

# The Evolutionary Journey of Methow Wildlife

by Dana Visalli

The animals that populate the Methow Valley reflect to a surprising degree the long evolutionary history of animal life in North America and on the planet as a whole. It is as if we are living in science lab devoted to the study of evolution. For example, the lampreys in our river system are considered to be the oldest fish on the planet. In fact they are so old they lack bones, jaws and scales--they are barely a fish at all. A 360 year-old fossil lamprey was recently found in South Africa, and it differs hardly at all from a modern lamprey, because this taxonomic group has changed little over the intervening vast period of time.

Another old-timer in the Methow is the mountain beaver (which is not a beaver), a large rodent that lives in the montane forest throughout the watershed, although it is nocturnal and rarely seen. It is thought to be the most primitive rodent on earth, with poorly developed teeth and weak jaw musculature.

And among our amphibians, both the spadefoot toad and tailed frog are considered to be examples archaic living anurans (the amphibians lacking true tails). At the same time of course we have numerous representatives of recent evolution. For example most of our avian species pairs like common and Barrow's goldeneyes, downy and hairy woodpeckers, and mountain and western bluebirds evolved during the last two million years, in the course of the glacial advances. The evolutionary story is woven into the fabric of wildlife in the Methow.

The biological trail winds all the way back to single-celled organisms, which were of course invisible and therefore unknown to humans through most of our own long history. The Dutchman Anton Leeuwenhoek was the first human to view the



Coyote pups at Pipestone Canyon--one of 72 mammal species that have traveled the long, winding evolutionary road to the Methow.

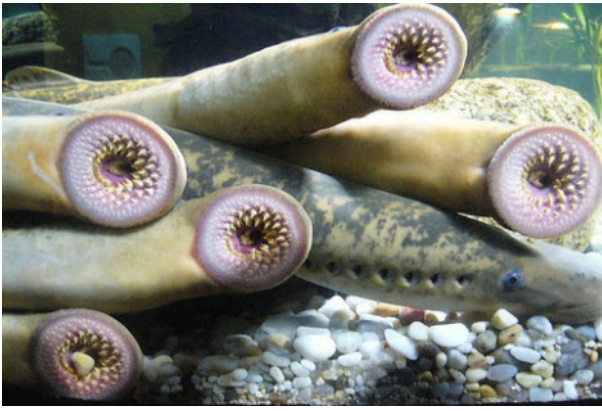
tiny cells known as prokaryotes, or bacteria, in 1676, because he had been able to build a simple microscope. He called them 'animalcules', or little animals. This fired up the imagination of others so much that another researcher, Nicolaus Hartsoecker, was convinced he saw 'tiny preformed men' in sperm cells. He called the little beings 'homuncules'

and for some time many people believed that all humans--indeed all creatures--were simply vast, inflated versions of tiny but complete beings.

After the emergence of 'animalcules' and other 'little beings,' there were several other critical evolutionary steps before wildlife started arriving in the Methow. One important one was the evolution of cells with nuclei--a sort of cellular central command post. Bacteria, which are composed of cells known as prokaryotes (from Greek, translating 'before the seed'), do not have a nucleus. The other four kingdoms of life--animals, plants, fungi and protists--are all composed of much larger cells than bacteria, cells



Some of the 'homuncules' seen by Nicholus Hartsoecker in the 1600s, here resting in the eye of a needle.



Pacific lamprey, the world's oldest and most primitive fish, inhabits the Methow River. They lack bones, true fins, and jaws.

that all do have a nucleus. These cells are called eukaryotes ('true seed'). The favored theory for how eukaryotes arose is the failed attempt of one prokaryote to engulf and digest another. Apparently the two cells, one now inside the other, began to work together in a symbiotic ('life together') relationship.

A related evolutionary advance was the emergence of multicellular organisms. This is not a trivial proposition; a large whale can be made up of as many 100 quadrillion cells (100,000,000,000,000,000), all of which work together, and none of which could survive alone, or make another whale. It is not known how multicellular life arose, but plant and animal life typically begin as a single cell (a fertilized egg), so the evolutionary process is reiterated frequently.

Small steps towards multicellularity can be observed in nature, such as in simple animals called sponges, in which every cell in a sponge retains the ability to form a new creature. Once multicellularity did emerge, it flourished and diversified, resulting in the case of the Animal Kingdom in 36 distinct phyla ('tribes') of creatures, from worms to wombats.

All early life was in the oceans, and by 400 million years ago fish had become dominant in those seas. The most primitive Class of fish is the Agnatha ('without jaws'), which includes lamprey and hagfish. They are the 'oldest' fish on the planet, appearing in the fossil record in the Cambrian Period, 550 million years ago. They not only lack jaws, but also lack bones, scales, true fins and a stomach.

As fate would have it we have a lamprey species in the Methow, called the Pacific lamprey. It

spends most of its life, four to seven years, in a larval form known as an ammocoete (from Greek words meaning 'to lie in bed'). These larvae live in accumulated piles of organic debris in the backwaters of mountain rivers. Here they survive as filter-feeders, taking in fine organic matter through their mouth, and filtering out consumable material such as bacteria and diatoms at the gill slits. At this stage they are only 2-5 inches long.

When they have had enough of living in debris, they migrate to the ocean, where they become parasites. They develop rasping and sucking mouthparts, which they then use to attach to fish and extract body fluids. After one or two years in the ocean, during which time they can grow to thirty inches in length, they return to clear streams (although not necessarily their natal stream) to spawn. Females may lay as many as 100,000 eggs, after which they die. In spite of their exceptional durability, lamprey numbers have plummeted in the Methow in recent years and are approaching zero.

There is a total of 26 species fish in the Methow; all the rest of them have real jaws, unlike lamprey. Each species utilizes a different portion of the available aquatic environment, from fast-moving, cold-water mountain streams to seasonally warm ponds and lakes. Among them are five species of salmon. Before their decline over the past 150 years, 16 million salmon migrated up the Columbia River in an average year, carrying millions of tons of ocean nutrients back upstream and uphill from the sea to the mountains. This amounted to a sort of anti-gravity machine that enhanced



Pacific salmon die after spawning, and the enormous quantity of ocean nutrients in their bodies serve to fertilize the nutrient-poor uplands.



A tiger salamander, one of seven species of amphibians in the Methow.

the fertility and carrying capacity of the glacier-scoured, nutrient-poor uplands.

In the Devonian Period (410-360 million years ago), two groups of fish were numerous, the 'ray-finned fish' and the 'fleshy-finned fish.' The latter group was less adept at swimming, because their fins were fleshy, but they could support themselves on these appendages. When in shallow water they could clamber up onto dry land for short periods. Their air sac, which had originally evolved in fish as a floatation and stabilization device, over time developed into lungs.

