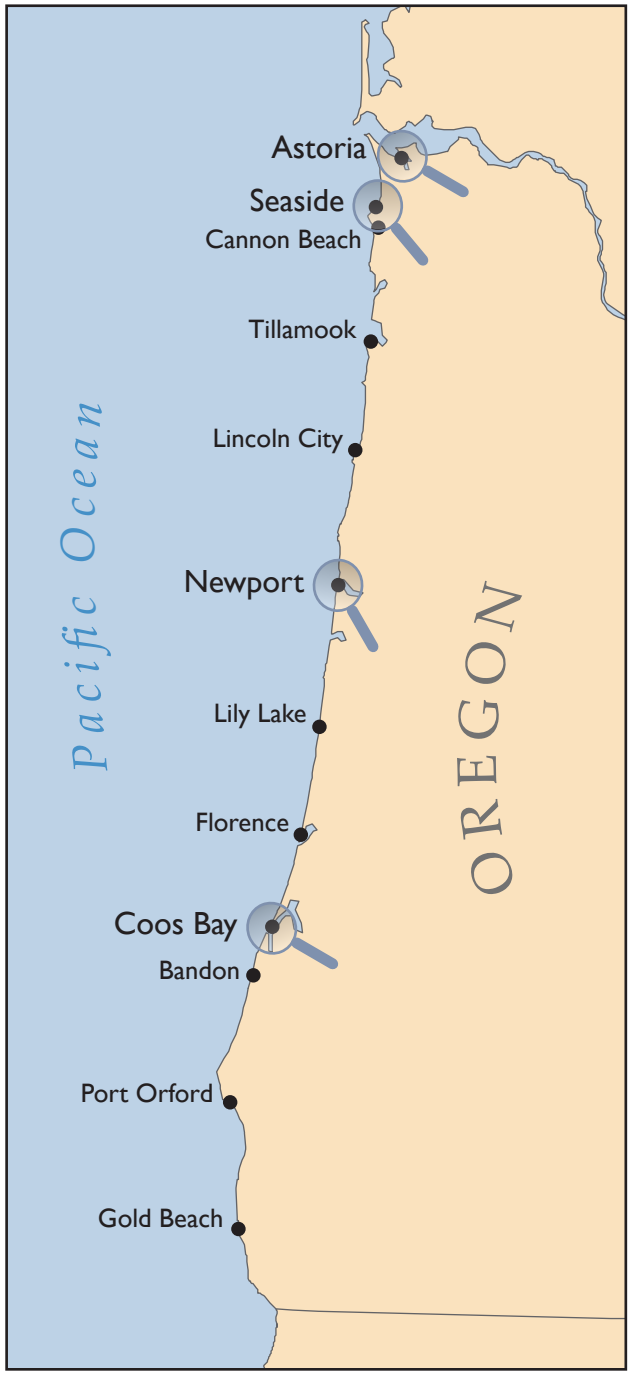


Coos Bay



City Limits

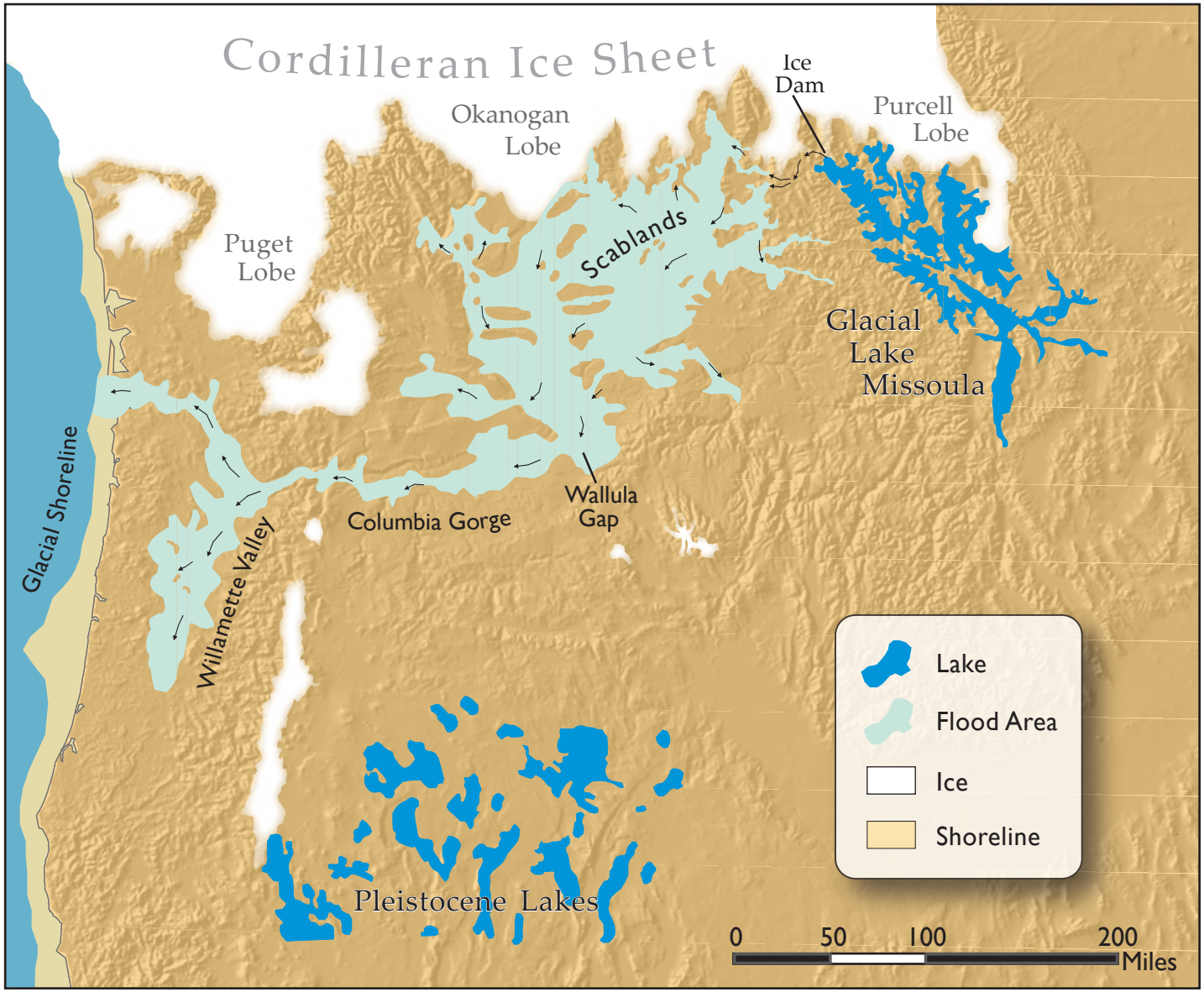
Tsunami Flood Zones



Lake Missoula Floods

At the end of the last ice age (20,000 years ago), a glacier formed an ice dam on the North Fork of the Clark River in Montana. When the dam broke, it caused a 500-foot-high wall of water to sweep west over Washington, where the waters scraped off layers of soil, leaving behind a landscape known today as the "Scablands".

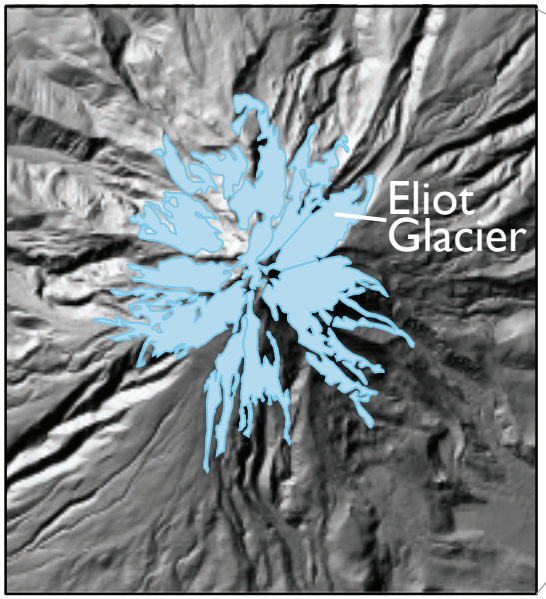
The flood continued west and south to Oregon and through the Columbia River gorge. At Portland, the water flooded the Willamette Valley (briefly reversing the flow of the river) and finally headed northwest to the mouth of the Columbia where the flood waters, and the debris they carried, emptied into the Pacific Ocean.

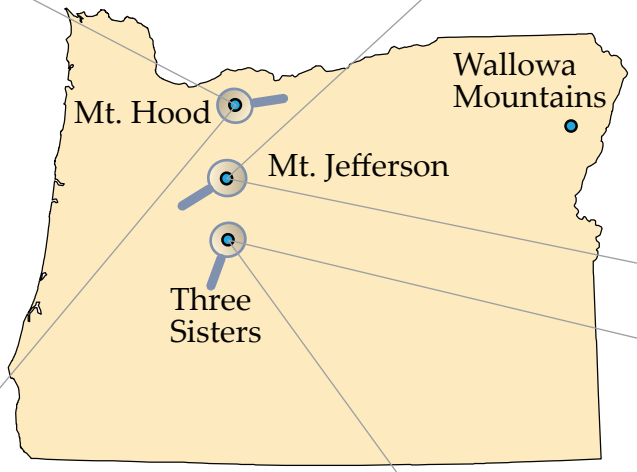


Glaciers In Oregon

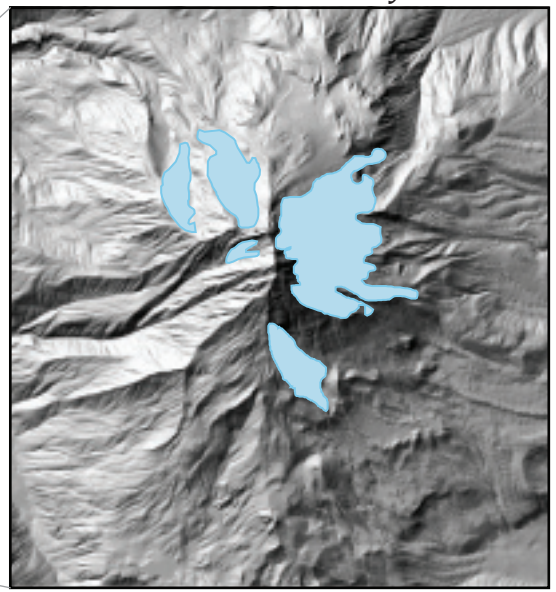
Oregon has many alpine (or mountain) glaciers on the highest peaks. One of the impacts of global climate change is that these glaciers are melting and may disappear by the middle of the century.

Mt. Hood

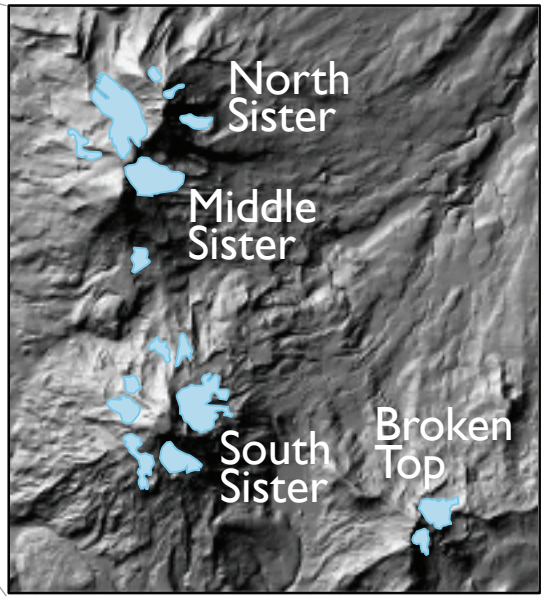




Mt. Jefferson



Three Sisters

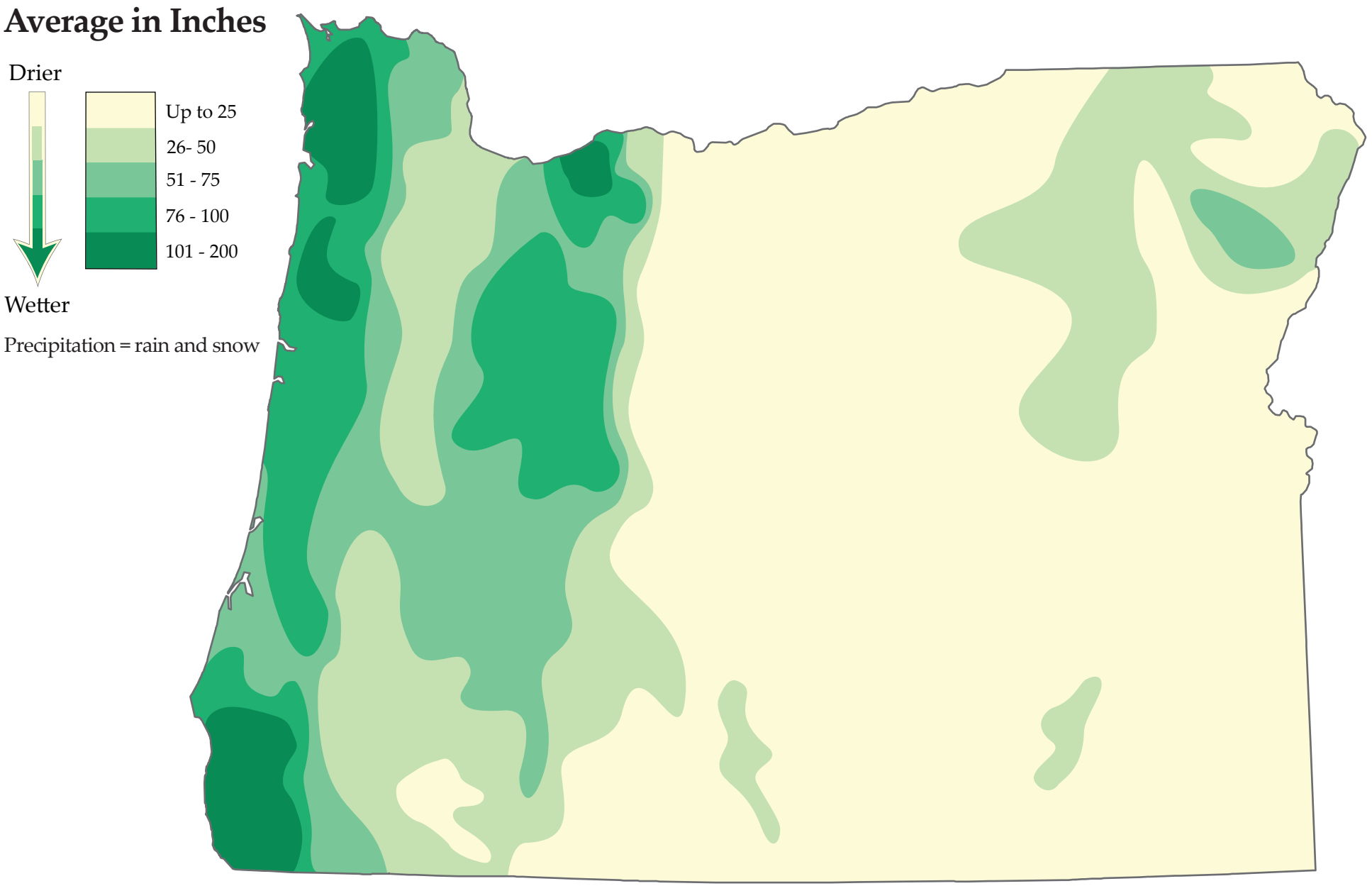


(1901)

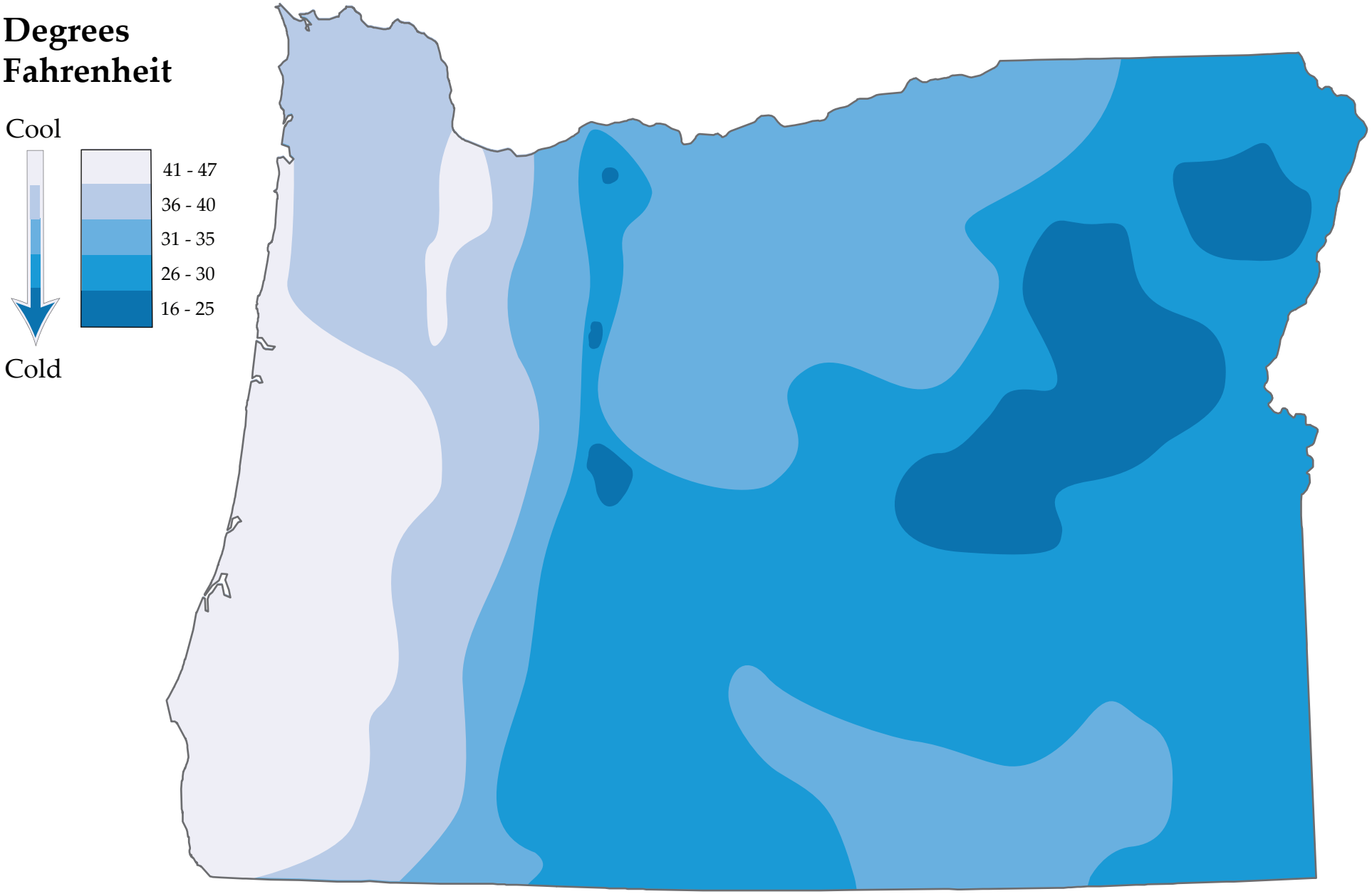
(2005)

Eliot Glacier,
Mt. Hood

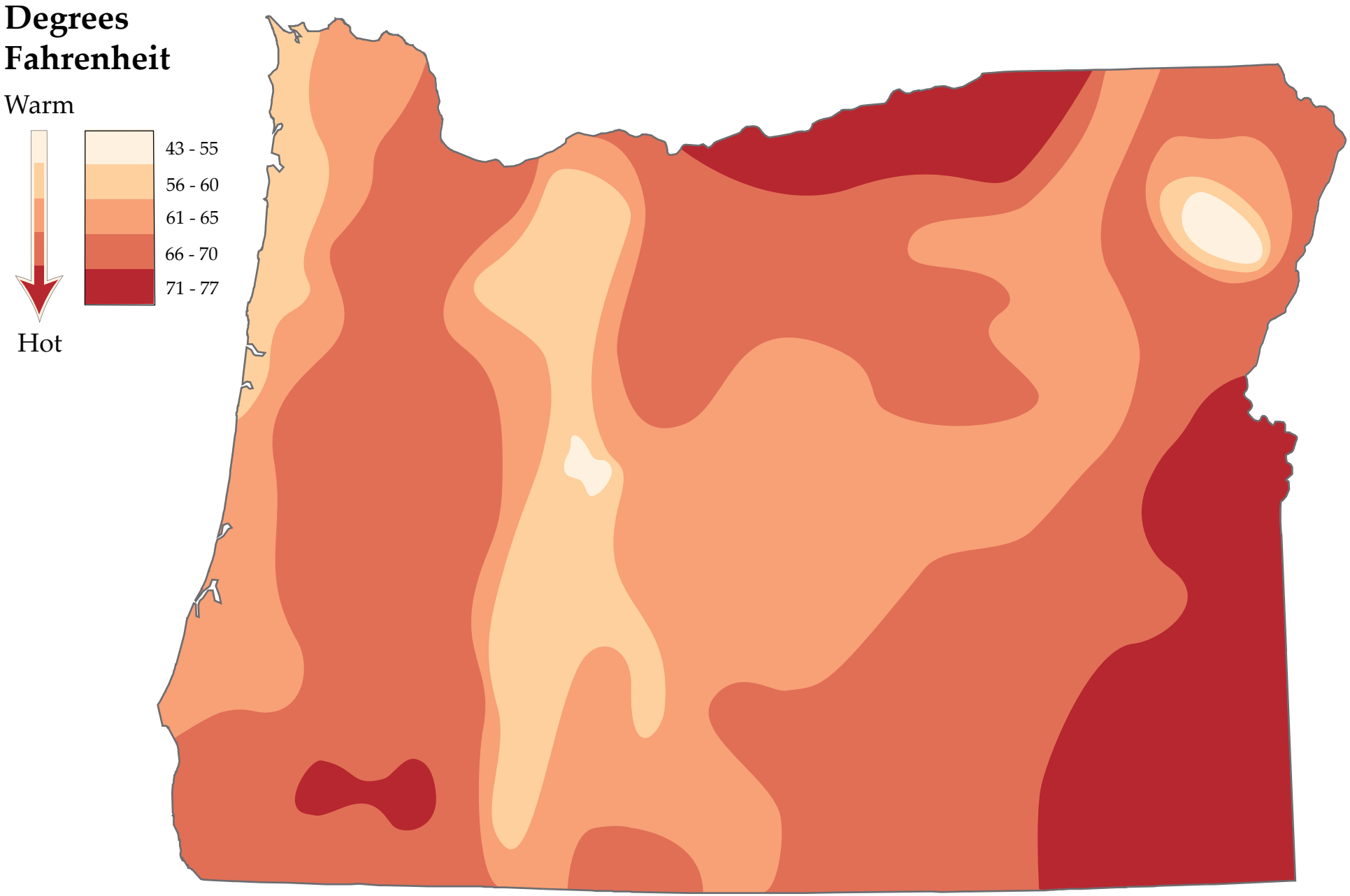
Average Annual Precipitation



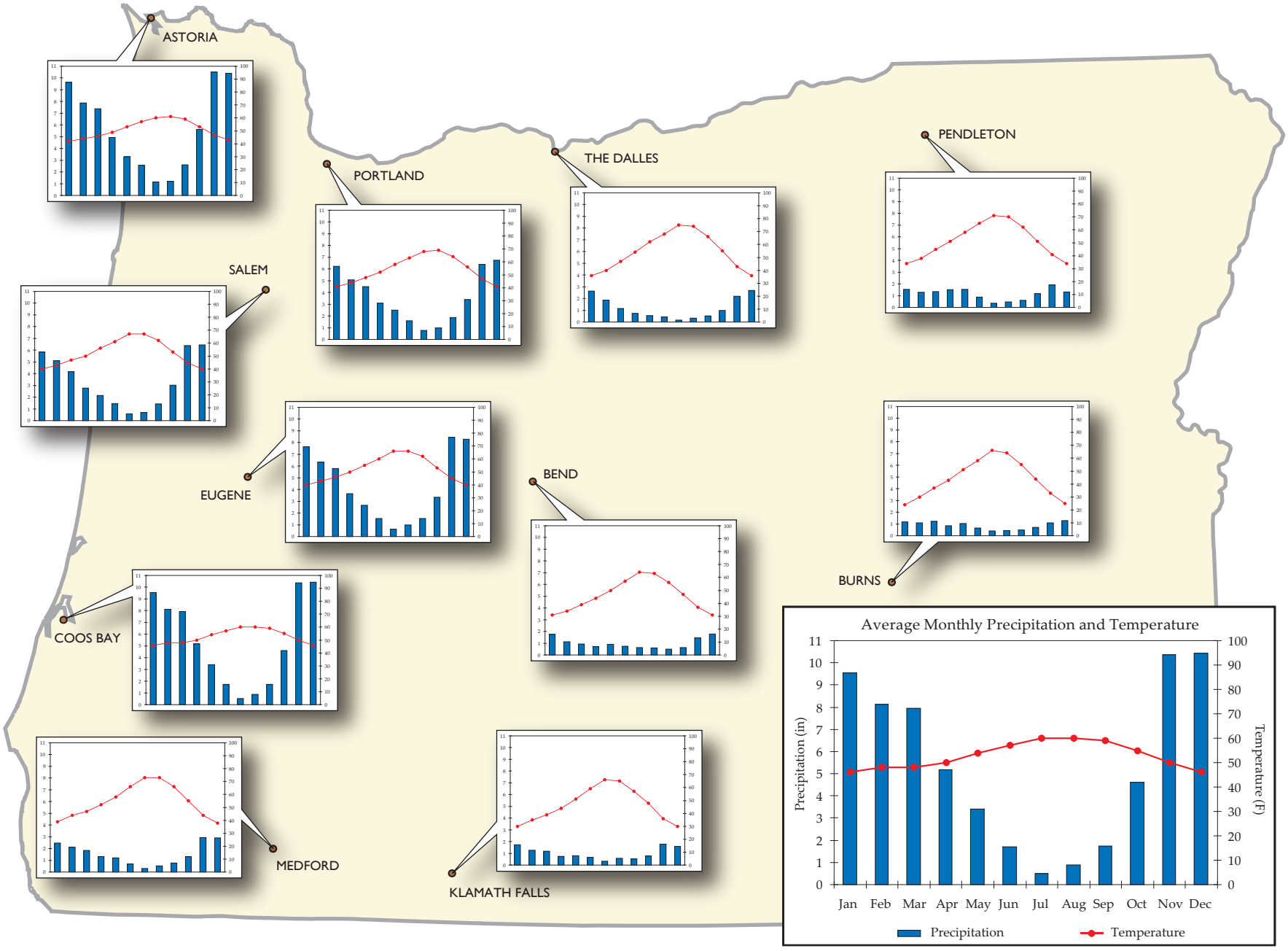
Average January Temperature



Average July Temperature



Climographs



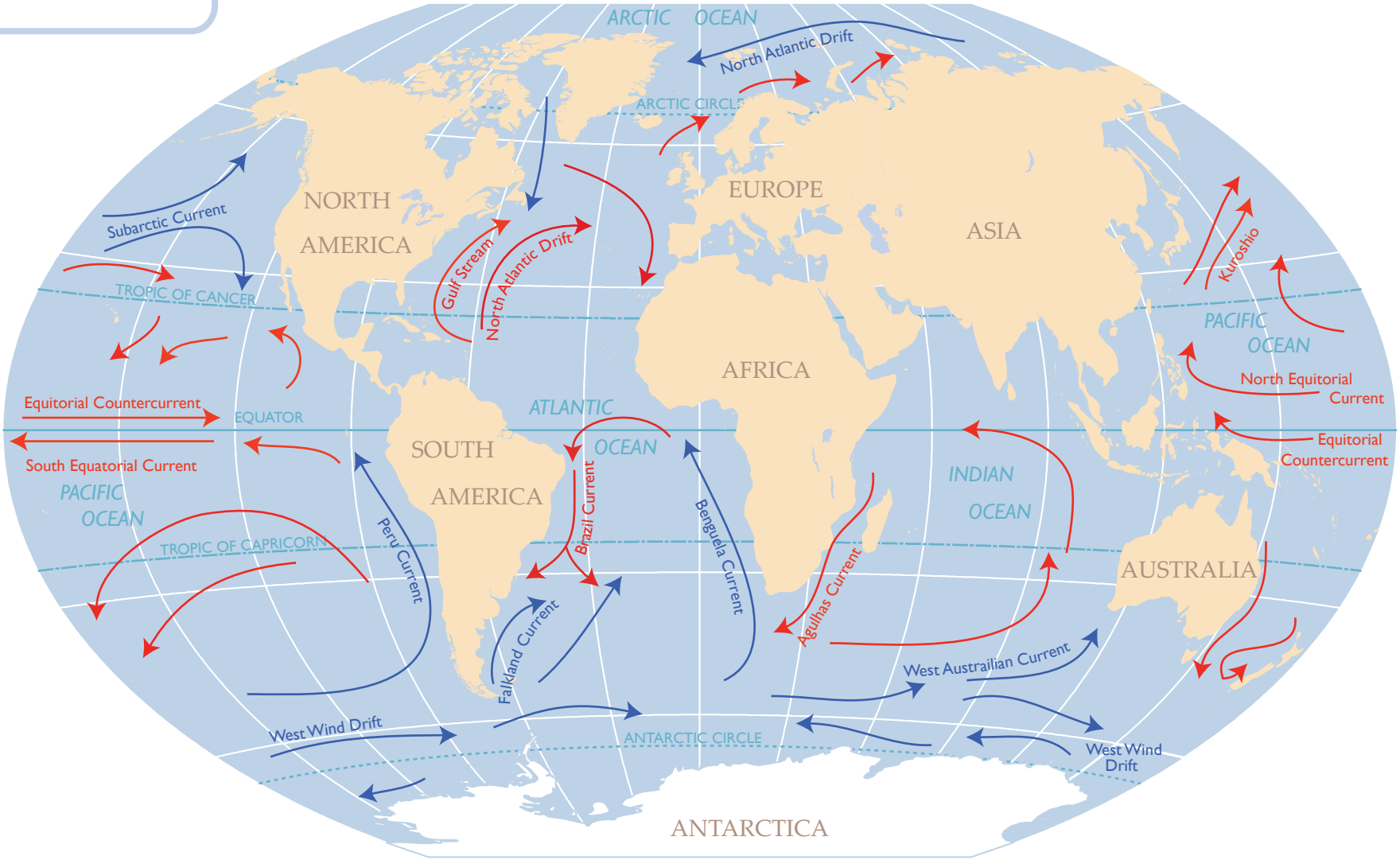
Ocean Currents

Warm Ocean Current

Cool Ocean Current

Continents influence the direction of ocean currents by changing the flow of the water. At the same time, the temperature of ocean currents influences the temperature of coastal areas, such as Oregon's coast.

Warm ocean temperatures are generated near the Equator, and then carried towards the poles where they cool before returning to the Equator. Most of the ocean currents off the coast of Oregon are cold.

