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Landscaping for wildlife: a guide for the Missoula area

Margot Hart Dale

The University of Montana

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Landscaping for Wildlife
.....a guide for the Missoula area

by
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Bachelor of Environmental Design
University of Colorado -- Boulder, 1985

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for the degree of
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Chairperson, Board of Examiners

Dean, Graduate School

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The other evening I saw 10 different bird species in my backyard in less than an hour -- Yellow Warbler, Yellow-rumped Warbler, House Finch, Blackbird, Hairy Woodpecker, Black-capped Chickadee, Cliff Swallow, Evening Grosbeak, Red-breasted Robin and a hummingbird which was too fast to identify. All in my backyard right here in Missoula!

All of these birds have responded to the changes I made in the yard. Changing the yard's design from a lawn dominated landscape to a shrubby, not-so-neat habitat for wildlife -- including an experimental pond-- has been very rewarding to me. To increase wildlife habitat, I didn't wait for Congress to pass a wilderness bill or for the City Council to decide on open space -- I simply created habitat for wildlife in my own backyard. And it works.

If everyone were to change their yards to benefit wildlife, think of how much more wildlife habitat there would be.
If you have ever been concerned with the loss of wildlife habitat, creating landscapes for wildlife in your own yard is one of the simplest and most empowering things you can do to help. It is even more helpful when contiguous neighbors work together to create larger areas of native habitat.

Although this won't replace the need for large tracts of undeveloped land, your yard can host a myriad of birds and butterflies and possibly some small mammals, reptiles, amphibians and bats.

Changing your yard into a haven for wildlife is a process that requires you to look at how wildlife inhabit their environment and how you can meet their needs. No longer are plants viewed just for their natural beauty but also as a source of food and shelter. Physical components like snags and rock piles also become potentially important wildlife shelter and creating water sources can lead to ingenious inventions.

Before examining the potentials of your backyard it's important to understand the environment in which your property is situated. Where and what type are the nearest natural environs? Are you near a water source? Considering your surroundings will help to determine what wildlife you can attract.

Urban Environment

Within the urban environment, opportunities for attracting wildlife vary. Next to lack of habitat, one of the largest obstacles for wildlife is access. Most animals, with the exception of winged creatures, require protected travel corridors to move from one area to another. Hedges, grassy swales, and river corridors are good examples. Whether your property is urban or suburban, there are many more opportunities for attracting wildlife if it is adjacent to a feasible corridor.

Urban centers are the most inaccessible and inhospitable to wildlife. Suburban areas have more potential and rural fringes the most.
Climate

Missoula's climate is one of extremes. During July and August we have more clear sunny days than almost anywhere in the United States. For these two months the percentage of possible sunshine reaches 80% and averages 77%.

For the other 10 months Missoula rivals Seattle for cloud cover. During the Fall and Spring clouds dominate the sky 69% of the time. From November through March, Missoula is cloudy 80% of the time.

Although we are blanketed with clouds most of the year they only precipitate 13.2 inches on average. Because of this, soil moisture is low, most of the native vegetation is drought-tolerant and Missoula is considered to have an arid climate.

In contrast to the arid soil conditions, the relative humidity from October through March hovers around 80%. This is as high or higher then many maritime locations at similar latitudes and temperatures and may account for the moss growing on the north side of roofs. During the hot summer months Missoula's relative humidity drops as low as 31% in the afternoons and we become a truly arid environment.

Temperatures swing from winter's sub-zeros to summer's upper 90's. Missoula has about 128 frost free days which decreases dramatically with increasing elevation. Plants and animals must be able to survive the cold winters, short growing season and hot summers.

Missoula's proximity to the Pacific Northwest partially explains these climatic extremes. As air masses moving east from the Pacific Northwest are lifted and cooled by the mountains, moisture condenses and precipitates. Although these air masses have lost most of their moisture on the Cascade and Bitterroot Mountains, there is plenty to cloud our skies and humidify our air, but not enough to precipitate. Summer's warm air masses from the South push the moister, eastward moving air masses north, giving us clear skies for those two months.

Moisture and Vegetation

With so little precipitation, water is the most limiting factor and is the strongest determinant for what type of vegetation will grow. Grasslands grow in the driest sites and forests grow where ever there is enough moisture to support them. Along the rivers, there is more ground water to support cottonwood groves.

Soil moisture is more telling than precipitation. Sunny areas of land lose significant amounts of soil moisture through evaporation. Shady areas and sites at higher elevations are cooler and retain more soil moisture. This is easily seen on Mount Sentinel. Grasslands dominate the hot southwest aspects. The shadier, cooler northeast aspects support Douglas-fir and Ponderosa Pine forests.

South-facing slopes receive more sun and lose more water through evaporation than north-facing slopes. The related increase in soil moisture is enough to support forests.
Grasslands: Most of Missoula is built in this zone.

Coniferous forest: usually above 4000, where it's cooler & there is enough moisture.

Grassland: grows where the soil is arid.

Forest edge

E riparian area
Ground water supports trees & shrubs.

Vegetation Zones
The forest's layers are differentiated by plant types: trees, shrubs, lichens, herbs and fungi.

Coniferous Forests

The coniferous forests around Missoula commonly grow above 4000 feet or on the shadier sides of mountains and in swales where moisture accumulates. In the days prior to human settlement Missoula's valley floor was, generally, too dry to support coniferous forests. That scenario is different today. Because of additional water used to irrigate lawns and gardens and the moister, shadier micro climates available on the north side of houses there are many more places conifers could grow.

Flora

Cover story species include Ponderosa Pine, Douglas-fir and Western Larch. Almost all understory species are shade tolerant and include Buffaloberry, Service-berry, Ninebark and Snowberry. Woody ground covers, like Kinnikinnick and Oregon Grape, and herbaceous plants, like Heart Leaf Arnica, Yarrow and Pine Grass cover the forest floor.

Fauna

Forests have several vertical layers which offer many niches for wildlife. Forest fauna often have eyesight suited for dim lighting, claws or fingers adapted to climbing trees and mottled brown camouflage colors. The Northern Flying Squirrel is an excellent example of a species adapted to arboreal life. Its clawed feet easily cling to branches and it can leap, partly flying, between trees without ever touching the ground. Forest birds, like the Goshawk, have longer tails and shorter wingspans to turn quickly between the branches.

Soils

Coniferous forest soils are usually Alfisols. Compared with other local soils, they tend to have more soil moisture, lower pH (more acidic) and less nutrients. The soil surface typically has a layer of pine needle litter and a thin, pale subsurface horizon. The subsurface horizon has paled because water has leached its organic matter and clays. Forest plants like slightly acidic soils and may not thrive in Missoula's more alkaline valley floor soils.
Forest Edges

The biological diversity of forest edges is greater than almost any other type of habitat in our area. It is on the forest's edge that both forest and grassland species mix, forming a transition area often referred to as an ecotone. Being on the edge of their respective habitats, many of the species are on the outer limits of their comfort zones.

The shift from forest to grasslands is almost always moisture related. Changes in the soil's available moisture is seen where the hot southwest slopes give way to the cooler northeast slopes; with altitude changes; topographic variations; or, where the type of soil changes abruptly, from a sandy texture to a heavy loam that holds water well.

Because of its wealth of diversity, this type of habitat is often mimicked.

Flora

In our area, Ponderosa Pine is the most common tree to be on the edge. It prefers full sun and tolerates dry conditions. Shrubs include Ninebark, Elderberry, Snowberry and other sun tolerant species. The grasses are species that grow on moister sites, like Rough Fescue.

Fauna

Almost all grassland and forest animals can be found at some time in forest edges. Food is often more plentiful and attracts a variety of animals. While some animals, like the coyote, are adapted to taking advantage of these situations others are not. Forest birds accustomed to dark and densely covered habitat are exposed on the edge and may fall prey to Red-tailed Hawks. On the other hand, the Red-tailed Hawk's abilities are limited because its wing span is too broad and does not permit quick turning or flying amongst branches.

With both grassland and forest species present, this zone has high biological diversity.
Grasslands

Grassland ecosystems do not have the vertical variety of forests or the benefits of much water. What they do have is a sweeping vastness that characterizes an integral quality of grassland ecology. This breadth of space is created in an arid environment where there isn't enough moisture to support trees and only a few shrubs. It is windy and exposed. Grassland animals often travel in large herds or live underground.

The Missoula valley was once dominated by native shortgrass prairie. With urbanization the grasslands were fragmented and lost. Disturbed remnants can still be seen on the slopes of Mounts Jumbo and Sentinel and Waterworks Hill.

While it is not possible to entirely recreate this environment in your backyards, micro-versions are heavily used by butterflies, bees, insects, some birds and a few reptiles.

Flora

Grassland plant species typically have one or several characteristics which help reduce water loss: hairy leaves to insulate from heat; lighter colors to reflect sun's heating rays; narrow erect leaves; a multitude of roots to absorb any available soil moisture or deep tap roots to capitalize on the cool, moist soil depths.

Native grass species include Bluebunch Wheatgrass, Idaho Fescue, Rough Fescue, June Grass and Needle-and-Thread Grass. There are a myriad of forbs from buttercups and Arrowleaf Balsamroot to Bitterroot. Shrubs, such as sage and Ninebark thrive in these areas. Weeds like Knapweed, Leafy Spurge and Sulphur Cinquefoil have invaded and taken over some grasslands.

Fauna

Almost all grassland fauna seem to have adapted to their relatively shelterless environment by burrowing or running a lot. Gophers, prairie dogs, ground squirrels, jack rabbits all dwell and hide from predators in burrows. Many grassland predators, such as weasels, ferrets, badgers, foxes and coyotes, also live in holes. There is even a hole-dwelling owl, the Burrowing Owl. Some birds, such as grouse and quail, tend to run instead of fly. Burrowing or non-burrowing, grassland animals' camouflage beiges help them to secretly hide or nest, like the Western Meadowlark, amongst the grasses.

