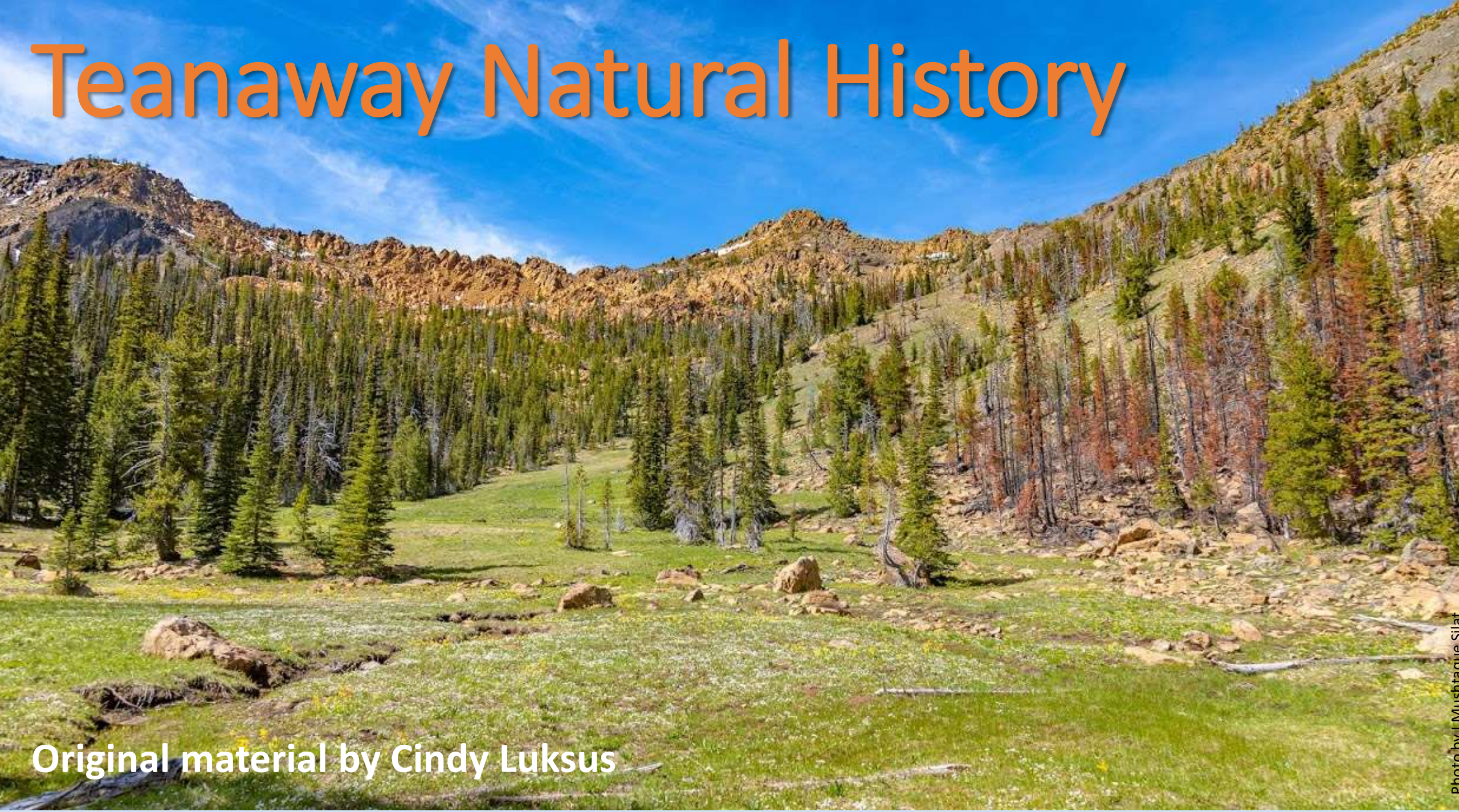
Teanaway Natural History



Original material by Cindy Luksus

Photo by Mushtaque Silat

Teanaway Natural History

1. Who were the first inhabitants?
2. What is the history of the land?
3. Geology of the area
4. Forest dynamics
5. Trees, shrubs, flowers, wildlife, butterflies, lichen