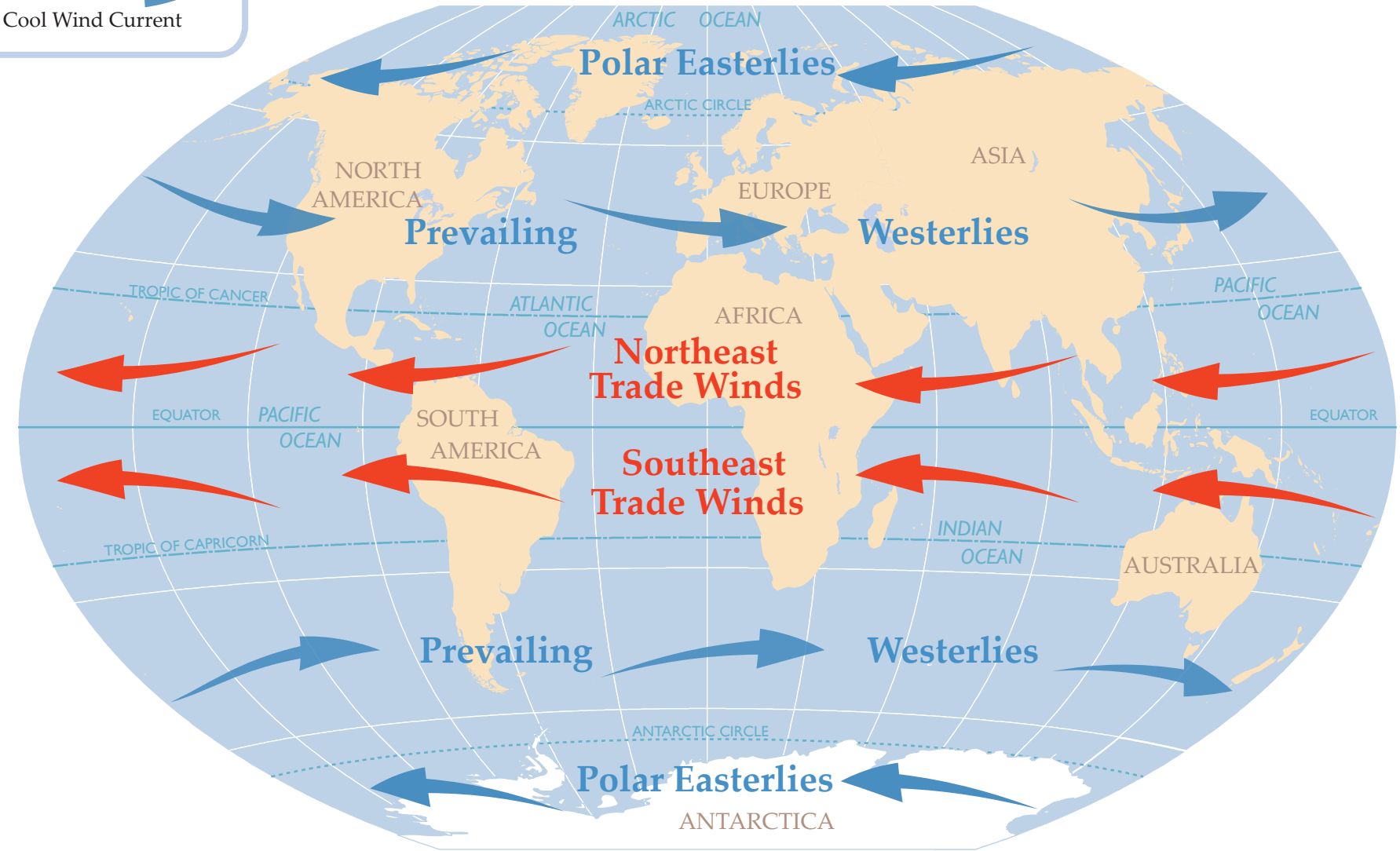


Global Wind Patterns

Warm Wind Current

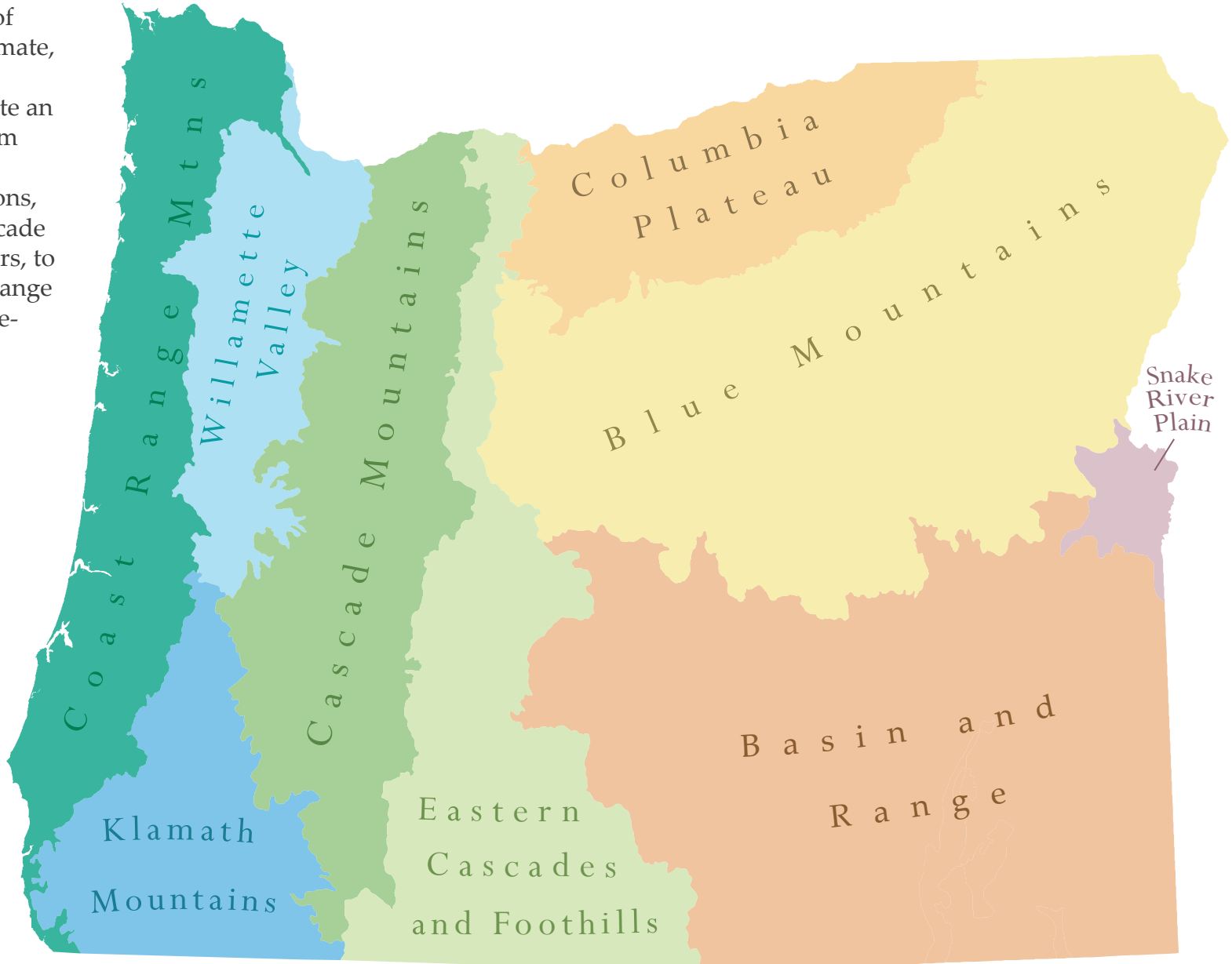
Cool Wind Current

Oregon's climate is influenced by the westerly winds that blow from the Pacific Ocean, bringing cool, moist air toward the land. The directions of the main winds influence the weather on each continent but they also had an impact on the routes of global exploration during the day of sails (such as Christopher Columbus' trips to the Americas).

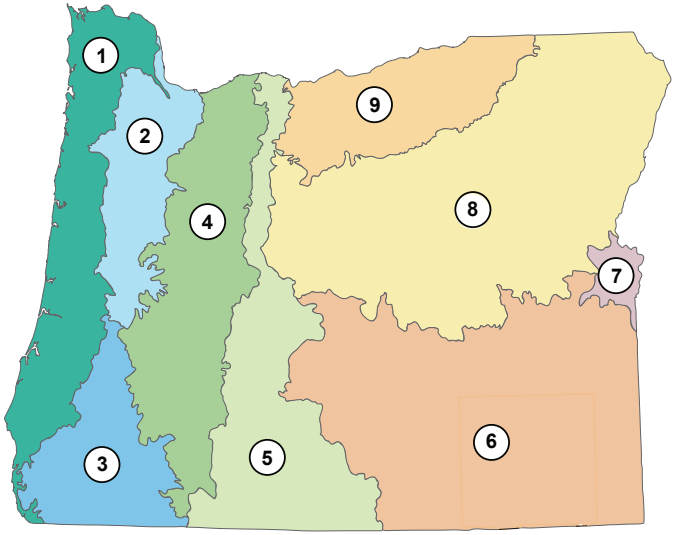


Ecoregions

An ecoregion is an area of land in which similar climate, flora (plants) and fauna (animals) interact to create an environment distinct from other areas. Oregon has several different ecoregions, from the moist, cool Cascade Range with its tall conifers, to the hot, arid Basin and Range with its junipers and sage-brush.



Ecoregions in Pictures



Coast Range

Willamette Valley

Klamath Mountains

Cascade Mountains

Eastern Cascades and Foothills

Basin and Range

Snake River Plain

Blue Mountains

Columbia Plateau

Vegetation Zones

Vegetation zones are areas with similar groups of plants.

Western Hemlock Zone – Varied groups of plants occur depending on precipitation and elevation.

Willamette Forest-Prairie Zone – Various forest, woodland, open savanna and prairie type groups of plants.

Alpine Zone – These relatively small areas are found only at the highest elevations and consist of small plants and low-lying shrubs.

Mixed Conifer and Broadleaf Forest Zone – This zone's plant groups have a mix of Oregon and Californian species.

Cascade Subalpine Forest Zone – Open meadow and forests form patterns according to elevation and snowpack.

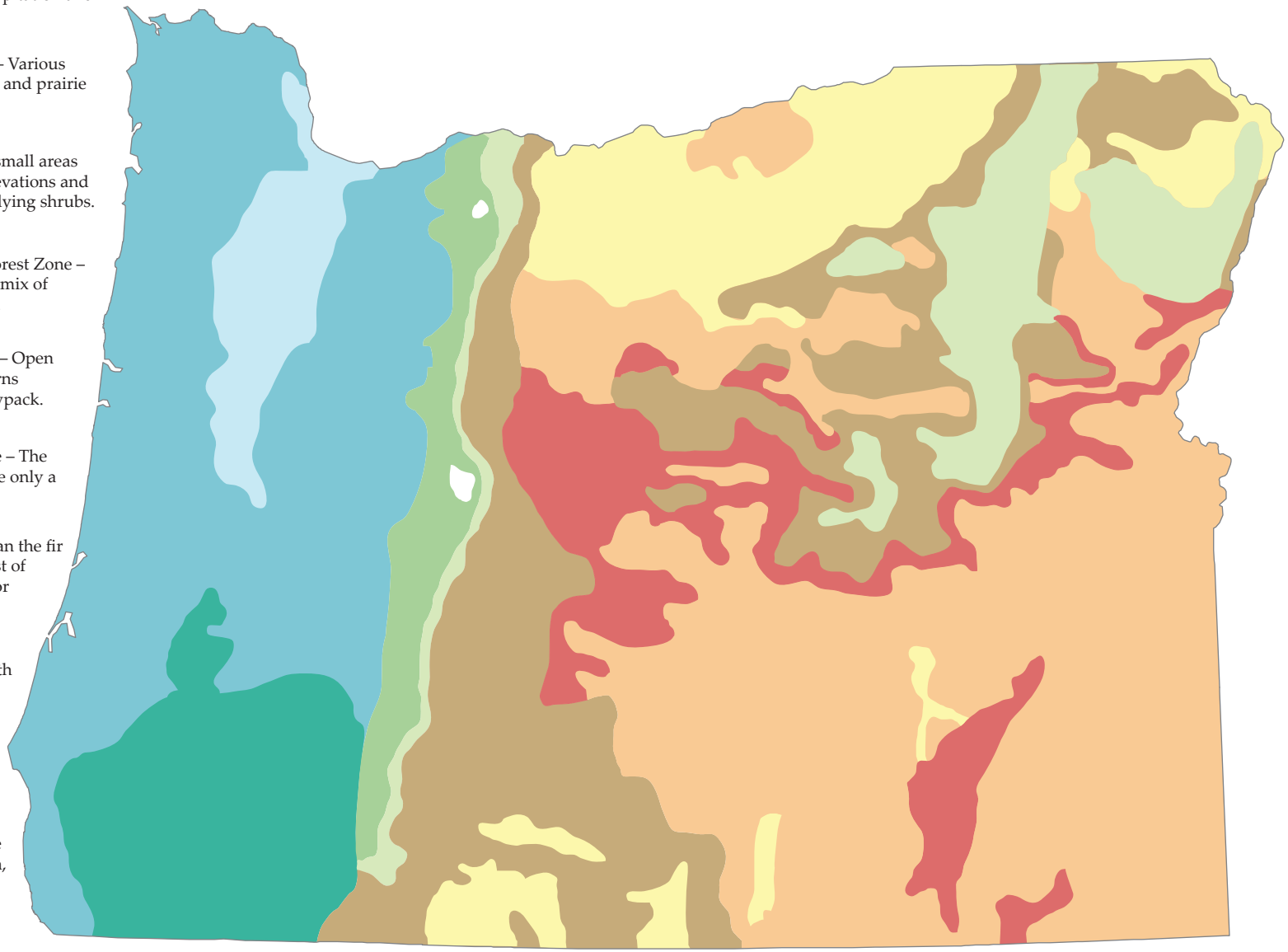
Grand Fir and Douglas Fir Zone – The plant groups in this zone require only a moderate amount of water.

Ponderosa Pine Zone – Drier than the fir zones, these plant groups consist of Ponderosas with woody shrub or grassland.

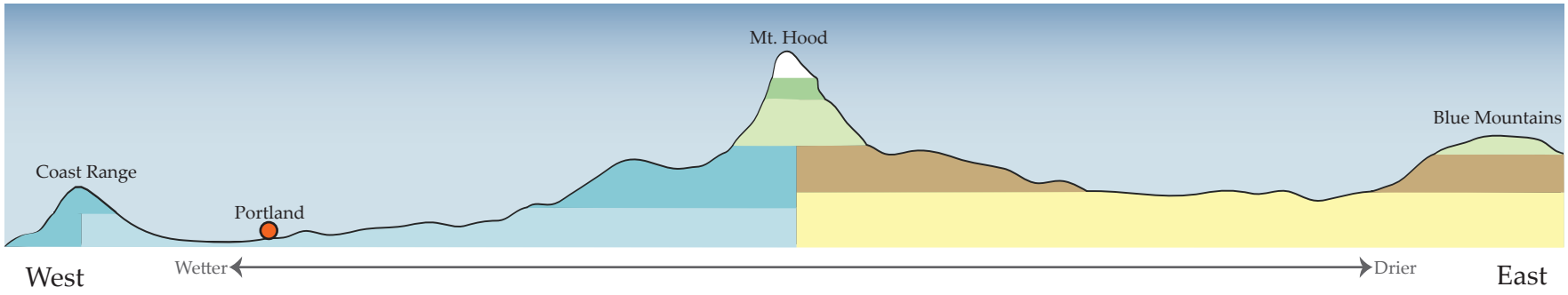
Grasslands Zone – These areas have grassland plant groups with almost no trees or shrubs.

Western Juniper Zone – These open woodlands have Juniper trees with desert shrubs or sagebrush plant groups.

Big Sagebrush Zone – This large zone is dominated by sagebrush, with some other shrubs and grasses .



Vegetation Zones: Elevation Cross-Section



Sitka Spruce Zone

Conifer: Common Name, *Coniferous*
Leafy Tree: Common Name, *Trt leafi*
Plant Species: Common Name, *Plant*
Grasses: Common Name, *Grassy M*

Willamette Forest-Prairie Zone

Western Hemlock Zone

Grand Fir and Douglas Fir Zone

Cascade Subalpine Forest Zone

Alpine Zone

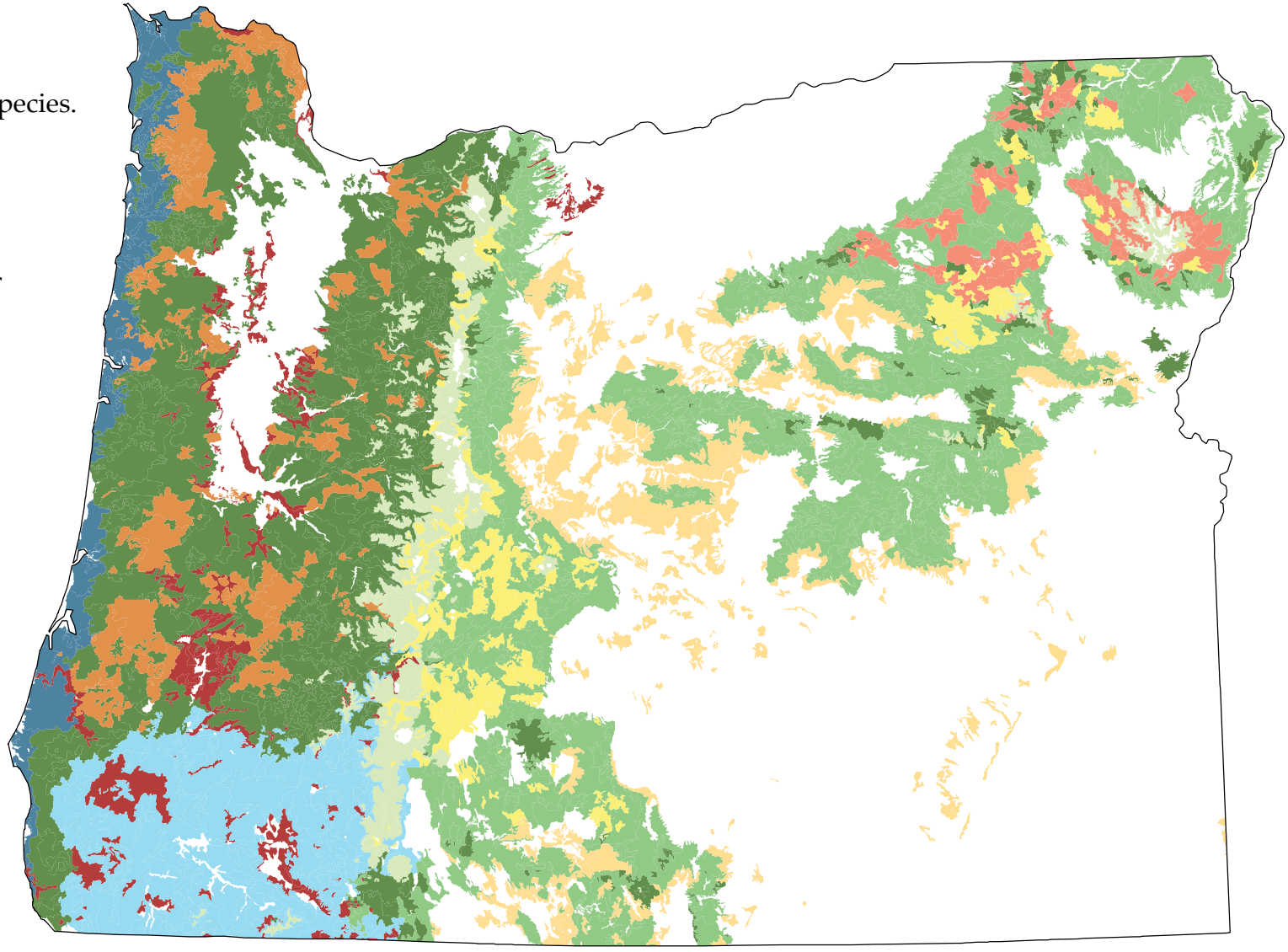
Ponderosa Pine Zone

Grassland Zone

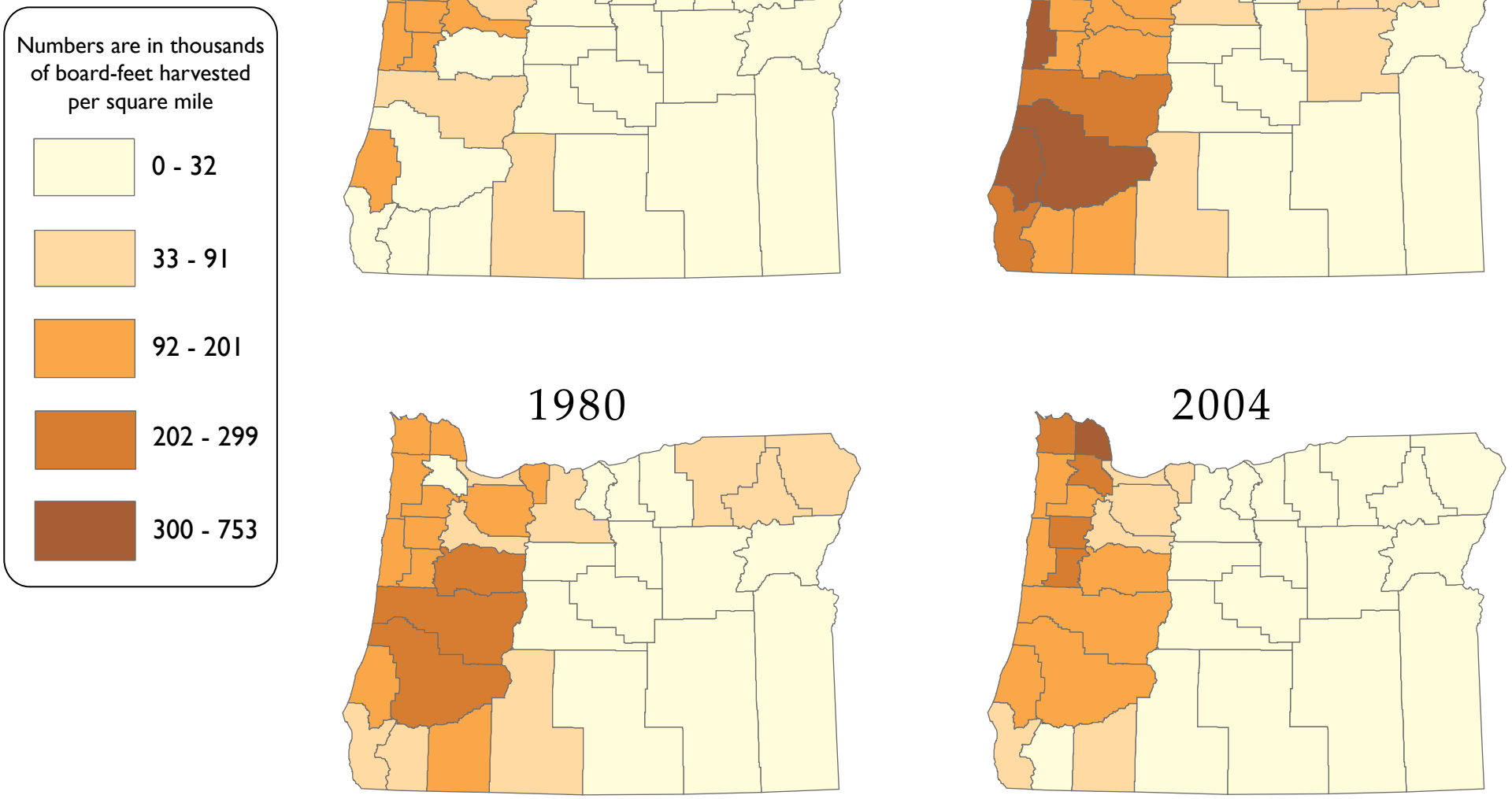
Forests

Oregon's forest zones are defined by the main type of tree species found in each zone. Most areas are dominated by one species, but other areas have relatively equal portions of more than one species.

- Douglas Fir
- Sitka Spruce
- Klamath Mixed Conifer
- Mixed Conifer
- Hardwoods
- Subalpine Fir
- Ponderosa Pine
- Lodgepole Pine
- Western Larch
- Western Juniper



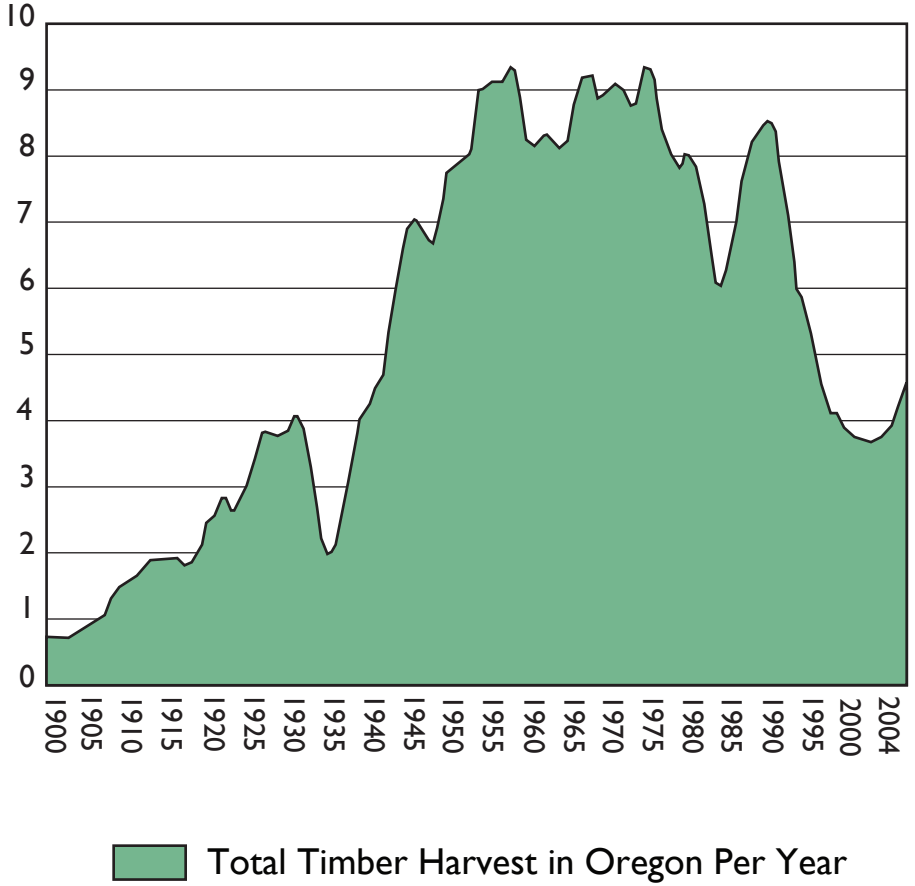
Timber Harvest Over Time



Timber Resources

Total Harvest for 1900 - 2004

(in billion board-feet)



What exactly are "Board-Feet?"

"Board-feet" is a measurement of timber that people use to describe how much useable lumber can be obtained from a cut tree. One board-foot is equal to a 12-inch by 12-inch by 1-inch piece of wood.

One mature Douglas Fir tree is equal to approximately 187.5 board-feet. This assumes that it is cut after 75 years of growth and that it grew in a healthy stand that had no more than 400 trees in each acre.

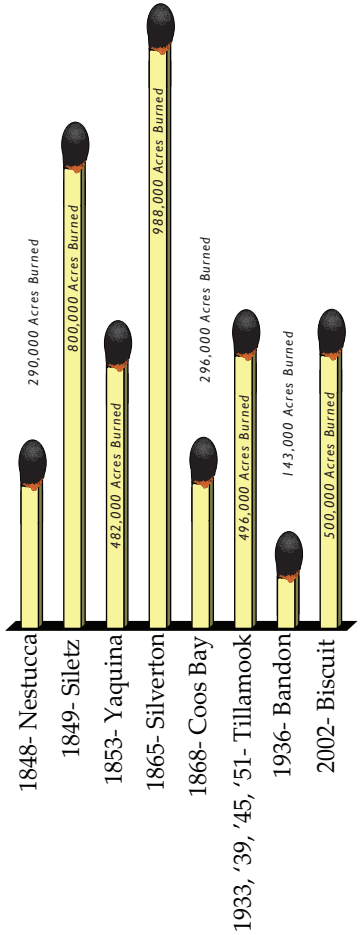
One average 2000 square-foot house takes approximately 20,000 board-feet of lumber to build. The cabinets usually add an additional 3,000 board-feet.

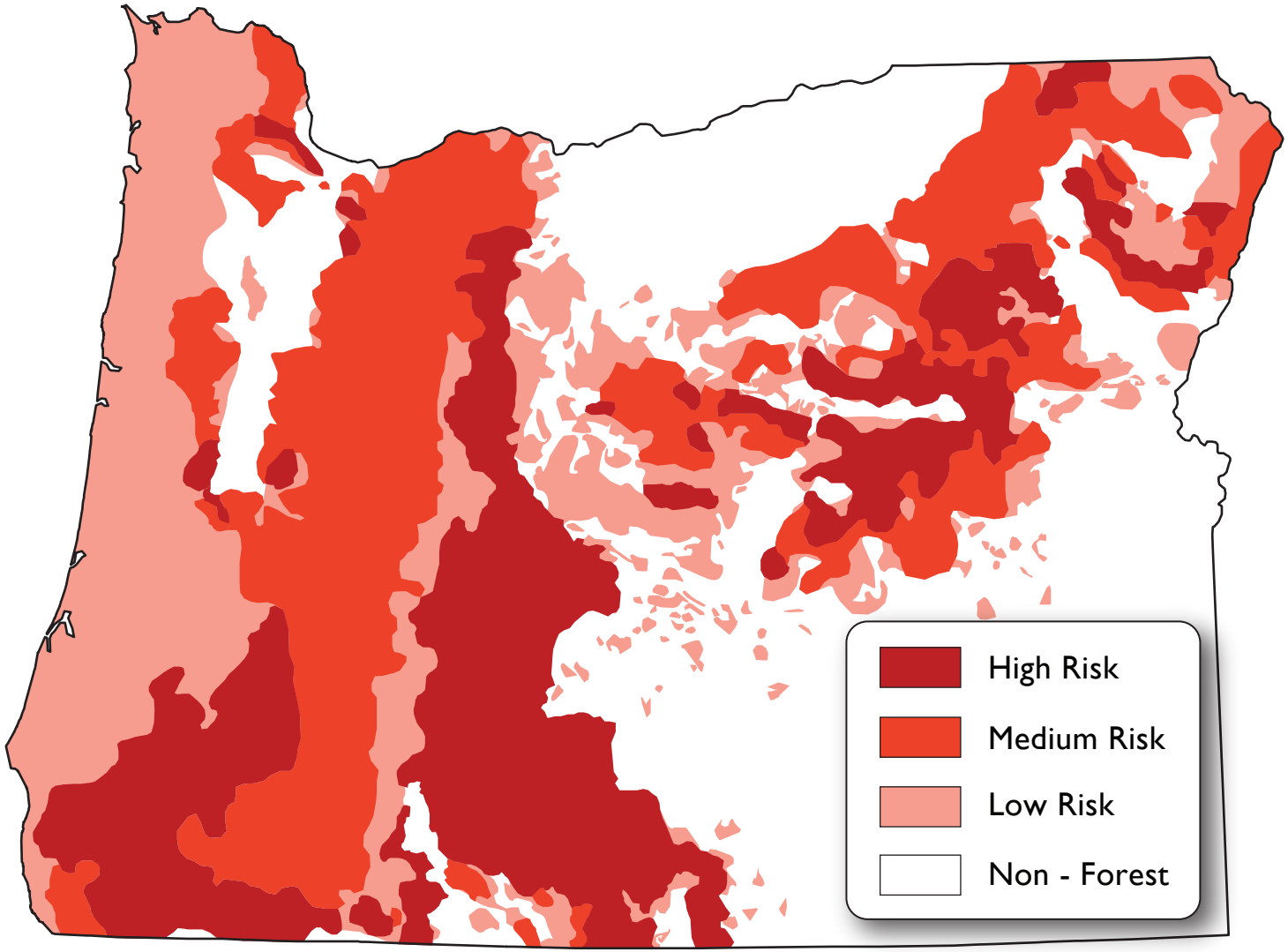
Aerial photo,
South of Vernonia, OR

What does a timber harvest look like from above?