Soils

Mollisols are almost always found under grasslands. These soils have a thick dark surface horizon, tend to be alkaline and can be rich in nutrients. Generally, farmers love them.

Because most grasses grow with two-thirds of their biomass in root systems, most of the organic decay occurs below ground. The organic matter accumulates, creating the typical thick dark surface horizons. With so little moisture the soluble components such as calcium carbonate also remain, causing alkaline conditions.
Riparian Areas

The shrubby and sometime treed areas paralleling water courses are called riparian zones. They can be wide or narrow, steep or flat and have varying water tables. Riparian areas next to cool, fast, narrow mountain streams have different flora, fauna and soils than the wide bottom lands next to warm, broad, slow rivers, or marshes that form in river sloughs and in topographic depressions. What they all have in common is water saturated soils for at least a few months of the year and their incredibly important value for wildlife.

In a sense, riparian zones have a symbiotic relationship with the bodies of water they surround. For the benefit of such plentiful water, riparian vegetation filters incoming water, stabilizes the bank and shades and cools the running water. The banks and old river terraces temporarily store flood waters, preventing increased damages downstream.

Flora

Riparian flora is uniquely adapted to having wet feet for at least part of the year, usually during spring floods. Many species are dependent on these conditions for survival. For example, cottonwood seeds can only germinate in damp, silty, riparian soils after river floods. Dams and rip-rapping have lessened flood deposition, reducing cottonwood regeneration.


Fauna

If there was an Endangered Habitat List, the water's edge would be on it. All native amphibians are entirely dependent on this narrow zone for survival and almost all animals come from adjacent areas to drink. The Ouzel, or American Dipper, lives its entire life in the mountain streams and accompanying riparian zones. It chases aquatic insects and minnows underwater without fins or flippers and nests in the over-
hanging cut banks. The Belted Kingfisher perches on overhanging branches and dives on small fish.

There is an incredibly broad range of habitat in riparian areas. Not only are there vertical layers, as in coniferous forests, but a very rich aquatic zone. Animals are dependent on the clean water and protective cover of healthy riparian systems.

Soils

Along rivers and streams, the most common soils are Entisols and Inceptisols. These soils form from silts and sands deposited when the rivers flood. Although silts and sands are nutrient poor, these soils are often nutrient rich because of the wealth of detritus deposited during floods.

In marshy areas the common soils are Histosols. These form when the ground is saturated with water and the fallen vegetation decomposes without oxygen, which is a very slow process. As a result, organic matter accumulates. Layers of dark organic matter typify these soils.
Basic Wildlife Needs

Food
Different species have different requirements which often change seasonally. Some birds prefer berries, others rely on insects and many eat both. Providing insects may mean including their habitat, like leaf-litter. Being aware of the natural zone that you live in or near and its food chain will help to determine how to create the most useful wildlife habitat.

Water
Water is the most limited resource in this area and, unless you already live near a body of water, is probably the most valuable feature you can include on your property. It can be as simple as an upturned garbage can lid or an elaborate aerated pond with accompanying aquatic ecosystem.

Shelter
Almost all wildlife need protected places to hide from predators, bad weather and to rest. For example, Ground Squirrels have burrows, Marmots hide in rock piles and Grosbeaks fly to trees.

Diversity
Landscape diversity is critical. Not only plant diversity but non-living components as well. Fallen leaves, rock piles, caves, brush piles and snags provide important cover for numerous animals. Plant diversity protects against diseases and pests and provides a greater variety of food.

Territory
Every animal has specific territories. For some animals, like the Grizzly Bear, territories are huge. An insect's territory may be just one raspberry bush. Although it is not possible to landscape animals' territories, understanding their extent helps to determine attractive wildlife.

Designing Your Yard

While planning your yard it is important to remember that there is no wrong or right way to do it. The steps below are a general guide. If the task seems daunting, start small, you don't have to do everything in one summer.

Site Analysis
The first step is to inventory and analyze your yard. For this a site analysis is usually drafted. (See the following page for an example.) The objectives include examining:

- **Potentials for wildlife.** After looking at the list (left) of Basic Wildlife Needs consider your yard: do you have any of these components: berry producing shrubs, trees with cones, a pond, snags, rock piles? Where are the best place for these food sources, water and shelter? Also consider your location in the city and what type of natural are you may be near? What wildlife would be there? Can they get to your property? Answering these questions will help to determine what wildlife to plan for.

- **The qualities, plants and soils of the site.** For example, this part of the yard is sunny, there is great pine tree in this corner, a good view looking that way and I would like more privacy here.

- **Your family needs.** Consider your family's activities. For example, if you like to barbecue or if your kids have a swing-set, plan for these activities away from wildlife areas. If your primary goal is to watch wildlife, possibly include a comfortable deck or patio near the house, with a view into your yard.

Although a drafted site analysis is very helpful, sometimes its completion can become an obstacle. If this is the case, try inventoring your yard long hand.
Site Plan

Translate the site analysis into a site plan. For example: the route most people take to the alley becomes a path, densely foliated evergreen shrubs are placed along the property’s edge for privacy or only low growing plants go where a view is to be preserved.

If you have specific plant arrangements in mind, note them, or, if you are not sure of what and how to plant just denote a general area, say for a butterfly garden. See the examples below.
There are many ways to include wildlife oriented planting arrangement into your yard. Below are four basic arrangements, ideas for other designs may come from a variety of places, including magazines, neighbors' yards, nature and design books.

It's important to remember that there are no wrong or right ways to arrange plants. If you are hesitant, try mocking-up arrangements by placing potted plants, children, furniture or anything that resembles the shape of the plant in its possible location.

A forest landscape gives eye-level privacy without encroaching on the yard. Views into the understory are great.

If you live on a stream, plant riparian shrubs and trees. Include a small raised deck for low-impact exceptional wildlife viewing.

Shrubby forest edges are excellent for privacy. Mix evergreen and deciduous shrubs for diversity and year-round privacy.

Grasslands are useful for emphasizing larger masses, like buildings and trees.
Planting It

- It's best to plant in Spring and Fall when plants are dormant.

- All plants, even drought tolerant species, need to be watered for the first year to establish themselves.

- If your soil doesn't match the needs of your plants, make sure to modify it. For example, many plants require well-drained soil, if your soil is heavy and compacted add sand and compost or peat.

Native Plants

Because our wildlife is already familiar with them, native plants, in general, will have a higher response rate than imported species. Native plants are also healthier in their own environment and require less maintenance.

Deciding on what is native is not always easy. Is it native to this valley, the northern Rocky Mountains, the Rocky Mountains or the West? Where do you draw the line? For example, Pinyon Pine is often listed as a native, but, the northern edge of its natural range is near Fort Collins, Colorado. Perhaps, the best answer is to plant non-invasive species that will remain healthy without help from us.

Sources for Native Plants

Finding native plants is difficult. Most nurseries in our area have a slim selection, and often the native plants they do have are not from this area. Some places can order them upon request.

Bitterroot Native Growers is a wholesale nursery in Corvallis that deals almost exclusively with native plants. There is a minimum order and, because, they are in such high demand, their plants are usually gone by early summer. So you need to plan ahead and place an order very early.

The best places to collect natives is from soon-to-be developed sites. If you know of a house to be built, ask the homeowner or contractor if you can dig plants before they start.

Collecting native plants from road-cuts, clear-cut areas or stream sides is another possibility. Always obtain permission from the owner or managing organization, like the Forest Service. It is wise to check with the Montana Native Plant Society or a local botanist to insure that the site you are considering isn't especially sensitive and the species you are looking for are not endangered.

If you collect seeds from wild plants to grow them yourself, make sure to leave some seeds. Most species’ survival is dependent on reseeding themselves. For annuals, reseeding themselves every year is the only way they survive here.

Soils

There are two ways to determine what type of soil you have: Take a sample into the Missoula County Extension Service or dig a hole and consider it yourself.

Soil has three components. Sand, silt and clay. Organic matter may also be present. Sand grains are visible with the naked-eye, silt is barely visible and clay particles can’t be seen with the naked-eye. Organic matter is always dark, almost black, brown.

When considering it yourself, dig a deep hole. Pull out small clumps of soil from various levels. Wet each clump and see if it feels sticky. Wet clay always feel sticky enough to hold two fingers together. Sandy soils are rarely sticky.

If there is lots of clay, water will drain slowly. This may be an advantage unless these soils are under a downspout and you plan to plant species that like well drained soils. Sandy soils may drain water too quickly for some plants.
Including Water

In such an arid climate, water can be scarce and is incredibly valuable. Creating a source of water can be very simple or very elaborate. In any case, it's best to supply water year-round as in winter unfrozen water is limited.

Water sources include: An upturned garbage can lid or hub-cap placed near the house so you don't have to travel far to break winter ice; purchasing a bird bath with a heating element from a bird store or, if you have a larger body of water use a cattle trough heater. One ingenious design wraps a metal container with heating tape and encases the entire thing in a wooden box.

While birds are attracted to moving water in a sunny location, other animals feel differently. Some small mammals prefer to drink secretively and prefer water hidden amongst shrubs. Butterflies can't land on open water and rely on saturated sand or muddy areas to 'puddle'.

There are ingenious ways to use water from roof run-off. One possibility is to send a cascade of water down rocks or through pools - away from the house's foundation. While the sounds and motion of the descending water can only be appreciated when in rains or during snow melt, the water can lead to a pond for year round use.
Creating a Marsh

In his book, The Backyard Naturalist, Craig Tuft documents his creation of a small marsh using water from his roof. It's surprisingly simple.

He calculated his roof run-off to be about 14,000 gallons per year and then excavated an area to accommodate about one-fourth that volume (450 square feet by 14 inches deep.) From the downspout he dug a French-drain to this area. (This is a gravel filled trench on a grade.) Creating a soil mixture composed mostly of peat, with some sand and compost he filled the soon-to-be marsh. He planted it after the first rain. Using marsh plants that hummingbirds and butterflies like, he says he watched and enjoyed the immediate response to his side-yard marsh.