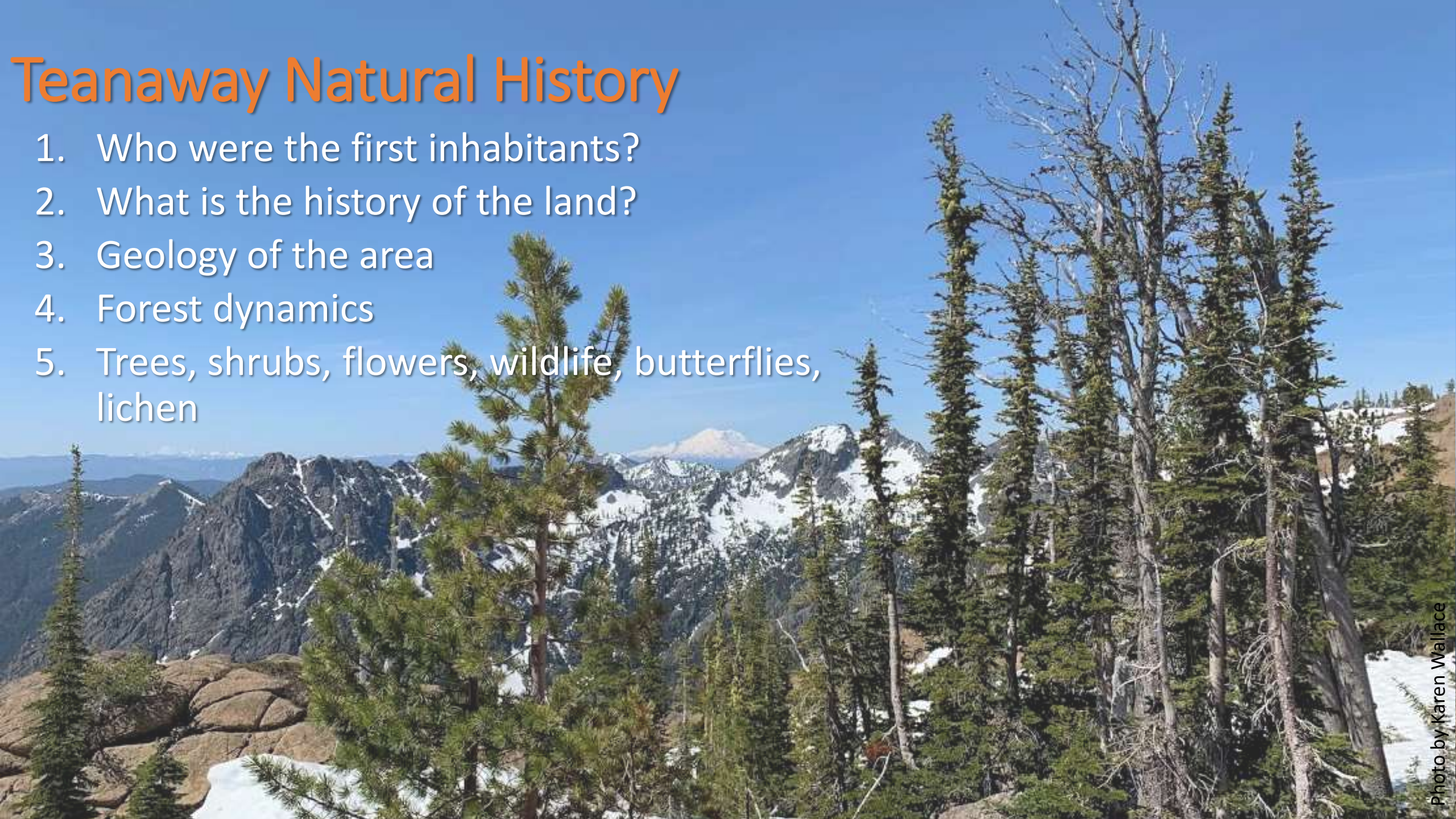


Photo by Karen Wallace

Teanaway History

- **The first inhabitants of the Teanaway River Valley were members of the Yakama, Cayous and Nez Perce Indian Tribes. The Teanaway Valley was part of the summering grounds for these tribes. The name Teanaway possibly had its origins in a Sahaptin word, tyawnawí-ins, meaning “Drying Place”.**
- **The watershed is within the ceded area of the Yakama Nation under the Treaty of 1855.**