Forest Fire Risk

Historic Fires

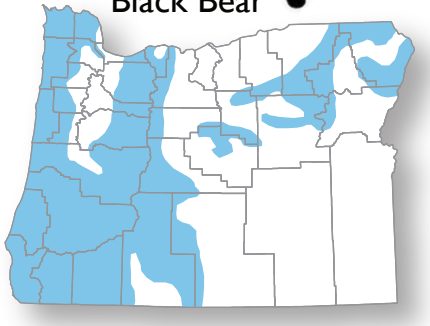




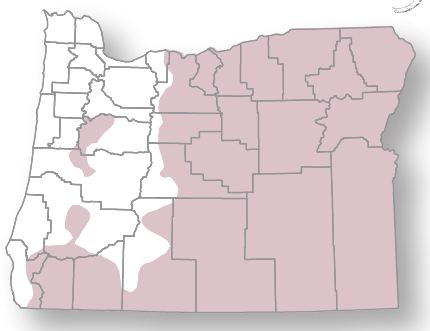
Wildlife Distribution

These maps show the distribution, or range, of some of Oregon's wildlife species. The distribution shows where each animal can be found but the number of animals found in each area depends on the abundance of food, predators, and other habitat conditions.

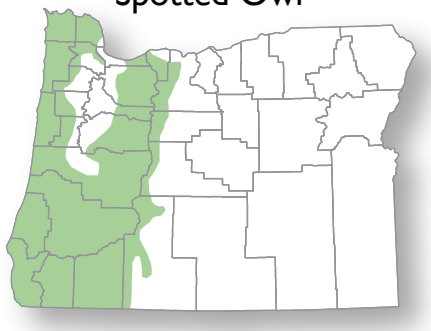
Black Bear



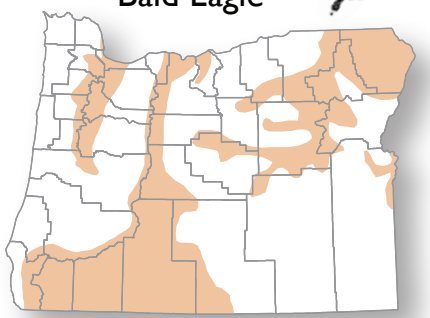
Western Rattlesnake



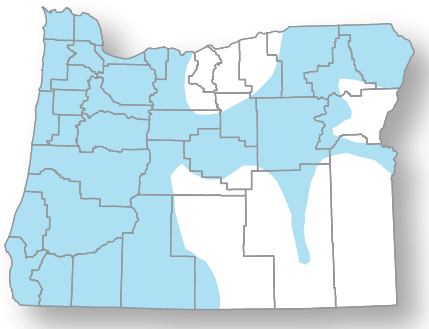
Spotted Owl



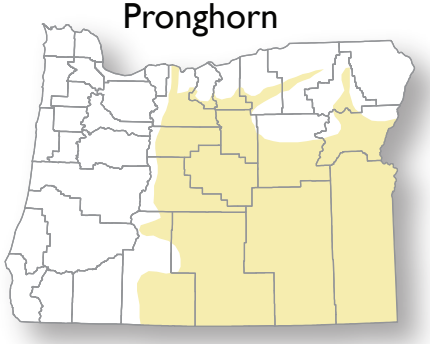
Bald Eagle



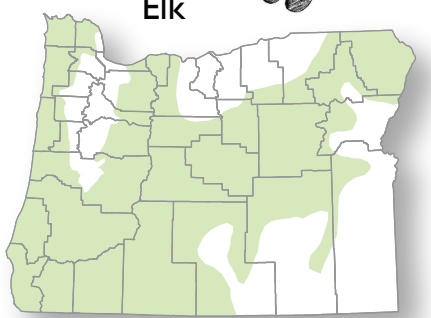
American Beaver



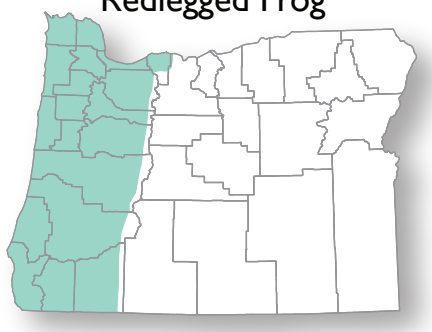
Pronghorn



Elk



Redlegged Frog



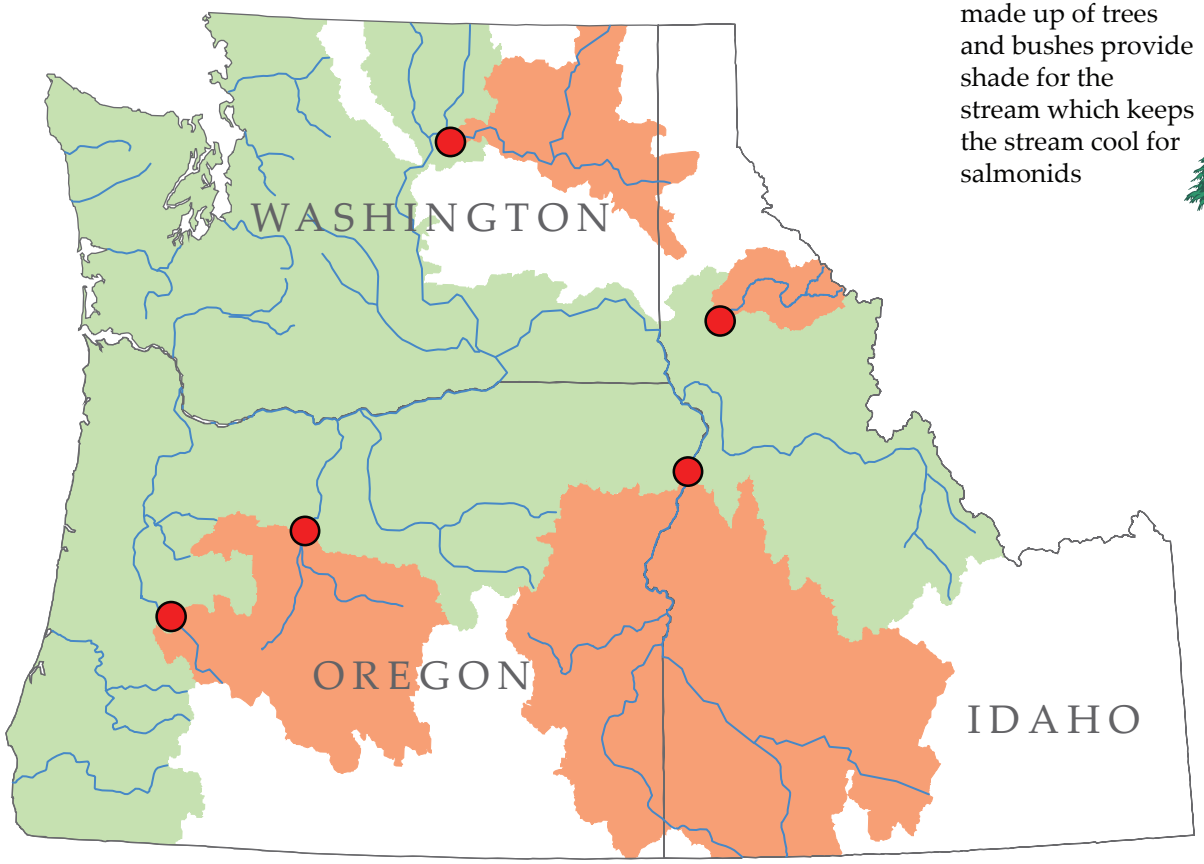
Pacific Migratory Bird Routes

The Pacific Flyway

Many birds migrate during the year, sometimes traveling thousands of miles to breeding and feeding grounds.

They migrate in "flyways" where there is adequate food and water for them to rest before continuing their journeys. Because of its rivers, lakes and wetlands, Oregon is home to several flyways and breeding grounds. Wildlife refuges have been established to protect the areas where birds breed and rest during their migrations.

Pacific Coast Salmon



Historic Salmon Range

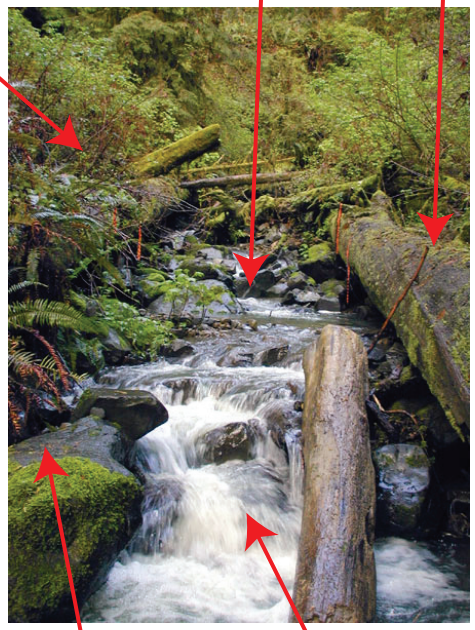
Present-Day Salmon Range

Major Dams

Riparian areas made up of trees and bushes provide shade for the stream which keeps the stream cool for salmonids

Boulders and cobbles provide **habitat** for insects like stoneflies and mayflies

Trees that fall into the stream provide **shelter** from predators

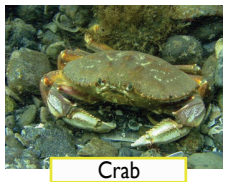


Fallen leaves and branches supply the stream with **nutrients**

Turbulent water creates **dissolved oxygen** for salmon

Fish and Hatcheries


Shrimp

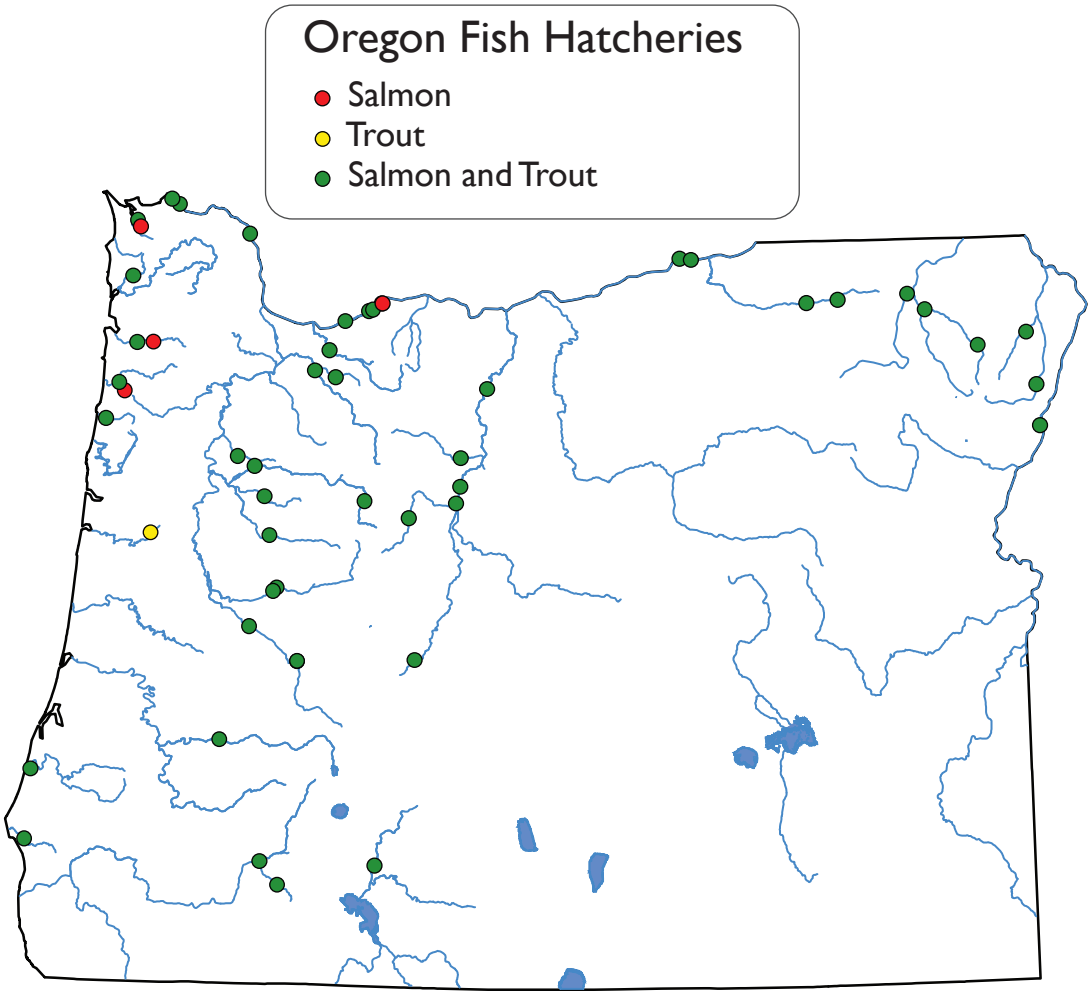

Crab

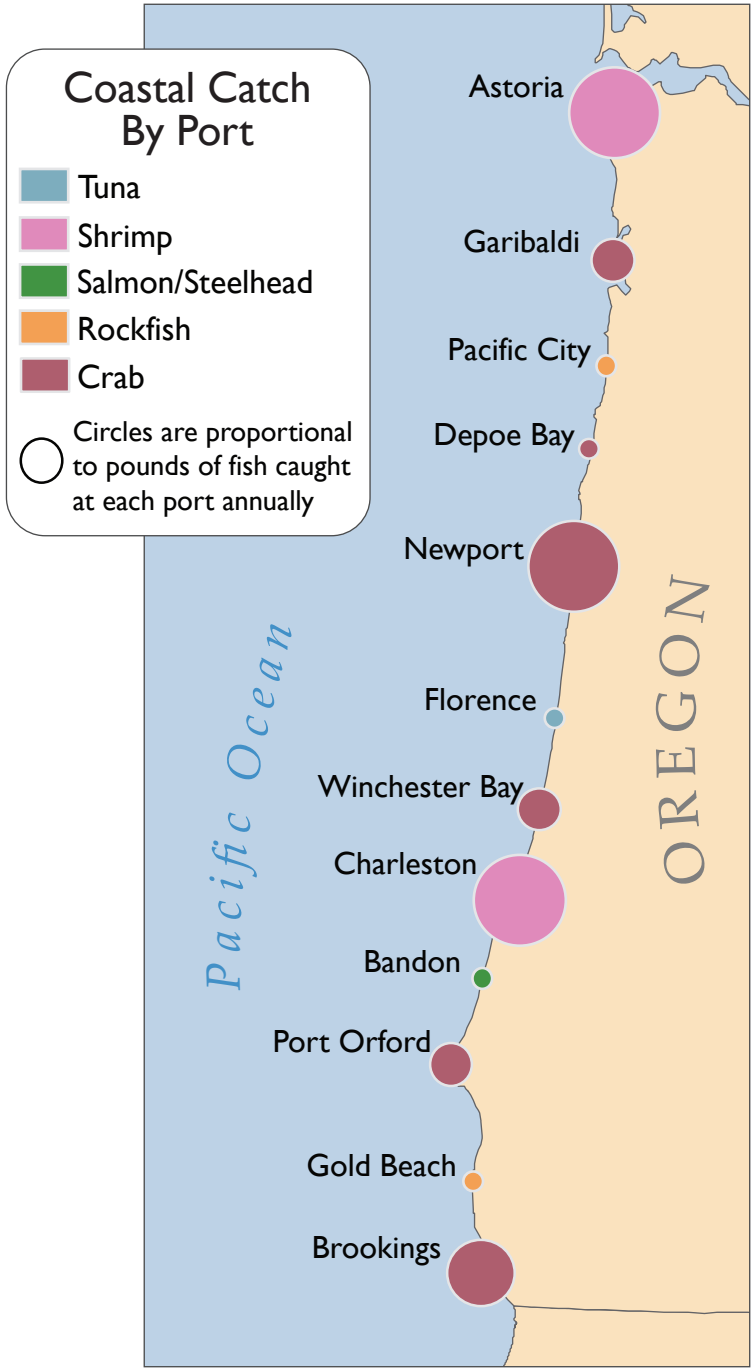

Pacific Whiting


Sole

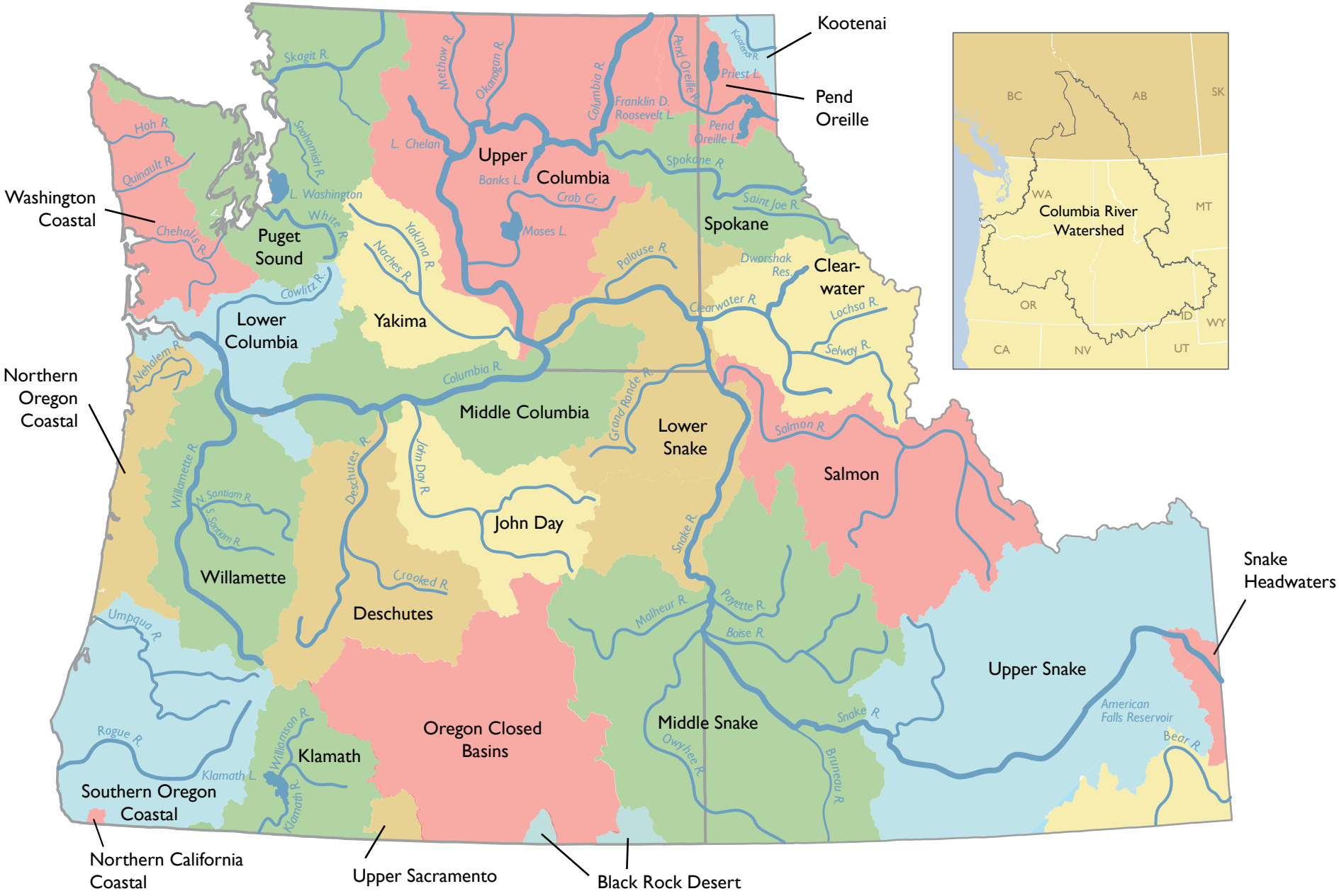

Rockfish

Total catch: Top five fish and shellfish

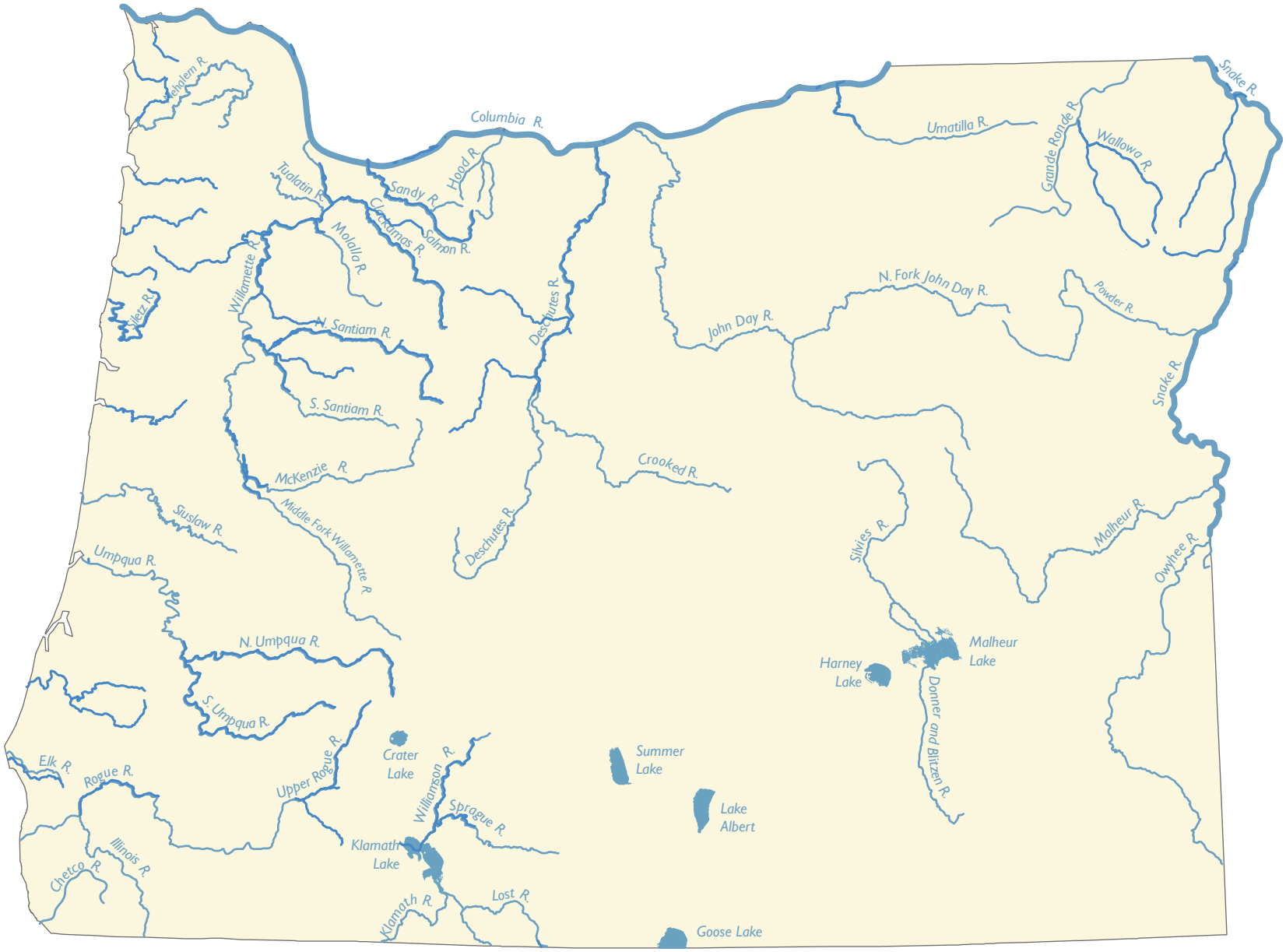




Pacific Northwest Watersheds



Rivers and Lakes



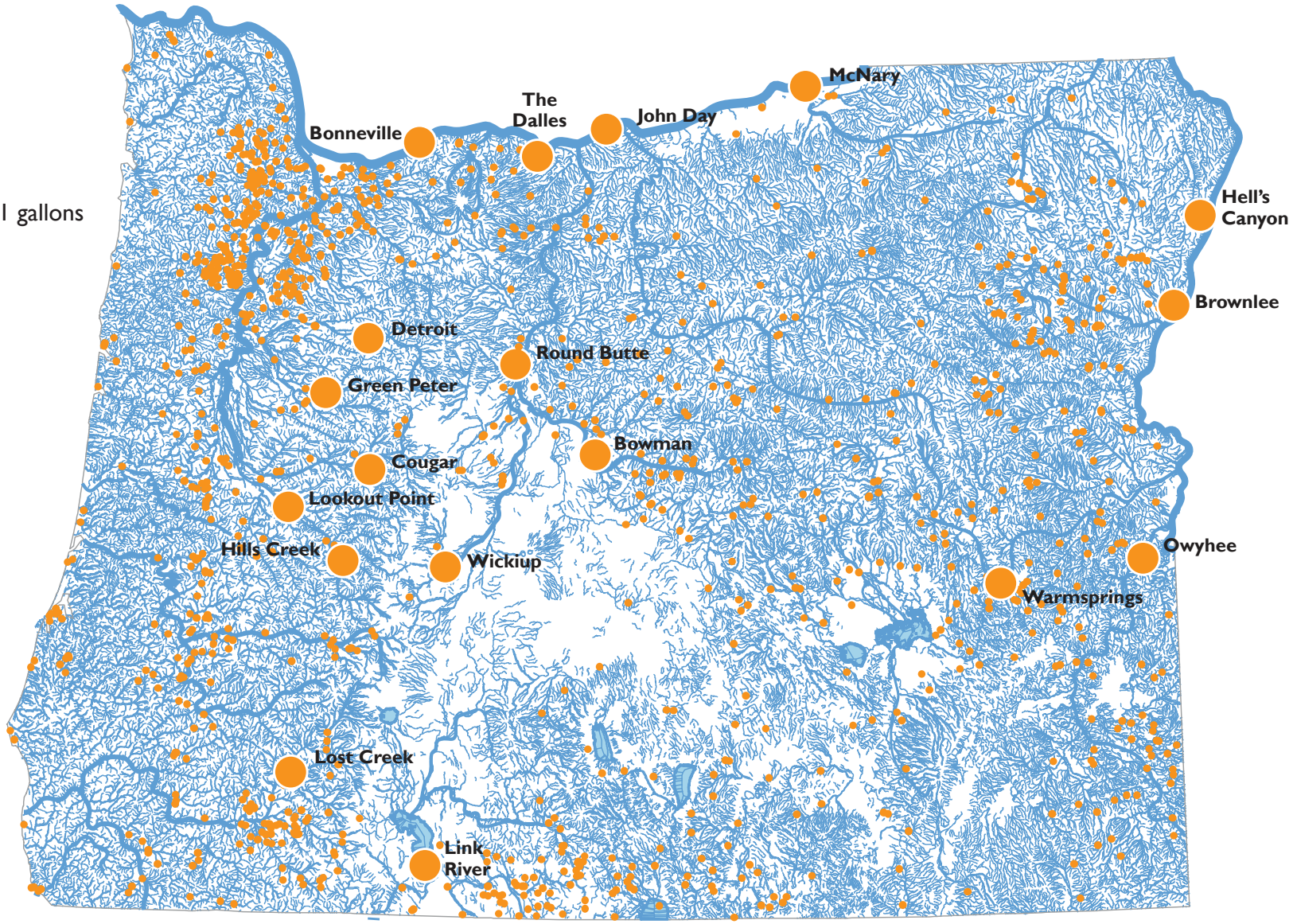
Dams of the Pacific Northwest

Grand Coulee Dam

Oregon Dams

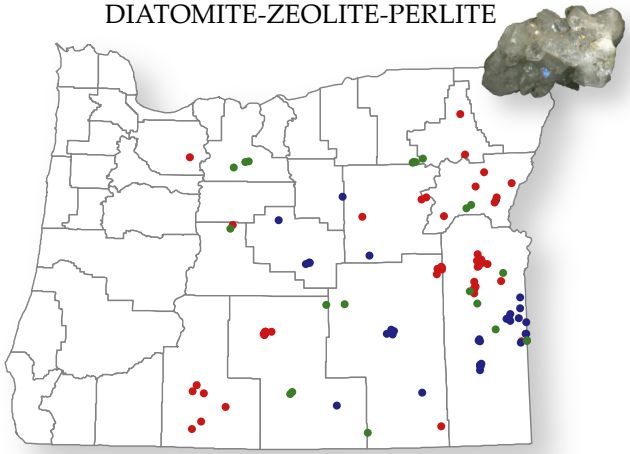
- Dam
- Dams with the largest reservoirs (Holding more than 155, 000 acre-feet)

One acre-foot = 325,851 gallons



Mineral Deposits (actively mined)

DIATOMITE-ZEOLITE-PERLITE



ONE DOT = ONE MINE

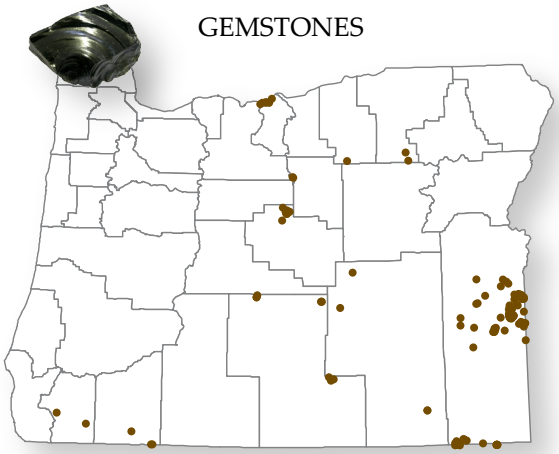
- zeolite
- diatomite
- perlite

Diatomite is a soft chalk-like rock that is crushed and used in insecticides, cat litter, and dynamite.

Zeolite is formed when volcanic rocks and ash react with water. It is crushed and dried to use in concrete.

Perlite is a light volcanic glass that has a high water content and expands when heated. It is used in construction, plaster, insulation, and horticulture.

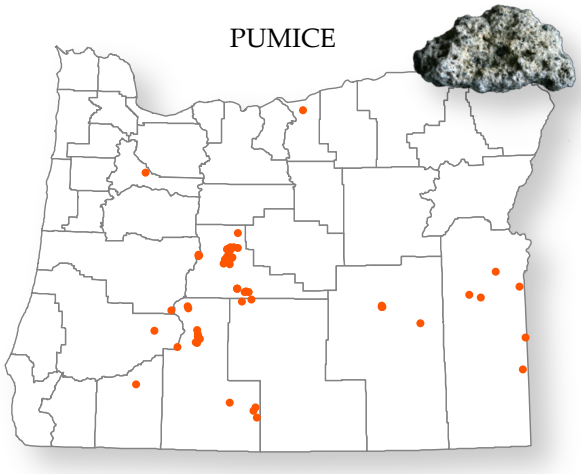
GEMSTONES



ONE DOT = ONE MINE

Gemstones are precious and semi-precious minerals used to make jewelry.