Translating this to the Missoula area...

Note: These are only rough calculations and creating a side-yard marsh is not a fine-tuned science. Also, during the very dry months of July and August, additional water will have to be added.

Given:
The annual rainfall is 13.2 inches = 1.1 ft/year.
The area of your roof: When calculating the square footage, only measure the horizontal distances not the sloped edges, and only include the part of the roof that will drain into the marsh.

Calculations:
1) 1.1 ft/year x your roof's area = usable water volume
2) Divide by 4 to calculate one fourth volume.
3) Divide by depth, in feet, of marsh (14 inches = 1.2 feet)
4) The remaining square footage is the marsh's surface area which can be given any shape you like.

Using our house as an example:
Our roof is 24ft x 36ft = 864 ft²
But only half of it will drain into the marsh, which = 432 ft^²

1) 1.1 ft/yr x 432 ft² = 475.2 ft³/year
2) Divide by 4 = 118 ft³/year
3) Divide by 1.2 ft = 99 ft²

So our marsh area would be 99 square feet which is equivalent to an area 10 feet by 9.9 feet, or, 6 feet by 16.5 feet, or any shape I want. As these calculations are rough and I don't want a square marsh I would mark the general dimensions and probably create a peanut shaped area that has a varied depth.

Marsh Plants in our area include:
Arrowleaf Horsetails
Cattails Bullrushes
Monkey flower Sedges
Conserving Water

Many of the species listed in this guide are drought-tolerant. With a little more planning it is possible to design your property so that it conserves even more water. There are five basic principles which are included in all xeriscape guides. They are as follows.

- Zone your property
- Increase the soil's water holding capacity
- Plant drought tolerant species
- Mulch like crazy
- Water efficiently

Planning for water conservation in addition to landscaping for wildlife may seem like a package that is too big to handle. But, all of the ideas here are part-and-parcel to the original site analysis — like determining the hottest and therefore most arid parts of your yard— and basic planting procedures.

1 Zoning

There are two ways to zone your property: by its microclimates and by the water requirements of the plants.

Your house and any existing trees and shrubs create shaded, partially-shaded and sunny areas. In general, the shadier sites will be cooler and retain more moisture, while the sunniest sites will be very dry. The same effect is apparent when looking at the aspects of Mount Sentinel. The northern, cooler sides have more soil moisture and are able to sustain Ponderosa pine and Douglas-fir while the southern aspects are primarily grasslands. By taking advantage of the microclimates you can have a greater variety of plants. This diversity will also attract a larger variety of wildlife.

Plants have different water requirements. By keeping the drought tolerant species in one area and the moisture loving species in another, you won't have to water the entire yard as much or as often.

The shade provided by trees, shrubs and buildings yields micro-climates that a bare piece of property does not have. Shadier sites are moister while sunny locations are drier.
2 Increase the soil's water holding capacity

Unless the soil on your land is peat, adding a little organic matter (compost or peat) will increase the soil's water holding capacity as well as the nutrient holding capacity. Because of organic matter's unique chemical structure, water will latch onto it instead of percolating through. Some clays also have this ability. If you are planting species that prefer well drained soil, be careful not to add too much.

3 Plant drought tolerant species

Simply said, drought tolerant species don't need as much water and can stand the very dry summers. It's important to note that not all native plants are drought tolerant. Many native species live in the riparian zone where they are accustomed to wet feet or at high altitudes which have significantly more soil moisture.

4 Mulch like crazy

Mulch can be almost anything, straw, cobbles, shredded bark, pine needles, etc., that covers the soil's surface.

Significant amount of water is lost through evaporation. A thick layer, about 3 inches, of mulch on the soil surface provides insulation, keeping the soil cooler so that less moisture is lost. This is especially true in the sunniest areas. Not only will this practice conserve water, but it will also reduce weeds.

5 Water efficiently

One way plants protect themselves against drought is to grow roots deep into the cooler and moister depths of the soil. It is critical that you water for long periods of time at a slow rate. The water must have time to percolate down. By watering with a sprinkler for a few minutes during the day, not only are large amounts of water lost to the air, but you are training the plants' roots to stay near the surface, which dries out first.
MOUNT SENTINEL HOUSE

Pushed up against the base of Mount Sentinel, this yard is steep and has unusual opportunities for wildlife. The yard was designed and planted years ago, before the ideas of landscaping for wildlife, and although it is dominated by non-native species the profusion of wildlife coming into the yard, from Mount Sentinel, is exceptional. The homeowners have witnessed Saw-whet Owls, a Flammulated Owl, Red-tailed hawks and even a Sharp-shinned hawk taking down a Robin. Deer are plentiful as well as squirrels.

Some of the more important comments that the owners have made are:

- The snags (there are more elsewhere in the yard) are incredibly important for a large variety of birds, including Downy Woodpeckers, Pileated Woodpeckers and Flickers. They've trimmed back the branches to reduce the chance for them to fall.

- While the cones from the Ponderosa pines and other conifers use to be food for native squirrels, the acorns on the Basswood tree have attracted the non-native Fox Squirrels. They no longer see as many of the native squirrels.

- The importance of the water source under the Aspens cannot be overstated. Many birds bathe and drink there.

- Hummingbirds are attracted to the Coral bells and monarda flowers.
UNIVERSITY AREA HOUSE

Although this yard was gifted with mature Mountain Ash trees, Serviceberry and many other trees, it was still lawn dominated. Changing it into a low maintenance, diverse, water conserving and wildlife attracting place is the homeowners long term goal and one that is taking a while to realize.

The idea is to keep some lawn in the center of the yard and fill in the edges with a dense mixture of evergreen and deciduous shrubs and groundcovers. The idea is to maximize privacy but also to keep the sense of space that exists.

The garden was placed next to the existing plum trees to concentrate the area that requires the most water. Other areas are planted with more drought-tolerant species.

The pond is a simple design, fed by roof run-off, with no pumping system and only a plastic liner. It is placed in the shade to reduce evaporation and to lend a peaceful element to the developing drought tolerant shade garden surrounding it. Birds love it and the water has miraculously sprouted a realm of fascinating aquatic insects. To reduce the problem of cats preying on the birds, Kinnikinnick, which is very low to the ground and offers hiding spots for cats to attack from, surrounds the pond. There is an arborvitae nearby to give water-laden birds a close safe perch.
WESTSIDE HOUSE

The homeowners' primary mission is to transform a 60' by 130' city lot into a place filled with native plants that will offer privacy, beauty and attract birds and other wildlife. Reducing maintenance and water-use are also goals.

Like most yards in Missoula this one was dominated by lawns, had little diversity and offered almost no privacy. To change this, shrubs and trees are placed to block views to and from neighbor's yards and the street. Species were selected for wildlife value and diversity.

The source for most of the plants are the forest service sites and soon-to-be-developed homesites. Because the process of digging and transplanting plants is long and slow the homeowner has broken the project into three phases, be completed, hopefully, in the following summers.

Phases
1. Planting trees and shrubs.
2. Planting the Natural Area surrounding the house.
3. Planting native grassland plants and including water for birds.

KEY:
CAPITAL LETTERS: Existing Plants
LOWERCASE: To be planted
1" = 20' North
### Trees

<table>
<thead>
<tr>
<th>Plant</th>
<th>Form Height</th>
<th>Habitat</th>
<th>Light</th>
<th>Soil</th>
<th>Drought Tolerant</th>
<th>Wildlife</th>
<th>Value/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountain Alder</td>
<td>D/R 30'</td>
<td>RF</td>
<td>PS</td>
<td>M-H</td>
<td>no</td>
<td>Seed, cover and nest sites for birds. Small ornamental cones.</td>
<td></td>
</tr>
<tr>
<td>Alnus incana (A. tenufolia)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Betula occidentalis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lodgepole Pine</td>
<td>E/P 50'</td>
<td>F</td>
<td>Sun</td>
<td>L-M</td>
<td>no</td>
<td>Shelter for birds, small mammals.</td>
<td></td>
</tr>
<tr>
<td>Pinus contorta</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ponderosa Pine</td>
<td>E/P 60'</td>
<td>GF</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Shelter for birds, some squirrels. Cones food for some squirrels.</td>
<td></td>
</tr>
<tr>
<td>Pinus Ponderosa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quaking Aspen</td>
<td>D/R 45'</td>
<td>RF</td>
<td>Sun</td>
<td>L-M</td>
<td>no</td>
<td>Host for some butterfly larvae. Soft wood for cavities.</td>
<td></td>
</tr>
<tr>
<td>Populus tremuloides</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Cottonwood</td>
<td>D/R 60'</td>
<td>R</td>
<td>Sun</td>
<td>L-M</td>
<td>no</td>
<td>Soft wood for cavities.</td>
<td></td>
</tr>
<tr>
<td>Populus trichocarpa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Douglas-fir</td>
<td>E/P 100'</td>
<td>F</td>
<td>SunPS</td>
<td>L-M</td>
<td>no</td>
<td>Cover for birds and large mammals.</td>
<td></td>
</tr>
<tr>
<td>Pseudotsuga menziesii</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dwarf Mountain Ash</td>
<td>D/R</td>
<td>FSR</td>
<td>SunPS</td>
<td>L-H</td>
<td>no</td>
<td>Bright red clusters of summer fruit for birds.</td>
<td></td>
</tr>
<tr>
<td>Sorbus scopulina</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Soils