A few of these fleshy-finned fish survive today as lungfish in Australia, Africa and South America. They live in areas subject to severe drought, and some can even survive conditions where the water they live in dries out completely; the lungfish remain encased in mud and estivate. These fish breathe with lungs, and while they have gills, the gills are too atrophied to be functional. The shift from an aquatic to a terrestrial creature is evident in this group.

If all life up to the Devonian Period lived in the sea, there would be an obvious advantage to being able to spend increasing amounts of time near the water's edge or out of the water – there would be no predators. There are however a few serious problems with spending time on land. One is that it is an extremely desiccating (drying) environment. Terrestrial organisms are composed of about 65% water, so retaining it is critical to survival. Other problems with life on land include the greatly increased impact of gravity compared to an aquatic environment, obtaining oxygen from dry air, disposing of metabolic toxins (emitted as a liquid in aquatic organisms),

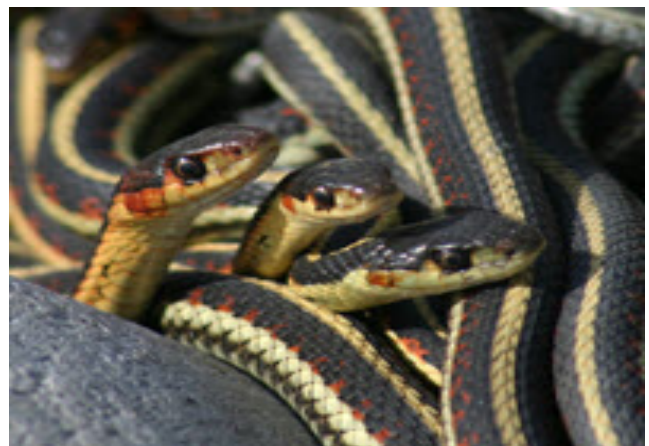
bringing together male and female gametes in reproduction, keeping eggs moist, and finding food.

One possible evolutionary step towards living on land would be to in a sense live 'two lives,' existing out of the water when possible but returning when necessary, such as to lay eggs. As it happens the meaning of the word 'amphibian' translated from the Greek is 'both lives,' and indeed most amphibians live both in and out of water.

Amphibians are generally unable to retain moisture in dry conditions, so on land they usually reside in damp environments. They obtain oxygen on land both by gills and by absorbing it through their skin. They resolve reproductive problems by returning to water to mate and lay their eggs. The Methow's seven species of amphibians all live part of their adult lives on land, but all of them must return to water to reproduce.

The first amphibians appear in the fossil record about 370 million years ago (at the end of the Devonian Period). They could colonize new habitats at the water's edge, but they could not penetrate the vast inland areas of dry habitat.

Amphibians are carnivores as adults, and they would not have colonized land if there were not animal nutrients available. But in fact insects and other arthropods preceded them onto land. Insects were pre-adapted to life on land. Being small, gravity had little affect on them, and being covered by a tough exoskeleton made of chitin prevented water loss. The first insects to venture onto land would have arrived to eat plants – which of course make their own food via photosynthesis. Plants had emerged on land 450 million



Valley garter snakes, one of two species of garter snakes in the Methow.

years ago, and insects followed by about 400 million years ago.

It would be fascinating to know how many species of ants, bees, wasps, beetles, flies, moths, dragonflies, grasshoppers, crickets, caddisflies, mayflies, and stoneflies there are in the Methow, but experts able to identify such creatures are rare. As a place to start with the observation of insects, there is a key to Washington and Methow bumblebees available at the *Methow Naturalist* web site, and a list of the Methow's butterflies.

Meanwhile vertebrates had evolved characteristics that allowed them stand on their limbs (legs instead of fins) and obtain oxygen from the air (lungs instead of gills, in fact most amphibians have gills when they are young and lungs when they grow to adulthood). But they were confined (and still are) to the water's edge because water loss through their skin is high, and their eggs need to be laid in water. With the uplands of entire continents devoid of vertebrate life because their relative aridity, over time natural selection fashioned the characteristics that made life away from water possible. Some groups of amphibians drifted genetically towards scaly skin, which retarded moisture loss, and a leathery egg shell, which allowed eggs to retain moisture and therefore could be laid on land. This new class of organisms arose about 300 million years ago; we call them reptiles (which means 'crawling' or 'creeping').

Reptiles became the dominant animals on land, including the Age of Dinosaurs 150 million to 65 million years ago. The dinosaurs went extinct 65 million years ago, probably because of a very dramatic asteroid strike that ejected so much dust and smoke into the atmosphere that photosynthesis almost ceased for a period of months or years, and ecosystems collapsed. All large terrestrial reptiles perished, but smaller ones lived on in the form of both modern reptiles and as today's birds. Presently there are 8000 species of reptiles in the world, with eleven species in the Methow. One of them, our painted turtle, effects a role reversal with amphibians; it lives in the water but comes to shore to lay its eggs.

There are some obvious similarities between modern lizards and modern birds. Both lay eggs, both have scales (birds have scales on their feet, and feathers are produced by the same tissue as

scales), and both have large orbit (eye openings in the skull) and two holes behind the skull (a signature characteristic of a particular line of reptiles and dinosaurs before them). It was first suggested that birds had evolved from reptiles in general and dinosaurs in particular in 1862, soon after the famous 'oldest bird' fossil, called Archaeopteryx was found in Germany. The idea was largely dismissed until the 1990s, when non-avian feathered dinosaur fossils were discovered in China. At present 34 dinosaur species have been found with feathers, and it is generally accepted that the world's 10,000 bird species, including the Methow's 265 species, are all descendants of a particular line of dinosaurs.

It is interesting to ponder how we can have 265 species of birds in this one small valley, when there is an ecological rule that two species cannot occupy the exact same habitat or niche (niche is a somewhat more all-encompassing word than habitat, as it includes all aspects of an individual or species, including behavior, seasonality, etc). It follows that if there are 265 bird species in the Methow, there must be 265 different niches.

A survey of any the Methow's various groups of birds would illustrate how birds partition available habitat. For example there are seven species of 'diving ducks' in the Methow, birds capable of swimming under water to procure food. Six of the seven species are species pairs: the bufflehead and hooded merganser (which have been known to hybridize), common and Barrow's goldeneyes, and common and red-breasted mergansers. In all three cases, the first bird of each pair nests north of the second bird, so the habitat is partitioned by season. The first pair of birds listed above utilizes ponds. The second and third pairs utilize similar habitat but eat different prey types. Harlequin ducks are the only one of the seven species to regularly feed on the bottom of riffles and rapids.