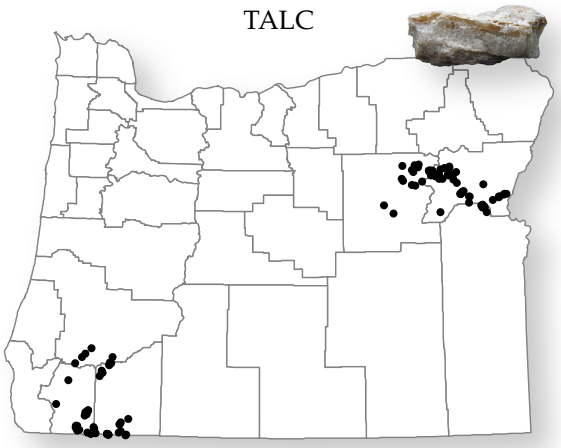
PUMICE



ONE DOT = ONE MINE

Pumice is a light, porous volcanic rock that looks like a sponge. It is used in pencil erasers, cosmetics, and to produce stone-washed jeans.

TALC

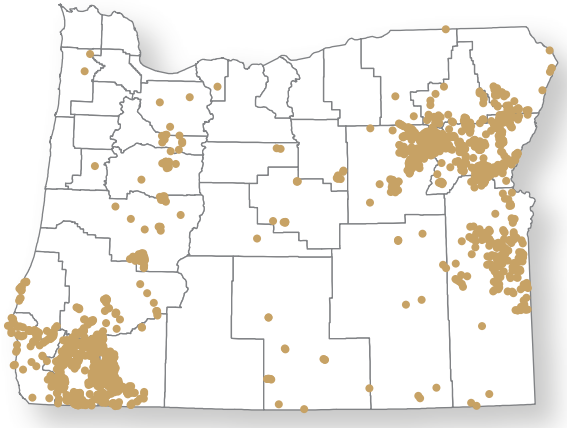


ONE DOT = ONE MINE

Talc is green, grey, or white, and is an important industrial mineral used for counter tops and in making paints, ceramics, and paper.

Mineral Deposits (not actively mined)

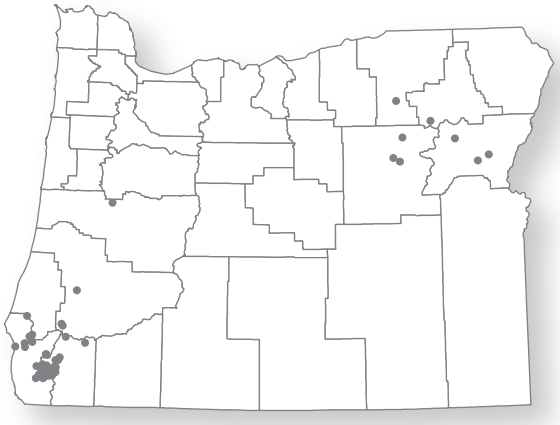
GOLD



ONE DOT = ONE MINE

Gold can be mined from hard rock and from river gravels and beach sands and is used in jewelery, electrical conductors, and dentisty.

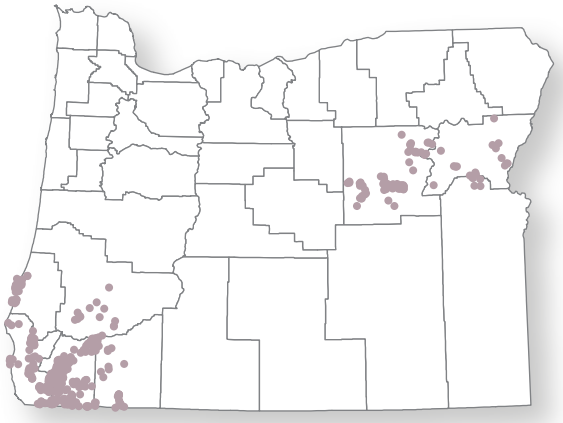
NICKEL



ONE DOT = ONE MINE

Nickel is a silvery white metal used in stainless steel, cast iron, magnets, and coins.

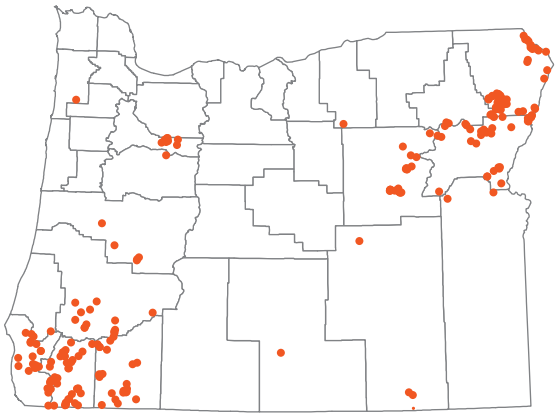
CHROMIUM



ONE DOT = ONE MINE

Chromium is a steel-gray, shiny, hard metal used in stainless steel and in dyes and paints.

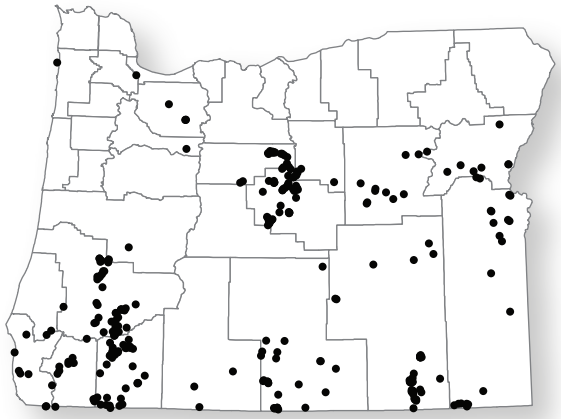
COPPER



ONE DOT = ONE MINE

Copper is a reddish metal used in electrical wiring and pipes.

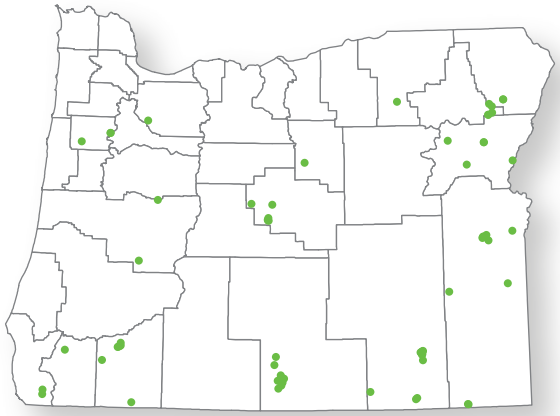
MERCURY



ONE DOT = ONE MINE

Mercury is a toxic silvery metal (also known as quicksilver) and is liquid at room temperature. It is used in thermometers, barometers, and neon lights.

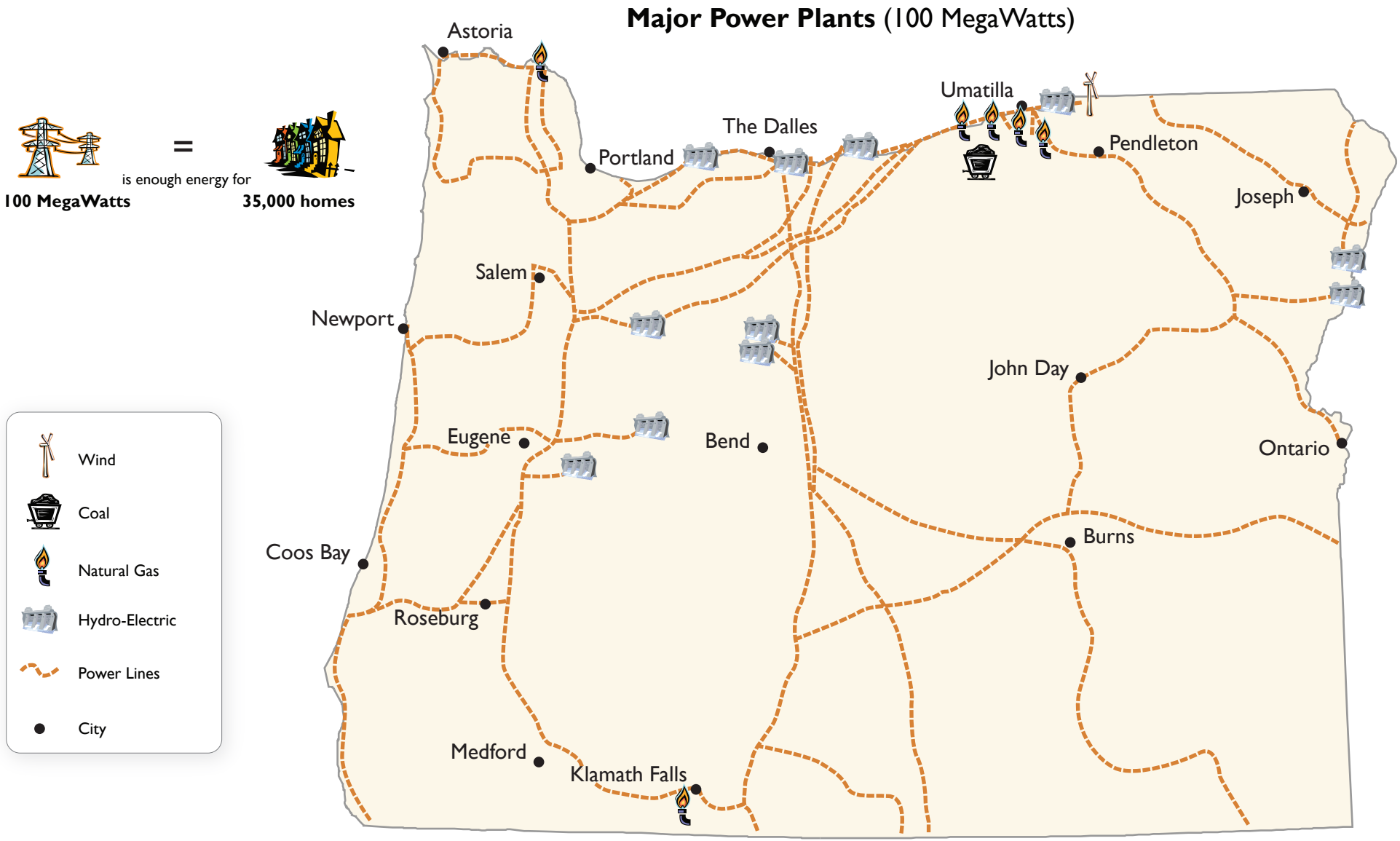
URANIUM



ONE DOT = ONE MINE

Uranium is a dense element that is silvery in color and radioactive. It is used for nuclear energy and military weapons.

Energy Production



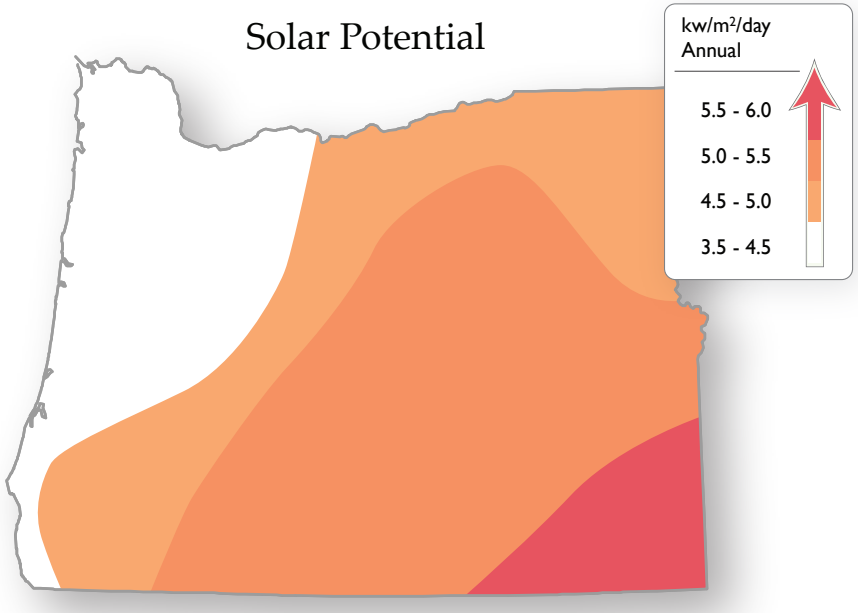
Renewable Energy Potential

Solar energy is measured in kilowatts (kw) per square meter (m^2) per day ($kw/m^2/day$)

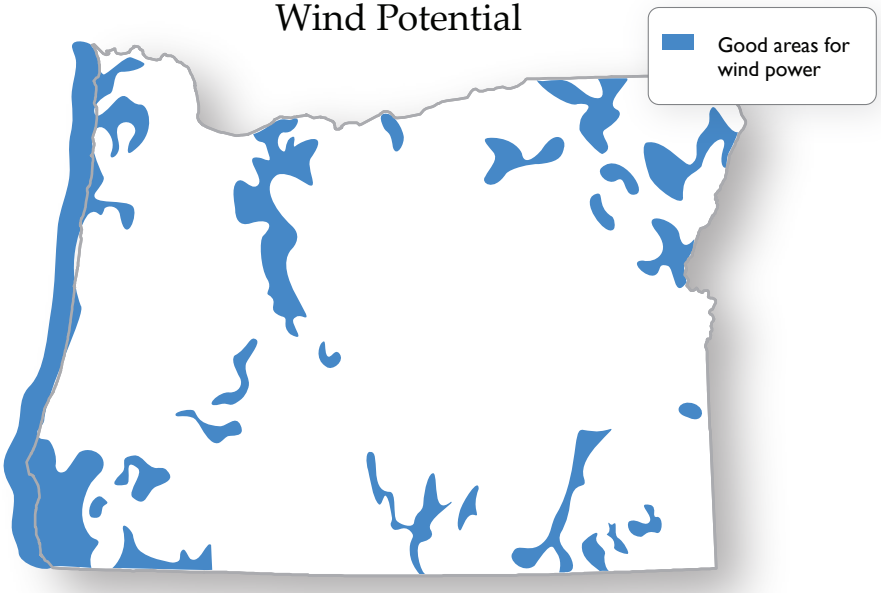
Geothermal energy is measured by the amount of heat energy produced by the earth in an area (average thermal conductivity watts/meter-Kelvin)

Wind potential is generally found in areas that have moderately strong and consistent winds

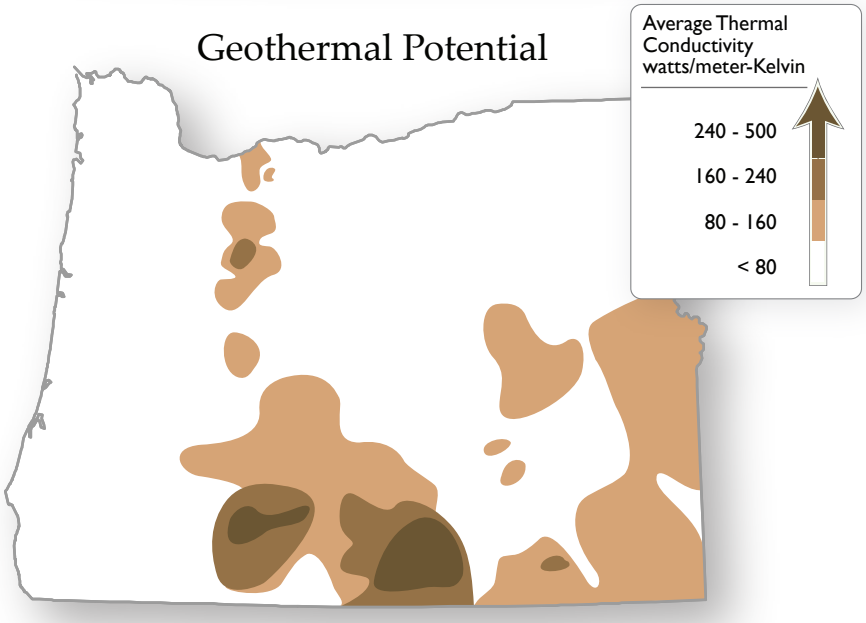
Solar Potential



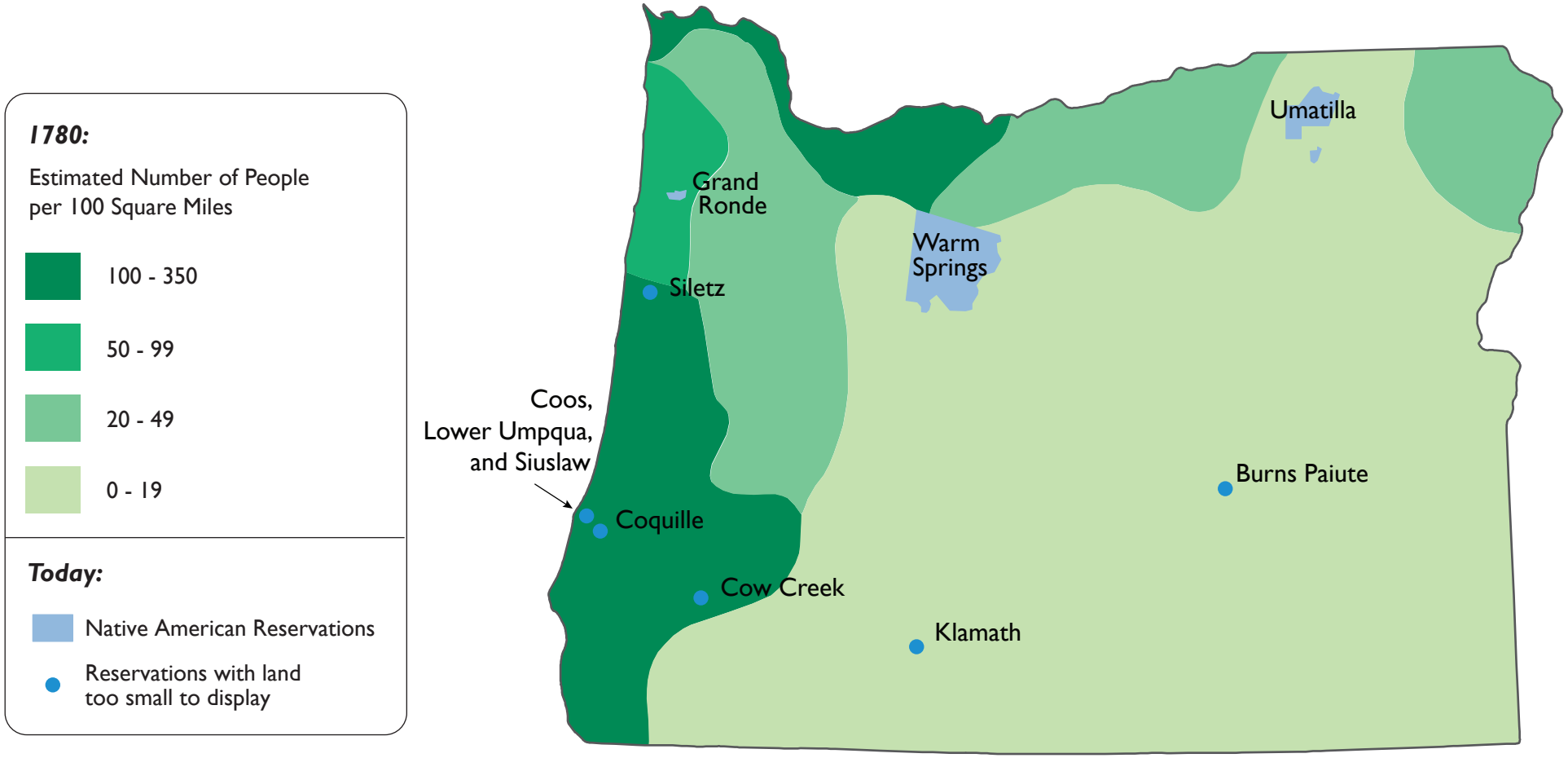
Wind Potential



Geothermal Potential



Native Americans: 1780 Population



In 1780, before the expedition of Lewis and Clark, there were many Native American tribes across Oregon, including the Chinook, Kalapooia, and Molalla. They lived mainly along the coast and in the Willamette River and lower Columbia River. In the mid-1800s, the 49th parallel was set as the International Border, gold was discovered in California, and the Oregon Trail was opened up. Settlers from eastern states began to pour in to the west. Fighting and European diseases such as smallpox killed many Native Americans. Some tribes were wiped out of existence. The remaining tribes were placed on reservations. Oregon has three main reservations- Warm Springs, Umatilla, and Grand Ronde - and a few smaller ones like Cow Creek and Siletz. Today, however, many Native Americans live off the reservations in cities and rural areas throughout the state.

Native American Tribes and Language Groups

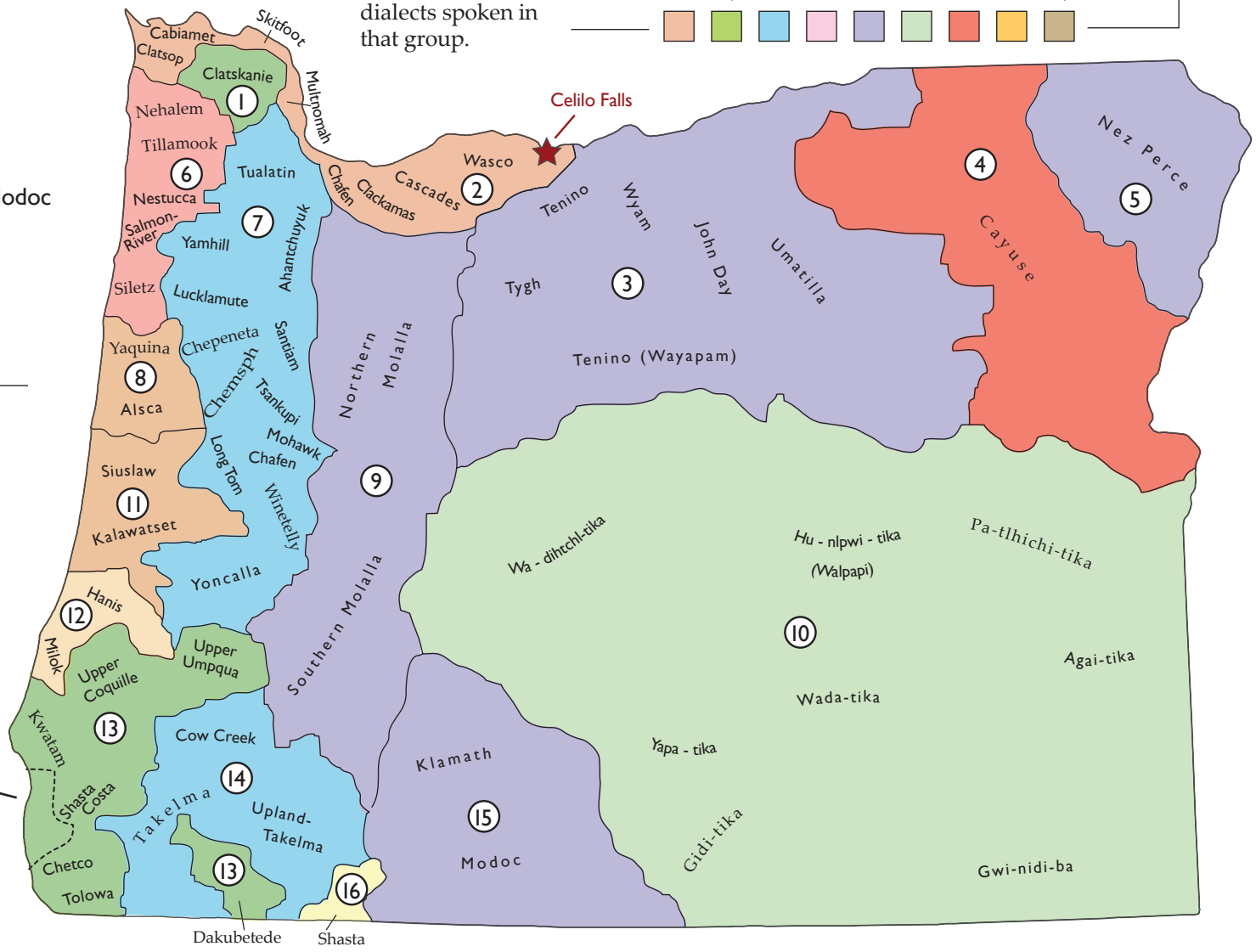
Tribes

1. Clatskanie
2. Chinook
3. Sahaptin
4. Cayuse
5. Nez Perce
6. Tillamook
7. Kalapuya
8. Alsea
9. Molalla
10. Northern Paiute
11. Sluslaw
12. Coos
13. Tututni
14. Takelma
15. Klamath/Modoc
16. Shasta

Language

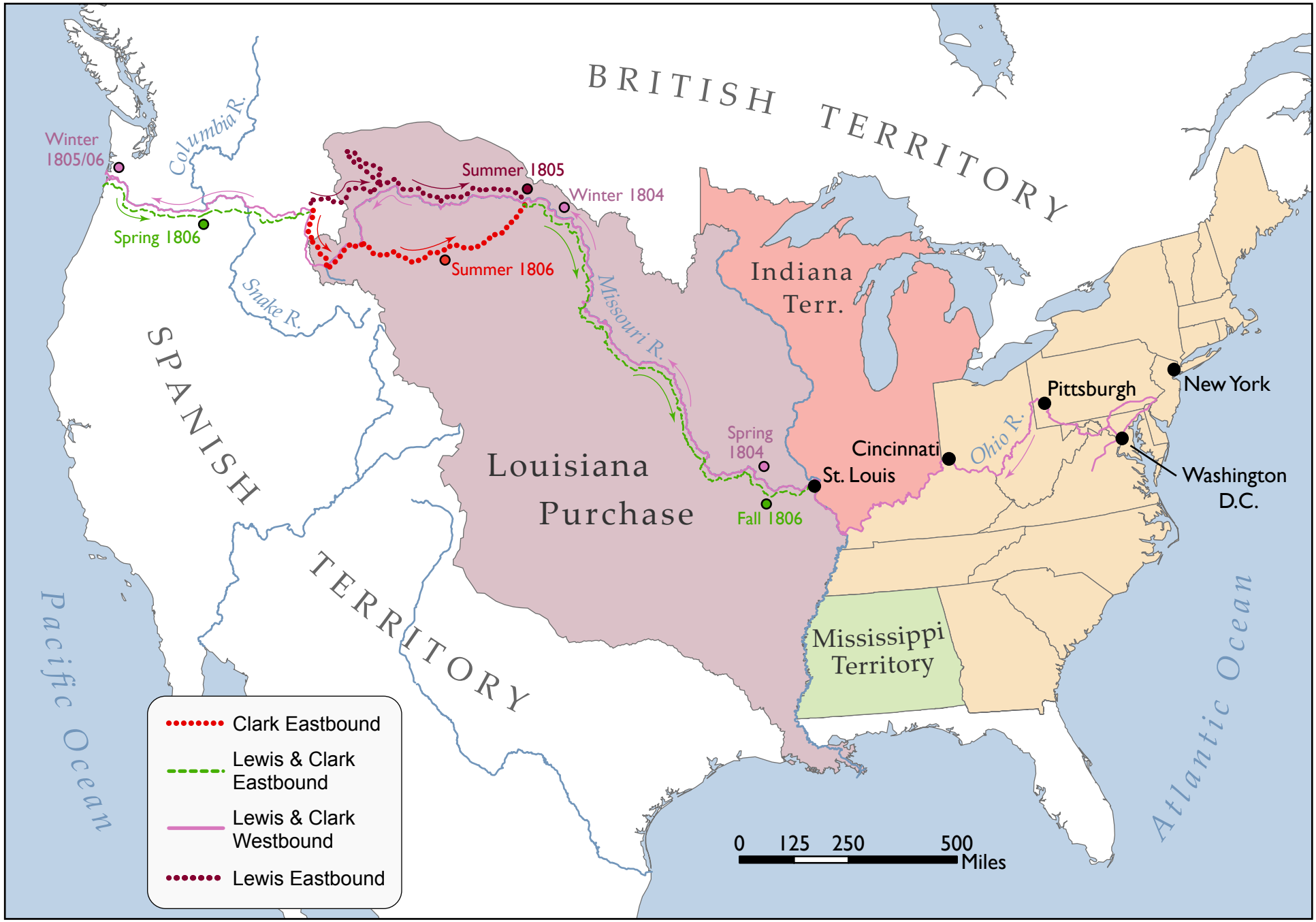
The color represents language groups. The names represent the dialects spoken in that group.