<table>
<thead>
<tr>
<th>Light</th>
<th>Habitat</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>L = Light, well drained</td>
<td>Sh = Shade</td>
<td>E = Evergreen</td>
</tr>
<tr>
<td>M = Medium, mod. well drained</td>
<td>PS = Part shade</td>
<td>D = Deciduous</td>
</tr>
<tr>
<td>H = Heavy, poorly drained</td>
<td>Sun</td>
<td>P = Pyramidal</td>
</tr>
<tr>
<td></td>
<td>F = Forest</td>
<td>R = Round</td>
</tr>
<tr>
<td></td>
<td>M = Marsh</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S = Shrubby Edge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R = Riparian</td>
<td></td>
</tr>
<tr>
<td>Plant</td>
<td>Form Height</td>
<td>Habitat</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>Rocky Mountain Maple</td>
<td>D/R 10'</td>
<td>RF</td>
</tr>
<tr>
<td>Serviceberry</td>
<td>D/R 8-15'</td>
<td>RS</td>
</tr>
<tr>
<td>serviceberry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kinnicinnick</td>
<td>E/H &lt;4&quot;</td>
<td>F</td>
</tr>
<tr>
<td>silver sagebrush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver Sagebrush</td>
<td>E/R 3'</td>
<td>G</td>
</tr>
<tr>
<td>big sagebrush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big Sagebrush</td>
<td>E/R 4'</td>
<td>G</td>
</tr>
<tr>
<td>big sagebrush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oregon Grape</td>
<td>E/H 6&quot;</td>
<td>F</td>
</tr>
<tr>
<td>oregon grape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snowbrush Ceanothus</td>
<td>E/R 5'</td>
<td>FS</td>
</tr>
<tr>
<td>snowbrush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mountain-mahogany</td>
<td>D/R 5'</td>
<td>GS</td>
</tr>
<tr>
<td>mountain-mahogany</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubber Rabbitbrush</td>
<td>D/V 4'</td>
<td>G</td>
</tr>
<tr>
<td>rubber rabbitbrush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redosier Dogwood</td>
<td>D/R 6-10'</td>
<td>R</td>
</tr>
<tr>
<td>redosier dogwood</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Soil**
- L = Light, well drained
- M = Medium, mod. well drained
- H = Heavy, poorly drained

**Light**
- Sh = Shade
- PS = Part shade
- Sun

**Habitat**
- F = Forest
- G = Grassland
- S = Shubby edge
- R = Riparian

**Form**
- E = Evergreen
- D = Deciduous
- H = Horizontal
- V = V-shaped
<table>
<thead>
<tr>
<th>Plant</th>
<th>Form Height</th>
<th>Habitat</th>
<th>Light</th>
<th>Soil</th>
<th>Drought Tolerant</th>
<th>Wildlife</th>
<th>Value/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cliffrose Cowania stansburiana</td>
<td>E/R 6'</td>
<td>SG</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Deer browse. Fragrant light yellow flowers in summer. Long seed plumes in fall.</td>
<td></td>
</tr>
<tr>
<td>Apache Plume Fallugia paradoxa</td>
<td>E/R 6'</td>
<td>GS</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Seeds for birds and small mammals. White rose-like flowers in spring. Feathery seed heads later.</td>
<td></td>
</tr>
<tr>
<td>Common Juniper Juniperus communis</td>
<td>E/H 2-3'</td>
<td>GSF</td>
<td>Sun</td>
<td>L-H</td>
<td>yes</td>
<td>Excellent year round cover for small mammals and birds. Cones eaten by a few animals.</td>
<td></td>
</tr>
<tr>
<td>Rocky Mountain Juniper Juniperus scopularum</td>
<td>E/C 8-15'</td>
<td>GSF</td>
<td>Sun</td>
<td>L-H</td>
<td>yes</td>
<td>All season shelter and cones for birds.</td>
<td></td>
</tr>
<tr>
<td>Black Twinberry Lonicera involucrata</td>
<td>D/R</td>
<td>SF</td>
<td>PS</td>
<td>L-H</td>
<td>no</td>
<td>Berries for birds and mammals.</td>
<td></td>
</tr>
<tr>
<td>Utah Honeysuckle Lonicera utahensis</td>
<td>D/R 4'</td>
<td>SG</td>
<td>PS</td>
<td>L-M</td>
<td>no</td>
<td>Fruit for birds and chipmunks. Yellow flowers in late spring. Low mounded shape is good cover.</td>
<td></td>
</tr>
<tr>
<td>Ninebark Physocarpus malvaceus</td>
<td>D/R 5-9'</td>
<td>GS</td>
<td>Sun</td>
<td>L-H</td>
<td>yes</td>
<td>Shelter for songbirds.</td>
<td></td>
</tr>
<tr>
<td>Chokecherry Prunus virginiana</td>
<td>D/R 10-15'</td>
<td>RFS</td>
<td>SunPS</td>
<td>M</td>
<td>no</td>
<td>Berries and nesting cover for birds. Showy early spring flowers.</td>
<td></td>
</tr>
<tr>
<td>Antelope Bitterbrush Purshia tridentata</td>
<td>D/R 3-6'</td>
<td>GS</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Birds and small mammals eat seeds. Deer, elk browse Spring yellow flowers.</td>
<td></td>
</tr>
<tr>
<td>Oakleaf Sumac Rhus trilobata</td>
<td>D/R 4-6'</td>
<td>SF</td>
<td>Sun</td>
<td>M</td>
<td>yes</td>
<td>Food and cover for ground birds, small mammals and deer. Gorgeous red fall color.</td>
<td></td>
</tr>
</tbody>
</table>

**Soil**
- L = Light, well drained
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- H = Heavy, poorly drained

**Light**
- Sh = Shade
- PS = Part shade
- Sun = Sun

**Habitat**
- F = Forest
- G = Grassland
- S = Shrubby edge
- R = Riparian
- C = Columnar

**Form**
- E = Evergreen
- D = Deciduous
- R = Round
- H = Horizontal
- V = V-shaped
<table>
<thead>
<tr>
<th>Plant</th>
<th>Form Height</th>
<th>Habitat</th>
<th>Light</th>
<th>Soil</th>
<th>Drought Tolerant</th>
<th>Wildlife Value/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golden Currant</td>
<td>D/R 6'</td>
<td>R</td>
<td>SunPS</td>
<td>M-H</td>
<td>mod</td>
<td>Fruit for birds. Yellow spring flowers, deep red berries and red leaf color in fall.</td>
</tr>
<tr>
<td>Ribes aureum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woods Rose</td>
<td>D/R 5'</td>
<td>R</td>
<td>Sun</td>
<td>L-H</td>
<td>mod</td>
<td>Year round cover. Winter food for birds and mammals.</td>
</tr>
<tr>
<td>Rosa woodsii</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thimbleberry</td>
<td>D/V FS</td>
<td>ShPS</td>
<td>M-H</td>
<td>no</td>
<td></td>
<td>Fruit for birds, bears and smaller mammals.</td>
</tr>
<tr>
<td>Rubus parviflora</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Willow species</td>
<td>D/R 3-15'</td>
<td>R</td>
<td>Sun</td>
<td>L-H</td>
<td>no</td>
<td>Cover for birds. Excellent bank stabilizer. Host for butterflies.</td>
</tr>
<tr>
<td>Salix spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Elderberry</td>
<td>D/R 5-8'</td>
<td>FS</td>
<td>all</td>
<td>L-H</td>
<td>no</td>
<td>Lots of fruit for birds and small mammals.</td>
</tr>
<tr>
<td>Sambucus cerulea</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russet Buffalo berry</td>
<td>D/R 4-7'</td>
<td>FS</td>
<td>ShPS</td>
<td>L-H</td>
<td>no</td>
<td>Fruit for quail, chipmunks and squirrels.</td>
</tr>
<tr>
<td>Shepardia canadensis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snowberry</td>
<td>D/R 3'</td>
<td>FS</td>
<td>SunPS</td>
<td>L-M</td>
<td>mod</td>
<td>Fruit for birds and small mammals.</td>
</tr>
<tr>
<td>Symphoricarpos spp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cattail</td>
<td>D/V M</td>
<td>Sun</td>
<td>Wet H</td>
<td>no</td>
<td></td>
<td>Cover, perching branches for songbirds. Food for ducks.</td>
</tr>
<tr>
<td>Typha latifolia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Some Plant Forms**

- Pyramidal
- Columnar
- Round Tree
- V-shaped
- Horizontal
- Round Shrub
# Wildflowers

<table>
<thead>
<tr>
<th>Plant</th>
<th>Flower Season</th>
<th>Habitat</th>
<th>Light</th>
<th>Soil</th>
<th>Drought Tolerant</th>
<th>Wildlife Value/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yarrow</td>
<td></td>
<td>GSF</td>
<td>Sun</td>
<td>L-H</td>
<td>yes</td>
<td>Bee flower.</td>
</tr>
<tr>
<td><em>Achillea lanulosa</em></td>
<td>white</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrowleaf Balsamroot</td>
<td>yellow</td>
<td>G</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Birds eat seeds.</td>
</tr>
<tr>
<td><em>Balsamorhiza sagittata</em></td>
<td>spring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian Paintbrush</td>
<td>Red</td>
<td>G</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Butterfly nectar and larvae food. Difficult to establish.</td>
</tr>
<tr>
<td><em>Castilleja spp.</em></td>
<td>summer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Clematis</td>
<td>yellow</td>
<td>GF</td>
<td>SunPS</td>
<td>L-H</td>
<td>no</td>
<td>This woody vine is good cover for birds and small mammals.</td>
</tr>
<tr>
<td><em>Clematis ligusticifolia</em></td>
<td>summer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shooting Star</td>
<td>purple/white</td>
<td>GSF</td>
<td>Sun</td>
<td>M</td>
<td>no</td>
<td>Bee flower.</td>
</tr>
<tr>
<td><em>Dodoncatheon jeffreyi</em></td>
<td>early</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purple Coneflower</td>
<td>purplish</td>
<td>G</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Excellent for butterfly and bee nectar.</td>
</tr>
<tr>
<td><em>Echinacea purpurea</em></td>
<td>summer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fireweed</td>
<td>pink</td>
<td>GS</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Butterfly and bee flower.</td>
</tr>
<tr>
<td><em>Epilobium angustifolium</em></td>
<td>pink</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blanket Flower</td>
<td>yellow/red</td>
<td>G</td>
<td>Sun</td>
<td>L-H</td>
<td>yes</td>
<td>Butterfly and bee nectar.</td>
</tr>
<tr>
<td><em>Gaillardia aristata</em></td>
<td>summ-fall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scarlet Gillia</td>
<td>red</td>
<td>GS</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Hummingbird flower.</td>
</tr>
<tr>
<td><em>Gilia aggregata</em></td>
<td>summer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gayfeather</td>
<td>purple</td>
<td>G</td>
<td>Sun</td>
<td>L-H</td>
<td>yes</td>
<td>Hummingbird flower.</td>
</tr>
<tr>
<td><em>Liatris spp.</em></td>
<td>summer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Soils