Anyone who doubts that mammals evolved from reptiles needs to spend some time with the duck-billed platypus, a mammal common in Australia. The platypus has fur and gives milk like a proper mammal, although it has no nipples, so milk is simply released through pores and lapped up by the young. But as is the case with reptiles, it reproduces by laying eggs, and has only a single opening for reproduction, urination and defe-

cation, called a cloaca (platypuses are in the Subclass Monotreme, which means 'one opening'). These traits are shared with reptiles and birds, but not other mammals. In further resemblance to birds, it has a bill and webbed feet much like a duck. It has a reptilian gait, with legs that are on the side of the body, lizard-like, rather than underneath. And, the platypus is ancient, a 'living fossil.' Fossils 110 million years old have been found that look very much like today's platypus.

There are three subclasses of mammals: Monotremes, Marsupials ('pouched'), and Placentals (from the Greek for 'flat' or 'cake'). Monotremes evolved in Australia, where the five extant species live today. Marsupials appear to have evolved in East Asia before the super-continent Pangaea split up, but became dominant only in Australia because the few placental mammals present there died out 55 million years ago. The earliest placental mammals also appear in China, 160 million years ago, and over time they became the dominant mammals in Eurasia and the Americas.

There are 72 mammals known to exist in the Methow, all of them placental mammals. They range in size from small (the masked shrew weighs as little as 1/16<sup>th</sup> of an ounce) to large (moose can weigh over 1100 pounds), and in habitat from semi-aquatic (muskrats can stay submerged for up to 15 minutes) to aerial (the Methow has 13 species of bats).

Wildlife populations are constantly shifting, and the species present in the Methow today are not necessarily the same ones that were here prior to the last glacial advance, 18,000-13,000 years ago. In fact there was a remarkable die-off of at least fifty large mammals throughout North America between 13,000 and 10,000 years ago. Many of those now-extinct species are known from Washington and would certainly have inhabited the Methow in the not-too-distant past.

That die-off was extreme enough to induce Charles Darwin to write in 1839, "It is impossible to reflect on the state of the American continent without astonishment. Formerly it must have swarmed with great monsters; now we find mere pygmies compared with the antecedent races."

The list of extinctions includes mammoths, mastodons, the Mexican horse, four horse species, the western camel, a llama, two genera of deer, two genera of pronghorn, the long-horned bison, woodland musk-ox, the shrub-ox and stag moose, a giant beaver (the size of a black bear), the Shasta ground sloth, and, among the carnivores, the dire wolf, sabertooth cat, scimitar cat, American lion, American cheetah, and the giant short faced bear (which was as big as a moose).

In the Americas, most of the potential large domesticates, such as horses and camels, were driven to extinction, mostly by being killed and eaten by humans. Thus when agrarian civilizations developed on these continents they had no draft animals. (Horses evolved in North America; they had migrated across the Bering Land Bridge long before they went extinct in North America, which was only about 10,000 years ago; they returned to North America post-extinction in 1519 with Hernan Cortez). Surprisingly, many of the large mammal species that we think of as characterizing North American wilderness today only arrived from Siberia by traversing the Bering Land Bridge during the last glacial advance. These species include moose, elk, grizzly bears, and our modern species of bison.

Studies of geology, botany and zoology all indicate that the earth and life upon it are in constant flux. The Roman Marcus Aurelius must have been aware of this fact when he wrote, in 150 AD, "Time is a river of passing events, and strong is its current. No sooner is a thing brought into sight than it is swept by and another takes its place, and this too will be swept along."

**Birds of the Methow Watershed**

Methow Naturalist/www.methownaturalist.com- Year 2014 List

| #  | Ab | Common Name                 | Scientific Name           |
|----|----|-----------------------------|---------------------------|
| 1  | 2  | Common Loon                 | Gavia immer               |
| 2  | 2  | Horned Grebe                | Podiceps auritus          |
| 3  | 2  | Eared Grebe                 | Podiceps nigricollis      |
| 4  | 2  | Red-necked Grebe            | Podiceps grisegena        |
| 5  | 2  | Pied Billed Grebe           | Podilymbus podiceps       |
| 6  | 2  | Western Grebe               | Aechmophorus occidentalis |
| 7  | 5  | Clark's Grebe               | Aechmophorus clarkii      |
| 8  | 5  | American White Pelican      | Pelecanus erythrorhynchos |
| 9  | 5  | Double-crested Cormorant    | Phalacrocorax auritus     |
| 10 | 1  | Great Blue Heron            | Ardea herodias            |
| 11 | 5  | Great Egret                 | Ardea alba                |
| 12 | 5  | Cattle Egret                | Bubulcus ibis             |
| 13 | 5  | Black-crowned Night Heron   | Nycticorax nycticorax     |
| 14 | 4  | Tundra Swan                 | Cygnus columbianus        |
| 15 | 4  | Trumpeter Swan              | Cygnus buccinator         |
| 16 | 5  | Greater White-fronted Goose | Anser albifrons           |
| 17 | 4  | Snow Goose                  | Chen caerulescens         |
| 18 | 1  | Canada Goose                | Branta canadensis         |
| 19 | 5  | Cackling Goose              | Branta hutchinsii         |
| 20 | 1  | Wood Duck                   | Aix sponsa                |
| 21 | 1  | Mallard                     | Anas platyrhynchos        |
| 22 | 2  | Northern Pintail            | Anas acuta                |
| 23 | 1  | Gadwall                     | Anas strepera             |
| 24 | 1  | American Widgeon            | Anas americana            |
| 25 | 5  | Eurasian Widgeon            | Anas penelope             |
| 26 | 1  | Northern Shoveler           | Anas clypeata             |
| 27 | 2  | Blue-winged Teal            | Anas discors              |
| 28 | 1  | Cinnamon Teal               | Anas cyanoptera           |
| 29 | 1  | Green-winged Teal           | Anas crecca               |
| 30 | 1  | Ring-necked Duck            | Aythya collaris           |
| 31 | 1  | Greater Scaup               | Aythya marila             |
| 32 | 1  | Lesser Scaup                | Aythya marila             |
| 33 | 5  | Tufted Duck                 | Aythya fuligula           |
| 34 | 2  | Canvasback                  | Aythya valisineria        |
| 35 | 1  | Redhead                     | Aythya americana          |
| 36 | 2  | Harlequin Duck              | Histrionicus histrionicus |
| 37 | 5  | Surf Scoter                 | Melanitta perspicillata   |
| 38 | 5  | White-winged Scoter         | Melanitta fusca           |
| 39 | 1  | Common Goldeneye            | Bucephala clangula        |
| 40 | 1  | Barrow's Goldeneye          | Bucephala islandica       |
| 41 | 1  | Bufflehead                  | Bucephala albeola         |
| 42 | 1  | Common Merganser            | Mergus merganser          |
| 43 | 5  | Red-breasted Merganser      | Mergus serrator           |
| 44 | 1  | Hooded Merganser            | Lophodytes cucullatus     |
| 45 | 1  | Ruddy Duck                  | Oxyura jamaicensis        |
| 46 | 1  | Turkey Vulture              | Cathartes aura            |
| 47 | 1  | Northern Harrier            | Circus cyaneus            |
| 48 | 5  | White-tailed Kite           | Elanus leucurus           |
| 49 | 2  | Cooper's Hawk               | Accipiter cooperii        |
| 50 | 1  | Northern Goshawk            | Accipiter gentilis        |
| 51 | 1  | Sharp-shinned Hawk          | Accipiter striatus        |
| 52 | 5  | Broad-winged Hawk           | Buteo platypterus         |
| 53 | 1  | Red-tailed Hawk             | Buteo jamaicensis         |
| 54 | 5  | Swainson's Hawk             | Buteo swainsoni           |
| 55 | 5  | Ferruginous Hawk            | Buteo regalis             |
| 56 | 2  | Rough-legged Hawk           | Buteo lagopus             |
| 57 | 2  | Osprey                      | Pandion haliaetus         |
| 58 | 2  | Golden Eagle                | Aquila chrysaetos         |
| 59 | 1  | Bald Eagle                  | Haliaeetus leucocephalus  |
| 60 | 1  | American Kestrel            | Falco sparverius          |
| 61 | 4  | Prairie Falcon              | Falco mexicanus           |
| 62 | 4  | Peregrine Falcon            | Falco peregrinus          |
| 63 | 3  | Merlin                      | Falco columbarius         |
| 64 | 5  | Gyr Falcon                  | Falco rusticolus          |
| 65 | 2  | Ring-necked Pheasant        | Ring-necked Pheasant      |
| 66 | 2  | Gray Partridge              | Perdix perdix             |
| 67 | 1  | Chukar                      | Alectoris chukar          |
| 68 | 1  | Ruffed Grouse               | Bonasa umbellus           |