Penutian
Athabascan
Takelman-Kalapuyan
Salish
Plateau Penutian
Uto-Aztecan
Cayuse
Hokan
Alsea & Siuslaw



This area inhabited by speakers of: Yukichetunne, Tutuni, Mikonotunne, Cheme-tunne,Chetleshin, Kwaishtunnetunne

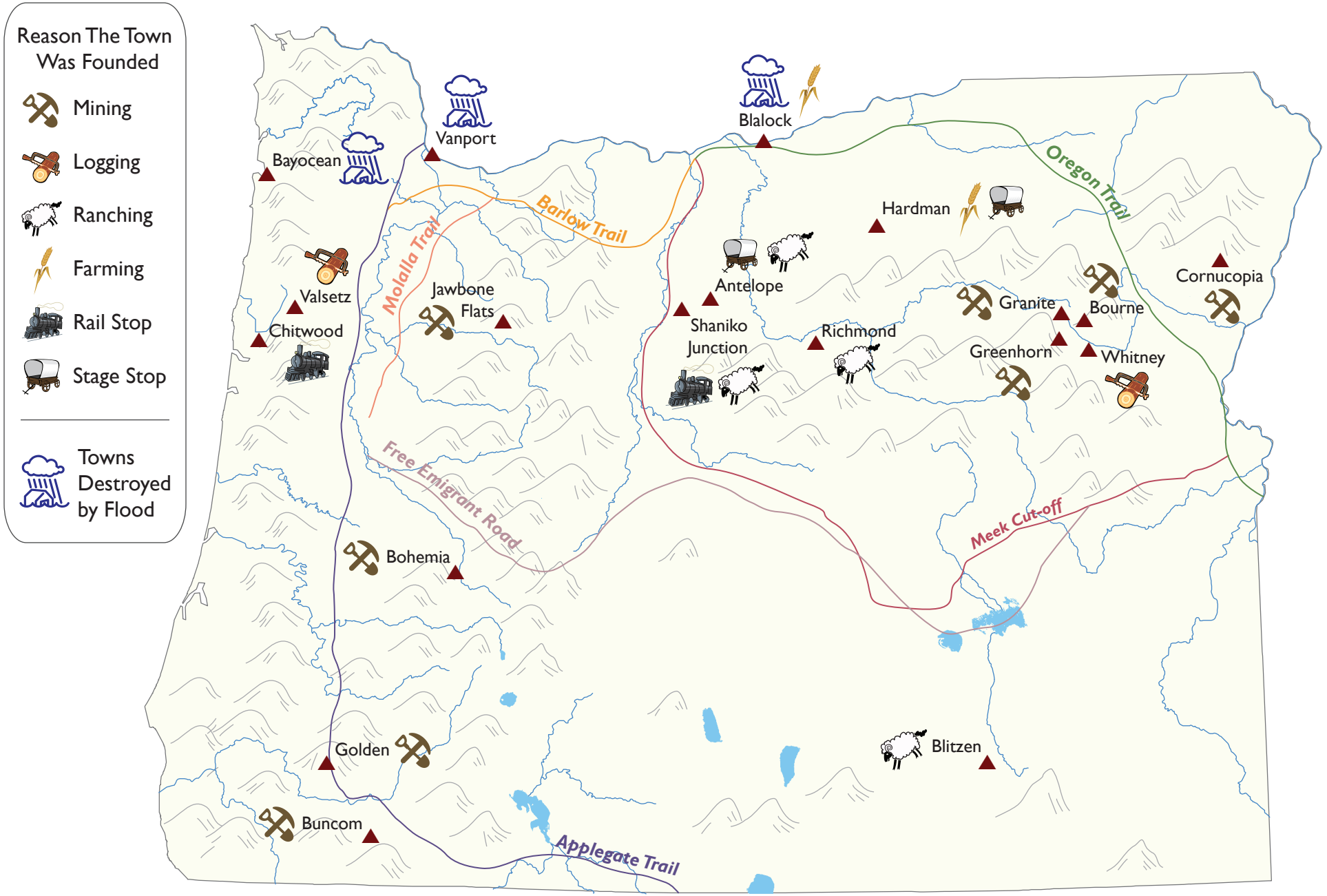
The Lewis and Clark Expedition, 1804-1806



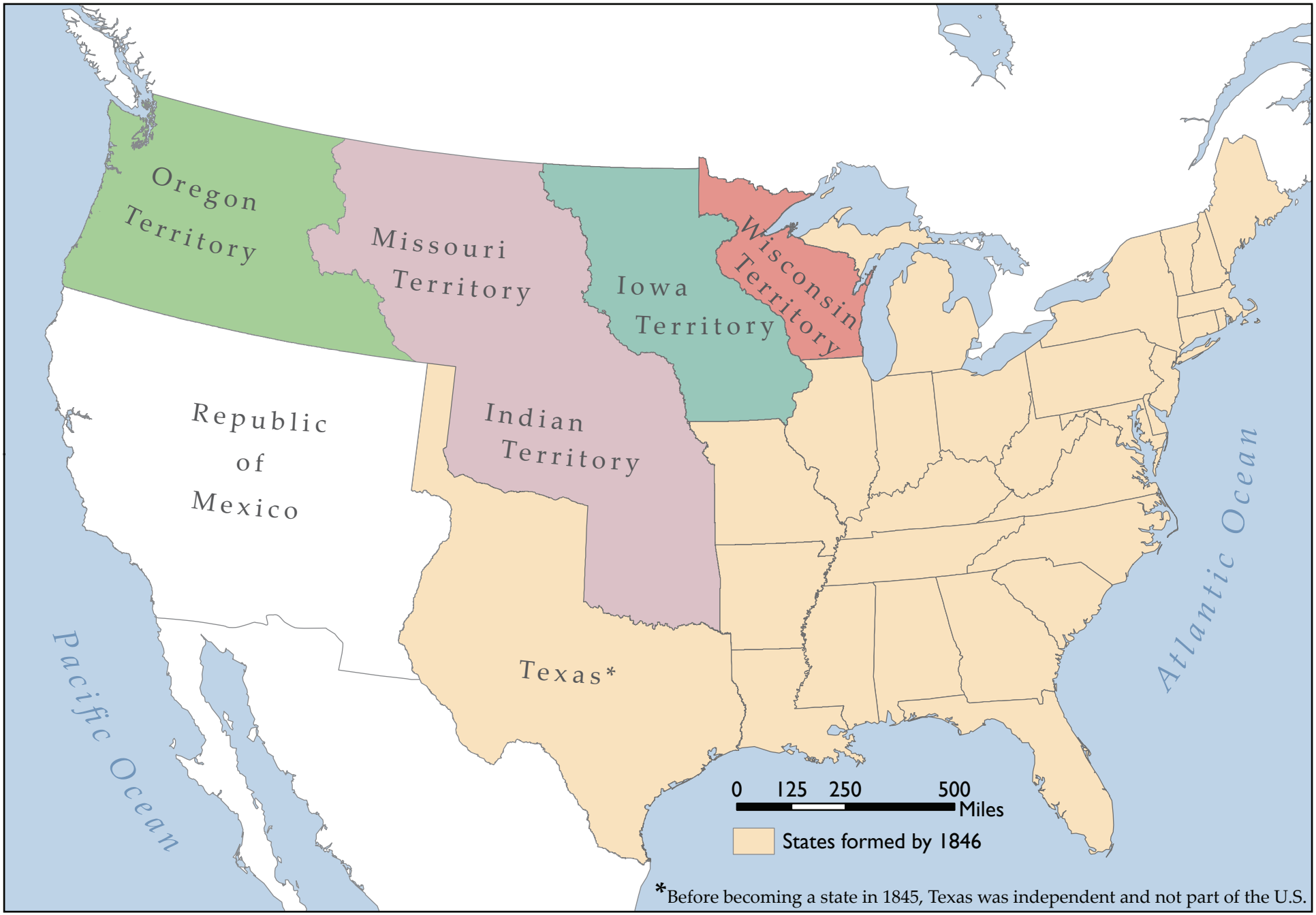
The Oregon Trail

Wagon wheel ruts on the Oregon Trail in Eastern Oregon

Oregon's Historic Trails and Ghost Towns

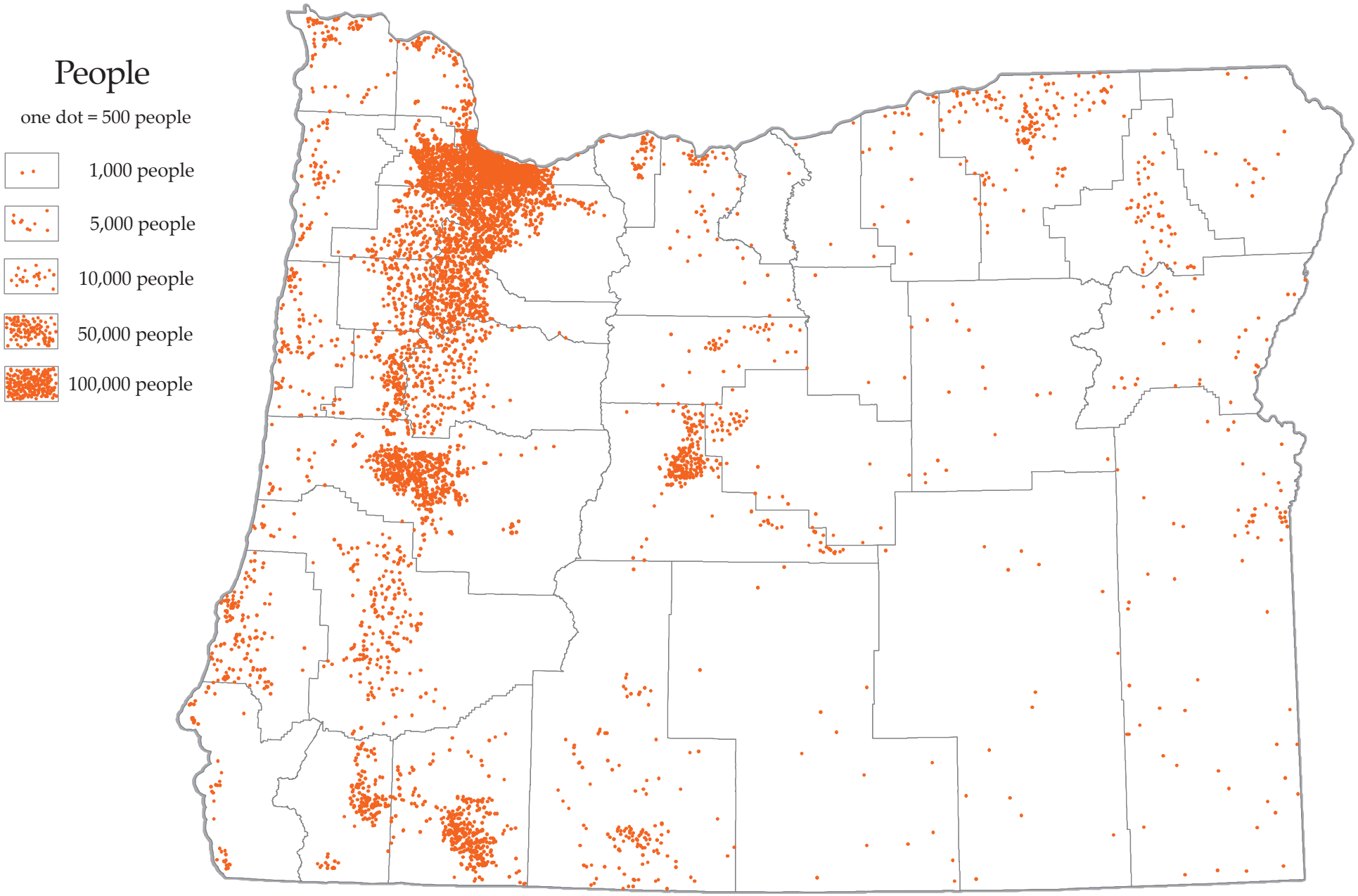


United States in 1846: States and Territories



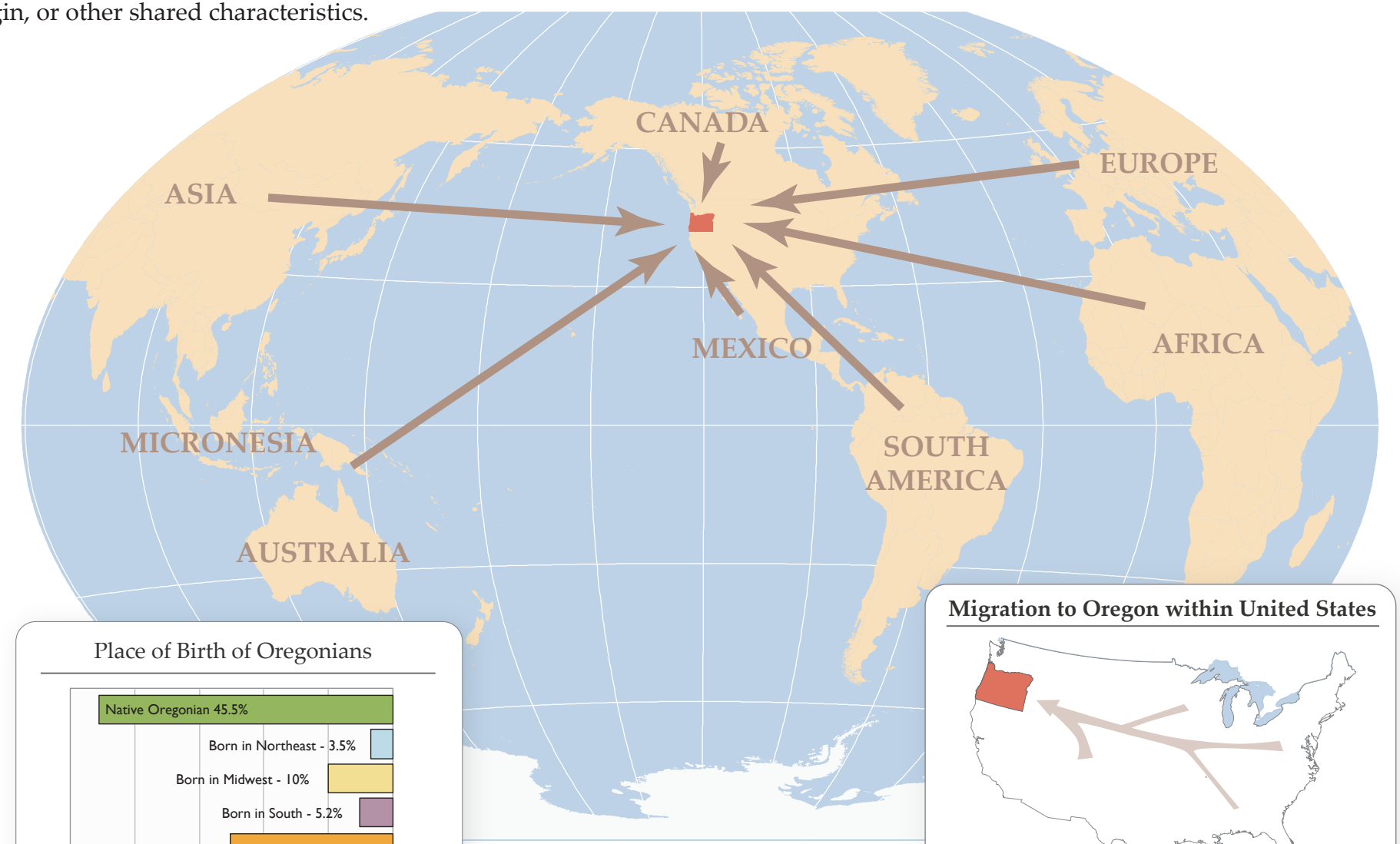
United States in 1859: Oregon Statehood

Population


People
one dot = 500 people
1,000 people
5,000 people
10,000 people
50,000 people
100,000 people

Where Do We Come From?

Ethnicity refers to the cultural characteristics that a group has in common. These may include language, religion, country of origin, or other shared characteristics.



Place of Birth of Oregonians

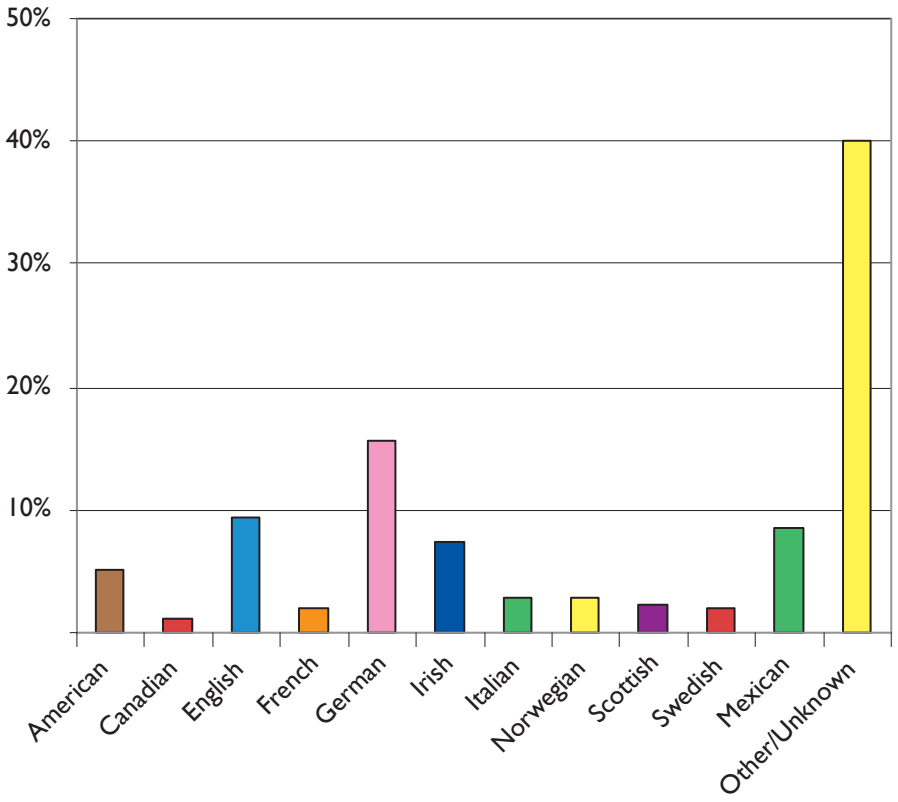
Migration to Oregon within United States

The width of the arrow is proportional to the number of people moving to Oregon from other regions of the United States

Ancestry and Race in Oregon

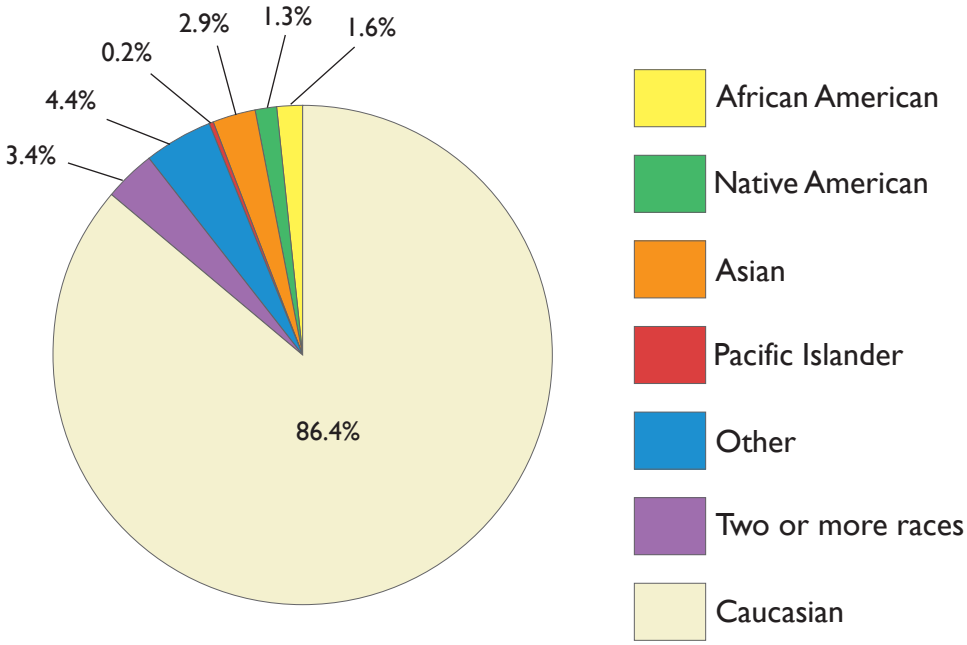
Ancestry

Ancestry refers to your parents, your grandparents, and other relatives from whom you are descended. An imporant element of ancestry is the country (or countries) that you or your ancestors came from before arriving in the United States.



Race

As used in the U.S. Census, race refers to social and cultural characteristics as well as ancestry. Because each of us has our own understanding of our family's culture and ancestry, the U.S. Census allows us to identify our own race, culture and ethnicity.



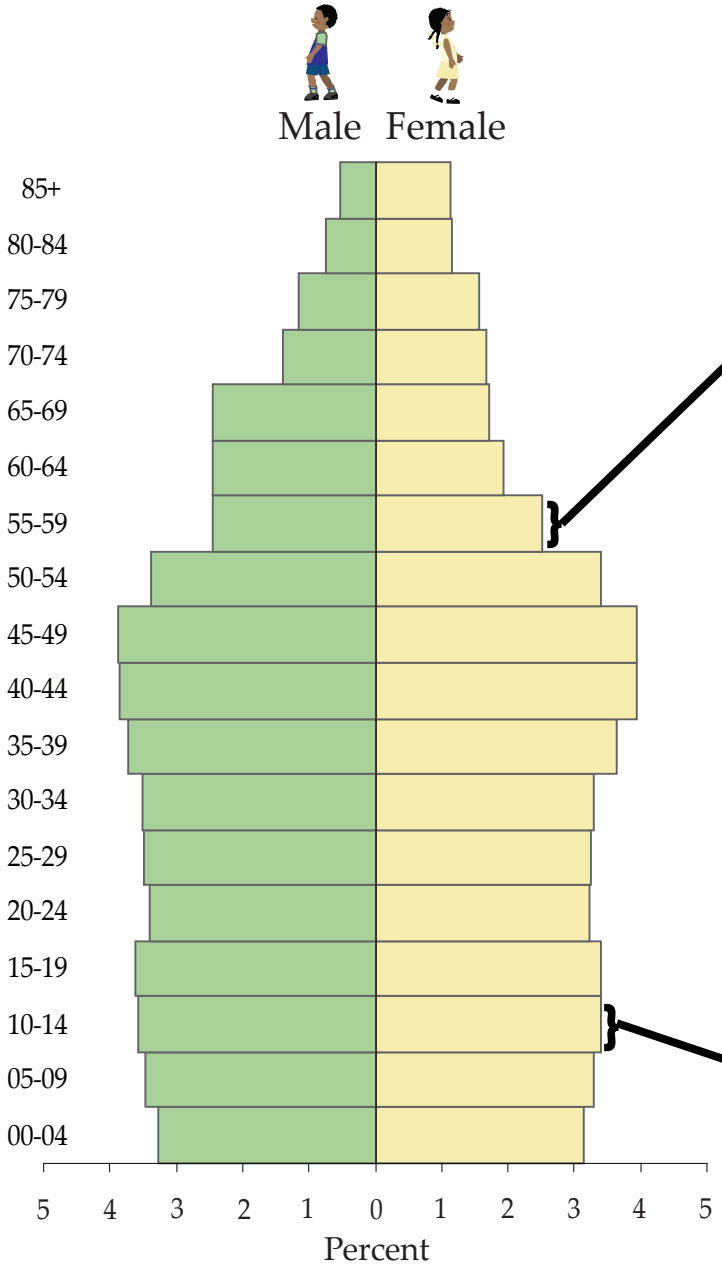
The Age of Oregon's Population

What is a Population Pyramid?

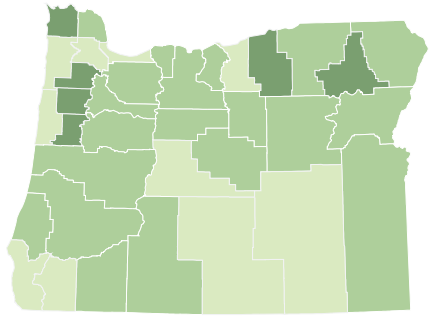
A population pyramid divides a population by gender (male or female) and by age (from youngest at the base to oldest at the peaks). Each bar of the pyramid represents a percentage of the population.

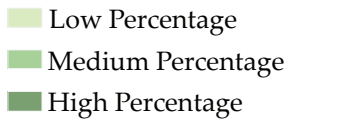
This pyramid shows Oregon's 2002 population, and each bar represents five years of the population.

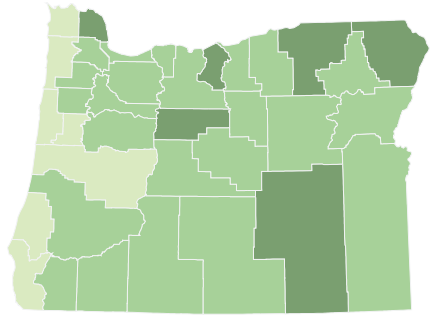
Another way to show a state's population is with a choropleth map. The two maps at the right show where the 10-14 year olds and the 55-59 year olds live in Oregon.



Where the 55-59 year olds live

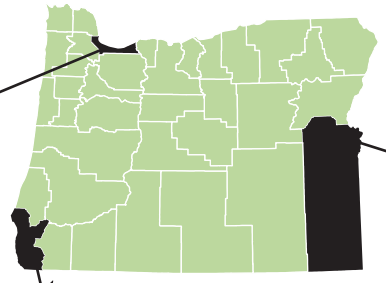




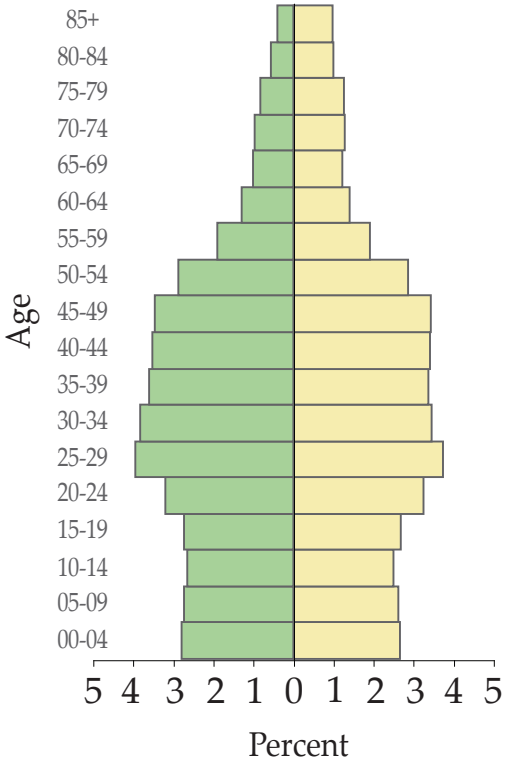


Where the 10-14 year olds live

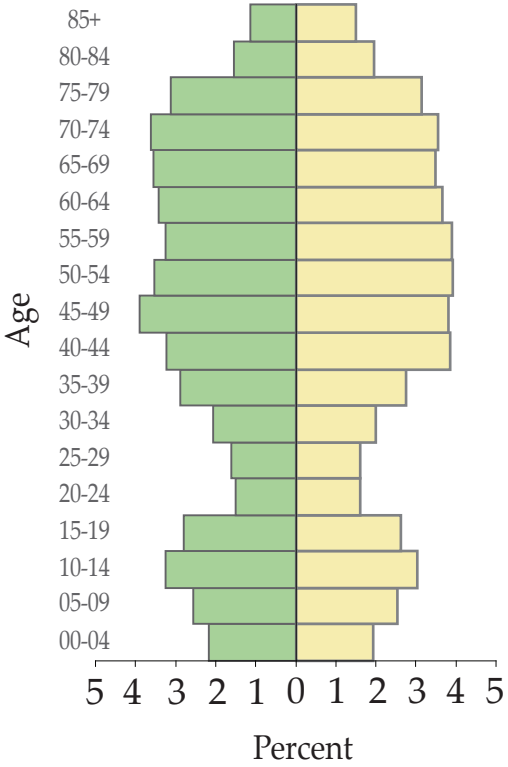
Population Pyramids of Three Counties



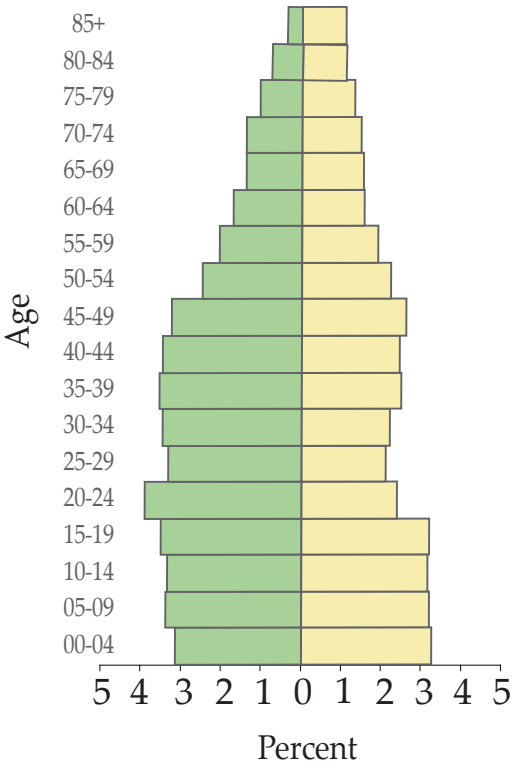
Multnomah County



Curry County



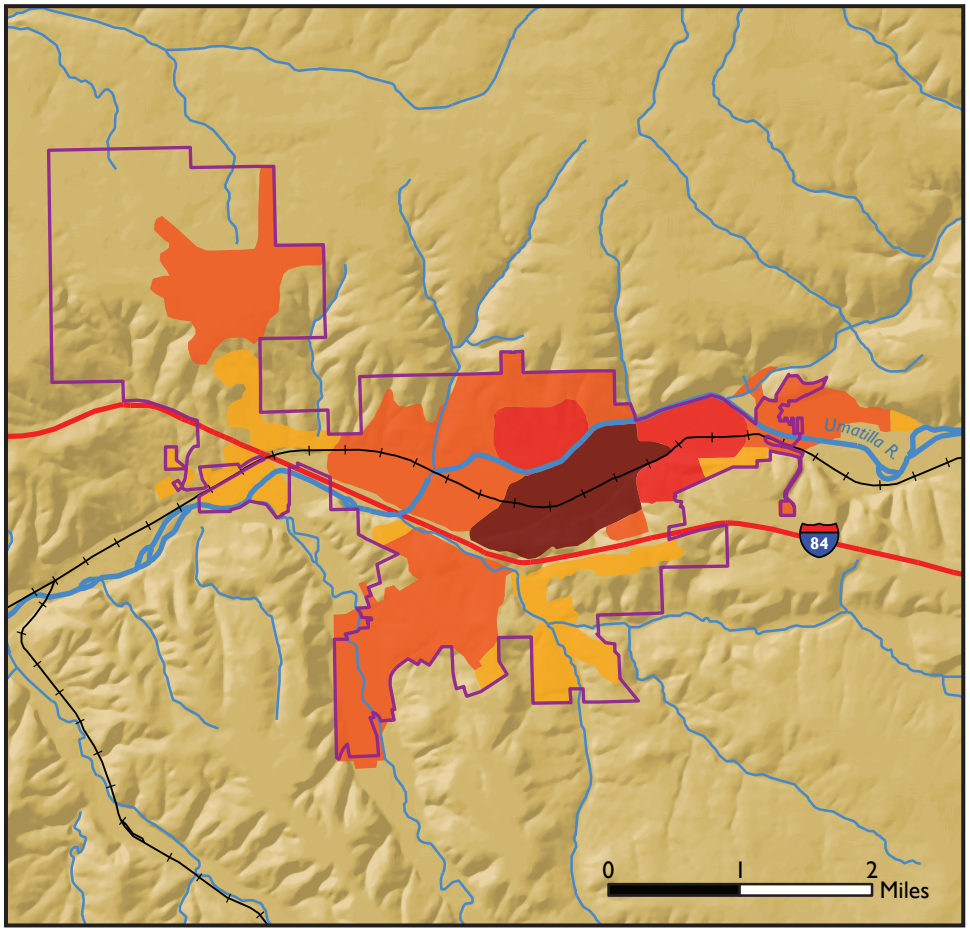
Malheur County



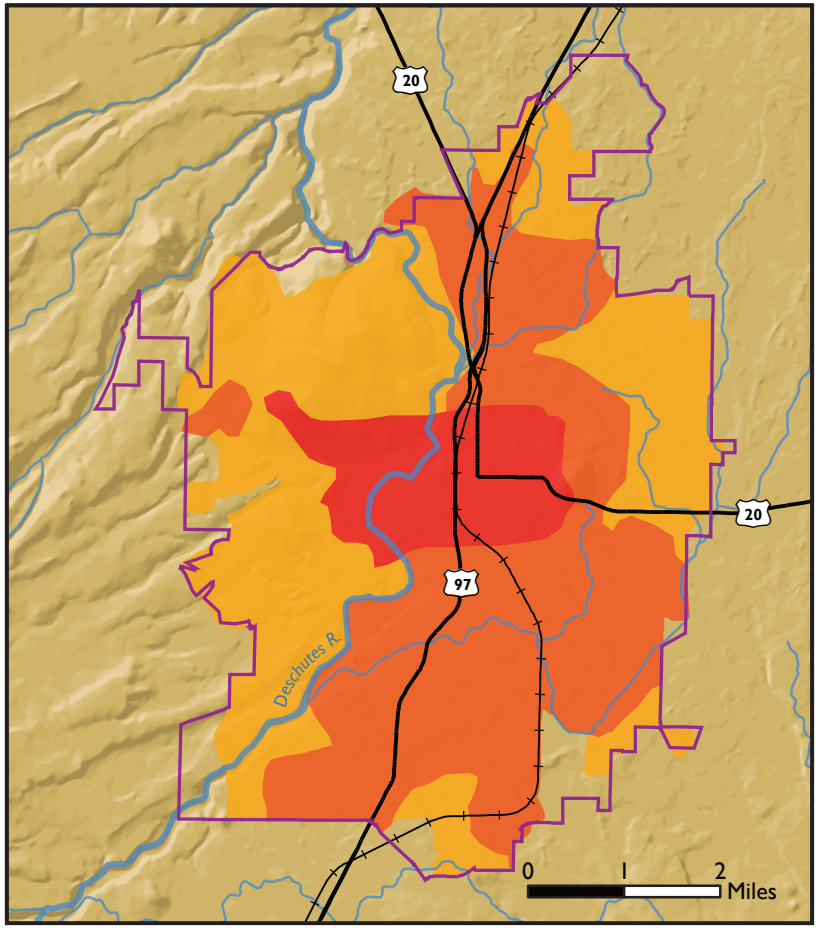
Growth of Pendleton and Bend

The maps on these two pages show how Bend, Pendleton, Ashland and Medford have grown since 1900. When did most of the growth occur? Are the cities similar or different in the ways they have grown?