- **L** = Light, well drained
- **M** = Medium, mod. well drained
- **H** = Heavy, poorly drained

## Light

- **Sh** = Shade
- **PS** = Part shade
- **Sun** = Sun

## Habitat

- **F** = Forest
- **M** = Marsh
- **S** = Shrubby Edge
- **R** = Riparian
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<th>Value/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lupine Lupine spp.</td>
<td>blue sp/summ</td>
<td>G</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Important for many butterflies.</td>
<td></td>
</tr>
<tr>
<td>Bee Balm/Horesemint Monarda spp.</td>
<td>varies</td>
<td>GS</td>
<td>Sun</td>
<td>L-M</td>
<td>no</td>
<td>Bees and butterflies feed on nectar.</td>
<td></td>
</tr>
<tr>
<td>Yellow Monkey-Flower Mimulus guttatus</td>
<td>yellow</td>
<td>RM</td>
<td>Sun</td>
<td>Wet H</td>
<td>no</td>
<td>Used by butterflies and bees.</td>
<td></td>
</tr>
<tr>
<td>Primrose Oenothera spp.</td>
<td>white or yell. summer</td>
<td>GS</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Butterfly and bee flower.</td>
<td></td>
</tr>
<tr>
<td>Penstemon Penstemon spp.</td>
<td>many varies</td>
<td>GSR</td>
<td>Sun</td>
<td>L-M</td>
<td>mod</td>
<td>The red varieties are a favorite with hummingbirds. Very showy plant.</td>
<td></td>
</tr>
<tr>
<td>Collomia Collomia linearis</td>
<td>pink sp-fall</td>
<td>GSF</td>
<td>SunPS</td>
<td>L-M</td>
<td>mod</td>
<td>Hummingbird flower.</td>
<td></td>
</tr>
<tr>
<td>Buttercup Ranunculus spp.</td>
<td>yellow spring</td>
<td>GSRF</td>
<td>SunPS</td>
<td>L-H</td>
<td>mod</td>
<td>Butterfly flower.</td>
<td></td>
</tr>
<tr>
<td>Prairie Coneflower Ratibida columnifera</td>
<td>dk.red summ-fall</td>
<td>G</td>
<td>Sun</td>
<td>L-M</td>
<td>yes</td>
<td>Bees, butterflies dine on nectar.</td>
<td></td>
</tr>
<tr>
<td>Black-eyed Susan Rudbeckia hirta</td>
<td>white summ-fall</td>
<td>GS</td>
<td>Sun</td>
<td>L-M</td>
<td>mod</td>
<td>Butterfly flower.</td>
<td></td>
</tr>
<tr>
<td>Goldenrod Solidago elongata</td>
<td>yellow fall</td>
<td>SF</td>
<td>SunPS</td>
<td>M</td>
<td>mod</td>
<td>Butterfly and bee flower.</td>
<td></td>
</tr>
<tr>
<td>Johnny Jump-up Viola tricolor</td>
<td>purp/yell summer</td>
<td>GSF</td>
<td>SunPS</td>
<td>L-H</td>
<td>yes</td>
<td>Butterflies nectar plant. A low growing annual that reseeds itself profusely.</td>
<td></td>
</tr>
</tbody>
</table>

**Soils**

- **L** = Light, well drained
- **M** = Medium, mod. well drained
- **H** = Heavy, poorly drained
- **Sh** = Shade
- **F** = Forest
- **P** = Part shade
- **S** = Shrubby Edge
- **R** = Riparian
- **G** = Grassland
Birds

Birds are attractive, interesting and possibly the most responsive to your efforts. Many birds can be found in this area. Some pass through on migrations, others winter or summer here, and many live here year-round.

Landscaping for birds means including berry producing shrubs, dense evergreens for shelter and a year round water source. For birds that eat insects, include insect producing elements, like fallen leaf litter, and eliminate pesticide use. Many people spray their Box Elders to prevent the Box Elder bug larvae from eating all the leaves. Most often, if you wait, the tree will be covered with a variety of insect eating birds, like Yellow Warblers and Blackbirds.

Feeders are an easy way to attract hordes of finches, grosbeaks and other seed eaters. The local bird stores have feeders and Oiled-Sunflower seeds in bulk.

Domestic Cats

No matter how much they're fed, domestic cats will prey on small birds and mammals. With cats in the neighborhood it may seem unwise to invite wildlife to your backyard, but they are ways to design your yard to improve wildlife's chances.

Most cats prey on ground feeding animals. If cats may be a problem, reduce the number of opportunities for animals to be on the ground. For example, instead of building a pond, develop an above ground, at least three feet, water system - like a bird bath. For the critters that insist on ground maneuvers, make sure that there is thick, dense, cat impenetrable cover nearby. Some junipers work.

It is impossible to train a cat not to hunt, but bells on a cat's collar may alert wildlife to the cat's approach.

Hummingbirds

These tiny, colorful birds are easy to attract, primarily because of their amazing response to the color red. This is apparent if you have been buzzed while wearing red clothing. They also prefer nectar from tubular shaped flowers.

If you're having trouble attracting them, place a large red cloth near the hummingbird plants - just like a big road sign.

Calliope Hummingbird - These are the most common in our area and the smallest north American hummingbird. The female builds her nest in evergreens to look like cones. In the early spring can be seen sipping nectar from Black Currants.

Rufous Hummingbird - They winter in Southern Mexico and in the summer are common in forests and shrubby forest edges.

Black-chinned Hummingbird - Winters on the west coast of Mexico and possibly into New Mexico. Montana is near the northern edge of its summer breeding range. It's common in valleys and on lower mountains.

Hummingbird Flowers

Gayfeather
Indian Paintbrush
Red columbine
Fireweed
Firecracker Penstemon

Honeysuckle
Viburnum
Iris
Tiger Lily
Four O’clock

Hasturtium
Skyrocket Gilia
Larkspur
### Birds to Watch For

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
<th>Season</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heron</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Blue Heron</td>
<td>RM</td>
<td>Y</td>
<td>Frogs, fish</td>
</tr>
<tr>
<td><strong>Swans, Geese &amp; Ducks</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada Goose</td>
<td>RMG</td>
<td>Y</td>
<td>Aquatic vegetation</td>
</tr>
<tr>
<td>Mallard</td>
<td>RM</td>
<td>Y</td>
<td>Aquatic insects, crustaceans</td>
</tr>
<tr>
<td>Common Goldeneye</td>
<td>RM</td>
<td>Y</td>
<td>Fish, some insects</td>
</tr>
<tr>
<td>Barrow's Goldeneye</td>
<td>RM</td>
<td>S</td>
<td>Fish, small aquatic critters</td>
</tr>
<tr>
<td>Common Merganser</td>
<td>RM</td>
<td>S</td>
<td>Acorns and vegetation</td>
</tr>
<tr>
<td>Pied-billed Grebe</td>
<td>RM</td>
<td>S</td>
<td>Aquatic insects, some fish</td>
</tr>
<tr>
<td>Double-crested Cormorant</td>
<td>M</td>
<td>S</td>
<td>Acorns and vegetation</td>
</tr>
<tr>
<td>Wood Duck</td>
<td>RM</td>
<td>Y</td>
<td>Aquatic vegetation</td>
</tr>
<tr>
<td>Green-winged Teal</td>
<td>RM</td>
<td>S</td>
<td>Small plants &amp; animals in mud</td>
</tr>
<tr>
<td>Cinnamon Teal</td>
<td>RM</td>
<td>S</td>
<td>Small plants &amp; animals in mud</td>
</tr>
<tr>
<td>Northern Shoveler</td>
<td>RM</td>
<td>S</td>
<td>Aquatic plants, wsp. wild celery</td>
</tr>
<tr>
<td>Redhead</td>
<td>RM</td>
<td>S</td>
<td>Aquatic plants, wsp. wild celery</td>
</tr>
<tr>
<td><strong>Vultures</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey Vulture</td>
<td>GCS</td>
<td>S</td>
<td>Carrion</td>
</tr>
<tr>
<td><strong>Hawks and Eagles</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Osprey</td>
<td>R</td>
<td>S</td>
<td>Fish</td>
</tr>
<tr>
<td>Bald Eagle</td>
<td>R</td>
<td>Y</td>
<td>Carrion, fish</td>
</tr>
<tr>
<td>Golden Eagle</td>
<td>GCS</td>
<td>Y</td>
<td>Smaller grassland mammals</td>
</tr>
<tr>
<td>Northern Harrier</td>
<td>MG</td>
<td>Y</td>
<td>Small mammals, frogs, insects</td>
</tr>
<tr>
<td>Northern Goshawk</td>
<td>SF</td>
<td>Y</td>
<td>Birds, ducks, some mammals</td>
</tr>
<tr>
<td>Red-Tailed Hawk</td>
<td>GRS</td>
<td>Y</td>
<td>Small mammals</td>
</tr>
<tr>
<td>Rough-legged Hawk</td>
<td>MG</td>
<td>W</td>
<td>Small mammals</td>
</tr>
<tr>
<td><strong>Falcon</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Kestrel</td>
<td>RGSF</td>
<td>Y</td>
<td>Mice, insects</td>
</tr>
<tr>
<td>Prairie Falcon</td>
<td>GCS</td>
<td>Y</td>
<td>Small mammals, some birds</td>
</tr>
<tr>
<td><strong>Partridges, Grouse &amp; Pheasant</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Grouse</td>
<td>SF</td>
<td>Y</td>
<td>Pine needles, insects and seeds</td>
</tr>
<tr>
<td>Ruffed Grouse</td>
<td>RS</td>
<td>Y</td>
<td>Berries, buds, catkins</td>
</tr>
<tr>
<td>Spruce Grouse</td>
<td>SF</td>
<td>Y</td>
<td>Insects, seeds, berries</td>
</tr>
<tr>
<td>Ring-necked Pheasant</td>
<td>GRS</td>
<td>Y</td>
<td>Insects, seeds, berries</td>
</tr>
<tr>
<td><strong>Rails and Coots</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sora</td>
<td>MR</td>
<td>S</td>
<td>Insects, snails, seeds</td>
</tr>
<tr>
<td>Virginia Rail</td>
<td>MS</td>
<td>S</td>
<td>Insects, slugs, snails</td>
</tr>
<tr>
<td>American Coot</td>
<td>RM</td>
<td>Y</td>
<td>Insects, slugs, snails</td>
</tr>
</tbody>
</table>