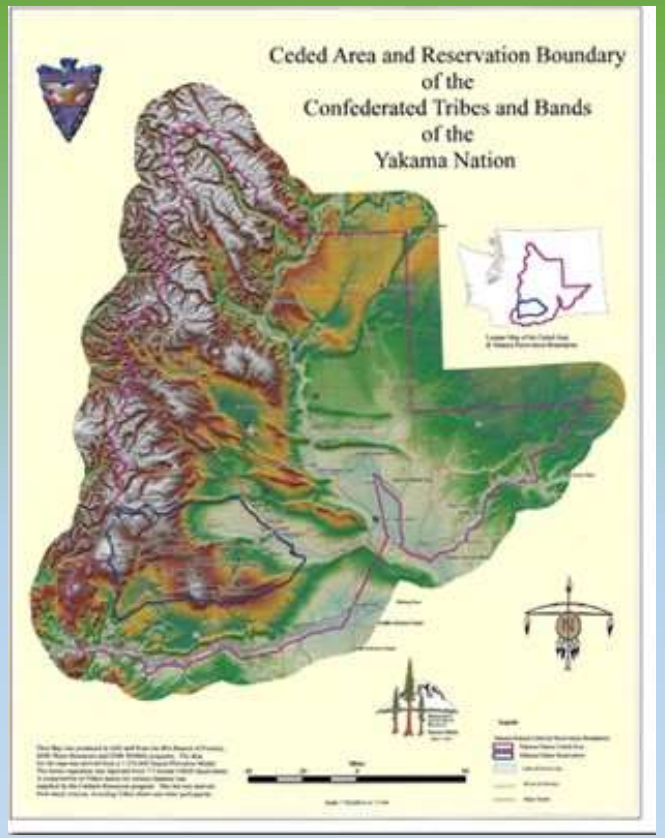


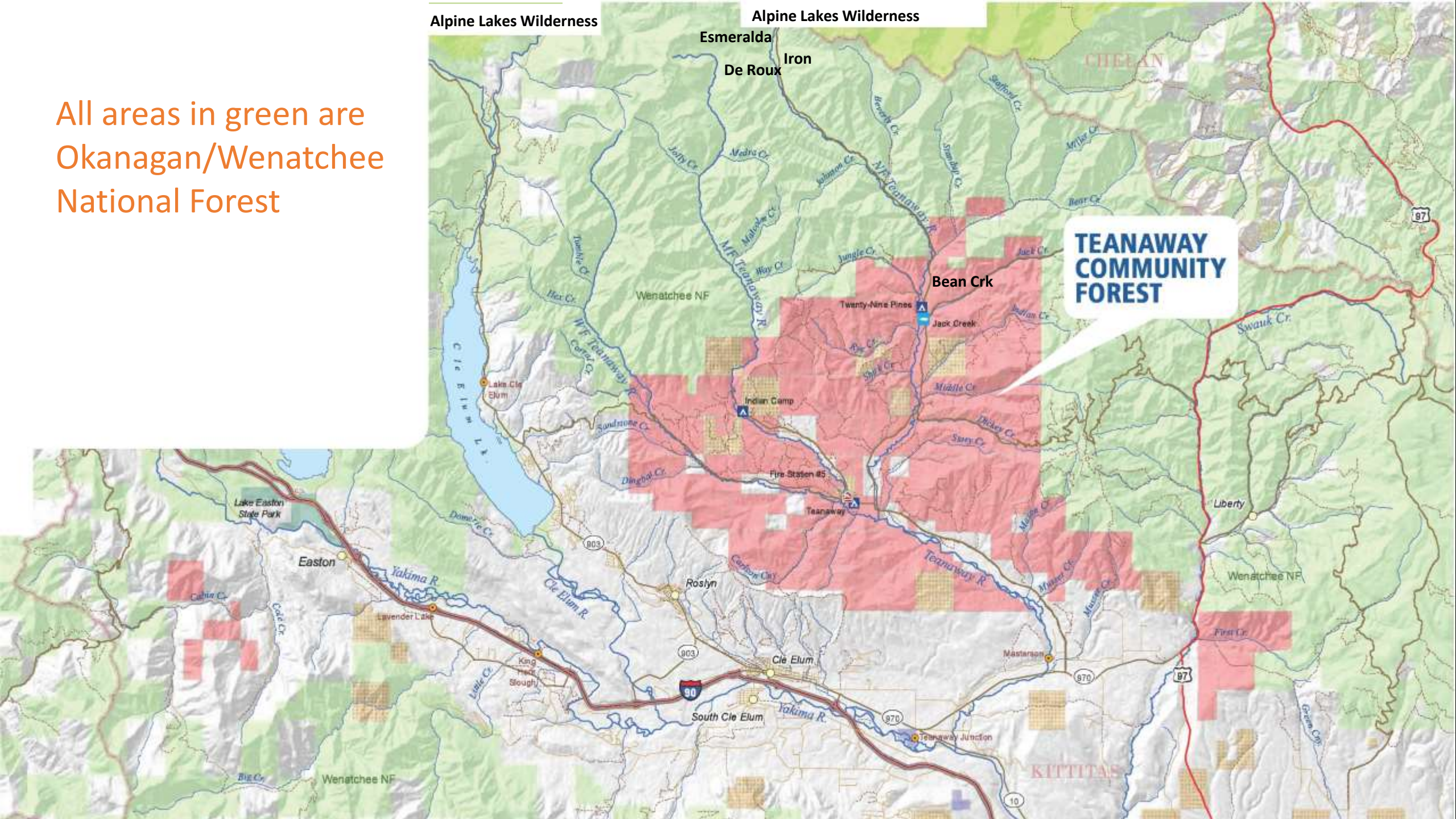
Photo by Adam Johnson

Teanaway History

Farming, grazing, and timber harvest became important within the watershed as European immigrants and other settlers began moving into the area in the late 1800s. Sheep and livestock grazing occurred, and at various times, several thousand head of livestock grazed in the area. Timber harvest within the forest began early in the 1900s.


Okanogan-Wenatchee National Forest
Location Map
Lake Chelan National Recreation Area
Lake Chelan Sawtooth Wilderness
Glacier Peak Wilderness
CHELAN RANGER DISTRICT
Methow River
Brewster
Pateros
Lake Chelan
Entiat River
Chiwawa River
White River
Little Wenatchee River
Henry M. Jackson Wilderness
ENTIAT RANGER DISTRICT
Chelan
Columbia River
Stevens Pass
WENATCHEE RIVER RANGER DISTRICT
Entiat
Leavenworth
Alpine Lakes Wilderness
Icicle River
Wenatchee River
Forest Headquarters
Wenatchee
Snoqualmie Pass
CLE ELUM RANGER DISTRICT
Blewett Pass
Cle Elum
Little Naches River
Norse Peak Wilderness
Yakima River
Ellensburg
American River
Bumping River
Chinook Pass
NACHES RANGER DISTRICT
William O. Douglas Wilderness
Naches
Tieton River
White Pass
Rimrock Lake
Yakima
Goat Rocks Wilderness
Major Rivers
Major Highways
National Forest Offices
National Forest
Wilderness Areas within Okanogan-Wenatchee NF
N
W
E
S
Okanogan
Everett
Spokane
Seattle
Wenatchee
Olympia
WASHINGTON
Yakima

All areas in green are Okanagan/Wenatchee National Forest



Teanaway Links: Where to read more about it!

1. Teanaway Magic from the WTA magazine: https://www.wta.org/news/magazine/magazine/1071.pdf
2. Teanaway Community Forest Management Plan: http://www.friendsoftheteanaway.org/wp-content/uploads/amp_rec_TeanawayRecPlan_120718.pdf