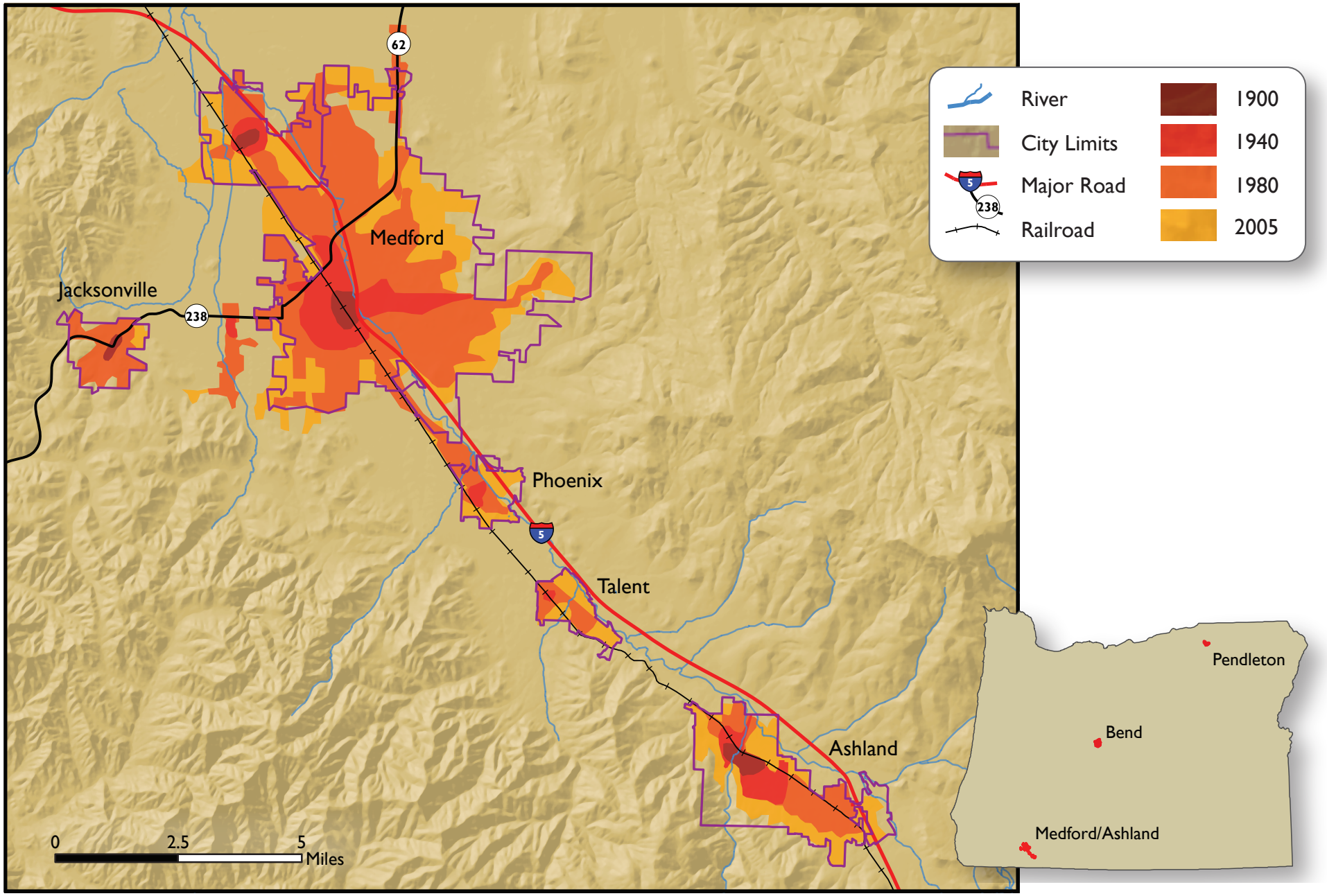
Pendleton



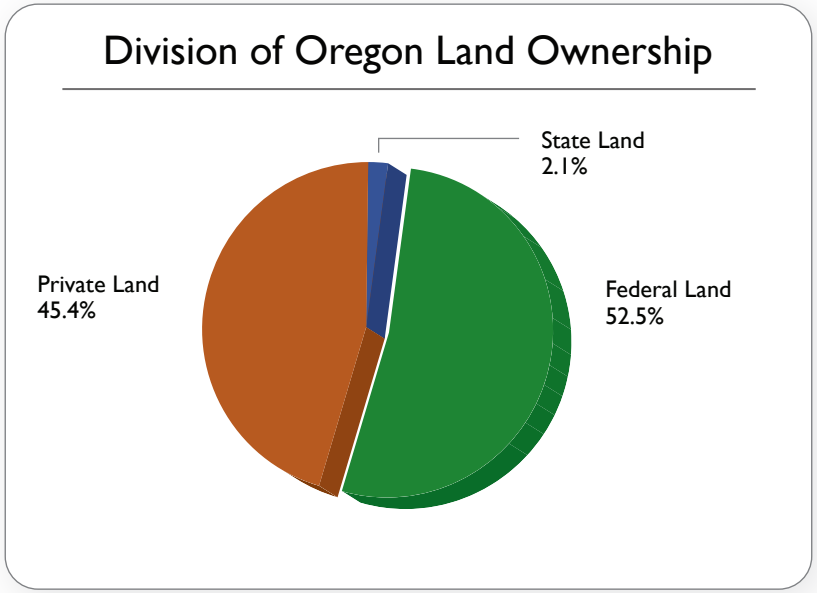
Bend

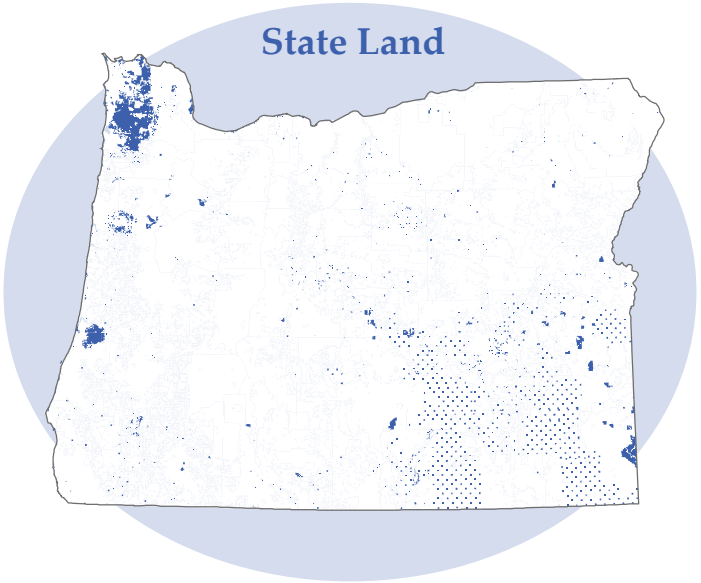


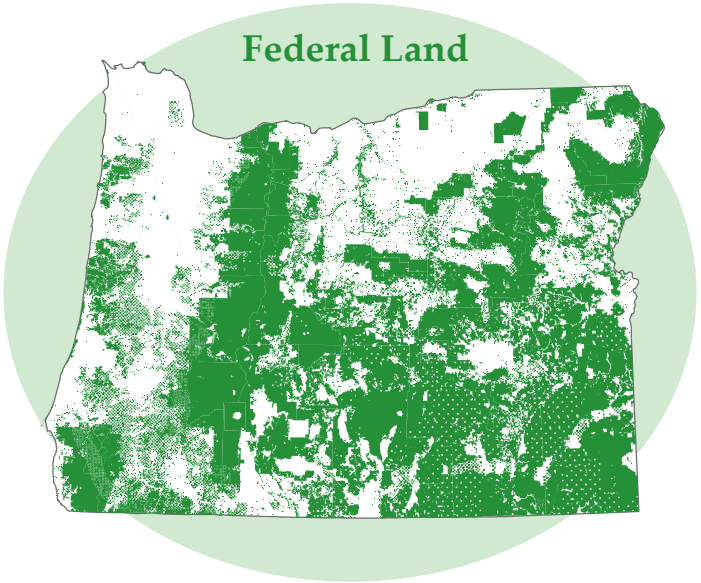
Growth of Ashland and Medford



Land Ownership

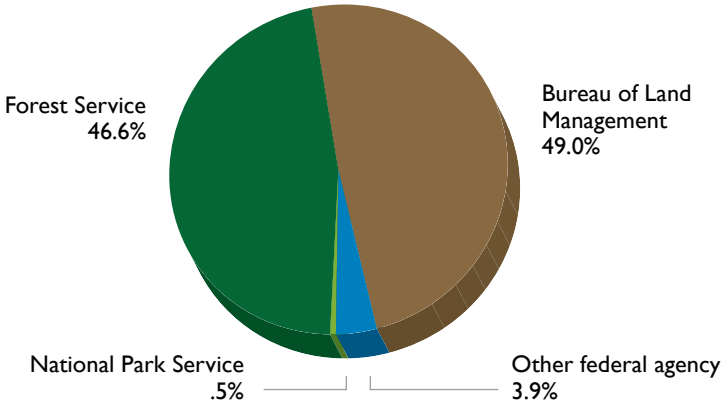




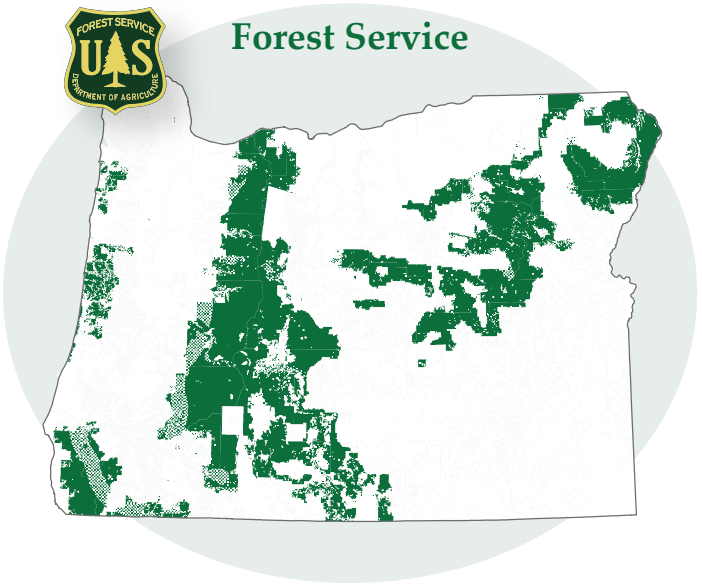


Federal Land Ownership

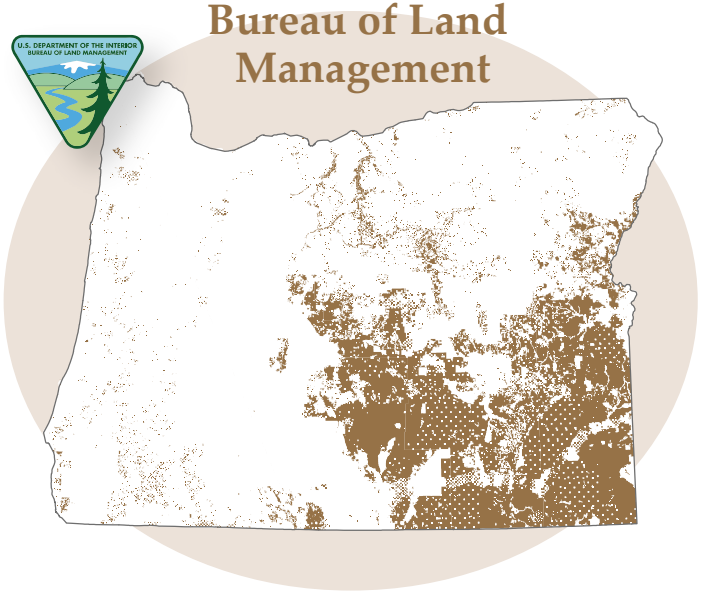
Division of Federal Land Ownership



Forest Service

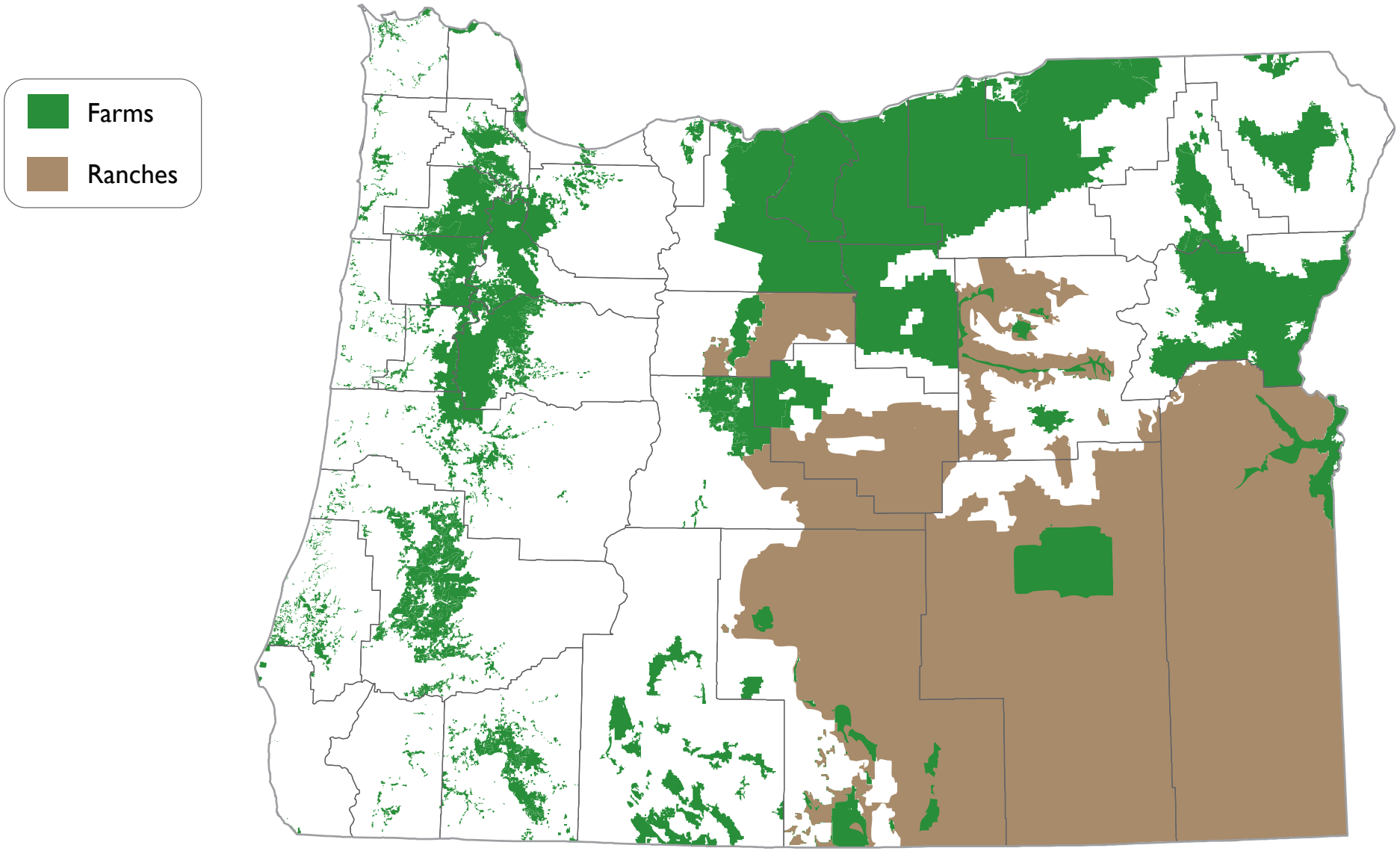


Bureau of Land Management

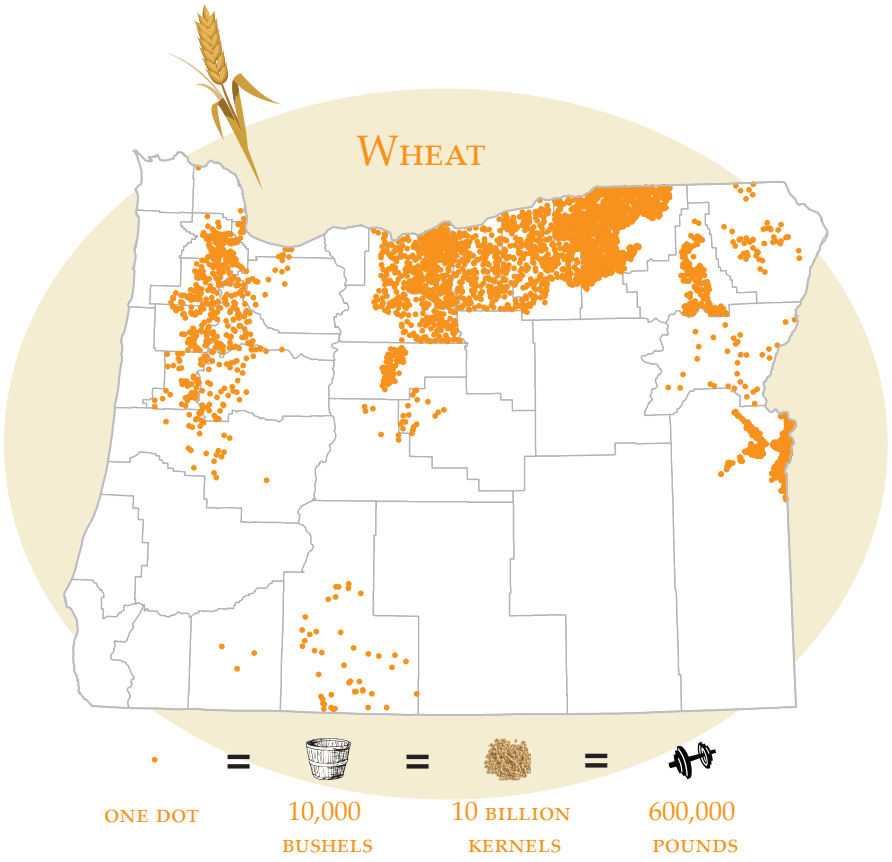


National Park Service

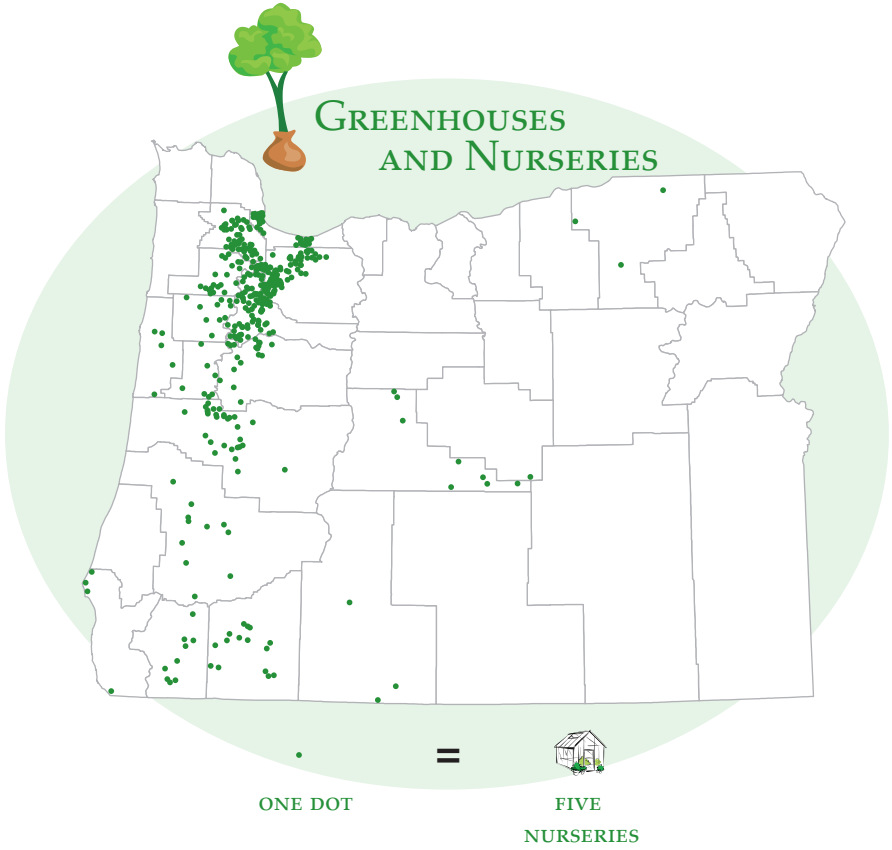
Farm and Ranch Lands



Major Crops

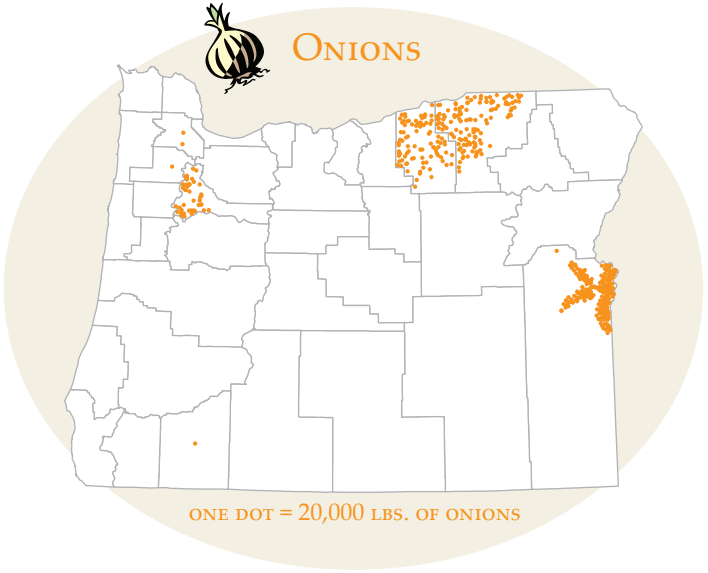


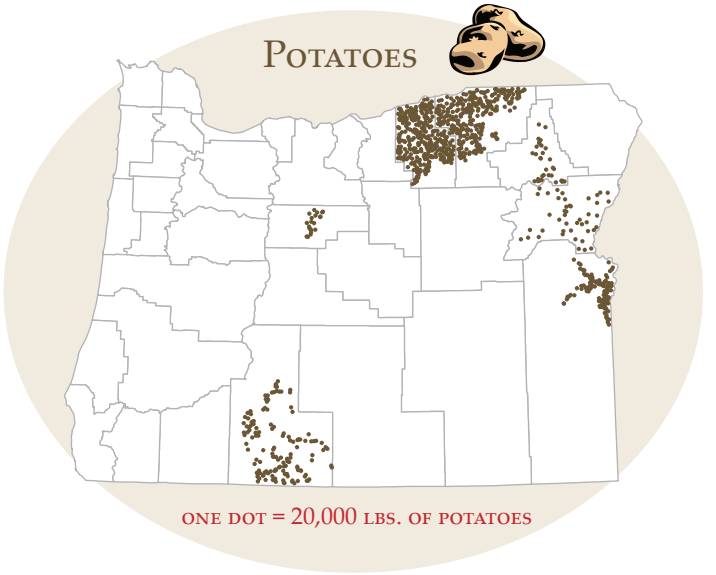
Wheat is Oregon's largest crop by weight.

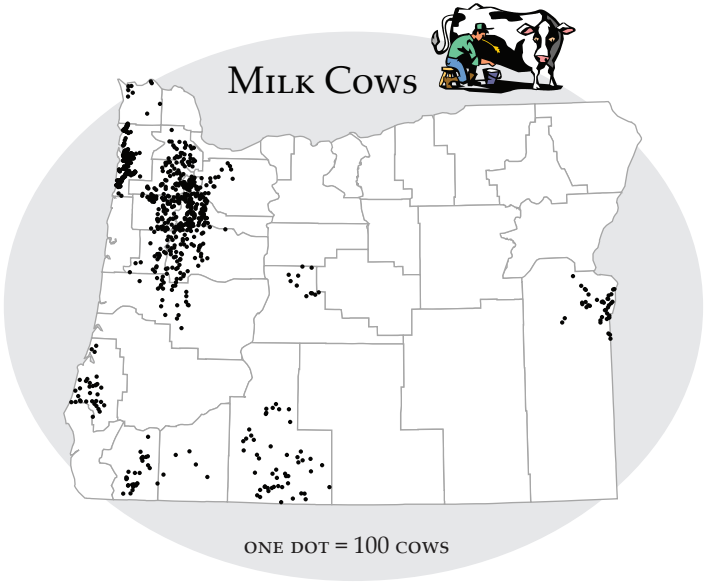


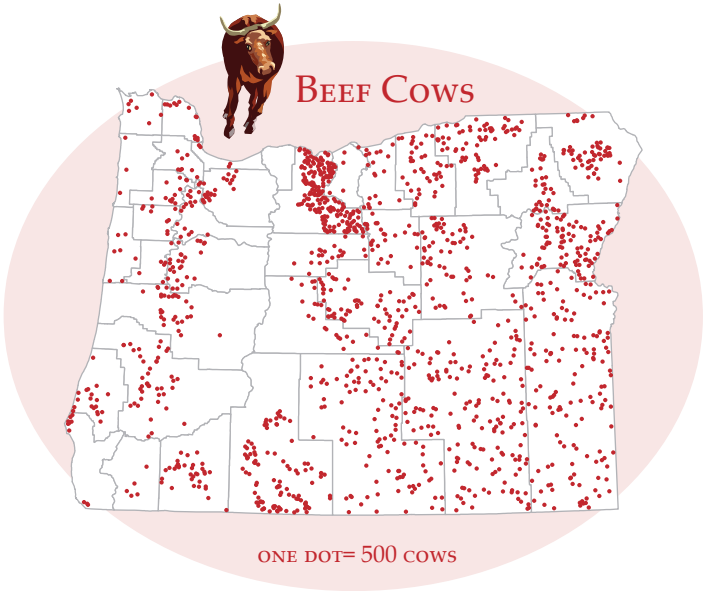
Greenhouses and nurseries are Oregon's largest crop by total dollar value.