**Plovers**

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
<th>Season</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Killdeer</td>
<td>RMG</td>
<td>Y</td>
<td>Insects</td>
</tr>
<tr>
<td>Semi-palated Plover</td>
<td>M</td>
<td>SP</td>
<td>Aquatic insects</td>
</tr>
</tbody>
</table>

**Sandpipers**

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
<th>Season</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spotted Sandpiper</td>
<td>RMG</td>
<td>S</td>
<td>Insects, mollusks</td>
</tr>
<tr>
<td>Long-billed Dowitcher</td>
<td>RM</td>
<td>Y</td>
<td>Aquatic worms, mollusks</td>
</tr>
<tr>
<td>Common Snipe</td>
<td>RM</td>
<td>Y</td>
<td>Aquatic worm, mollusks</td>
</tr>
<tr>
<td>Wilson's Phalarope</td>
<td>M</td>
<td>S</td>
<td>Insect larvae</td>
</tr>
</tbody>
</table>

**Owls**

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
<th>Season</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammulated Owl</td>
<td>SF</td>
<td>S</td>
<td>Small insects</td>
</tr>
<tr>
<td>Western Screech-Owl</td>
<td>RS</td>
<td>Y</td>
<td>Mice, voles</td>
</tr>
<tr>
<td>Great Horned Owl</td>
<td>RSF</td>
<td>Y</td>
<td>Small mammals</td>
</tr>
<tr>
<td>Northern Pygmy-Owl</td>
<td>RSF</td>
<td>Y</td>
<td>Rodents, snakes, lizards</td>
</tr>
<tr>
<td>Barred Owl</td>
<td>FR</td>
<td>Y</td>
<td>Small mammals</td>
</tr>
<tr>
<td>Northern Saw-whet Owl</td>
<td>RF</td>
<td>Y</td>
<td>Small mammals</td>
</tr>
</tbody>
</table>

**Goatsuckers (Nightjars)**

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
<th>Season</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Nighthawk</td>
<td>RMS</td>
<td>S</td>
<td>Flying insects</td>
</tr>
<tr>
<td>Common Poor-will</td>
<td>FS</td>
<td>S</td>
<td>Flying insects</td>
</tr>
</tbody>
</table>

**Swifts**

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
<th>Season</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaux’s Swift</td>
<td>FS</td>
<td>S</td>
<td>High flying insects</td>
</tr>
<tr>
<td>White-Throated Swift</td>
<td>CFSS</td>
<td>S</td>
<td>High flying insects</td>
</tr>
</tbody>
</table>

**Woodpeckers**

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
<th>Season</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lewis’ Woodpecker</td>
<td>RS</td>
<td>Y</td>
<td>All drill insects from tree trunks. The Sapsuckers</td>
</tr>
<tr>
<td>Red-naped Sapsucker</td>
<td>RSF</td>
<td>Y</td>
<td>Y drill a hole and return when the sap has trapped insects.</td>
</tr>
<tr>
<td>Downy Woodpecker</td>
<td>RSF</td>
<td>Y</td>
<td>Y drill a hole and return when the sap has trapped insects.</td>
</tr>
<tr>
<td>Hairy Woodpecker</td>
<td>RSF</td>
<td>Y</td>
<td>Y drill a hole and return when the sap has trapped insects.</td>
</tr>
<tr>
<td>Black-backed W.</td>
<td>SF</td>
<td>Y</td>
<td>Y drill a hole and return when the sap has trapped insects.</td>
</tr>
<tr>
<td>Northern Flicker</td>
<td>RCF</td>
<td>Y</td>
<td>Y drill a hole and return when the sap has trapped insects.</td>
</tr>
<tr>
<td>Pileated Woodpecker</td>
<td>RF</td>
<td>Y</td>
<td>Y drill a hole and return when the sap has trapped insects.</td>
</tr>
</tbody>
</table>

**Flycatchers**

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
<th>Season</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olive-sided Flycatcher</td>
<td>SF</td>
<td>S</td>
<td>Catch insects in midair, may eat some fruit.</td>
</tr>
<tr>
<td>Western Wood-pee wee</td>
<td>RS</td>
<td>S</td>
<td>Catch insects in midair, may eat some fruit.</td>
</tr>
<tr>
<td>Willow Flycatcher</td>
<td>RGS</td>
<td>S</td>
<td>Catch insects in midair, may eat some fruit.</td>
</tr>
<tr>
<td>Hammond’s Flycatcher</td>
<td>F</td>
<td>S</td>
<td>Catch insects in midair, may eat some fruit.</td>
</tr>
<tr>
<td>Say’s Phoebe</td>
<td>GC</td>
<td>S</td>
<td>Catch insects in midair, may eat some fruit.</td>
</tr>
</tbody>
</table>

**Habitat Key:**
- R = Riparian
- M = Marshes
- F = Forest
- S = Shrubby Forest Edge
- G = Grasslands
- C = Cliffs

**Season Key:**
- Y = Yearround
- W = Winter
- Sp = Spring
- S = Summer
- F = Fall
<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
<th>Season</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Larks &amp; Swallows</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horned Lark</td>
<td>G</td>
<td>Y</td>
<td>Weed seeds and insects</td>
</tr>
<tr>
<td>Tree Swallow</td>
<td>RGM</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Violet-green Swallow</td>
<td>RGMCS</td>
<td>S</td>
<td>Catch flying insects</td>
</tr>
<tr>
<td>Northern Rough-winged</td>
<td>RGMCS</td>
<td>S</td>
<td>In midair.</td>
</tr>
<tr>
<td>Bank Swallow</td>
<td>RGMCS</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Cliff Swallow</td>
<td>RGMCS</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Barn Swallow</td>
<td>RGMCS</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td><strong>Jays, Crows &amp; Raven</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray Jay</td>
<td>SF</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Stellar's Jay</td>
<td>SF</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Clark's Nutcracker</td>
<td>SF</td>
<td>Y</td>
<td>Opportunities, they have</td>
</tr>
<tr>
<td>Black-billed Magpie</td>
<td>RGMRF</td>
<td>Y</td>
<td>a varied diet.</td>
</tr>
<tr>
<td>American Crow</td>
<td>RGS</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Common Raven</td>
<td>GSF</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><strong>Titmice</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black-capped Chickadee</td>
<td>RS</td>
<td>Y</td>
<td>Insects, seeds and berries</td>
</tr>
<tr>
<td>Mountain Chickadee</td>
<td>RSF</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><strong>Nuthatches</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red-breasted Nuthatch</td>
<td>SF</td>
<td>Y</td>
<td>Nuts and seeds</td>
</tr>
<tr>
<td>White-breasted Nuthatch</td>
<td>RS</td>
<td>Y</td>
<td>Insect larvae and eggs in bark</td>
</tr>
<tr>
<td>Pygmy Nuthatch</td>
<td>RSF</td>
<td>Y</td>
<td>Insects on trunks and flying</td>
</tr>
<tr>
<td><strong>Creeper</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown Creeper</td>
<td>RF</td>
<td>Y</td>
<td>Insects on bark</td>
</tr>
<tr>
<td><strong>Wrens</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rock Wren</td>
<td>C</td>
<td>S</td>
<td>Mostly insects</td>
</tr>
<tr>
<td>House Wren</td>
<td>RGS</td>
<td>S</td>
<td>Mostly insects</td>
</tr>
<tr>
<td>Winter Wren</td>
<td>RSY</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><strong>Dippers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Dipper</td>
<td>R</td>
<td>Y</td>
<td>Insect larvae, some minnows</td>
</tr>
<tr>
<td><strong>Thrushes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golden-crowned Kinglet</td>
<td>RSY</td>
<td>Y</td>
<td>Insects</td>
</tr>
<tr>
<td>Ruby-crowned Kinglet</td>
<td>RSY</td>
<td>S</td>
<td>Insects</td>
</tr>
<tr>
<td>Mountain Bluebird</td>
<td>GSF</td>
<td>S</td>
<td>Insects in flight and on ground</td>
</tr>
<tr>
<td>Townsend's Solitaire</td>
<td>CSF</td>
<td>Y</td>
<td>Insects</td>
</tr>
<tr>
<td>Swainson's Thrush</td>
<td>RSY</td>
<td>S</td>
<td>Ground insects</td>
</tr>
<tr>
<td>Hermit Thrush</td>
<td>SF</td>
<td>S</td>
<td>Insects</td>
</tr>
<tr>
<td>Varied Thrush</td>
<td>RF</td>
<td>S</td>
<td>Insects</td>
</tr>
<tr>
<td>American Robin</td>
<td>RGSF</td>
<td>Y</td>
<td>Insects</td>
</tr>
<tr>
<td><strong>Shrikes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Shrike</td>
<td>GS</td>
<td>W</td>
<td>Small rodents, snakes, insects</td>
</tr>
</tbody>
</table>