| #   | Ab | Common Name            | Scientific Name          |
|-----|----|------------------------|--------------------------|
| 69  | 1  | Dusky (Blue) Grouse    | Dendragapus obscurus     |
| 70  | 1  | Spruce Grouse          | Falcipennis canadensis   |
| 71  | 3  | White-tailed Ptarmigan | Lagopus leucurus         |
| 72  | 3  | Wild Turkey            | Meleagris gallopavo      |
| 73  | 1  | California Quail       | Callipepla californica   |
| 74  | 2  | Virginia Rail          | Rallus limicola          |
| 75  | 1  | Sora                   | Porzana carolina         |
| 76  | 1  | American Coot          | Fulica americana         |
| 77  | 2  | Sandhill Crane         | Grus canadensis          |
| 78  | 5  | Black-bellied Plover   | Pluvialis squatarola     |
| 79  | 5  | American Golden Plover | Pluvialis dominica       |
| 80  | 5  | Semi-plumated Plover   | Charadrius semiplamatus  |
| 81  | 1  | Killdeer               | Charadrius vociferous    |
| 82  | 5  | American Avocet        | Recurvirostra americana  |
| 83  | 4  | Greater Yellowlegs     | Tringa melanoleuca       |
| 84  | 4  | Lesser Yellowlegs      | Tringa flavipes          |
| 85  | 4  | Solitary Sandpiper     | Tringa solitaria         |
| 86  | 1  | Spotted Sandpiper      | Actitis macularia        |
| 87  | 4  | Long-billed Curlew     | Numenius americanus      |
| 88  | 5  | Western Sandpiper      | Calidris mauri           |
| 89  | 4  | Least Sandpiper        | Calidris minutilla       |
| 90  | 5  | Dunlin                 | Calidris alpina          |
| 91  | 5  | Baird's Sandpiper      | Calidris bairdii         |
| 92  | 5  | Semipalmated Sandpiper | Calidris pusilla         |
| 93  | 5  | Pectoral Sandpiper     | Calidris melanotos       |
| 94  | 5  | Stilt Sandpiper        | Calidris himantopus      |
| 95  | 4  | Long-billed Dowitcher  | Limnodromus scolopaceus  |
| 96  | 5  | Short-billed Dowitcher | Limnodromus griseus      |
| 97  | 1  | Wilson's Snipe         | Gallinago delicata       |
| 98  | 4  | Wilson's Phalarope     | Phalaropus tricolor      |
| 99  | 4  | Red-necked Phalarope   | Phalaropus lobatus       |
| 100 | 5  | Parasitic Jaeger       | Stercorarius parasiticus |
| 101 | 5  | Sabine's Gull          | Xema sabini              |
| 102 | 4  | Bonaparte's Gull       | Larus philadelphia       |
| 103 | 1  | Ring-billed Gull       | Larus delawarensis       |
| 104 | 5  | California Gull        | Larus californicus       |
| 105 | 2  | Herring Gull           | Larus argentatus         |
| 106 | 5  | Thayer's Gull          | Larus thayeri            |
| 107 | 5  | Glaucous-winged Gull   | Larus glaucescens        |
| 108 | 3  | Black Tern             | Chlidonias niger         |
| 109 | 4  | Caspian Tern           | Sterna caspia            |
| 110 | 5  | Common Tern            | Sterna hirundo           |
| 111 | 5  | Forster's Tern         | Sterna dougalli          |
| 112 | 1  | Rock Dove              | Columba livia            |
| 113 | 4  | Band-tailed Pigeon     | Patagioenas fasciata     |
| 114 | 1  | Mourning Dove          | Zenaidura macroura       |
| 115 | 5  | Eurasian Collared Dove | Streptopelia decaocto    |
| 116 | 5  | Barn Owl               | Tyto alba                |
| 117 | 3  | Long-eared Owl         | Asio otus                |
| 118 | 3  | Short-eared Owl        | Asio flammeus            |
| 119 | 2  | Flammulated Owl        | Otus flammeolus          |
| 120 | 2  | Western Screech Owl    | Megascops kennicottii    |
| 121 | 5  | Northern Hawk-owl      | Surnia ulula             |
| 122 | 1  | Great Horned Owl       | Bubo virginianus         |
| 123 | 5  | Snowy Owl              | Bubo scandiacus          |
| 124 | 5  | Great Gray Owl         | Strix nebulosa           |
| 125 | 4  | Spotted Owl            | Strix occidentalis       |
| 126 | 2  | Barred Owl             | Strix varia              |
| 127 | 2  | Northern Pygmy-owl     | Glaucidium californicum  |
| 128 | 5  | Burrowing Owl          | Athene cucularia         |
| 129 | 3  | Boreal Owl             | Aegolius funereus        |
| 130 | 1  | Northern Saw-whet Owl  | Aegolius acadicus        |
| 131 | 1  | Common Nighthawk       | Chordeiles minor         |
| 132 | 2  | Common Poorwill        | Phalaenoptilus nuttallii |
| 133 | 1  | Belted Kingfisher      | Ceryle alcyon            |
| 134 | 2  | White-throated Swift   | Aeronautes saxatalis     |
| 135 | 2  | Black Swift            | Cypseloides niger        |
| 136 | 2  | Vaux's Swift           | Chaetura vauxi           |