Farm Products

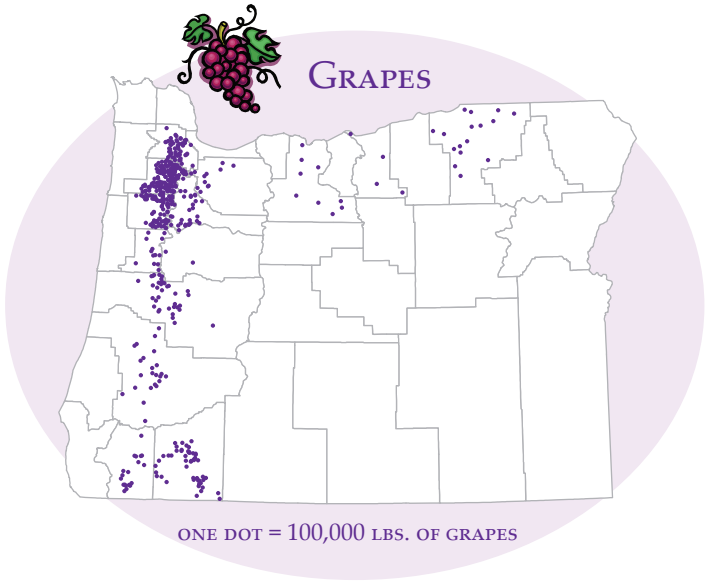


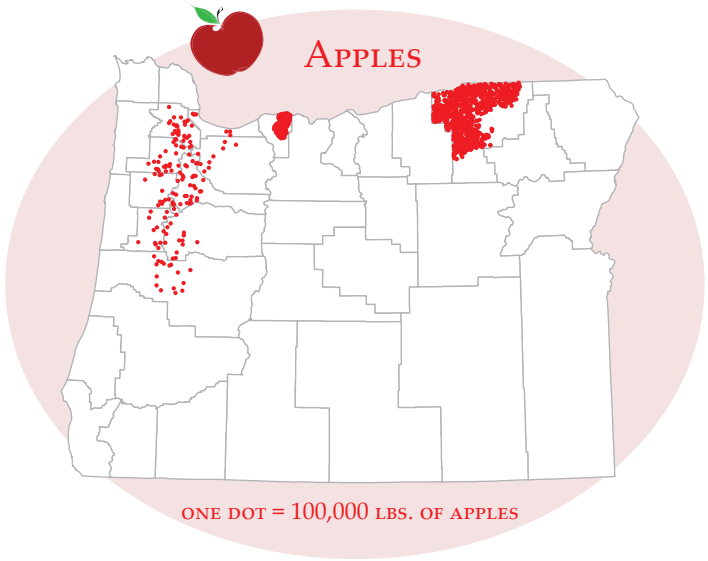


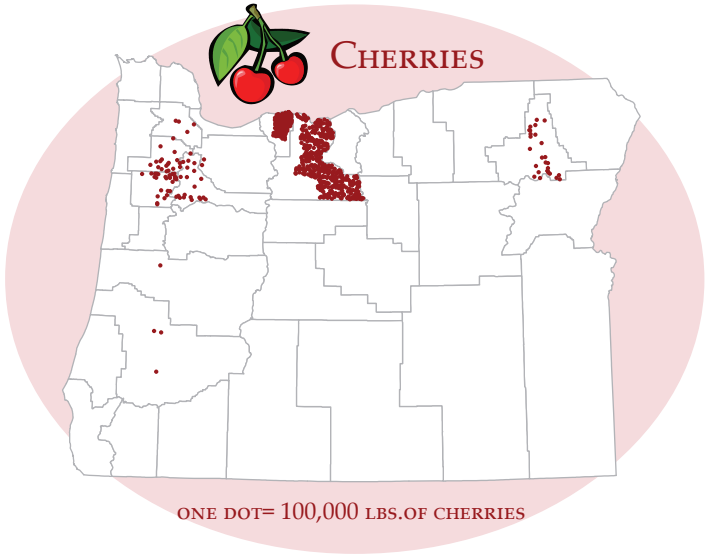


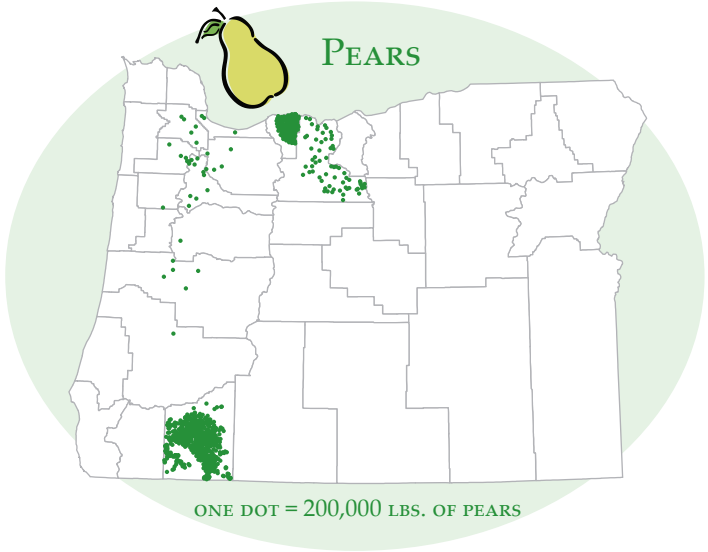


Fruit Crops


Grapes
one dot = 100,000 lbs. of grapes

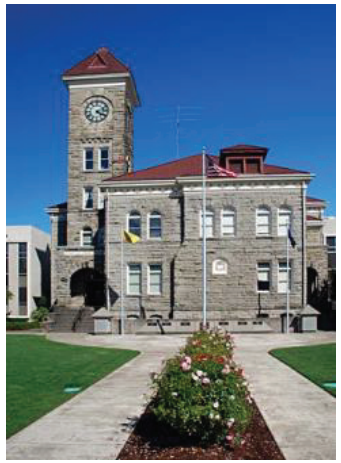

Apples
one dot = 100,000 lbs. of apples

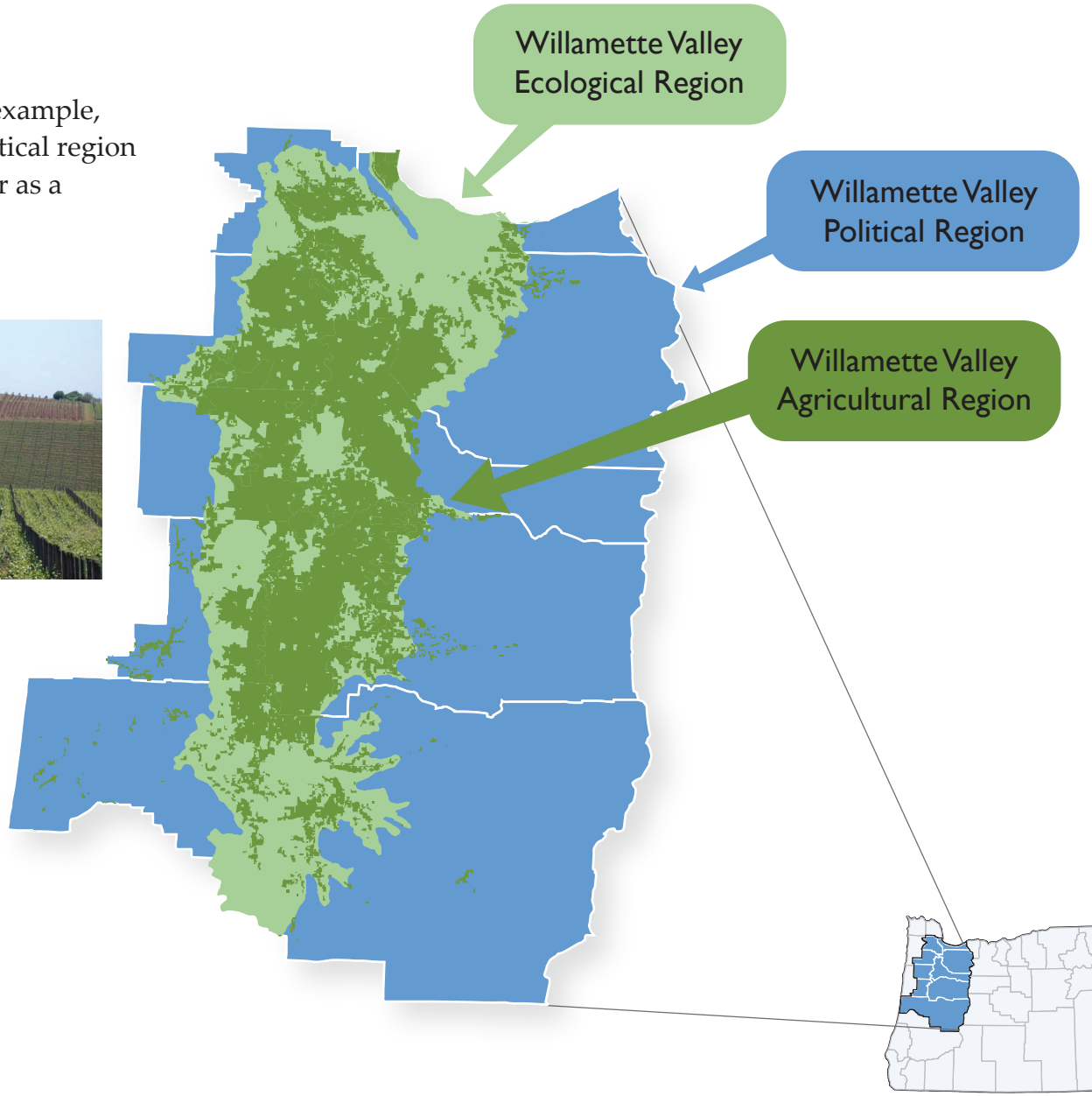

Cherries
one dot= 100,000 lbs.of cherries


Pears
one dot = 200,000 lbs. of pears

Defining a Region: The Willamette Valley

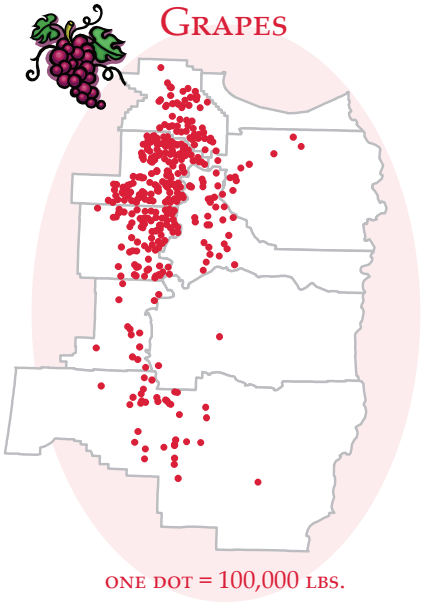
We can define a "region" in many ways. For example, the Willamette Valley can be defined as a political region (counties), an ecological region (vegetation) or as a land-use region (agricultural).





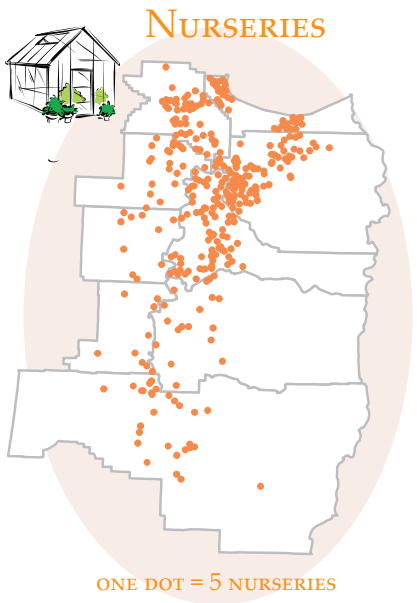
Willamette Valley Crops

Grapes



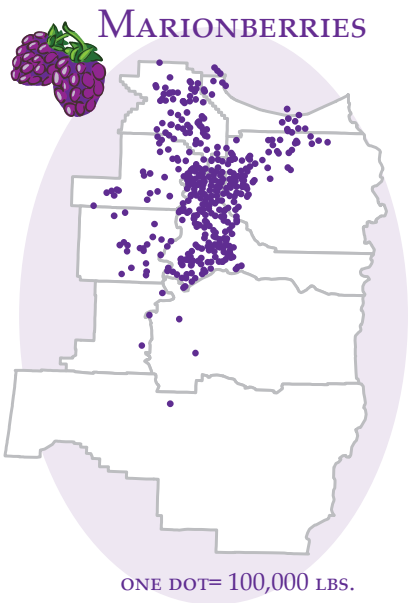
One dot = 100,000 lbs. of grapes

Nurseries



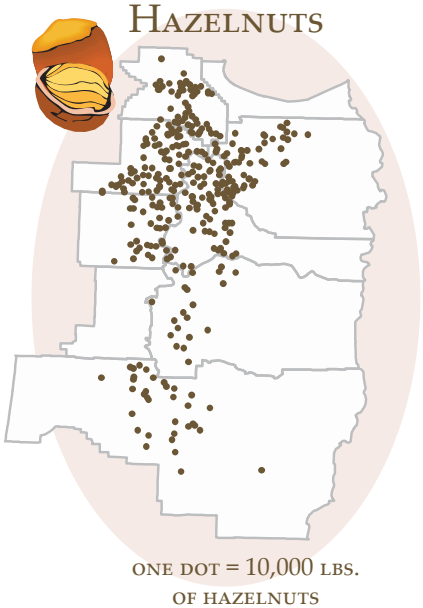
One dot = 5 nurseries

Marionberries



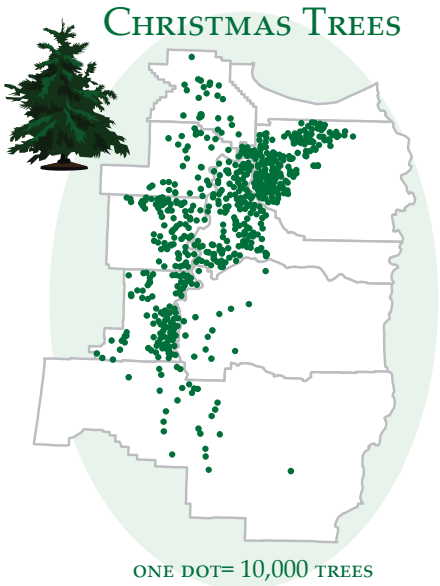
One dot= 100,000 lbs. of marionberries

Hazelnuts



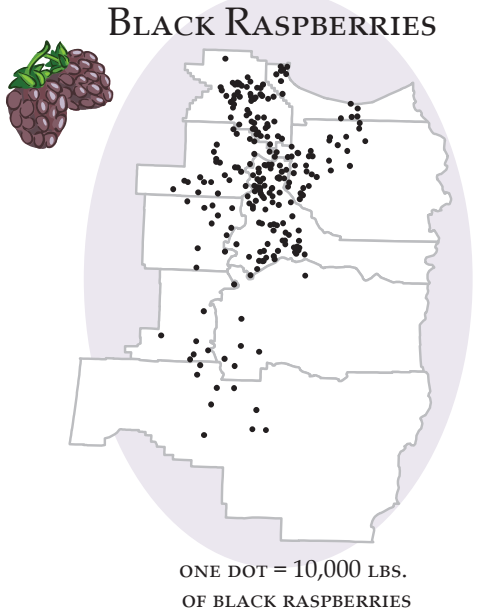
One dot = 10,000 lbs. of hazelnuts

Christmas Trees



One dot= 10,000 trees

Black Raspberries



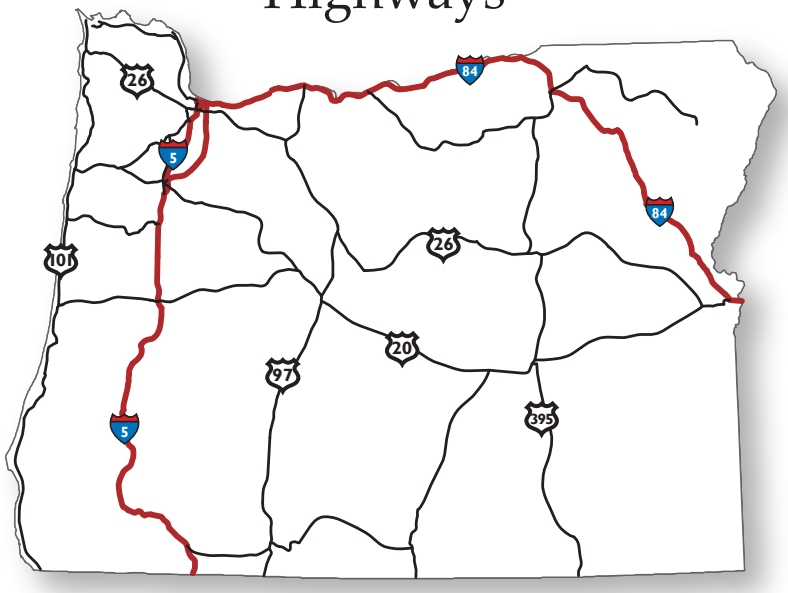
One dot = 10,000 lbs. of black raspberries

Transportation

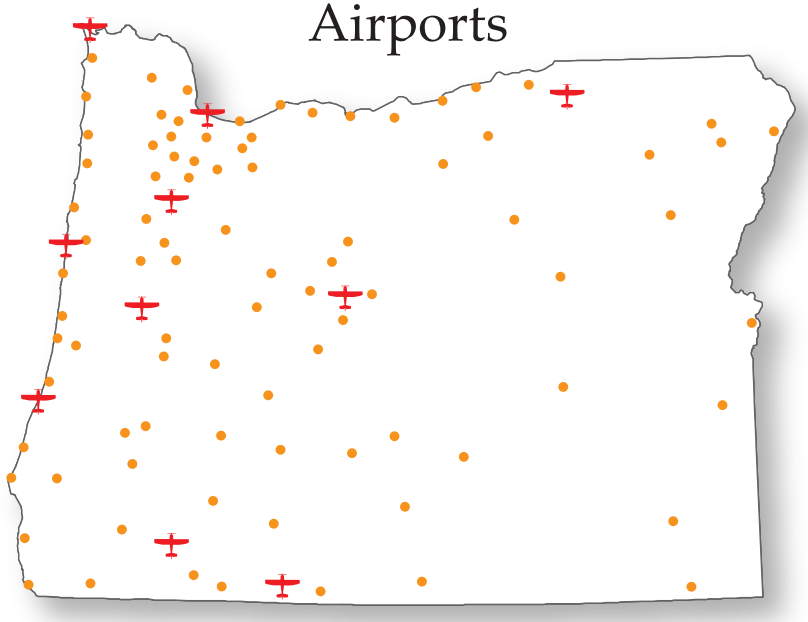
Railroads

Train Station
Major Airport
Other Airports
Freight Railroad (RR)
Passenger & Freight RR
Interstates
Highways

Highways

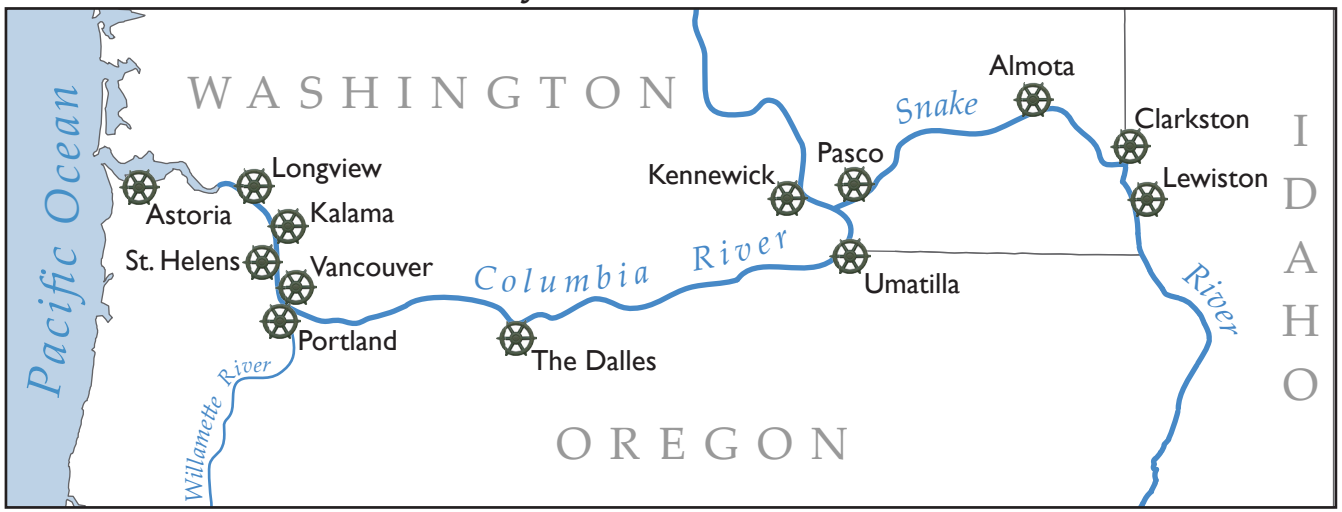


Airports



Ports

Columbia/Snake River System Ports



Port of Portland

Containers

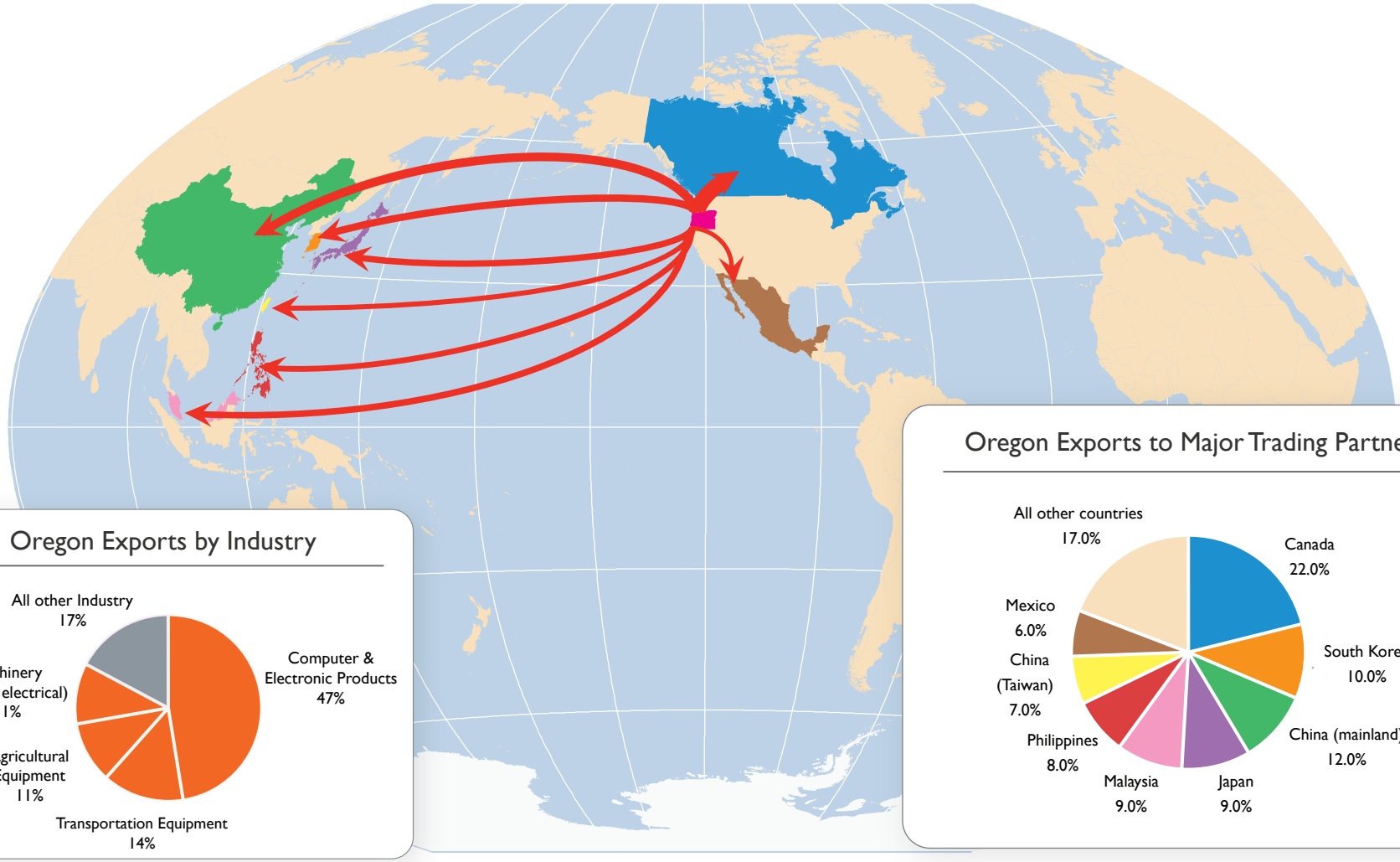
Top 10 Ports on the West Coast

Ranked by Cargo Volume (2006)

Oregon Exports

Individual countries cannot produce all the products their citizens need or want. When countries trade, they import (bring in products) and export (ship out products). Oregon exported more than six billion dollars of goods to foreign countries in 2005, about 1.5% of all goods shipped from the USA that year.

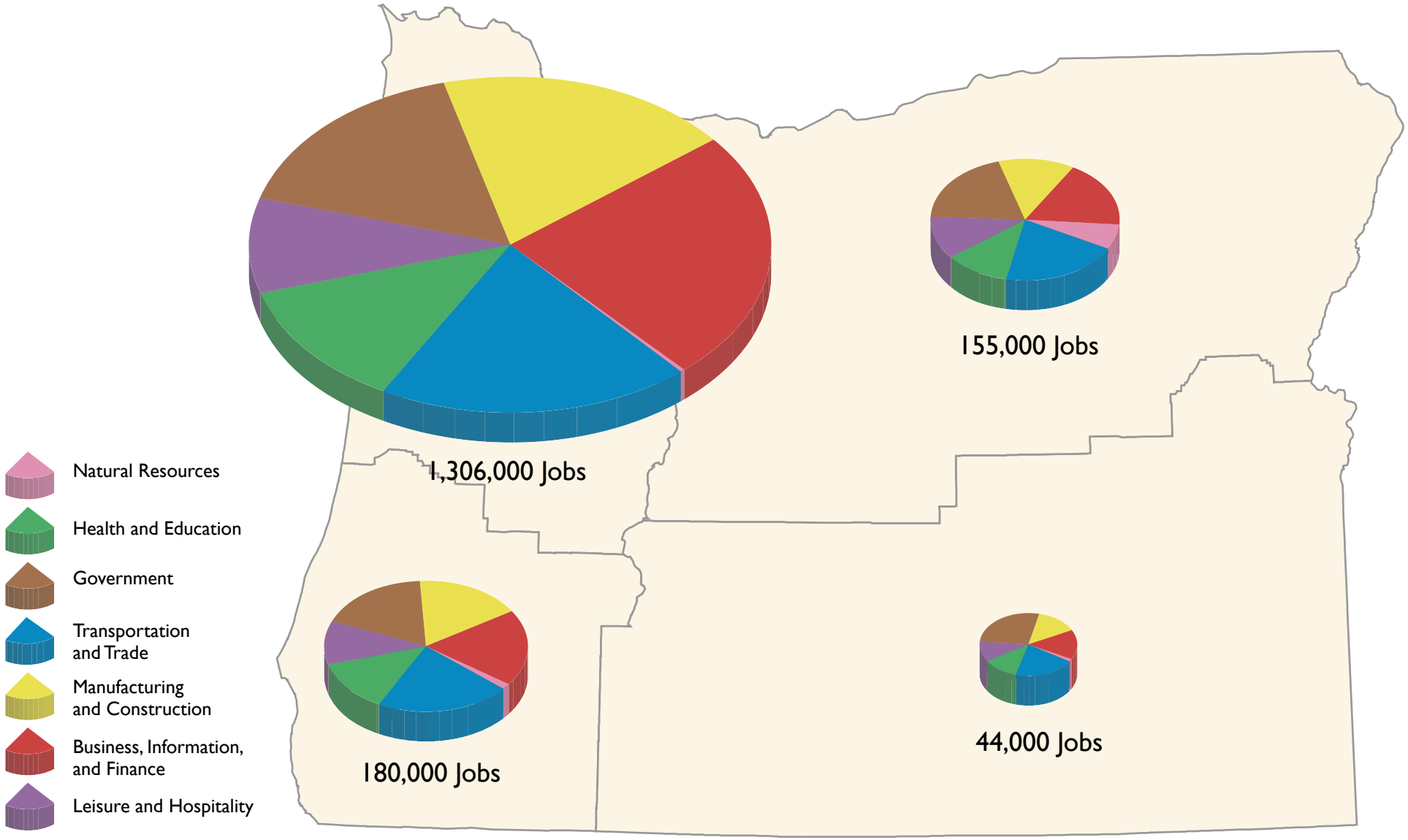
More than 50% of those goods were shipped to just five countries. It is difficult to measure the amount of goods imported for use in Oregon because when ships arrive in Oregon's ports only some of the goods they deliver stay in Oregon. The rest is sent to other states.



Oregon Exports by Industry

Oregon Exports to Major Trading Partners

Employment: By Sector



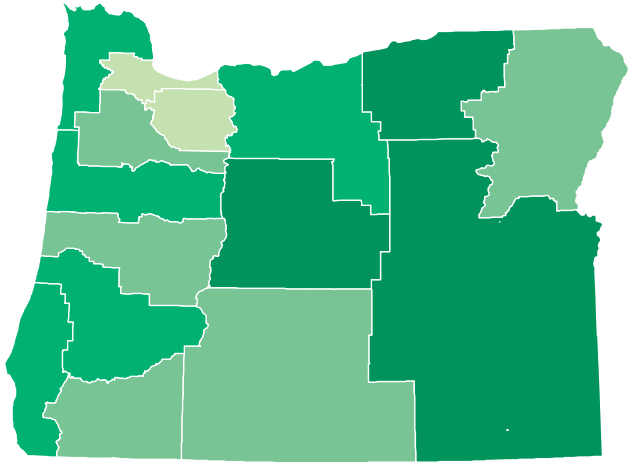
Using Data: A Cartographer's Dilemma

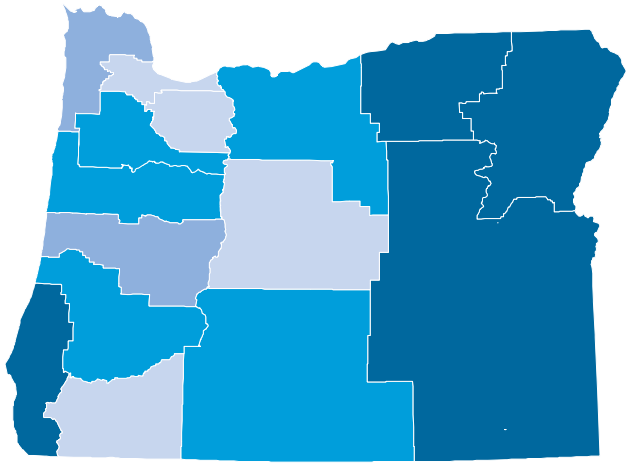
An example using employment in Oregon

Cartographers have to make decisions about how to map data. One decision is the area that is used to map the data. For example, the cartographer can use counties as an area which can then be grouped into 15 regions or into 4 regions. The result is maps which change the way you see the information.

These maps show two important types of employment in Oregon – natural resources and government – and the locations of those jobs seem to change depending on how the cartographer groups the counties.