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- Sp = Spring
- S = Summer
- F = Fall

**Species**

**Waxwings**
- Bohemian Waxwing: GS, W
  - They love berries.
- Cedar Waxwing: RGS, Y

**Starlings**
- European Starling: GS, Y
  - Snails, insects, fruit

**Vireos**
- Solitary Vireo: SF, S
  - Mostly insects, some berries
- Warbling Vireo: SF, S
- Red-eyed Vireo: R, S

**Warblers, Sparrows and Blackbirds**
- Orange-crowned Warbler: GRS, S
  - Caterpillars, beetles, small worms
- Yellow Warbler: R, S
- Yellow-rumped Warbler: RG, S
  - Flying insects
- Townsend’s Warbler: F, S
- MacGillivray's Warbler: RS, S
- Common Yellowthroat: RM, S
- Wilson's Warbler: RS, S
- Western Tanager: RSF, Y
- Black-headed Grosbeak: GSF, Y
- Lazuli Bunting: RS, S
- Rufous-sided Towhee: RS, S
  - Seeds and insects
- American Tree Sparrow: RG, S
- Chipping Sparrow: RG, S
  - Seeds, insects on ground
- Brewer’s Sparrow: GF, S
- Vesper Sparrow: G, S
- Savannah Sparrow: GS, S
  - Seeds, insects on ground
- Song Sparrow: RM, Y
- Lincoln’s Sparrow: RMS, S
  - Seeds, insects on ground
- White-crowned Sparrow: RMS, S
- Dark-eyed Junco: GSF, Y
  - Seeds, insects on ground
- Red-winged Blackbird: RM, S
  - Grain, insects
- Red Crossbill: SF, S
  - Mosty insects
- Common Redpoll: GSF, W
- Pine Siskin: RG, S
  - Seeds, esp. dandelion/thistle
- American Goldfinch: RS, Y
  - Weed seeds
- Evening Grosbeak: RS, Y
  - Seeds
- House Sparrow: RG, Y
  - Seeds and grain on ground
Butterflies & Moths

Butterflies have captured the more imaginative names of the animal world. Painted Ladies, Wood Nymphs and Queens, Dogface, Hairstreaks and Large Marble, to mention a few. Gardening for them is great way to include colorful flowers.

Butterflies have several stages of life, two of which have special food requirements. The larval (caterpillar) and adult stages. When caterpillars emerge from the eggs they munch on their host plants. Later, after the caterpillar has created a cocoon and metamorphosed into a butterfly, the adult butterfly dines on nectar from a few specific plants.

Butterflies are cold-blooded so they need sunshine to warm their bodies. It's preferable to plant a butterfly garden in the afternoon sun. Areas dedicated to butterflies can be as small as a window box or as big as a meadow. If you would like to see butterflies throughout the summer, plant nectar sources that will flower consecutively. For example buttercup, lupine, Purple Coneflower or Blanket Flower, Black-eyed Susan and Goldenrod.

Butterflies can't light on open water to drink. Instead, they drink from sandy or muddy areas. At one end of a pond or in a separate container add sand and keep it saturated with water.

Moths tend to be more active at night, where they are found flying into lights. Butterflies prefer the daylight.

Some Butterfly Foliage

Trees: Aspen, cottonwood.

Shrubs: Willow, alder, Red-osier Dogwood.

Flowers: Aster, Wild Bergamot, Sulfur buckwheat, Rabbit brush, Indian Paintbrush, Gayfeather, legumes, milkweed, Thistle, Purple Coneflower, Clover, Violet.

Missoula's Common Butterflies and Moths

Key

Butterfly name - Habitat
H Caterpillar hosts
N Nectar source

Gossamer Wings

Purplish Copper - Urban weed fields to tidal marshes.
H Dock, sorrels, cinquefoils.
N Dock and baby breath.

Coral Hairsteak - Meadows, canyons.
H Very young wild fruits, including plums and Serviceberry
N Bee plant and butterfly weed.

Spring Azure - Woodlands everywhere.
H Dogwoods, ceanothus
N Dandelions, early spring blooms.

Common Blue - Always close to lupines.
Melissa Blue - Near lupines.
Silvery Blue - Widespread.
H Lupine, legumes, alfalfa, wild licorice.
N Lupine, Purple coneflower, alfalfa, milkweeds and composites.
Whites
Checkered White - Lowland open spaces.
Cabbage White - Essentially everywhere
Creamy Marblewing - Pine and aspen forests.
Sara Orangetip - Open areas.
  H Mustards, bee plants, cabbage and nasturtium.
  N Mustards, milkweeds, asters, dandelion, monkey flower.

Sulphurs
Orange Sulphur - Open areas.
Common Sulphur - Open areas.
  H Legumes, especially alfalfa and clover.
  N Alfalfa, clover, thistle, phlox, milkweeds, dandelion and dogwood.

Dainty Sulphur - Disturbed areas, near rivers, roadsides.
  H Marigolds, chickweed.
  N Marigolds and composites.

Parnassians & Swallowtails
Western Tiger Swallowtail - Widespread.
  H Poplars, Aspens and willows.
  N Indian Paintbrush, penstemons.
Phoebus' Parnassian - Mountain meadows.
  H Stonecrops
  N Stonecrops

Anise - Open spaces everywhere.
  H Leaves and flowers of fennel, parsley.
  N Zinnias, penstemon, mint, butterfly bush.

Milkweeds
Monarchs - Long migrators, will land almost anywhere
  Their entire life cycle depends on milkweeds.

Satyrs
Common Wood Nymph - Grassy areas near forest, meadows.
Mourning Cloak - Sunny stream sides, gardens, parks.
  H Willows, poplars, tall grasses, like.
  N Rotting fruit, sap, Mint, ironweed.

Brushfooted
Great Spangled - Meadows in coniferous forests.
Atlantis Fritillary - Meadows in forests.
Variegated Fritillary - Everywhere but forests.
  H Violets, flax, pansies.
  N Black-eyed Susans, thistles, milkweeds.

Red Admiral - Open areas, gardens.
  H Nettles.
  N Rotting fruit, sap.

Painted Lady - Everywhere.
Field Crescent - Open areas
  H Thistles, asters, composites.
  N Many composites.

Anicia Checkerspot - Pine forests, aspen groves, meadows
  H Indian Paintbrush, Penstemon, figworts and plantains
  N Cinquefoil, bistorts

Skippers
Roadside - Moist glades to shrubby areas.
  H Grasses
  N Low blue flowers such as verbena

Common Sooty Wing - Weedy areas
  H Pigweed, lambs quarters
  N Milkweed, peppermint, dogbane
More Insects and Spiders

Insect diversity and ability to mass reproduce makes them the most numerous and prevalent form of wildlife. Worldwide, their biomass outweighs any other category of critter. Over 10,000 species have been identified and some scientists think that there may be an equal amount undiscovered.

The microscopic world of bugs is diverse, fascinating and a delight. And as insects are the primary food source for many birds, small mammals, reptiles and amphibians, making sure insect habitat is part of your backyard ecosystem is critical for attracting other wildlife. Some useful guides to insects appear in the bibliography.

Providing habitat for Ground Beetles, Ladybugs, grasshoppers, crickets and other insects means allowing leaf litter to accumulate in some areas, including rock piles and shrubs - and not using pesticides.

The attack some insects make on treasured gardens and plants may seem to warrant pesticide use, but, both helpful carnivorous bugs and plant eating bugs perish. Without the carnivorous bugs, plant destroying insect populations can really explode and a never winning battle between you and the insects often follows leaving your yard devoid of any wildlife.

If there is a problem population, identify the bug and plan for its removal. It could be done by releasing a bunch of insects that prey on them, or paying a kid a penny per bug to collect them. The Missoula County Extension Office will help identify the pest and other solutions.

Bees

Bees are important pollinators and are an integral part of many flowering plants' life cycle. The flower's nectar attracts the bees and as they visit different flowers collecting nectar, pollen sticks to the bees legs, back and other body parts and is transported about. Flowers pollinated by bees must have some kind of landing platform (shown in an exaggerated form in the drawing above) and often have elaborate guide systems help the bees. Upside down tubular flowers, like Scarlet Gilia, are commonly pollinated by hummingbirds.

Some Flowers Pollinated by Bees
- Penstemon *Penstemon Spp.*
- Chokecherry *Prunus Virginiana*
- Wood's Rose *Rosa woodsii*
- Shrubby Cinquefoil *Potentilla fruticosa*
- Clovers *Trifolium spp.*
- Honeysuckle *Lonicera spp.*
- Bitterbrush *Purshia tridentata*
- Buffaloberry *Shepardia spp.*
- Calypso Orchid *Calypso bulbosa* - although these flowers have no nectar, the bees are fooled into visiting them at least a few times and are the sole pollinators.

Spiders

It seems that a yard dedicated to wildlife wouldn't be complete without spiders and their webs. Although spiders are not insects, they are incredibly helpful for controlling population bursts of destructive insects. Daddy-long-legs, orb weavers, jumping spiders and wolf spiders are just a few in our area. All of them prey on insects and some, like the orb weaver, build stunning webs.
Amphibians & Reptiles

Amphibians and reptiles have at least two things in common: They are cold blooded and kids love them. There is only one venomous species in our area - the Rattlesnake, and it's not very common around Missoula.