Photo by I Padraic Ryan


Mt Stuart dominates the upper elevation views

Bean Creek Basin

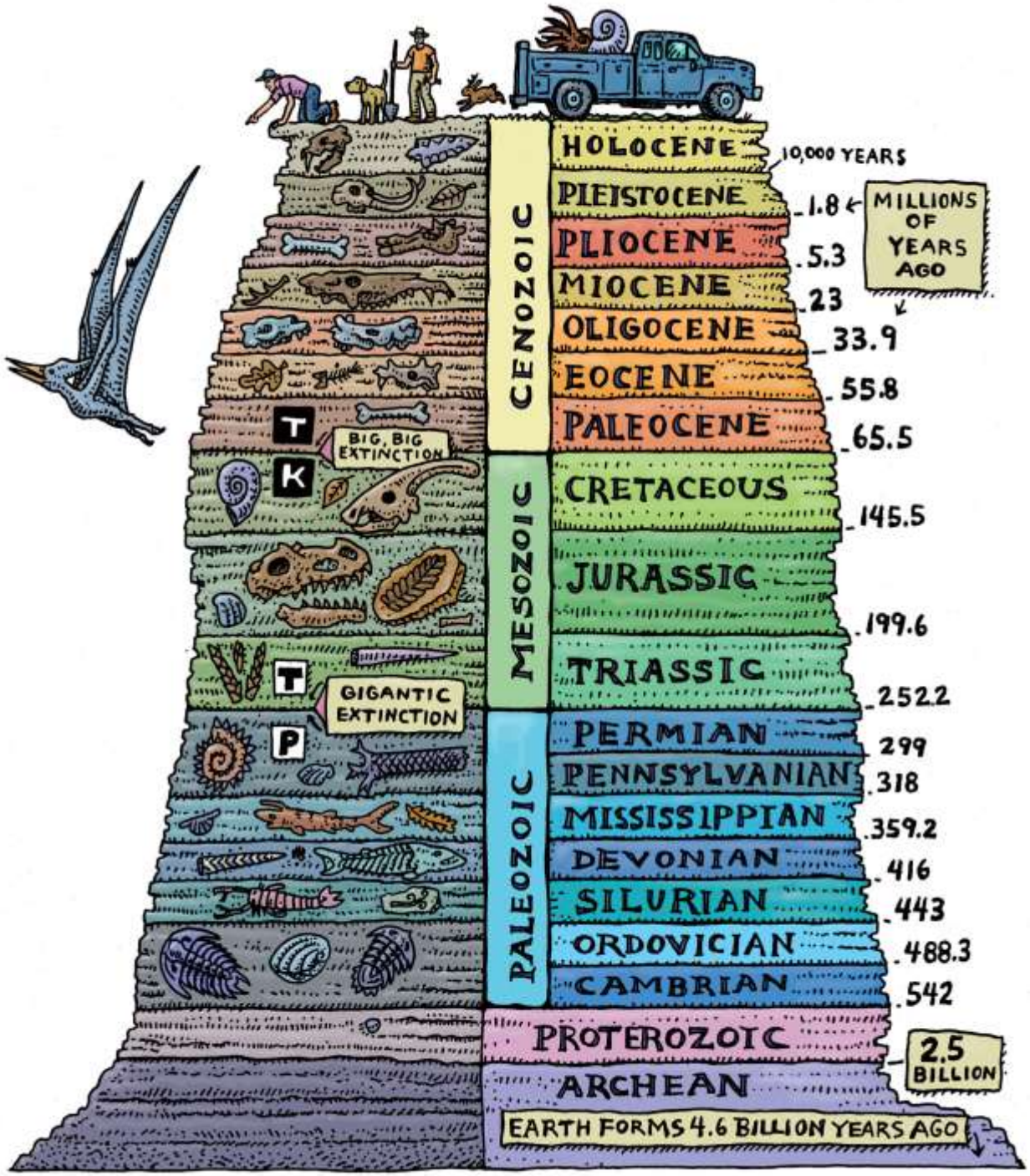
Esmerelda Basin

Swauk and Tronsen Ridge

Iron Peak

Geology

- The geology of the area is dominated by the Late Jurassic/Early Cretaceous Ingalls Tectonic Complex.
- This includes serpentinite and serpentinized peridotite as well as metasedimentary rocks, ultramafic, volcanic and intrusive igneous rocks
- Mt Stuart granite is 93 million years old and docked in it's present location around 55 million years ago. The serpentinite is 150 million years old and docked about the same time. The mystery is still HOW DID THEY GET THERE???



Geology

Serpentinite

- Grey-green to black rock with a waxy snakeskin like texture. Metamorphism of upper mantled rock which is ultramafic - dark colored rocks with a lot of magnesium and iron.
- Different type of metamorphism – heat and water rather than the typical heat and pressure. Pretty much underlies the entire ocean floor as these deep ultramafic magmas ooze up are are serpentinized by sea water.
- Made up of serpentine - the set of minerals in the serpentine group of minerals.

On Ingalls Peak—also known as “Don’t-step-on-it-too-slippery-rock!”

Photos by Karina V.

Geology

So what happened after all the **tectonic plate** activity?

- Periods of plasma flows succeeded by sedimentation formed Roslyn, Teanaway Basalt, and Swauk Formations – Eocene era – 34-58 million years ago Temperatures were warmer and there are many fossils records from this time.
- Plasma Flows from the Grand Ronde Flood Basalt formed flat-topped hills and steep slopes or cliffs– around 15.6 million years ago
- Glaciers blocked the Teanaway River forming a lake. Glacial drift and outwash---around 2.4–11.4 million years ago
- Landslides and river and stream deposits – Modern to 11 million years

Photo by I Padraic Ryan

Geology

So what are we left with today?

- Steep terrain, river valleys, mountain meadows
- Granite-Mt Stuart
- Metamorphic rock-high ridges rolling terrain
- Areas of serpentine soil – contains < 45% silica and is composed of the mineral serpentine---bare exposed slopes.