## Birds of the Methow Watershed

Methow Naturalist/www.methownaturalist.com- Year 2014 List

| #   | Ab | Common Name               | Scientific Name            |
|-----|----|---------------------------|----------------------------|
| 137 | 1  | Northern Flicker          | Colaptes auratus           |
| 138 | 1  | Lewis' Woodpecker         | Melanerpes lewis           |
| 139 | 1  | Downy Woodpecker          | Picoides pubescens         |
| 140 | 1  | Hairy Woodpecker          | Picoides villosus          |
| 141 | 2  | White-headed Woodpecker   | Picoides albolarvatus      |
| 142 | 2  | Three-toed Woodpecker     | Picoides tridactylus       |
| 143 | 2  | Black-backed Woodpecker   | Picoides arctus            |
| 144 | 1  | Pileated Woodpecker       | Dryocopus pileatus         |
| 145 | 2  | Williamson's Sapsucker    | Sphyrapicus thyroideus     |
| 146 | 5  | Red-breasted Sapsucker    | Sphyrapicus ruber          |
| 147 | 1  | Red-naped Sapsucker       | Sphyrapicus nuchalis       |
| 148 | 1  | Olive-sided Flycatcher    | Contopus cooperi           |
| 149 | 1  | Western Wood Pewee        | Contopus sordidulus        |
| 150 | 3  | Willow Flycatcher         | Empidonax traillii         |
| 151 | 5  | Least Flycatcher          | Empidonax minimus          |
| 152 | 1  | Dusky Flycatcher          | Empidonax oberholseri      |
| 153 | 1  | Hammond's Flycatcher      | Empidonax hammondii        |
| 154 | 3  | Gray Flycatcher           | Empidonax wrightii         |
| 155 | 2  | Pacific Slope Flycatcher  | Empidonax difficillis      |
| 156 | 1  | Say's Phoebe              | Sayornis saya              |
| 157 | 1  | Western Kingbird          | Tyrannus verticalis        |
| 158 | 1  | Eastern Kingbird          | Tyrannus tyrannus          |
| 159 | 2  | Northern Shrike           | Lanius excubitor           |
| 160 | 2  | Loggerhead Shrike         | Lanius ludovicianus        |
| 161 | 1  | Cassin's Vireo            | Vireo cassinii             |
| 162 | 1  | Warbling Vireo            | Vireo gilvus               |
| 163 | 2  | Red-eyed Vireo            | Vireo olivaceus            |
| 164 | 1  | Steller's Jay             | Cyanocitta stelleri        |
| 165 | 5  | Blue Jay                  | Cyanocitta cristata        |
| 166 | 5  | Western Scrub Jay         | Aphelocoma californica     |
| 167 | 1  | Gray Jay                  | Perisoreus canadensis      |
| 168 | 1  | Clark's Nutcracker        | Nucifraga columbiana       |
| 169 | 1  | Black-billed Magpie       | Pica hudsonia              |
| 170 | 1  | American Crow             | Corvus brachyrhynchos      |
| 171 | 1  | Common Raven              | Corvus corax               |
| 172 | 2  | Horned Lark               | Eremophila alpestris       |
| 173 | 1  | Tree Swallow              | Tachycineta bicolor        |
| 174 | 1  | Violet-green Swallow      | Tachycineta thalassina     |
| 175 | 1  | Northern Rough-winged Sw  | Stelgidopteryx serripennis |
| 176 | 1  | Bank Swallow              | Riparia riparia            |
| 177 | 1  | Barn Swallow              | Hirundo rustica            |
| 178 | 1  | Cliff Swallow             | Petrochelidon pyrrhonota   |
| 179 | 1  | Black-capped Chickadee    | Poecile atricapilla        |
| 180 | 1  | Mountain Chickadee        | Poecile gambeli            |
| 181 | 4  | Chestnut-backed Chickadee | Poecile rufescens          |
| 182 | 3  | Boreal Chickadee          | Poecile hudsonica          |
| 183 | 1  | White-breasted Nuthatch   | Sitta carolinensis         |
| 184 | 1  | Red-breasted Nuthatch     | Sitta canadensis           |
| 185 | 2  | Pygmy Nuthatch            | Sitta pygmaea              |
| 186 | 2  | Brown Creeper             | Certhia americana          |
| 187 | 5  | Marsh Wren                | Cistothorus palustris      |
| 188 | 2  | Black-chinned Hummingbird | Archilochus alexandri      |
| 189 | 5  | Anna's Hummingbird        | Calypte anna               |
| 190 | 1  | Calliope Hummingbird      | Stellula calliope          |
| 191 | 1  | Rufous Hummingbird        | Selasphorus rufus          |
| 192 | 5  | Bewick's Wren             | Thryomanes bewickii        |
| 193 | 1  | House Wren                | Troglodytes aedon          |
| 194 | 1  | Winter Wren               | Troglodytes troglodytes    |
| 195 | 2  | Rock Wren                 | Salpinctes obsoletus       |
| 196 | 2  | Canyon Wren               | Catherpes mexicanus        |
| 197 | 1  | American Dipper           | Cinclus mexicanus          |
| 198 | 1  | Golden-crowned Kinglet    | Regulus satrapa            |
| 199 | 1  | Ruby-crowned Kinglet      | Regulus calendula          |
| 200 | 1  | Mountain Bluebird         | Sialia currucoides         |
| 201 | 1  | Western Bluebird          | Sialia mexicana            |
| 202 | 1  | Townsend's Solitaire      | Myadestes townsendi        |
| 203 | 2  | Varied Thrush             | Ixoreus naevius            |

