BUILDING WITH WILDLIFE

A guide to conservation-oriented development

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The natural landscape that makes Montana the place we want to live is an intricate web of processes and interactions. The sparkling rivers, abundant wildlife, clean air, and landscapes that range from towering forests to broad grasslands don't exist in isolation to one another, or to us. When one of those processes is disturbed, ripples may be felt far beyond that point of contact.

This publication is intended to provide guidance on how to create developments that capitalize on the natural environment, while protecting the things we love about Montana. By incorporating ecological principles, we can build better developments for both people and nature.

THE ECOLOGICAL PRINCIPLES

1. Maintain natural habitat patterns.
2. Allow natural processes to continue.
3. Enable wildlife movement between natural areas.
4. Plan development according to the land's capacity.
5. Maintain key plants and animals.
6. Minimize the extent of disturbance.

1. MAINTAIN NATURAL HABITAT PATTERNS

Different kinds of habitat (forest, grassland, wetland, etc.) support specific kinds of plants and animals. Some animals and plants rely on a combination of habitats, depending on the season or the phase of their life cycle. These habitats lie in a natural pattern across the landscape, and a change in how one or more of them is distributed across a landscape can affect which plants and animals will be able to live and thrive in an area.

Development guideline

Keep a habitat mixture that mimics the patterns found naturally in the area.

Action examples

- Map existing natural habitat types on both your property and the larger landscape, taking note of sites that might be unique and necessary to the overall habitat pattern.
- Incorporate the existing ratios of habitat types into the overall design.
- Establish set ratios of roads and housing to natural areas and use them to guide development patterns. As a general rule, the fewer road miles the better, since roads break up blocks of habitat, making it easier to disturb wildlife.

2. ALLOW NATURAL PROCESSES TO CONTINUE

Natural systems are adapted to change. Events such as forest fires and floods are natural processes that help the landscape renew itself and remain resilient. Healthy fish require moving streams that create new channels and renew plant growth. Natural streamside (riparian) vegetation helps maintain safe water temperatures for fish and the plants and insect life on which they survive.

Regular fire keeps forest and sage lands healthy and robust. Native plants provide nutritious feed for both wildlife and livestock and are often destroyed by invasive non-native plant species. If we plan carefully, natural processes can continue without damage to homes or other property.


Allowing natural water flow maintains ecosystem functions

Development guideline

Build homes and infrastructure in areas free, or at very low risk, from natural hazards. Building in hazard free areas allows natural events to occur without harming people or property.

Action examples

Water

- Avoid building in the 100 year floodplain.
- Establish a setback from steep stream banks prone to erosion.
- Allow streams to meander across the floodplain.
- Avoid building on unstable soils or high water table areas.
- Restore degraded wetland/flood/stream functions.

Fire

- Define and map areas susceptible to wildfires, avoid placing new homes in high hazard areas.
- Create defensible space around homes already in areas susceptible to wildfires by clearing away brush, woodpiles, and other materials that could allow fire to reach buildings.

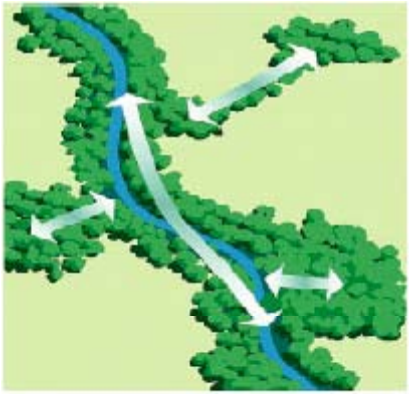
Rangeland

- Fence riparian areas – along streams and other waterways – to keep animals from damaging delicate vegetation.

- Control invasive weeds.
- Manage range to improve pasture and grasslands.
- Use prescribed fire when appropriate.

3. ENABLE THE MOVEMENT OF WILDLIFE

Wildlife moves across the land at different times of the year and their movement between different kinds of habitat is important to maintaining health and viability. Connected blocks create more habitat for wildlife; without connected habitat areas, populations of animals can become isolated, inbred, and more vulnerable to disease. With connected habitat, animals are able to move between the areas they historically need to survive, especially winter feeding and calving areas.