1. Low calcium to magnesium ratio
2. Lack of essential nutrients-nitrogen, potassium and phosphorus
3. High concentration of nickel and chromium

Geology

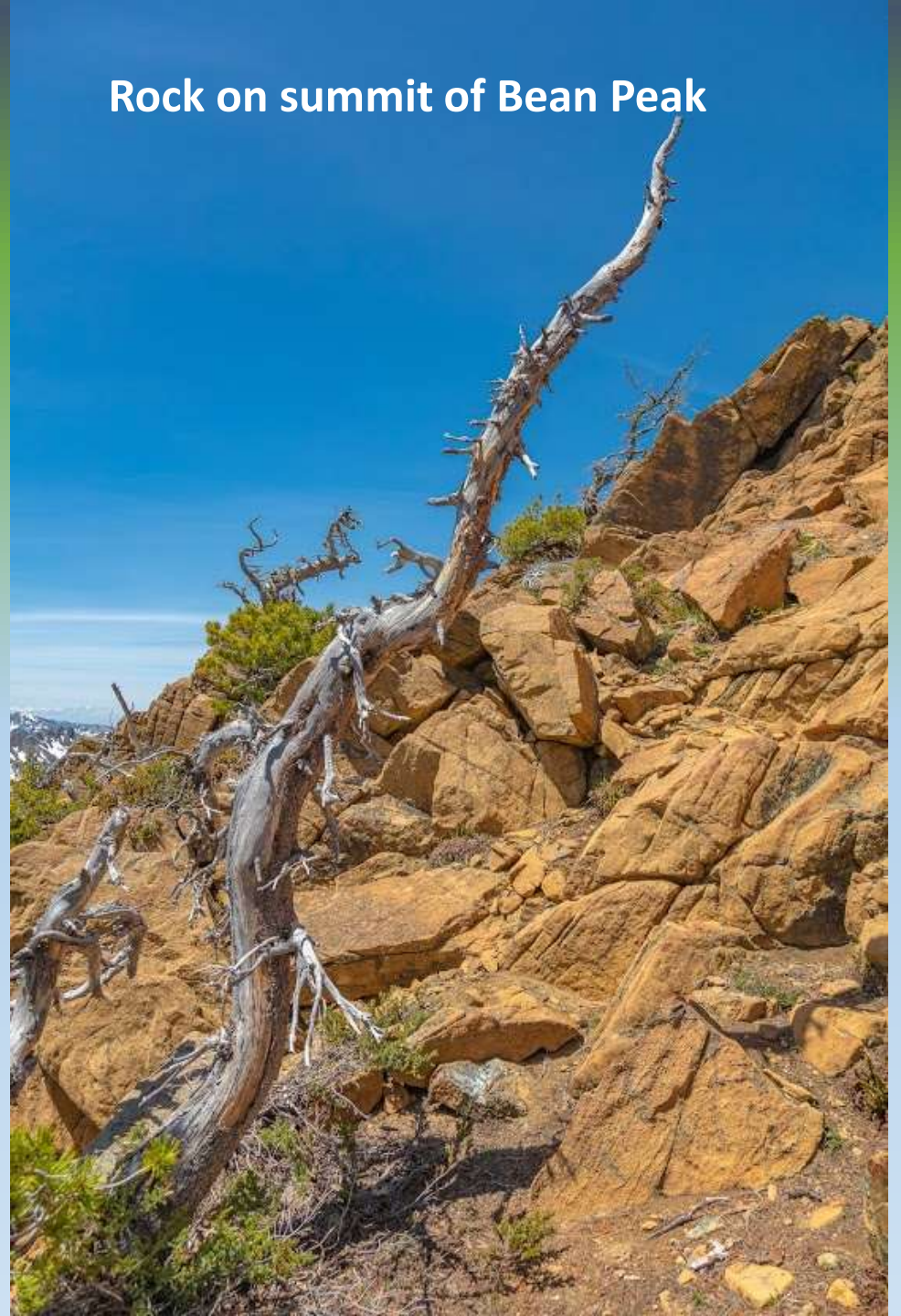
Mount Stuart - From Mexico? Geologist Nick Zentner discusses the Stuart Range. Its granite contains clues that continue to puzzle geologists. Did the granite really form in Mexico and move a thousand miles north to central Washington?

Photo by I Mushtaque Silat

Geology Resources

More geology resources for you:

- 5 minute Nick on the Rocks video available here
- 60 minute Nick Zentner lecture on Mount Stuart available here
- Geology of the Teanaway Community Forest: http://file.dnr.wa.gov/publications/ger_gsp_teanaway.pdf



Rock on summit of Bean Peak

Photo by I Mushtaque Silat

Geology Quiz

Who can figure out what this honeycomb pattern is on the rock on Bean Peak? Email Danielle, and you will win a prize. (If you are a geologist by profession or training, email me and I will give you a flower or shrub quiz instead!)

Photo by Tyler Stockdale

Rare or Endemic Flowers of the Wenatchee Mtns/Teanaway

Mid to High Elevations-Serpentine Barrens

Ivesia tweedyi-
Tweedy’s ivesia

Lomatium cuspidatum-Wenatchee Mountain Lomation

Portulacaceae- Primose Family

Claytonia megarhiza- Wenatchee Mountain Springbeauty

Trees Common in the Teanaway

Pinus ponderosa- Ponderosa Pine (3 needles)

Pinus albicaulis- Western White Pine (5 needles)

Abies grande-Grand Fir

Pseudotsuga menziesii- Douglas Fir


What is this tree?

Tsuga mertensiana-Mountain Hemlock

Picea engelmannii-Engelman's Spruce

Photos by Ben Legler

Other trees:

Lodgepole pine
Alpine Fir
Whitebark Pine
Pacific Yew
Silver Fir
Western Larch

What is this tree?