Because amphibians require fairly pristine environments near water, it's unlikely that most Missoulians will see them. Folks that live in the Bitterroots, Pattee Canyon or the Rattlesnake have a better chance and a unique opportunity to provide habitat for them. Reptiles are more versatile. Both are often found underneath things, like leaf litter, rocks and rotting logs. If you are lucky enough to live in their environment, try to protect it and possibly increase their habitat.

Amphibians, like the Spotted Frog and Leopard Frog are disappearing from the planet very quickly. People are unsure why this is happening but many consider amphibians to be indicators of habitat degradation.

Salamanders

Long-toed Salamander
Their habitat ranges from grasslands to conifer forests. Although they spend most of the year below ground, they can be found in marshy areas from late February to April.

Tiger Salamander
Have a broad range of habitat and spend most of the year below ground. They prefer areas where the ground is easily dug. Can be found under logs, leaf litter and rocks near the water during spring rains.

Coeur D'Alene Salamander
Coeur D'Alene Salamanders are lungless, respiring through their skin. They also prefer wet habitat and are found in waterfalls' spray zone, under moss and rocks at seeps and in wet talus slopes.

Frogs and Toads

Tailed Frog
Preferred habitat is clear, cold, swift mountain streams and nearby damp forests. Breeding is from May to September. The eggs are attached to downstream rocks. Tadpoles hang on in strong currents by sucking on to rocks with their mouths.

Pacific Tree Frog
This is the frog that fills the nighttime air with classic frog noises. Its habitat is amongst grasses and shrubs near slow moving water and ponds.

Leopard Frog
The Leopard Frog is rapidly disappearing in Montana. Any sightings are unusual. From valleys to mountains, they live in marshes and meadows near streams, ponds and lakes.

Spotted Frog
This frog inhabits mountainous areas near cold streams and lakes. They do not frequent warm lakes with dense growths of emergents, like cattails.

Bullfrog
Inhabits calm permanent waters with emergent or submergent vegetation. This introduced species out-competes the native Spotted Frog. The Bullfrog will eat anything that can fit into its mouth, including other frogs, mammals and snakes.

Western Toad
Lives in burrows which it digs itself near springs and streams. Occur from sage brush desert to coniferous forests.
Lizards

Northern Alligator Lizard
Preferring cooler temperatures, these lizards live higher in the mountains and can be found to 10,000 feet. They live under rotten logs, rocks or loose bark in coniferous forests and eat insects and snails.

Western Skink
Their preferred habitat is forests, open woodlands and grassy areas, especially where rocks are abundant. They are diurnal and feed on a variety of insects, their larvae, spiders and earthworms. If you find one, be careful—their tails break off. It will grow back but unnecessarily uses energy.

Snakes

Rubber Boa
Inhabits damp woodlands and coniferous forests, large grassy areas and stream sides. It's a constrictor and preys upon small mammals, their young, birds, salamanders and snakes. Hides under rocks or into damp sand, hollow rotting logs and forest litter.

Western Yellow-bellied Racer
Live in open woodlands, mountain meadows, rocky wooded hillsides and coniferous forests. They eat insects, small mammals, lizards and frogs.

Common Garter Snake
These are the most common snakes and can be found in moist areas and near water from grasslands to forests. Their diet includes fish, frogs, tadpoles, salamanders, worms, slugs and small mammals.

Turtles

Western Terrestrial Garter Snake
Inhabits a range of habitat from moist forests to dry grasslands, but is often near water. They feed on small mammals and birds, salamanders, fish and lizards.

Bullsnake
These snakes are large and can climb. They live anywhere from agricultural fields to moist coniferous forests. Their diet includes rodents, ground squirrels, rabbits, birds and lizards. Although they imitate a Rattlesnake by curling up, vibrating the tail and creating a buzzing sound, they are not venomous.

Western Rattlesnake
There are at least three subspecies which occur throughout this area. The Prairie Rattlesnake, Western Rattlesnake and Northern Pacific Rattlesnake. All are venomous and prefer rocky areas. They prey on small mammals, lizards, and birds.

Western Painted Turtle
Our only native turtle is easily identified. Not only because there are no other species to confuse it with, but because of the bright red marking on the undersides. They prefer slow moving waters with soft bottoms and submergent vegetation. They are also fond of basking on logs in the sun.
Mammals

The majority of Missoula's residents live in town, which is inaccessible to most mammals. To attract mammals throughout the city, there have to be travel paths or corridors. Working with neighbors to establish corridors and to enhance existing corridors could effectively enlarge mammals' habitat.

The grasslands around Missoula harbor Mule Deer, Badgers, Red Fox, Jack Rabbits, Colombian Ground Squirrels, Meadow Voles, Long-tailed and Least Weasels, and a variety of mice. Forests shelter elk, White-tailed Deer, Northern Flying Squirrels, Bushy-tailed Woodrats, Chipmunks, Yellow-bellied Marmots, Raccoons, Snowshoe Hares, Martens and Porcupines. The rivers are home to mink, beavers, muskrats and River Otters.

In the city's interior, Fox Squirrels dominate. Because the non-native Fox Squirrels prefer acorns from deciduous trees (now plentiful in the city) and the native squirrels eat coniferous cone seeds, the Fox Squirrels won.

If you live near wilder areas, enhance small mammal's habitat by including brush and rock piles for shelter and nut or acorn producing plants for food. Low, thickly vegetated shrubs, like Common Juniper, provide good cover. Many smaller mammals prefer protected water, so place a water source under a shrub.

Unwelcome Visitors

While Missoula's fringes are home to an amazing array of mammals, many of these are unwelcome visitors. Mule and White-tailed Deer can consume entire gardens and effectively 'bonsai' landscape plants; Black Bears and Mountain Lions are usually preferred at lengthy distances; and skunks, raccoons and mice are considered pests.

Except for deer, many unwelcome visitors are attracted to garbage and safe warm places. By keeping garbage in tightly sealed containers and closing off crawl spaces, garages and other potential dwellings, you can reduce problems.

Deer, on the other hand, are not so easily dealt with. The only foolproof method is an 8 foot fence, which effectively shuts out other pedestrian animals. Sources for discouraging deer include: The Missoula County Extension Service, Montana Native Plant Society and Bitterroot Native Growers.

BATS

There are nearly one thousand species of bats. Most of these inhabit the tropics but over forty species live in North America. While the northern species are tremendously important for controlling night-flying insects, many tropical bats feed on pollen and have co-evolved with some flowers to become the primary mechanism for pollination, and the plant's survival.

Bat populations are still falling, despite people's growing awareness of their importance. Six of the forty North American species are on the Endangered Species list. Three are on Montana Department of Fish, Wildlife and Park's (MDFWP) "Vertebrates of Special Concern." This decline is associated with human activities. When winter hibernation is disturbed, bats consume their fat reserves before winter's end and starve to death. Summer roosts, critical for nursing colonies, have also diminished. As a result, bats often search for places in attics, chimney cracks and eaves. When nursing colonies are repeatedly disturbed, mothers abandon the young.

Bats rarely bite unless in self-defense. Which usually happens when people try to pick up an injured bat. Even less likely than biting is the chance that the bat will have rabies. Less than one-half of one percent of bats have rabies.

Montana Bats

Montana is home to 14 different bat species, 9 of these live in the Missoula area. The Mouse-eared Bats (5 species) and the Big Brown Bat are most likely to use a bat house placed in the backyard, especially if you live near a river. Other bats like the Townsend's Big-eared Bat, Silver-Haired Bat and Hoary Bat are secretive and often solitary - they are not commonly seen around Missoula and are especially rare in developed areas.

Merlin Tuttle's America's Neighborhood Bats is extremely informative and includes easy-to-build bat house plans.
Neighborhood Wildlife Habitat

The bigger the wildlife habitat the better. Larger areas of land not only have higher diversity and numbers of plants and non-living landscape components but also provides more territory. All of these significantly improve habitat quality. When neighbors work together, it is possible to create notably more useful wildlife habitat than a single yard, without sacrificing privacy. Many houses in Pattee Canyon and other semi-suburban areas are already practicing this by leaving the native vegetation intact. In the city, houses are closer together and people are often more protective about their space.

Community Projects

Places shared by the community, like schoolyards, churchyards, graveyards and parks, can be at least partially landscaped for wildlife. Working to include wildlife can become educational projects for student groups, organizations or any interested parties. For an example see the butterfly and hummingbird garden in John Toole Park.

Sharing Water Sources

Most yards are too small to create a large or even medium size pond. But, if neighbors work together, a larger water source that will attract a significant variety of wildlife can be built and shared.

Creating Neighborhood Corridors

Creating safe corridors for animals to travel from wilder areas, such as Mount Sentinel, to suburban areas is a key way to expand or reestablish wildlife habitat. Often there are natural corridors, like streams, which only need emphasis by replanting riparian shrubs and trees. Man-made corridors include hedgerows, shrub-lined irrigation ditches or utility easements. Lincoln Hills, in the Rattlesnake, ran their utility easement in a grass and shrub filled swale along the backyards. The initial purpose was to decrease run-off, but this swale also serves an excellent route for wildlife.
For More Information

Plants

Bitterroot Native Growers, Inc.
445 Quast Lane
Corvallis, MT 59828
Wholesale Nursery, Deals exclusively with native plants

Landscaping


Urban Environment


Attracting Wildlife


Organizations
Five-Valleys Audubon Society

Montana Natural History Center
P.O. Box 8514, Missoula, MT 59807
243-4828

National Wildlife Federation
240 N. Higgins, Missoula, MT 59802
721-6705

Montana Native Plant Society
P.O. Box 992
Bozeman, MT 59771-0992
Bibliography


"Birds of Lolo Creek." Lolo National Forest and the Montana Natural History Center.

"Birds of Maclay Flats." Lolo National Forest and Montana Natural History Center.

"Birds of Pattee Canyon." Lolo National Forest and Montana Natural History Center.


"Birds of the Rattlesnake." Lolo National Forest and Montana Natural History Center.


