101 Legal Notices **101 Legal Notices**

Wallowa County A-List Noxious Weeds

These weeds are present in Wallowa County but occurring in small enough populations and with geographic infrequency such that eradication and containment are possible.

Common Bugloss	Anchusa officianalis
Common Tansy	Tanacetum vulgare
Hoary Alyssum	Berteroa incana
Italian Thistle	Carduus pycnocephalus
Knotweed Complex (Japanese, Himalayan, Giant, Bohemian)	Fallopia sp.
Leafy Spurge	Euphorbia esula
Meadow Knapweed	Centaurea pratensis
Musk Thistle	Carduus nutans
Myrtle Spurge	Euphorbia myrsinites
Orange Hawkweed	Hieracium aurantiacum
Oregano	Origanum vulgare
Perennial Pepperweed	Lepidium latifolium
Plumeless Thistle	Carduus acanthoides
Purple Loosestrife	Lythrum salicaria
Rose Campion	Lychnis coronaria
Russian Knapweed	Acroptilon repens
Scotch Broom	Sytisus scorparius
Spotted Knapweed	Centaurea maculosa
Tansy Ragwort	Senecio jacobaea
Welted Thistle	Carduus crispus
Whitetop (Hoary Cress)	Lepidium draba
Yellow Flag Iris	Iris pseudacorus

Wallowa County B-List Noxious Weeds

These weeds are present and pervasive where suitable habitat is found in Wallowa County and require control to mitigate negative impacts.

Absinth Wormwood	Artemisia absinthium
Annual Bugloss	Anchusa arvensis
Bachelor Button	Centaurea cyanus
Bloodrop/Pheasanteye	Adonis aestivalis
Bur Buttercup	Ranunculus testiculatus
Canada Thistle	Cirsium arvense
Chicory	Cichorium intybus
Common Burdock	Arctium minus
Common Crupina	Crupina vulgaris
Common Kochia	Kochia scoparia
Common Mullein	Verbascum thapsus
Common Teasel	Dipsacus fullonum
Dalmatian Toadflax	Linaria dalmatica
Diffuse Knapweed	Centaurea diffusa
Field Bindweed	Convolvulus arvensis
Himalayan Blackberry	Rubus armeniacus
Houndstongue	Cynoglossum officinale
Jointed Goatgrass	Aegilops cylindrical
Long-spine Sandbur	Cenchrus longispinus
Meadow Hawkweed	Hieracium caespitosum
Medusahead Rye	Taeniatherum caput-medusae
Oxeye Daisy	Chrysanthemum leucanthemum
Poison Hemlock	Conium maculatum
Puncturevine	Tribulus terrestris
Reed Canary Grass	Phalaris arundinacea
Rush Skeletonweed	Chondrilla juncea
Scotch Thistle	Onopordum acanthium
St. Johnswort	Hypercium perforatum
Sulphur Cinquefoil	Potentilla recta
Sweet Briar Rose	Rosa eglanteria
Tall Buttercup	Ranunculus acris
Tree of Heaven	Ailanthus altissima
Ventenata	Ventenata dubia
White Campion	Silene alba
Yellow Starthistle	Centaurea solstitialis
Yellow Toadflax	Linaria vulgaris

Wallowa County Target List Noxious Weeds

Noxious weed partners and agencies within Wallowa County have designated significant funding and labor towards projects targeting these weeds in 2018.

Common Bugloss	Anchusa officianalis
Common Tansy	Tanacetum vulgare
Hoary Alyssum	Berteroa incana
Jointed Goatgrass	Aegilops cylindrical
Knotweed Complex (Japanese, Himalayan, Giant, Bohemian)	Fallopia sp.
Leafy Spurge	Euphorbia esula
Meadow Hawkweed	Hieracium caespitosum
Meadow Knapweed	Centaurea pratensis
Medusahead Rye	Taeniatherum caput-medusae
Musk Thistle	Carduus nutans
Myrtle Spurge	Euphorbia myrsinites
Orange Hawkweed	Hieracium aurantiacum
Oregano	Origanum vulgare
Perennial Pepperweed	Lepidium latifolium
Plumeless Thistle	Carduus acanthoides
Puncturevine	Tribulus terrestris
Rush Skeletonweed	Chondrilla juncea
Russian Knapweed	Acroptilon repens
Scotch Broom	Sytisus scorparius
Spotted Knapweed	Centaurea maculosa
Sulphur Cinquefoil	Potentilla recta
Tree of Heaven	Ailanthus altissima
Tansy Ragwort	Senecio jacobaea
Welted Thistle	Carduus crispus
Whitetop (Hoary Cress)	Lepidium draba
Yellow Flag Iris	Iris pseudacorus
Yellow Starthistle	Centaurea solstitialis

Wallowa County Watch List Noxious Weeds

These are weeds that are either:

Known to be noxious and exist within neighboring counties/regionally but have no confirmed sites in Wallowa County*

OR

Thought to exist within Wallowa County and might one day exhibit traits that requires formal listing

Baby's Breath	Gypsophila paniculata
Black Henbane^	Hyoscyannus niger
Bouncing Bette	Sponaria officinalis
Buffalo Bur	Solanum rostratum
Bur Chervil	Anthriscus caucalis
Clary Sage	Salvia sclarea
Comfrey^	Symphytum sp.
Common Reed Grass^	Phragmites australis
Dyer's Woad*	Isatis tinctoria
Foxtail Barley^	Hordeum jubatum
Garlic Mustard*	Alliaria petiolata
Glyphosate-resistant Creeping Bentgrass*	Agrostis stolonifera
Iberian Starthistle*	Centaurea iberica
Lambsquarter^	Chenopodium album
Marsh Elder	Iva annua
Mediterranean Sage*	Salvia aethiopis
Perennial Peavine	Lathyrus latifolius
Ravennagrass*	Saccharum ravennae
Rough Cocklebur	Xanthium strumarium
Russian Olive^	Elaegnus angustifolia
Russian Thistle^	Salsola kali
Salt Cedar^	Tamarix ramosissima
Silverleaf Nightshade	Solanum elaeagnifolium
Sow Thistle	Sonchus arvensis
Spotted Cat's Ear^	Hypochaeris radicata
White Bryony	Bryonia alba
Wild Carrot^	Daucus carota

NOAA forecasts low returns for Chinook, improved returns for coho

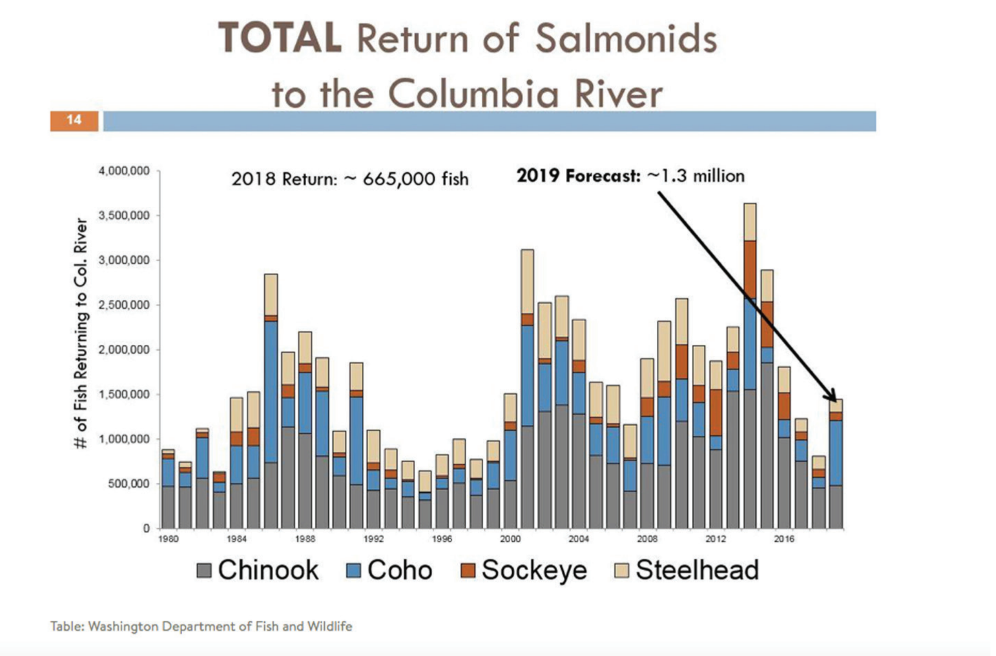

Table: Washington Department of Fish and Wildlife

NOAA Fisheries

Returns of Coho salmon are predicted to be relatively strong in 2019, due to ocean conditions favorable to coho; chinook returns are little improved over 2018.

Twice as many salmon and steelhead are predicted to return to the Columbia River Basin in 2019 as returned last year, Washington, Oregon, and Idaho state fish biologists reported at the Council's March meeting. The prediction for this year is 1.3 million fish entering the Columbia River to begin the upriver journey to spawn; last year the total return was 665,000.

While that is an improvement, it is fewer than the current 10-year average of 2.21 million fish, said Dan Rawding, Columbia River policy and science coordinator for the Washington Department of Fish and Wildlife. He noted the average for the decade of the 1980s was 1.5 million, for the 1990s 988,000, and for the 2000s 2 million. The upriver component (above Bonneville Dam) of the total salmon and steelhead run is forecasted at 968,000 fish this year compared to 619,400 in 2018.