What is happening in our Forests Today

From USDA 2004 “Forest Health Assessment for the Okanogan and Wenatchee National Forests”

- The severity and magnitude of wildland fires have been exacerbated in recent years by several conditions:

1. Accumulations of dead wood
2. Development of dense forests on dry and mesic sites
3. Ongoing insect and disease epidemics
4. Cumulative effects of several years of drought

Beetle/Defoliator/Dwarf Mistletoe Infestations

- Natural disturbance include fire, insects, diseases, wind throw, wild herbivores, and weather.
- Pre-settlement disturbances have been altered by management activities, climatic changes, livestock, grazing, timber harvesting, and human habitation.
- Diseases tend to spread diffusely over the entire forest and are not usually a factor.
- Fir engravers and defoliators, such as the Western spruce budworm do not often kill trees. However, in recent years they have sufficiently weakened trees so that they easily succumb to Bark beetles, the Mountain Pine Beetle, Spruce Beetle, and Douglas Fir Beetle. All of these attack and kill the larger trees first.

Photo by I Padraic Ryan

A lodgepole pine tree infested by the mountain pine beetle, with visible pitch tubes

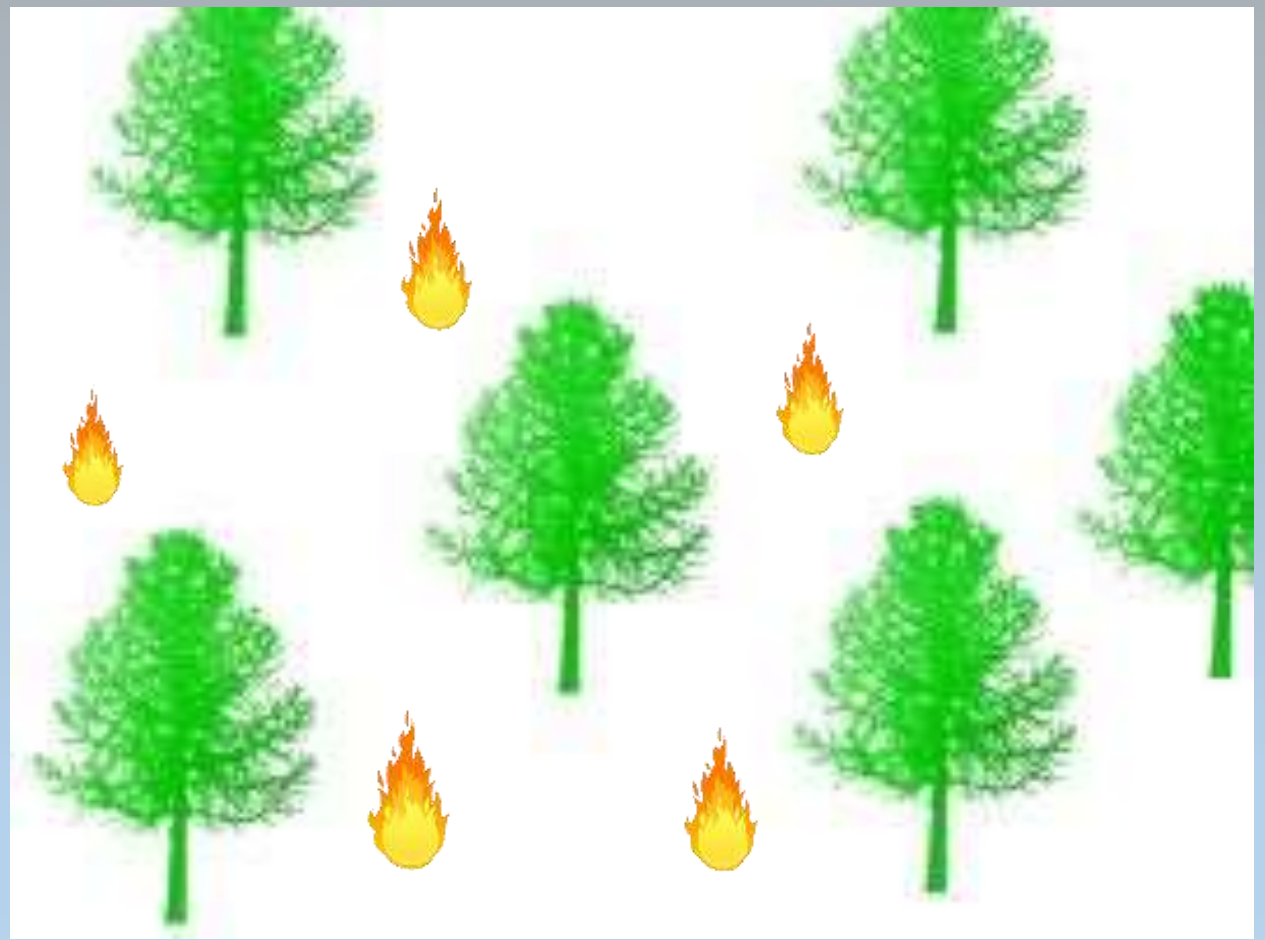
Beetle/Defoliator/Dwarf Mistletoe Infestations

Dwarf Mistletoe

- Parasitic plants that affect host trees by reallocating water and nutrients, causing deformation, growth loss and premature death.
- Affects western larch, ponderosa pine, lodgepole pine, and to a lesser extent hemlocks and grand fir. Douglas-fir is most affected.

Dense forests have increased the ability of insects and mistletoe to spread and make them next to impossible to contain, much less eradicate.

Our Forests: Pre-settlement and Now



The Impacts of Fire on the Forest

The Table Mountain Fire in 2012 burned over 40,000 acres along Blewett Pass, including the area we will visit for Swauk Trail and Tronsen Ridge, where fire scars are still visible. The fire began in late summer and burned until the weather changed in November.