| #   | Ab | Common Name                 | Scientific Name            |
|-----|----|-----------------------------|----------------------------|
| 204 | 1  | American Robin              | Turdus migratorius         |
| 205 | 1  | Veery                       | Catharus fuscescens        |
| 206 | 1  | Swainson's Thrush           | Catharus ustulatus         |
| 207 | 1  | Hermit Thrush               | Catharus guttatus          |
| 208 | 2  | Gray Catbird                | Dumetella carolinensis     |
| 209 | 2  | American Pipit              | Anthus spinoletta          |
| 210 | 1  | Bohemian Waxwing            | Bombycilla garrulus        |
| 211 | 1  | Cedar Waxwing               | Bombycilla cedrorum        |
| 212 | 1  | European Starling           | Sturnus vulgaris           |
| 213 | 2  | Orange-crowned Warbler      | Vermivora celata           |
| 214 | 1  | Nashville Warbler           | Vermivora ruficapilla      |
| 215 | 1  | Yellow Warbler              | Dendroica petechia         |
| 216 | 1  | Townsend's Warbler          | Dendroica townsendi        |
| 217 | 5  | Magnolia Warbler            | Dendroica magnolia         |
| 218 | 5  | Black-throated Gray Warbler | Dendroica nigrescens       |
| 219 | 1  | Yellow-rumped Warbler       | Dendroica coronata         |
| 220 | 5  | Hermit Warbler              | Dendroica occidentalis     |
| 221 | 5  | Yellow-throated Warbler     | Dendroica dominica         |
| 222 | 4  | American Redstart           | Setophaga ruticilla        |
| 223 | 5  | Northern Waterthrush        | Seiurus noveboracensis     |
| 224 | 1  | MacGillivray's Warbler      | Oporornis tolmiei          |
| 225 | 5  | Common Yellowthroat         | Geothlypis trichas         |
| 226 | 1  | Wilson's Warbler            | Wilsonia pusilla           |
| 227 | 3  | Yellow-breasted Chat        | Icteria virens             |
| 228 | 1  | Western Tanager             | Piranga ludoviciana        |
| 229 | 2  | Lazuli Bunting              | Passerina amoena           |
| 230 | 5  | Indigo Bunting              | Passerina cyanea           |
| 231 | 1  | Black-headed Grosbeak       | Pheucticus melanocephalus  |
| 232 | 5  | Rose-breasted Grosbeak      | Pheucticus ludovicianus    |
| 233 | 1  | Spotted (Rufous-s) Towhee   | Pipilo maculatus           |
| 234 | 2  | Chipping Sparrow            | Spizella passerina         |
| 235 | 5  | Clay-colored Sparrow        | Spizella pallida           |
| 236 | 1  | Brewer's Sparrow            | Spizella breweri           |
| 237 | 3  | American Tree Sparrow       | Spizella arborea           |
| 238 | 1  | Vesper Sparrow              | Poocetes gramineus         |
| 239 | 4  | Lark Sparrow                | Chondestes grammacus       |
| 240 | 2  | Savannah Sparrow            | Passerculus sandwichensis  |
| 241 | 2  | Fox Sparrow                 | Passerella iliaca          |
| 242 | 1  | Song Sparrow                | Melospiza melodia          |
| 243 | 2  | Lincoln's Sparrow           | Melospiza lincolni         |
| 244 | 1  | Dark-eyed Junco             | Junco hyemalis             |
| 245 | 5  | Harris Sparrow              | Zonotrichia querula        |
| 246 | 1  | White-crowned Sparrow       | Zonotrichia leucophrys     |
| 247 | 2  | Golden-crowned Sparrow      | Zonotrichia atricapilla    |
| 248 | 5  | White-throated Sparrow      | Zonotrichia albicollis     |
| 249 | 4  | Lapland Longspur            | Calcarius lapponicus       |
| 250 | 3  | Snow Bunting                | Plectrophenax nivalis      |
| 251 | 1  | Bullock's Oriole            | Icterus bullockii          |
| 252 | 1  | Western Meadowlark          | Sturnella neglecta         |
| 253 | 5  | Bobolink                    | Dolichonyx oryzivorus      |
| 254 | 1  | Red-winged Blackbird        | Agelaius phoeniceus        |
| 255 | 1  | Yellow-headed Blackbird     | X. xanthocephalus          |
| 256 | 1  | Brewer's Blackbird          | Euphagus cyanocephalus     |
| 257 | 1  | Brown-headed Cowbird        | Molothrus ater             |
| 258 | 2  | Gray-crowned Rosy Finch     | Leucosticte tephrocotis    |
| 259 | 1  | Red Crossbill               | Loxia curvirostra          |
| 260 | 4  | White-winged Crossbill      | Loxia leucoptera           |
| 261 | 1  | Evening Grosbeak            | Coccothraustes vespertinus |
| 262 | 1  | House Finch                 | Carpodacus mexicanus       |
| 263 | 1  | Purple Finch                | Carpodacus prupureus       |
| 264 | 1  | Cassin's Finch              | Carpodacus cassinii        |
| 265 | 1  | American Goldfinch          | Carduelis tristis          |
| 266 | 1  | Pine Siskin                 | Carduelis pinus            |
| 267 | 5  | Hoary Redpoll               | Carduelis hornemanni       |
| 268 | 3  | Common Redpoll              | Carduelis flammea          |
| 269 | 2  | Pine Grosbeak               | Pinicola enucleator        |
| 270 | 1  | House Sparrow               | Passer domesticus          |