Ensure wildlife passageways remain open and unumpeded, especially sensitive river corridors

Development guideline

Meaningful connections between habitat areas must be retained in the design. The developer and landowners should establish standards to ensure that wildlife can use the areas.

Action examples

- Cluster buildings and construction sites in a way that leaves natural areas open for wildlife use.

- Include connected open areas in the overall design so that wildlife is not trapped in developed areas and unable to reach necessary resources.
- Use wildlife-friendly road and fence design.

4. PLAN DEVELOPMENT TO FIT THE LAND'S CAPACITY

Land functions at a "carrying capacity," or the number and types of plants and animals that can live there. Different ecosystems have different carrying capacities, but every system has its resource limits. When a system is stressed beyond available resources, both land and wildlife suffer.

Development guideline

Understand the possible resource limits of the land targeted for development. The limiting resource will be different depending on the area. For example, in some places it might be water, while in others it might be winter range. Certain habitats can handle stress caused by development better than others. Incorporate the existing species and their resource needs, so that the carrying capacity of the system is not exceeded.

Action examples

- Assess the resources (e.g. natural forage, water supplies, etc.) that have existed historically on the land and determine how much is still available.
- Identify the species present and their resource needs.
- Analyze the resources the development will use, and compare them to the total habitat and resources available to provide a sense of how the carrying capacity will be affected.
- Design the development to minimize consumption of limited resources.

5. *MAINTAIN KEY PLANTS AND ANIMALS*

Certain species and habitats are particularly important to maintaining a healthy ecosystem. If these key species are removed, balance is lost, and an ecosystem could eventually collapse. For example, removing some predators may cause deer populations to skyrocket. Too many deer can lead to over-browsing of plants. This in turn may affect birds and other creatures dependent on those plants.

Similarly, certain habitats are more important for maintaining a broad range of species. For example, many animals rely on aspen groves and wetlands. If aspen or wetlands are removed from an area, the wildlife populations may leave, with effects that ripple across the landscape.

Careful planning is necessary to maintain the diversity and function of species in an ecosystem.

Development guideline

Consider sensitive areas and species throughout all phases of the project. Designs that foster coexistence with key species will encourage healthy wildlife populations. Allowing the system to naturally regulate itself means the community won't have to spend time and resources managing wildlife.

Action examples

- Define and map rare and sensitive areas, as well as those places essential to key species, and avoid developing there. These areas include wetlands, rare plant communities, winter ranges, breeding areas, and aspen groves.
- Define buffers and setbacks for rare/sensitive/critical areas, and establish guidelines for their use and protection.

6. MINIMIZE THE EXTENT OF DISTURBANCE

Sprawling rural residential development: increases in this type of development can increase human-wildlife conflicts, decrease functional valley habitat, and isolate wildlife habitat areas.

Like ripples from a stone dropped in a pond, our activities can alter natural processes and affect wildlife beyond our backyard. The impact of development on the surrounding land extends beyond the building site itself, creating what is called the zone of disturbance or development footprint. Different species and habitats are more sensitive to development's effects and the zone of disturbance may extend farther for some species than others. For one development the footprint may be small enough to have no impact on some species, but may still negatively affect another for a great distance. In most cases, a smaller zone of disturbance lessens the impact of development on natural systems.

Development guideline

Clustered development and infrastructure minimizes impact by overlapping the development footprints. In areas of lower density development (1 house per 80 acres or more), impact can be reduced by limiting the number of roads and coordinating access routes and construction of infrastructure to individual home sites.

Establish human/wildlife interaction guidelines, with special attention given to avoid attracting wildlife to areas where they will come into conflict with humans. Landscaping guidelines can also minimize the zone of disturbance and allow wildlife to continue to use areas close to the development.

Action examples

- Plan community water and sewer systems to avoid proliferation of individual wells and septic systems. Greater water consumption increases the development footprint.
- Establish trash and outdoor food storage guidelines to avoid wildlife conflict and feeding.
- Landscape with native vegetation or leave native vegetation intact to minimize the impact of conventional landscaping on wildlife.
- Avoid building on steep slopes where terrain may be unstable and may require longer roads that increase erosion.

Clustered development that maximizes open space for both human and wildlife use. Note the building setback from the river.

Now that you've determined what's important to wildlife and the land, what should you do next?