The Impacts of Fire on the Forest

Lodgepole pine is a fire-dependent species, requiring wildfires to maintain healthy populations of diverse ages. The bark of the lodgepole pine is fairly thin, minimizing the tree's defense to fire; however, the heat of fire opens the cones to release the seeds

The Impacts of Fire on the Forest

This older lodgepole pine managed to escape devastation in the Table Mountain Fire. The ones in the background were not as fortunate

The Impacts of Fire on the Forest

What happens when fires are too hot? Fire can be very damaging to natural areas. When fires burn too hot, due to accumulated fuel and climate change, the land may become scorched and plant life may struggle to regrow, negatively impacting wildlife and the riparian areas. (Jack Creek Fire 2017)

Photo by Matt Kurjanowicz

Meadows, Hillsides, Sub-alpine Meadows

Orobanchaceae-Broomrape Family (Formerly Figwort Family)

Pedicularis groenlandica- Elephant Head Lousewort

Pedicularis bracteosa – Bracted Lousewort

Orobanchaceae-Broomrape Family

Castilleja elmeri-Wenatchee Indian paintbrush, Elmer's paintbrush

Lentibulariaceae - Bladderwort Family

Pinguicula vulgaris – Common Butterwort

Boraginaceae-Borage Family

Hydrophyllum capitatum-Ball-head Waterleaf


Phacelia hastata-
Silver-leaf phacelia

Phacelia procera – Tall phacelia

Apiaceae-Parsley Family

Lomatium nudicale-
Bare-stemmed lomatium

Lomatium brandegei-
Brandegee's lomatium

Asteracea-
Aster Family

Cacaliopsis nardosmia-
Silvercrown Luina

Ranunculaceae- Buttercup Family

Delphinium nuttallianum- Upland or Common Larkspur

Anemone drummondii – Drummond’s anemone

Portulacaceae – Purslane Family

Lewisia Columbiana-
Columbia Lewisia

Polygonaceae Family - Buckwheats

Eriogonum pyrolifolium-
Alpine buckwheat

Eriogonum compositum-
Northern buckwheat

Eriogonum umbellatum-
Sulphur buckwheat

Erigonum elatum-
Tall buckwheat

Aconogonon davisiae-Davis's knotweed

Ericaceae-Heath Family

Pyrola picta-White-veined wintergreen

Orthilia secunda – One-sided wintergreen (with some Rattlesnake Plantain mixed in)