Forecasting fish returns is a bit like forecasting the weather months in advance. Fish biologists collect information on smolt migrations in previous years, ocean conditions, and returns in recent years then make educated guesses. Harvest seasons are set based on the predictions, then adjusted as the fish return. In 2018 fishery managers met 28 times to adjust fisheries, with the goal of balancing conservation of the salmon and steelhead runs with providing fishing opportunities, Rawding said.

Coho are the reason for the large increase in estimated total returns in 2019. A change in ocean conditions appears to favor coho this year. As well, ocean and in-river harvest of coho has been declining since 2005. So the optimistic forecast for the 2019 coho return this fall is for 726,000 fish entering the mouth of the river. The 2018 forecast was for 286,200 coho, and the actual return was 147,300.

Sockeye: The 2019 forecast is 94,400 fish; the 2018 return was 99,000. Most of the Columbia River run spawns in the Okanagon and Wenatchee river basins, but there is a very small component of Snake River sockeye, an endangered species. The forecast for those fish in 2019 is 43 natural-origin, compared to 36 last year, and 86 hatchery fish, compared to 240 last year. Fish raised at the new sockeye hatchery in Springfield, Idaho, should help boost adult returns in future years.

Snake River fall Chinook (combined natural-origin and hatchery): 10,016 hatchery and 5,435 natural-origin fish. Those numbers are close to the 2018 returns.

Meanwhile, rapidly changing conditions in the ocean environment have made forecasting salmon and steelhead returns even more difficult. Brian Burke, an ocean scientist with NOAA Fisheries in Seattle, said some aspects of the ocean ecosystem appear to be back to normal, but others are still changing. In response to the variability – from warmer than normal to cooler than normal in the course of a couple years recently, with the current trend toward cooling — he said, "my new answer is the ocean is still changing; we are seeing more variability, and 'typical' and 'normal' conditions are difficult to define."

Scientist explains low carbon dioxide during the Ice Age

Oregon State University

CORVALLIS, Ore. – Since scientists first determined that atmospheric carbon dioxide (CO2) was significantly lower during ice age periods than warm phases, they have sought to discover why, theorizing that it may be a function of ocean circulation, sea ice, iron-laden dust or temperature.

Yet no computer model based on existing evidence has been able to explain why CO2 levels were as much as one-third lower when an ice age settled in.

A new study published this week in Science Advances provides compelling evidence for a solution – the combination of sea water temperature variation and iron from dust off Southern Hemisphere continents.

"Many of the past studies that analyzed ocean temperatures made the assumption that ocean temperatures cooled at the same rate over the entire globe – about 2.5 degrees (Celsius)," said Andreas Schmittner, a climate scientist at Oregon State University and co-author on the study. "When they ran their models, temperature thus accounted for only a small amount of atmospheric CO2 decrease.

"We now know that the oceans cooled much more in some regions, as much as five degrees (C) in the mid-latitudes. Since cold water has a higher degree of CO2 solubility, it had the potential to soak up a lot more carbon from the atmosphere than past studies accounted for – and it realized more of that potential."

Schmittner and his colleagues estimate that colder ocean temperatures would account for about half of the decrease in CO2 during the last glacial maximum – or height of the last ice age. Another third or so, they say, was likely caused by an increase in iron-laden dust coming off the continents and "fertilizing" the surface of the Southern Ocean. An increase in iron would boost phytoplankton production, absorbing more carbon and depositing it deep in the ocean.

The researchers' models suggest that this combination accounts for more than three-quarters of the reduced amount of atmospheric CO2 during the last ice age. During the last glacial maximum, CO2 levels were about 180 parts per million, whereas levels in 1800 A.D. – just prior to the Industrial Revolution – were at about 280 parts per million.

Schmittner said the remaining amount of reduced carbon may be attributable to variations in nutrient availability and/or ocean alkalinity.

"The increase in iron likely resulted from ice scouring the landscape in Patagonia, Australia and New Zealand, pulling iron out of the rocks and soil," Schmittner said. "Since it was very cold and dry, the iron would have been picked up by the wind and deposited in the ocean.

"Our three-dimensional model of the global ocean agrees well with observations from ocean sediments from the last glacial maximum, giving us a high degree of confidence in the results."

The researchers say that when the Earth cooled during the last ice age, the oceans naturally cooled as well – except near the polar regions, which already were as cold as they could get without freezing. During warm phases, the difference in ocean surface temperatures between the high latitudes and the mid-latitudes was significant.

As warmer water moves toward Antarctica and begins to cool, the lost heat goes into the atmosphere, increasing the ocean's potential to soak up CO2.

"It's like when you take a beer out of the refrigerator," Schmittner said. "As it warms, the bubbles come out. Carbon dioxide is a gas, and it can dissolve in water as well as get into the ocean from the atmosphere, and it is more soluble in colder water. But that process takes a while and therefore the ocean doesn't realize all of its potential to take up CO2 in those waters around Antarctica that fill much of the deep ocean."