THE DEVELOPMENT PROCESS

Just like natural ecosystems, building a home or business involves a complex series of processes and interactions. A set of guidelines and actions are available to help the process run smoothly and minimize impacts on the ecosystem.

General guidelines

- Work with natural resource professionals early in the process, ideally before designing the development. Professionals such as Montana Fish, Wildlife & Parks biologists can help you determine the best approach for your property's habitats. They can help you understand your land in the context of the surrounding ecosystem so that critical areas are maintained.
- Identify and monitor the impact humans are having on the natural systems so that you know what kinds of environmental impacts to expect. This way you can avoid them or plan to mitigate them early in the project.
- Provide for effective long-term care and management of natural areas and open spaces.
- Remain flexible and adaptable. Remember that ecosystems are inherently complex and dynamic.

WHAT TO DO AND WHEN TO DO IT

Stage 1: Decide to develop and form the project team

The very first step in any development process is the landowner's decision to develop. The most important thing to remember is that the early decisions most affect your outcome. As you move through the process your opportunity to make changes and affect the outcome of the project diminishes, so make your actions count in the beginning.

The next step is assembling a team of experts to work on the project. Consultation with natural resource professionals is especially important early on to help determine the development that makes the most sense for the land. Development does not take place in a vacuum, and professionals can help you determine how the property fits into the landscape as a whole. The county planning office can provide guidance on who to contact with your questions about natural resources.

At this early stage you should begin to involve neighboring landowners. They may be able to provide you with important information and they are entitled to comment on the project at the public hearing, so getting their input early on can help your project succeed.

Stage 2: Prepare and submit the development plan

Stage two begins with an informal meeting with the county planner when you can go over your proposal, exchange ideas and concerns, obtain advice, and flag potential problems.

The bulk of the work during stage two is preparing your development plan—the heavy lifting! During this stage you are required to solicit comments from affected state agencies and local officials such as fire and police departments, put together the design and sketches, obtain permits, etc.

The goal of the second stage is to pull all elements of your proposal into a complete and well-planned package. Before you submit your preliminary plat, you are concerned with what you want to see. Afterwards, your energy will be spent reacting to comments. The key to success at this stage is good teamwork and allowing adequate time to make sure the project is sound. Most counties have checklists of required documentation.

Stage 3: Formal review and final plat approval

The county regulations kick in during the review period. First, the county planning staff prepares a written evaluation of the project. The planning board then meets to review the preliminary plat. Members of the development team are often present at meetings to give comments and answer questions. These meetings are also open to the public, and public comments will be an important part of the process. The board provides findings to the applicant, and the plan goes on to the county commissioners for their review.

The county commissioners either approve or deny the plat, and may approve the plat with conditions. The conditions must be met before the final plat may be approved. At this stage improvements start and construction may begin on the property. The overall review can take many months, and plans may need to be revised before the final plat is granted.

Stage 4: Build and live on the land

Stage four is the final stage of development, where buyers, the developer, and builders can take concrete steps to minimize negative impacts and create positive impacts. Decisions about the design and layout of a house and yard can make a big difference for the effects on wildlife and natural processes.

Living lightly on the land is the motto for this stage of development, and there are many resources available – from landscaping to fencing to water systems – to help you do this. By designing homes to reflect the ecological principles outlined above, you can increase the positive impacts of the development.

Ecosystem management does not end with the development plan. It extends throughout the life of the development. Even if you design a wildlife friendly development, the effort can be ruined if the residents do not respect the care you took in doing so. The key to ensuring that the development guidelines actually help the landscape is to incorporate them into the lifestyle choices of those who build there.

This guide began at a 2004 workshop sponsored by the Greater Yellowstone Coalition and the Sonoran Institute at the B Bar Ranch. The purpose of the workshop was to ensure that development guidelines maintained a strong scientific underpinning and also could be widely applicable to on-the-ground planning. The workshop represented a group of dedicated private landowners, professors from Montana State University (Ecology Department and Land Resources and Environmental Sciences Department), and representatives from Montana Fish, Wildlife & Parks, The Wildlife Conservation Society, and Montana County Planners. A Doris Duke Charitable Foundation fellowship sponsored graduate student Liz Forwand to carry the ideas forward that were generated at this workshop with a subset of the workshop participants, ultimately resulting in this document. Thanks to all for their support and efforts.

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