## Mammals of the Methow Watershed

Known (72 species) and \*Possible (5 species)-2014

*The Methow Naturalist*/www.methownaturalist.com/dana@methownet.com

| Common Name                       | Scientific Name                    | Abundance in the Methow | Habitat   |
|-----------------------------------|------------------------------------|-------------------------|---|
| <b>Shrews &amp; Moles</b>         | <b>Insectivora</b>                 |                         |   |
| Masked Shrew                      | <i>Sorex cinereus</i>              | common                  | Forests, ponderosa pine to subalpine fir                              |
| Montane (Dusky) Shrew             | <i>Sorex monticolus</i> (obscurus) | unknown                 | Forests, Douglas fir to subalpine fir                                 |
| Water Shrew                       | <i>Sorex palustris</i>             | unknown                 | Cold, clear water with abundant cover                                 |
| Vagrant Shrew                     | <i>Sorex vagrans</i>               | common                  | Widespread, usually near water  |
| <b>Bats</b>                       | <b>Chiroptera</b>                  |                         |   |
| California Myotis                 | <i>Myotis californicus</i>         | common                  | Shrub-steppe and lower forests  |
| Small-footed Myotis               | <i>Myotis ciliolabrum</i>          | common                  | Dry, open country   |
| Long-eared Myotis                 | <i>Myotis evotis</i>               | common                  | Wide-ranging, dry steppes to subalpine fir                            |
| Little Brown Bat                  | <i>Myotis lucifugus</i>            | common                  | Wide-ranging, dry steppe to subalpine fir                             |
| Fringed Myotis                    | <i>Myotis thysanodes</i>           | rare                    | Shrub-steppe to ponderosa pine  |
| Long-legged Myotis                | <i>Myotis volans</i>               | common                  | Primarily montane coniferous forest                                   |
| Yuma Myotis                       | <i>Myotis yumanensis</i>           | common                  | Lower elevations, closely associated w water                          |
| *Northern Long-eared Myotis       | <i>Myotis septentrionalis</i>      | no records              | Montane forests   |
| Hoary Bat                         | <i>Lasiurus cinereus</i>           | uncommon                | Lower elevation dry forests   |
| *Western Red Bat                  | <i>Lasiurus blossevellii</i>       | no records              | Riparian forests, orchards  |
| Silver-haired Bat                 | <i>Lasionycteris noctivagans</i>   | uncommon                | Forests, ponderosa pine to subalpine fir                              |
| Big Brown Bat                     | <i>Eptesicus fuscus</i>            | common                  | Wide-ranging, shrub-steppe to subalpine fir                           |
| Spotted Bat                       | <i>Euderma maculatum</i>           | rare                    | Shrub-steppe to ponderosa pine, near cliffs                           |
| Townsend's Big-eared Bat          | <i>Corynorhinus townsendii</i>     | uncommon                | Shrub-steppe and lower elevation forests                              |
| Pallid Bat                        | <i>Antrozous pallidus</i>          | common                  | Arid river canyons and cliffs, shrub-steppe                           |
| <b>Pikas, Hares &amp; Rabbits</b> | <b>Lagomorpha</b>                  |                         |   |
| Pika                              | <i>Ochotona princeps</i>           | common                  | Talus, rock or boulder slides down to 2000'                           |
| Snowshoe Hare                     | <i>Lepus americanus</i>            | common                  | From sea level to subalpine in coniferous forests                     |
| Nuttall's (Mountain) Cottontail   | <i>Sylvilagus nuttallii</i>        | rare (1 record)         | Sagebrush and lower elevation riparian thickets                       |
| <b>Rodents</b>                    | <b>Rodentia</b>                    |                         |   |
| Mountain Beaver                   | <i>Aplodontia rufa</i>             | common                  | Upper elevation riparian areas  |
| Hoary Marmot                      | <i>Marmota caligata</i>            | common                  | Above timberline near rock slides & meadows                           |
| Yellow-bellied Marmot             | <i>Marmota flaviventris</i>        | common                  | Drylands (inc cult fields) up to 3000'                                |
| Columbian Ground Squirrel         | <i>Spermophilus columbianus</i>    | uncommon                | From lowlands to alpine meadows in grasslands                         |
| Cascade Golden-mantled Gr Sq      | <i>Spermophilus saturatus</i>      | common                  | Ponderosa pine to subalpine fir coniferous forests near rock outcrops |
| Yellow-pine Chipmunk              | <i>Tamias amoenus</i>              | common                  | Open pine forest  |
| *Townsend's Chipmunk              | <i>Tamias townsendii</i>           | unconfirmed             | Upper elevation coniferous forest (in the Methow)                     |
| Western Gray Squirrel             | <i>Sciurus griseus</i>             | uncommon                | Associated with oaks; ponderosa in the Methow                         |
| Chickaree (Douglas Squirrel)      | <i>Tamiasciurus douglasii</i>      | uncommon                | Coniferous forests, mostly on the west side of crest                  |
| Red Squirrel                      | <i>Tamiasciurus hudsonicus</i>     | common                  | Coniferous forests, only on the east side of crest                    |
| Northern Flying Squirrel          | <i>Glaucomys sabrinus</i>          | common                  | All coniferous forests; present in Seattle                            |
| Beaver                            | <i>Castor canadensis</i>           | common                  | Along permanent streams and lakes with woody veg                      |
| Great Basin Pocket Mouse          | <i>Perognathus parvus</i>          | uncommon                | Not confirmed in the Methow but widespread in the shrub-steppe        |
| Northern Pocket Gopher            | <i>Thomomys talpoides</i>          | common                  | In open areas to 7000'; absent west of the crest                      |
| Bushy-tailed Wood Rat             | <i>Neotoma cinerea</i>             | common                  | Ubiquitous, from sea level to alpine zone                             |
| Forest Deer Mouse                 | <i>Peromyscus keeni</i> (oreas)    | rare                    | Dominant deer mouse in alpine zone of Cascades                        |
| Deer Mouse                        | <i>Peromyscus maniculatus</i>      | common                  | Occurs in almost all terrestrial habitats in the state                |