Counties grouped into 15 different areas





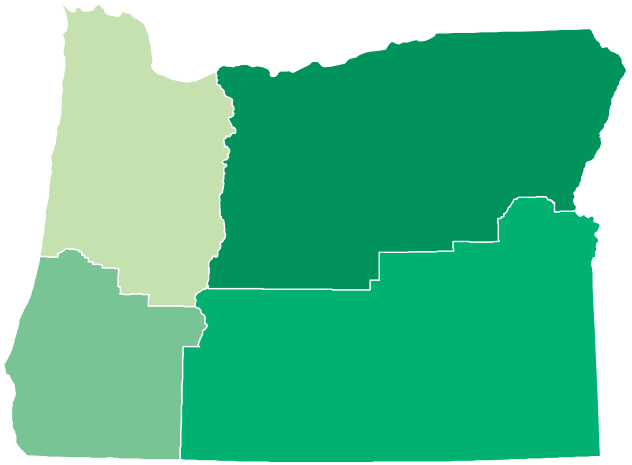
Natural Resources

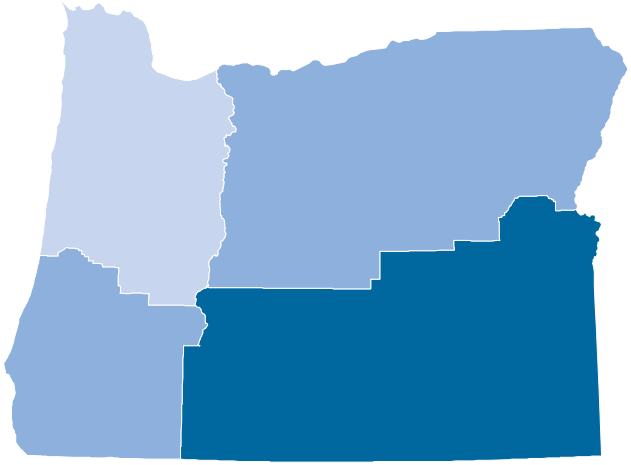
- .1% - .5%
- .6 - 1.5%
- 1.6% - 3.0%
- 3.1% - 15.0%

Government

- 12% - 16%
- 17% - 20%
- 21% - 25%
- 26% - 35%

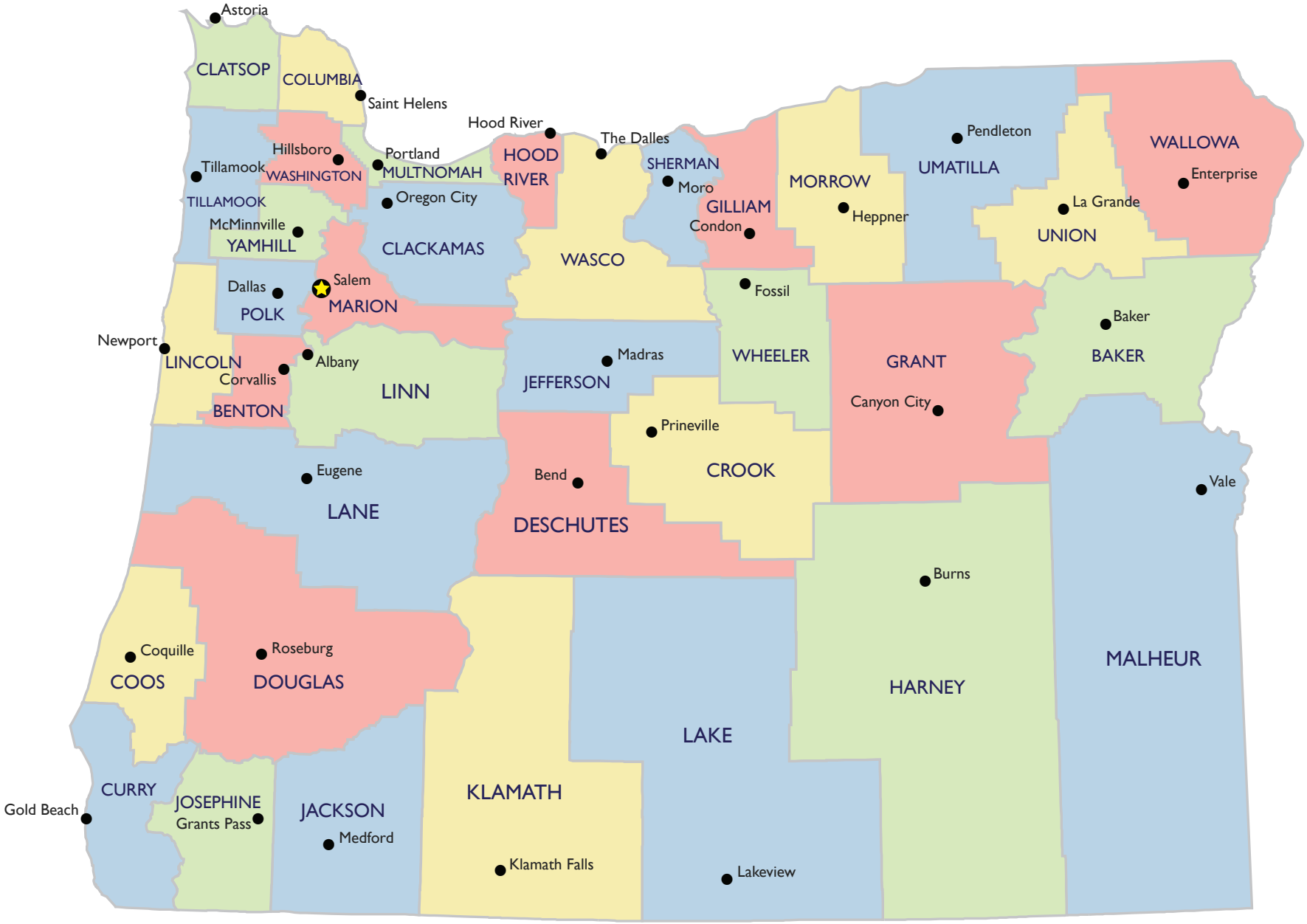
Counties grouped into 4 different areas



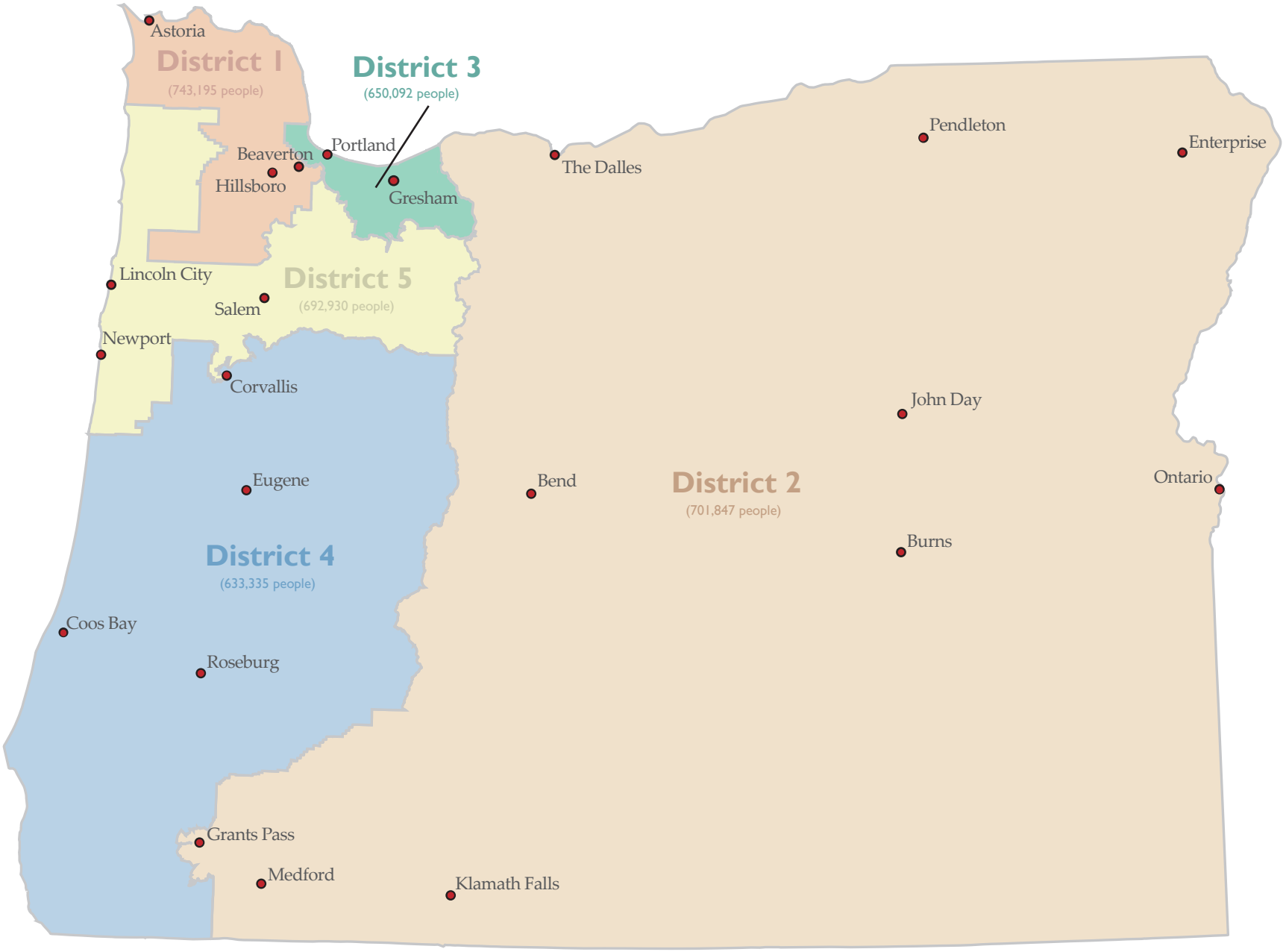


Recreation and Tourism

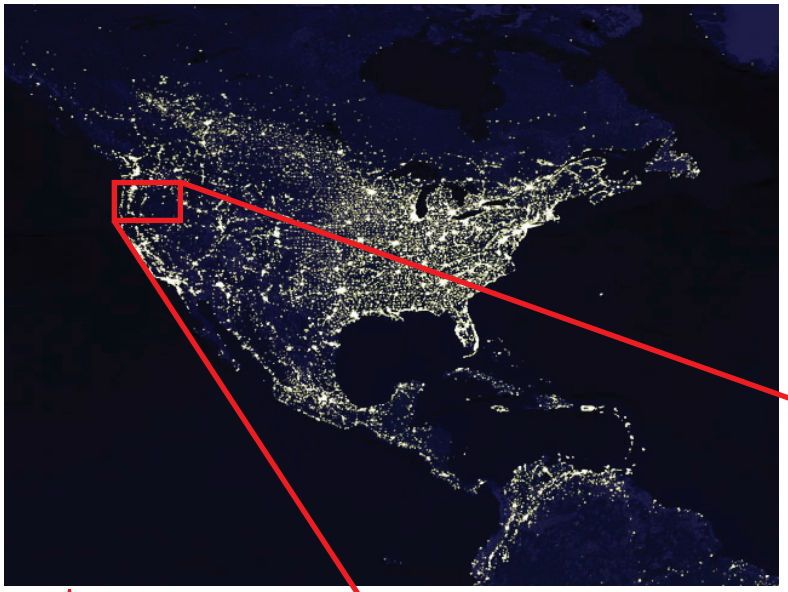
Counties and County Seats



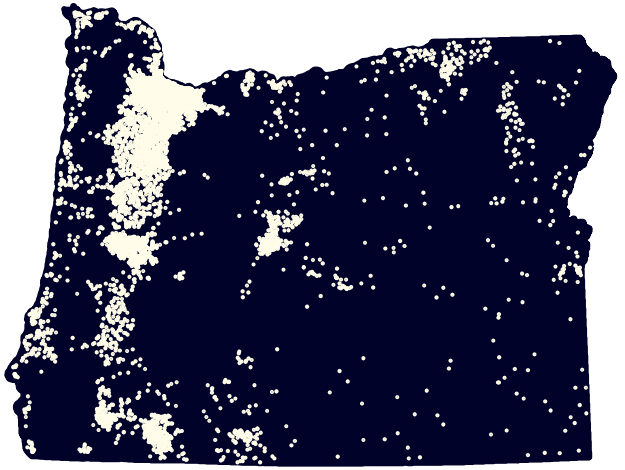
108th Congressional Districts



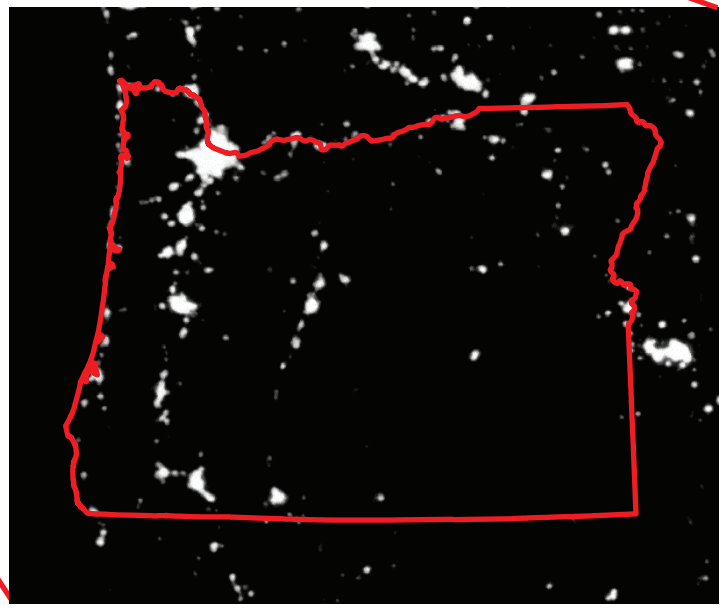
Oregon at Night



This image is taken at night from a satellite. The brightest parts of the image are where the largest numbers of people live. The areas are white because they are the lights from streetlamps and buildings. Cities, where many people live, are the brightest areas.



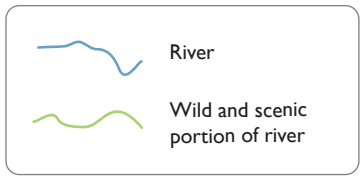
This image is a map made from the Population Map in this atlas, designed to look like Oregon at night.

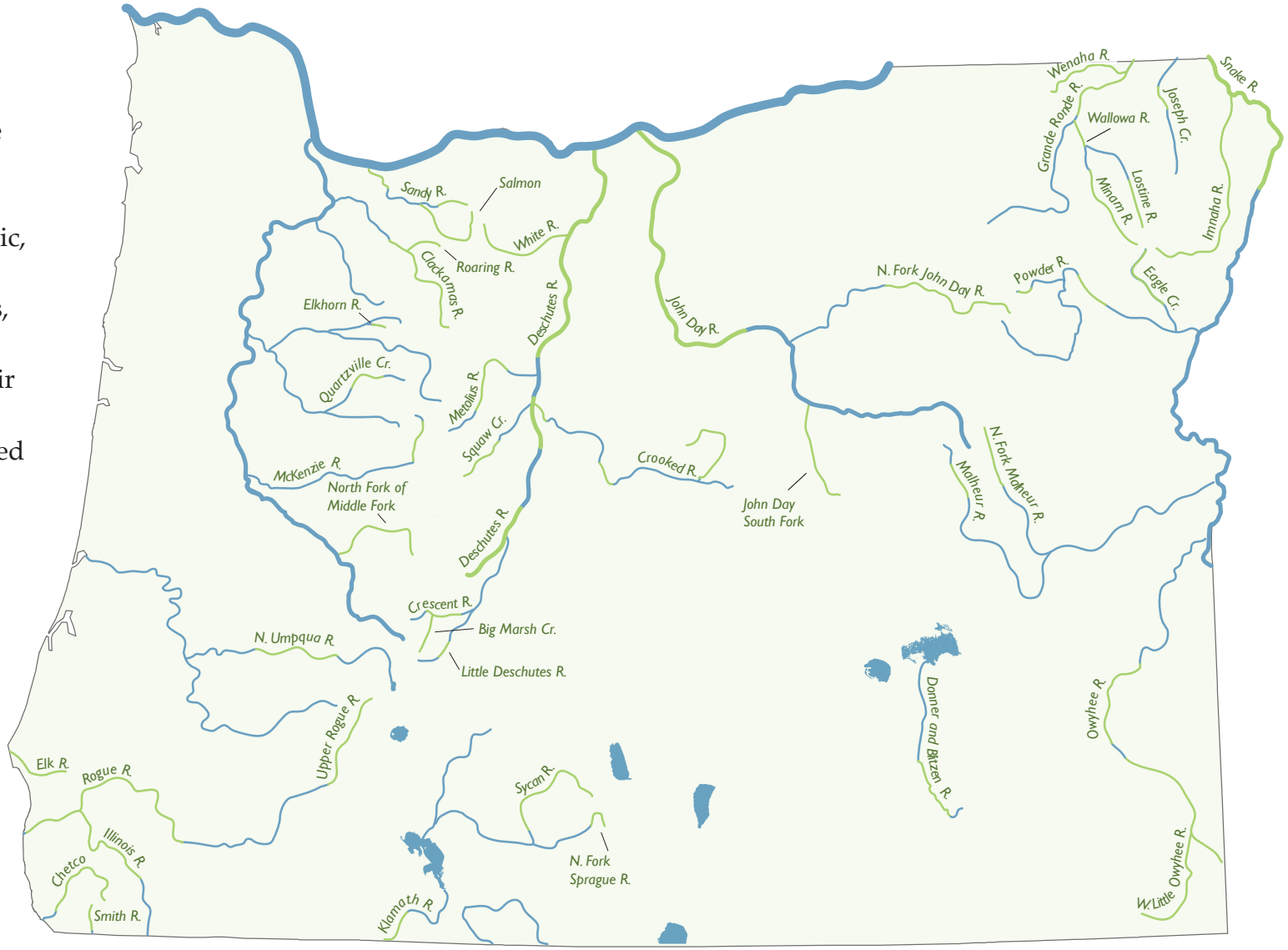


This image shows Oregon from the satellite.

National Wild and Scenic Rivers

The National Wild and Scenic Rivers Act of 1968 identified rivers in the United States that are to be preserved for their remarkable scenic, recreation, wildlife, geologic, historic, or cultural values. Rivers, or sections of rivers, designated as wild and scenic are preserved in their free-flowing condition and are not dammed or modified by humans.





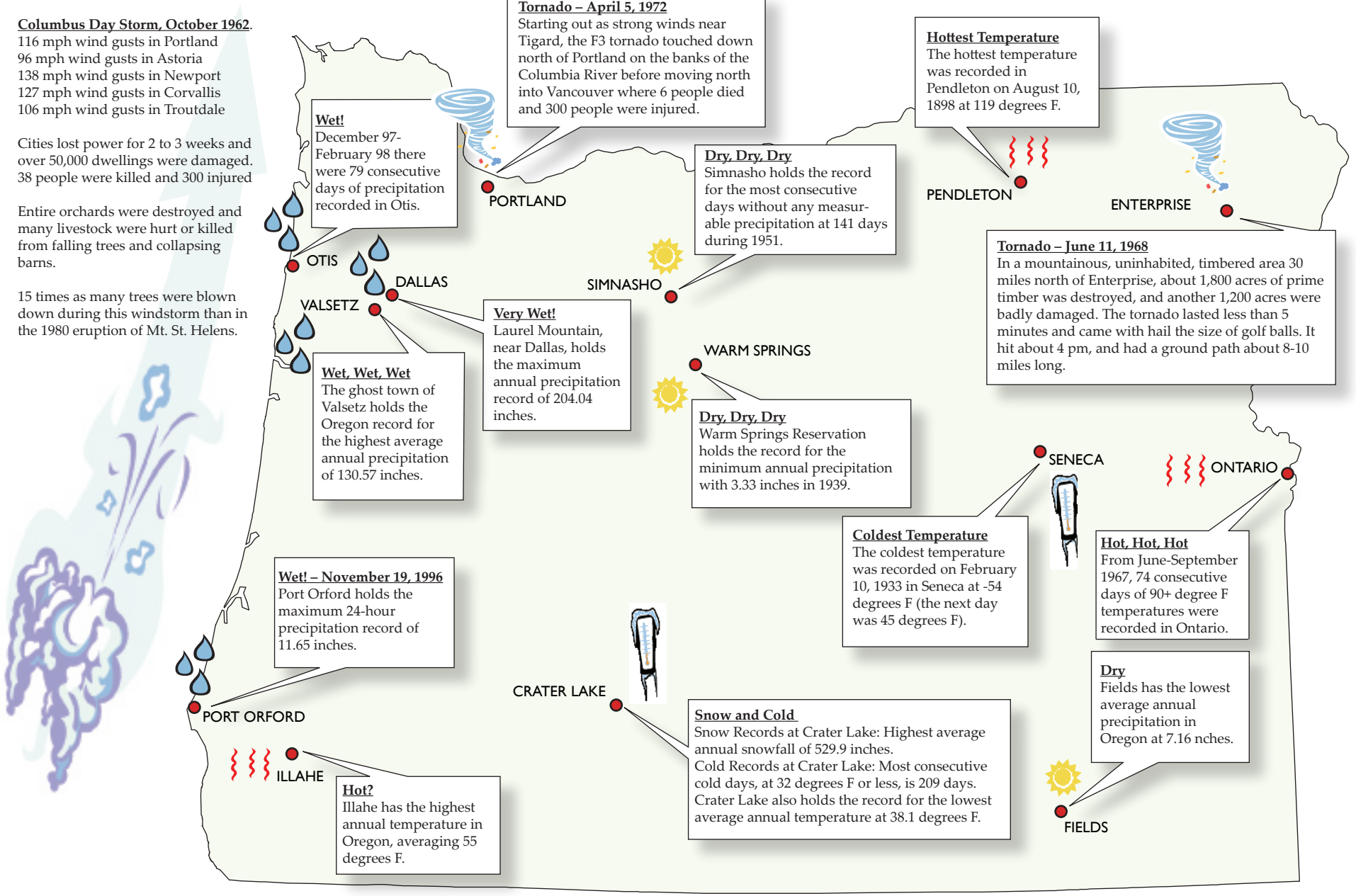
Weather Extremes

Columbus Day Storm, October 1962.
116 mph wind gusts in Portland
96 mph wind gusts in Astoria
138 mph wind gusts in Newport
127 mph wind gusts in Corvallis
106 mph wind gusts in Troutdale

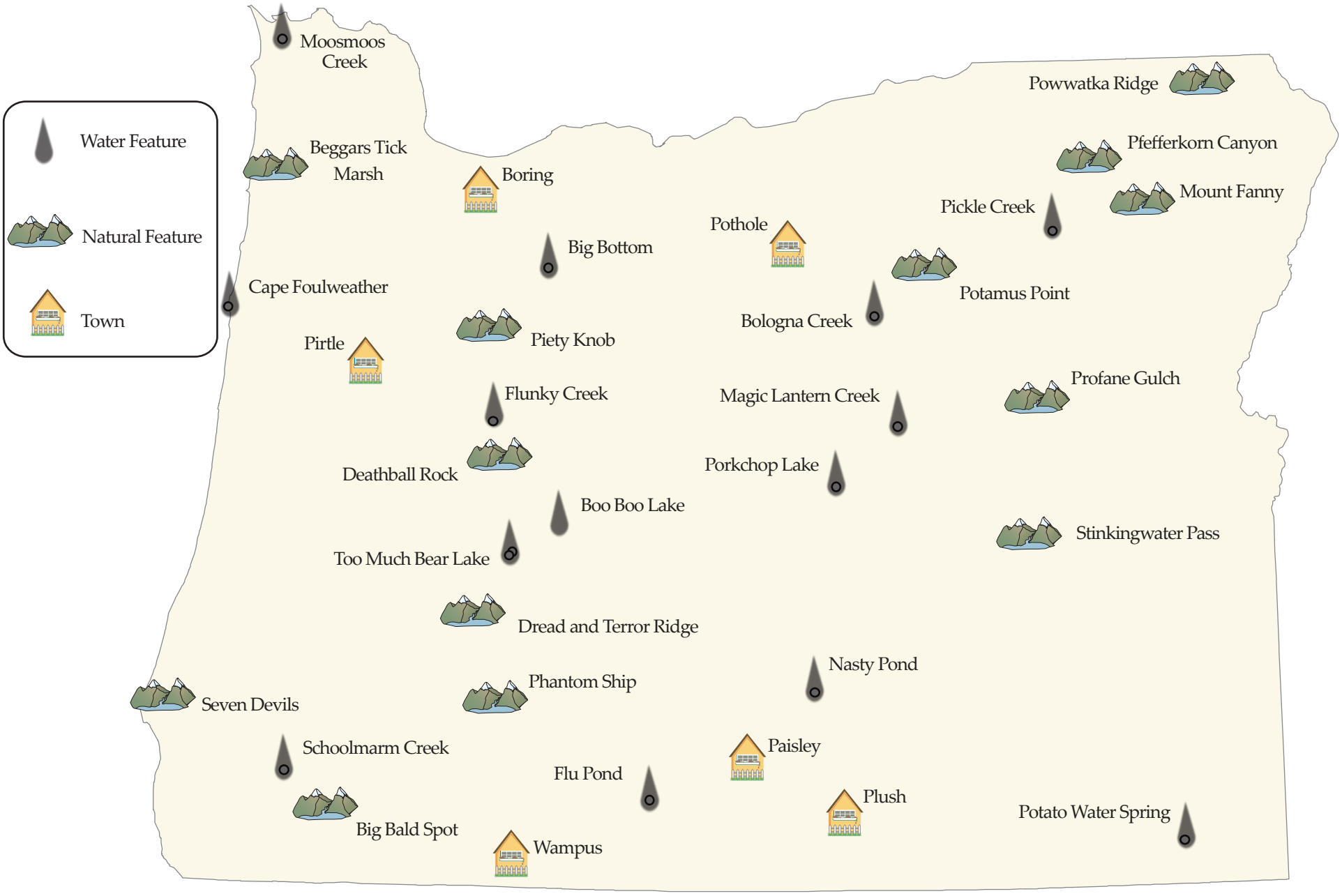
Cities lost power for 2 to 3 weeks and over 50,000 dwellings were damaged. 38 people were killed and 300 injured

Entire orchards were destroyed and many livestock were hurt or killed from falling trees and collapsing barns.

15 times as many trees were blown down during this windstorm than in the 1980 eruption of Mt. St. Helens.



Unusual Place Names



Place Name Origins

Places Named After Natural Features

Cape Foulweather is the place (and weather) of Captain Cook's first landfall in Oregon

Cascade Range was named after the rapids in the Columbia River

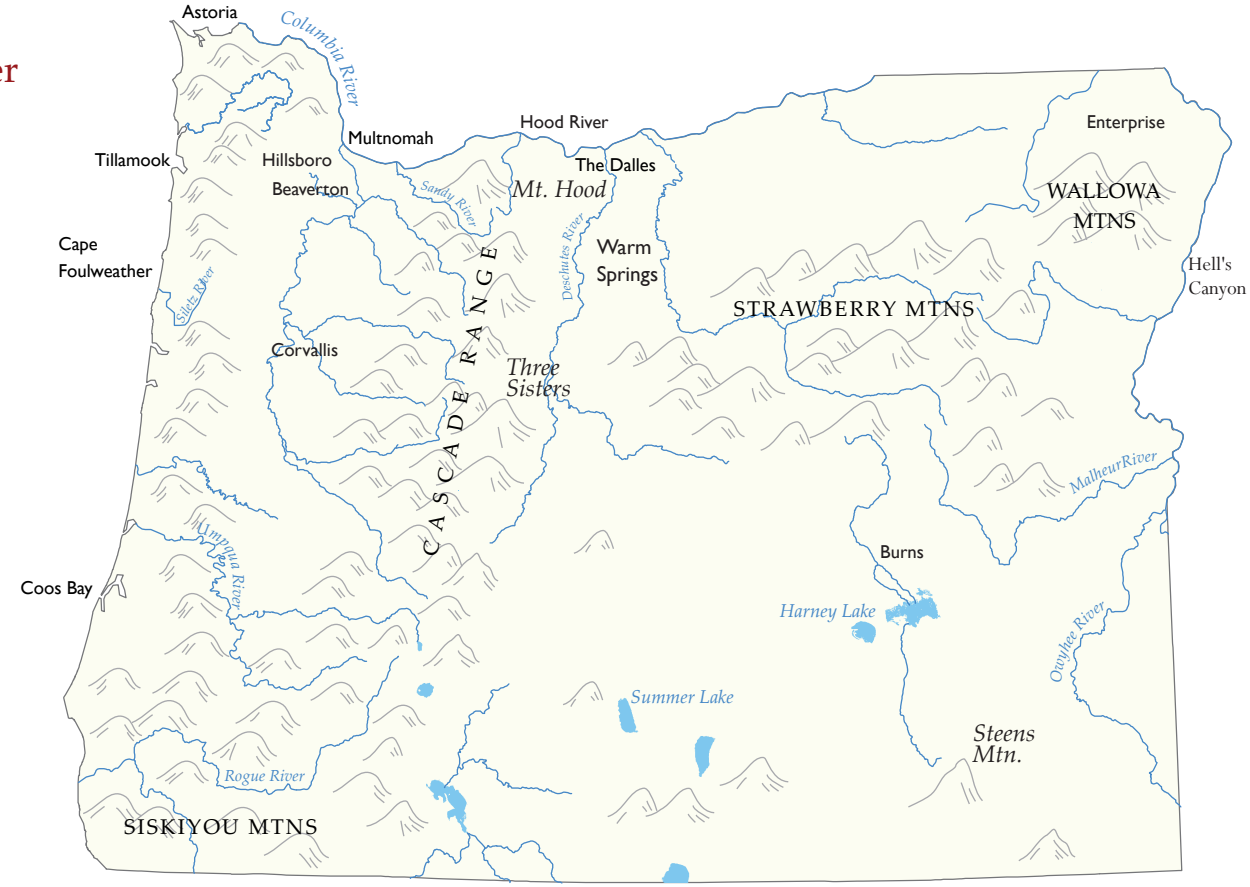
The Dalles means "flagstones" in French, and refers to a narrow river bordered by flat ledges

Sandy River is short "Quicksand River", named by named by Lewis and Clark

Strawberry Mountains are named for the wild strawberries found in the area

Deschutes River means "falls" in French and refers to Celilo Falls on the Columbia River

Warm Springs is named for the local natural



Places with Native American Names

Tillamook is the name of a Salish tribe

Multnomah is the Chinook name for the Willamette River

Wallowa Mountains refers to a Nez Perce word for a type of fish trap

Siskiyou Mountains is a Cree word for "spotted horse" which a fur trader lost in a snowstorm in the mountains

Siletz River refers to a local Native American word for black bear

Umpqua River is a Native American word for the area areound that river

Coos Bay was named after the Cook-koo-oose tribe

Places Named for Explorers and Immigrant Settlers

Hillsboro is named after Oregon's first elected governor, David Hill

Three Sisters mountains were originally called Faith, Hope, and Charity by missionaries

Hell's Canyon in the Snake River gorge was named to promote tourism

Columbia River was named by Captain Robert Gray after his ship, the "Columbia Rediviva", with first entered the river in 1792

Beaverton is named for the abundance of beavers that originally inhabited the wetlands of this agricultural region

Burns is named for the Scottish poet Robert Burns

Hood River and Mt. Hood are named for Samuel Hood, a member of Captain Vancouver's expedition

Corvallis is Latin for "heart of the valley"

Steens Mountain is named for the army major who fought the Paiutes in the region in 1860

Summer Lake was named by Captain Fremont to contrast with nearby Winter Ridge

Enterprise was named by the town's first, and optimistic, residents

Rogue River was first called Woodville, but was changed to better advertise the town

Harney Lake is named after a Brigadier General William Harney

Owyhee River is named for Hawaiian fur trappers killed nearby

Malheur River Means "misfortune" in French and refers to thefts of furs that hunters experienced in the area

Astoria is named for John Jacob Astor whose fur company had a trading post there

Sources

Photos:

Map	Photo	Source
Page 02	Crater Lake	NPS
	Satellite image	NASA
Page 05	Boring sign	Wikimedia
	Chinatown	Gary Halvorson (Oregon State Archuives)
	Pearl	David Banis
	Downtown	Jon Franczyk
Page 06	Hurricane Katrina	NOAA
	School/Hospital	David Banis
Page 07	Urban area	Wikimedia
	River/Railroad	Gary Halvorson (Oregon State Archuives)
	Forest	USFS
Page 08	45th parallel	Steph Gaspers
Page 22	Eliot Glacier	PSU
Page 30	Nine regions	EPA poster
Page 32	Seven zones	NW Habitate Institute Sagebrush Bird Conservation Network
Page 35	Framing	ABC News
Page 36	Fire	USFS
Page 38	Goose	Mike Baird, bairdphotos.com Flickr Creative Commons
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Page 43	Grand Coulee Dam	US Bureau of Reclamation
Page 45	Assorted rocks	Kai Schreiber; Karl Eschenbach; Kevin Walsh. Flickr Creative Commons
Page 52	Wagon train ruts	NPS
Page 69	License plate	Oregon DOT
	Government building Agriculture Land Use	Gary Halvorson (Oregon State Archuives)
Page 72	Shipping containers	Port of Portland
Page 79	Satellite image	NASA

Data:

Page 04: US Census Bureau 2010

Page 05: Prism Climate Group, Oregon State University,
30-year normals, 1971-2000

Page 06: U.S. Census Bureau, 2009-2013 American Community Survey

Page 23,24,25: Prism Climate Group, Oregon State University,
30-year normals, 1971-2000

Page 26: Oregon Climate Service

Page 34,35: Oregon Department of Forestry Oregon's Timber Harvests 1849-2004

Page 40: Oregon Deptartment of Fish and Wildlife
2014 Commercial food fish landings by port

Page 45,46: Oregon Department of Geology and Mineral Industries (DOGAMI)

Page 49: An Historical Atlas of Early Oregon,
J.A. Farmer, D.B. Karnes, G.T. Babich, T.P. Porterfield, 1973

Page 56: US Census Bureau 2010

Page 57: U.S. Census Bureau, 2009-2013 American Community Survey

Page 58: (Race) US Census 2010,
(Ancestry) 2009-2013 American Community Survey

Page 59,60: U.S. Census Bureau, 2009-2013 American Community Survey

Page 66,67,68,70: USDA and Oregon Department of Agriculture 2012-2013
Oregon Agriculture and Fisheries Statistics

Page 72: 2012 American Association of Port Authorities

Page 73: US Census Foreign Trade 2014

Page 74,75: State of Oregon Employment Department 2014 Summary

Page 78: Public Mapping Project

Page 79: US Census Bureau 2010

Acknowledgments

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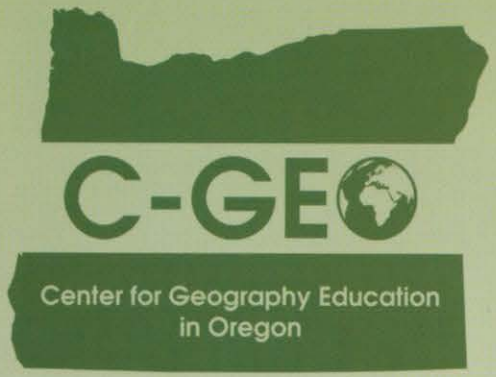
Tim McCarthy

Center for Geography Education in Oregon



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- To increase the emphasis on geography in grades pre-K through 12
- To improve geographic teaching methods and materials

Founded in 1986, the Center for Geography Education in Oregon works cooperatively with other educational, professional, civic, and corporate organizations to improve geographic education. Membership in the Center is free and open to anyone with similar interests.

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