Orchidaceae-Orchid Family

Calypso bulbosa-Calypso Orchid or Fairy Slipper

Platanthera dilatata-White Bog Orchid

Platanthera stricta-Slender Bog Orchid

Tofieldia Family

Triantha occidentalis - Sticky Asphodel

Photo by Ben Legler

Primulaceae- Primrose Family

Douglasia nivalis – Snow Douglasia

Dodecatheon jeffreyi-
Jeffery’s Shooting Star

Saxifragaceae-Saxifrage Family

Lithophragma sp-
Woodland Prairie Star

Polemoniaceae – Phlox Family

Ipomopsis aggregate – Skyrocket or Scarlet Gilia

Violaceae – Violet Family

Viola purpurea – Goosefoot violet

Shrubs Common in The Teanaway

Ericaceae-Heath Family

Arctostaphylos nevadensis-Kinnikinnick

Rhododendron columbianum-Trapper's Tea

Rhamnaceae-Buckthorn Family

Ceanothus velutinus-Snowbrush or Tobacco Bush

Ceanothus sanguineus-Red-stemmed ceanothus

Acer glabrum-Douglas Maple

Rosacae – Rose Family

Amelanchier alnifolia – Serviceberry

Prunus emarginata – Bitter Cherry

Spiraea betulifolia-Birch Leafed Spirea

Sorbus sp – Cascade and Sitka Mountain-ash

Ferns Common to The Teanaway

Polystichum lemmonii – Shasta Fern

Cryptogramma crispa – Rock-brake or Parsley Fern

Aspidotus densa-
Indian Dream Fern

Birds Common in The Teanaway

Western Tananger

Dark-eyed junco

Pine Siskin

Chipping Sparrow

Evening Grosbeak

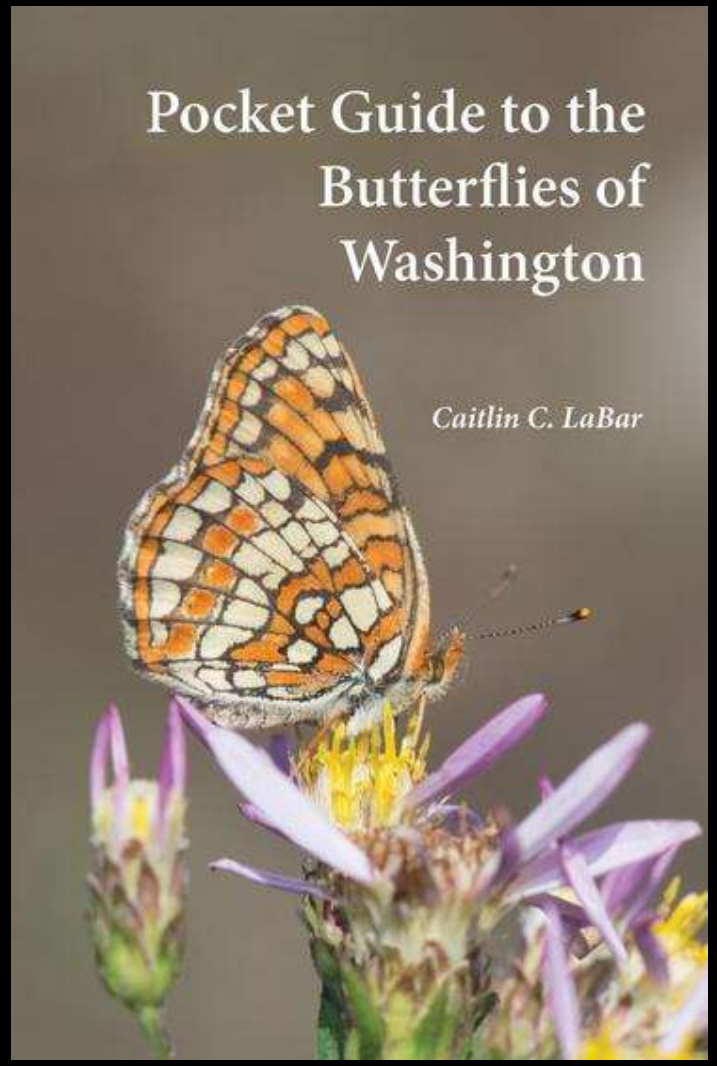
Photos from the Audobon website

Butterflies Common In the Teanaway

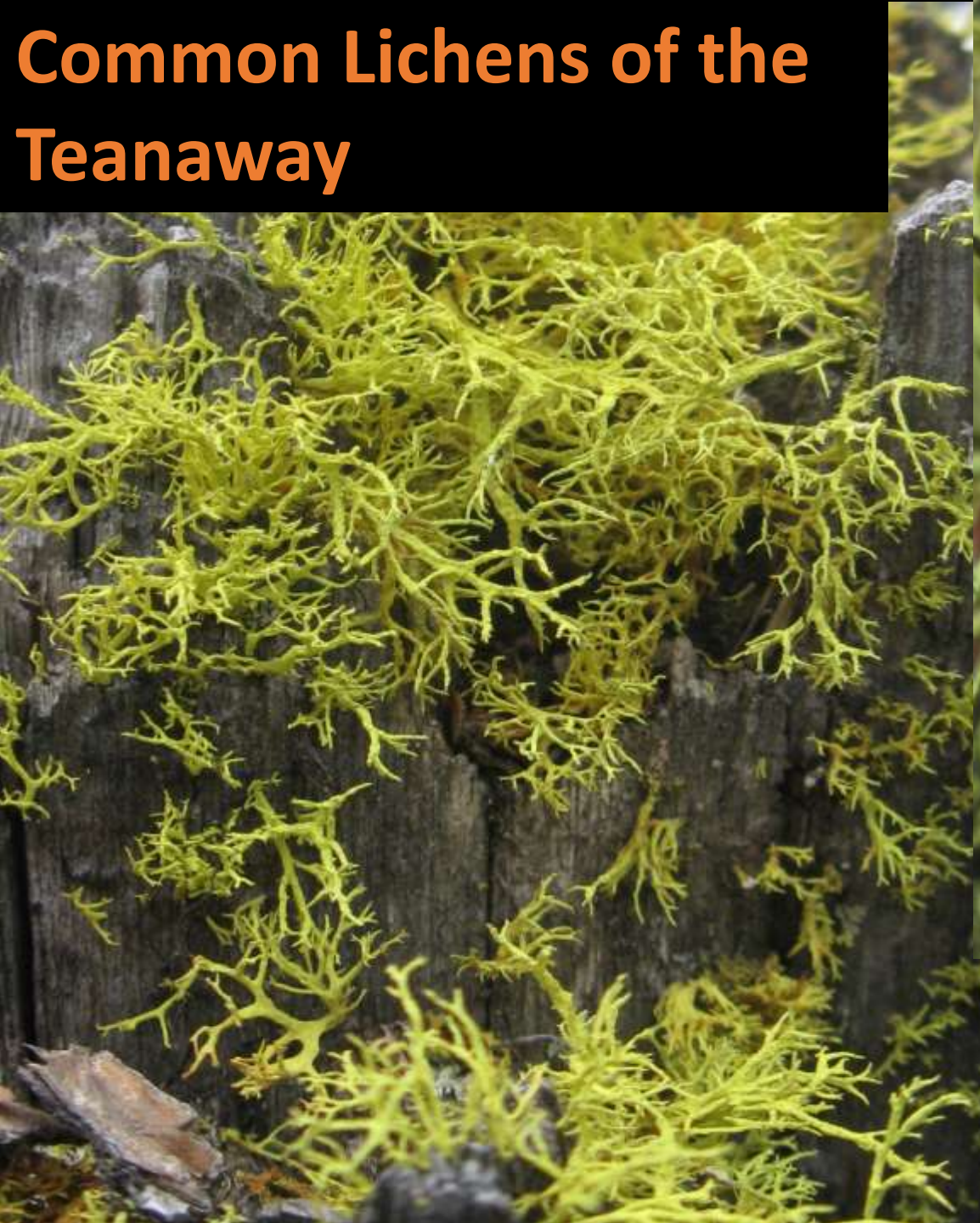
Anglewing or Comma

Morningcloak
and Blues

Butterfly charts are up on the course page.



Common Lichens of the Teanaway



Letharia Vulpina-Wolf Lichen

Letharia Columbiana-Wolf Lichen

Witch’s Hair – Alectoria sp. - Fruticose

Horsehair Lichen-Bryoria sp - Fruticose

Lichen charts are up on the course page. Also keep eye out for the workshop that Stewart Hougen and Gary Brill will teach for the Mountaineers this winter on mosses and lichens

Animals In the Teanaway

Wolf

Deer

Mountain goat

Elk

References

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- USDA 2004 “Forest Health Assessment for Okanogan and Wenatchee National Forests”- John Townsley, Bill Gaines, Jim Hadfield, Ricchy Harron, Connie Mehmel, and Elaine Leyda
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- http://www.conservationnw.org (Teanaway Community Forest)
- http://www.dnr.wa.gov/Teanaway
- Burke Museum Herbarium Image Collection
- Audubon Image Collection