|                           |                         |            |  |
|---------------------------|-------------------------|------------|--|
| Gapper's Red-backed Vole  | Clethrionomys gapperi   | uncommon   | Coniferous forests from sea level to timberline                          |
| Long-tailed Vole          | Microtus longicaudus    | ?          | A wide variety of habitats from sea level to timberline                  |
| Montane Vole              | Microtus montanus       | rare       | Riparian sagebrush to meadows below timberline                           |
| Meadow Vole               | Microtus pennsylvanicus | common     | Wet areas from lowlands to timberline on east slope                      |
| Richardson's Vole         | Microtus richardsoni    | rare       | Along cold, clear streams in the Cascades down to 4000'                  |
| Muskrat                   | Ondatra zibethicus      | common     | In slow-moving water in every county in the state                        |
| Heather Vole              | Phenacomys intermedius  | rare       | Most abundant in sub-alpine forests and moist meadows                    |
| Northern Bog Lemming      | Synaptomys borealis     | rare       | In cold wet bogs at the edge of boreal forests                           |
| Western Jumping Mouse     | Zapus princeps          | rare       | Sea level to alpine in forests, moist meadows and marshes                |
| Pacific Jumping Mouse     | Zapus trinotatus        | rare       | Nearly identical to <i>Z. princeps</i> but west of crest                 |
| Porcupine                 | Erethizon dorsatum      | common     | Widespread from sea level to tree line inc lush sagebrush                |
| House Mouse               | Mus musculus            | common     | Probably in every town and city in the state                             |
| Norway Rat                | Rattus norvegicus       | rare       | Along marshes and streams near settlements.                              |
| <b>Monkeys &amp; Apes</b> | <b>Primates</b>         |            |  |
| Human                     | Homo sapiens            | common     | Sea level to Montane forest, usually near water                          |
| <b>Carnivores</b>         | <b>Carnivora</b>        |            |  |
| Coyote                    | Canis latrans           | common     | Common over most of state, absent on most islands                        |
| Gray Wolf                 | Canis lupus             | rare       | First pack in state in 40 years appeared in the Methow in 2008           |
| Red Fox                   | Vulpes vulpes           | rare       | Indigenous but rare in the east Cascades                                 |
| Black Bear                | Ursus americanus        | common     | Lowland forest to subalpine parkland                                     |
| *Grizzly Bear             | Ursus arctos            | extirpated | Vanishingly rare in the Methow   |
| Raccoon                   | Procyon lotor           | common     | Occurs along nearly all bodies of water in state to 3000'                |
| Marten                    | Martes americana        | common     | State-wide in forested mountainous areas                                 |
| *Fisher                   | Martes pennanti         | extirpated | Forests; extirpated from the state, reintroduced in the Olympics in 2008 |
| Short-tailed Weasel       | Mustela ermina          | common     | Sea level to alpine in forested areas                                    |
| Long-tailed Weasel        | Mustela frenata         | common     | Sea level through all life zones to into alpine zone                     |
| Mink                      | Mustela vison           | common     | Common throughout state near water                                       |
| Wolverine                 | Gulo gulo               | uncommon   | Lower coniferous forests (winter) to alpine zone                         |
| Badger                    | Taxidea taxus           | rare       | In open habitats in eastern Washington                                   |
| Striped Skunk             | Mephitis mephitis       | rare       | Sea level to about 2000'; prefers open habitat                           |
| River Otter               | Lutra canadensis        | uncommon   | Streams, lakes, ponds  |
| Mountain Lion (Cougar)    | Felis concolor          | common     | Sea level to timberline, absent in the interior steppe of WA             |
| Lynx                      | Lynx canadensis         | uncommon   | In coniferous forest, 3000' to timberline                                |
| Bobcat                    | Lynx rufus              | common     | Throughout Washington, except the islands                                |
| <b>Hoofed Animals</b>     | <b>Artiodactyla</b>     |            |  |
| Elk                       | Cervus elaphus          | uncommon   | Widespread in state from shrub-steppe to subalpine                       |
| Mule Deer                 | Odocoileus hemionus     | common     | Throughout Washington including most islands                             |
| White-tailed Deer         | Odocoileus virginianus  | common     | Riparian and mixed woodlands east of the crest                           |
| Moose                     | Alces alces             | uncommon   | Primarily seen along major watercourses in northern WA                   |
| Mountain Goat             | Oreamnos americanus     | uncommon   | Rocky, mountainous terrain   |
| Bighorn Sheep             | Ovis canadensis         | rare       | Steep, rocky terrain adjacent to grasslands                              |

## Vertebrate Animal Species Known to Have Decreased in the Methow Watershed 1900-2012:

from *The Methow Naturalist*, Vol 3 #4, Winter 1998, updated 2012; Methow Biodiversity Project, PO Box 175, Winthrop, WA 98862

| Species                 | Current Condition | Pre-settlement Condition | Cause of Decline   |
|-------------------------|-------------------|--------------------------|--|
| <b>Fish</b>             |                   |                          |  |
| Coho salmon             | reintroduced      | abundant                 | Overfishing; dams  |
| Chinook salmon          | common            | abundant                 | Overfishing, dams  |
| Steelhead               | common            | abundant                 | Overfishing, dams  |
| Bull trout              | uncommon          | common                   | Overfishing, habitat loss, introduced species                                    |
| Native cutthroat trout  | uncommon          | common                   | Overfishing, habitat loss, introduced subspecies                                 |
| Native rainbow trout    | uncommon          | common                   | Overfishing, habitat loss, introduced subspecies                                 |
| <b>Reptiles</b>         |                   |                          |  |
| Western rattlesnake     | common            | common                   | Feared, often killed   |
| <b>Birds</b>            |                   |                          |  |
| Peregrine falcon        | rare              | rare                     | DDT  |
| Cooper's hawk           | uncommon          | common                   | DDT, shooting  |
| American kestrel        | common            | common                   | DDT & other pesticides   |
| Sharptail grouse        | extirpated        | common                   | Habitat loss   |
| Sage grouse             | extirpated        | rare                     | Habitat loss   |
| Burrowing owl           | extirpated        | uncommon                 | Loss of grasslands, rodent control, pesticides                                   |
| White-headed woodpecker | uncommon          | common                   | Loss of old-growth ponderosa pine  |
| Black-backed woodpecker | uncommon          | uncommon                 | Suppression of forest fires  |
| Lewis' woodpecker       | common            | common                   |  |
| Western wood pewee      | common            | common                   | Sensitive to forest fragmentation  |
| Olive-sided flycatcher  | common            | common                   | May be due to loss of tropical wintering habitat                                 |
| Barn swallow            | uncommon          | common                   | Unknown  |
| Rough-winged swallow    | uncommon          | common                   | Unknown  |
| Western bluebird        | common            | common                   | Habitat loss (snags for nesting), introduced species (starlings)                 |
| Mountain bluebird       | uncommon          | common                   | Habitat loss (fire suppression; loss of snags for nesting, openings for feeding) |
| Swainson's thrush       | common            | common                   | Habitat loss (riparian areas logged and grazed)                                  |
| <b>Mammals</b>          |                   |                          |  |
| Pygmy rabbit            | extirpated        | uncommon                 | cats, habitat loss (prior presence reported by early ranchers)                   |
| Whitetailed jackrabbit  | extirpated        | common                   | Habitat loss, killed on high-speed roads   |
| Hoary marmot            | common            | common                   | Possible competition with Columbia ground squirrels                              |
| Badger                  | uncommon          | uncommon                 | First recent den reported in 2008, seen increasingly by 2012                     |
| Fisher                  | extirpated        | rare                     | Habitat loss, trapping   |
| Pine marten             | common            | common                   | Habitat loss, trapping   |
| Striped skunk           | uncommon          | common                   | Winter kill  |
| Bighorn sheep           | reintroduced      | uncommon                 | Disease transferred from domestic sheep  |
| Mountain goat           | uncommon          | common                   | Warming trend over the last 13,000 years (e.g. used to extend to California)     |
| Lynx                    | rare              | uncommon                 | Habitat loss (fire suppression, loss of young conifers)                          |
| Grizzly bear            | extirpated        | rare                     | Human depredation  |
| Wolf                    | rare              | uncommon                 | Human depredation; a small pack from Canada appeared in the Methow in 2008       |

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| Sage grouse             | extirpated        | rare                     | Habitat loss   |
| Burrowing owl           | extirpated        | uncommon                 | Loss of grasslands, rodent control, pesticides                                   |
| White-headed woodpecker | uncommon          | common                   | Loss of old-growth ponderosa pine  |
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| Lewis' woodpecker       | common            | common                   |  |
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