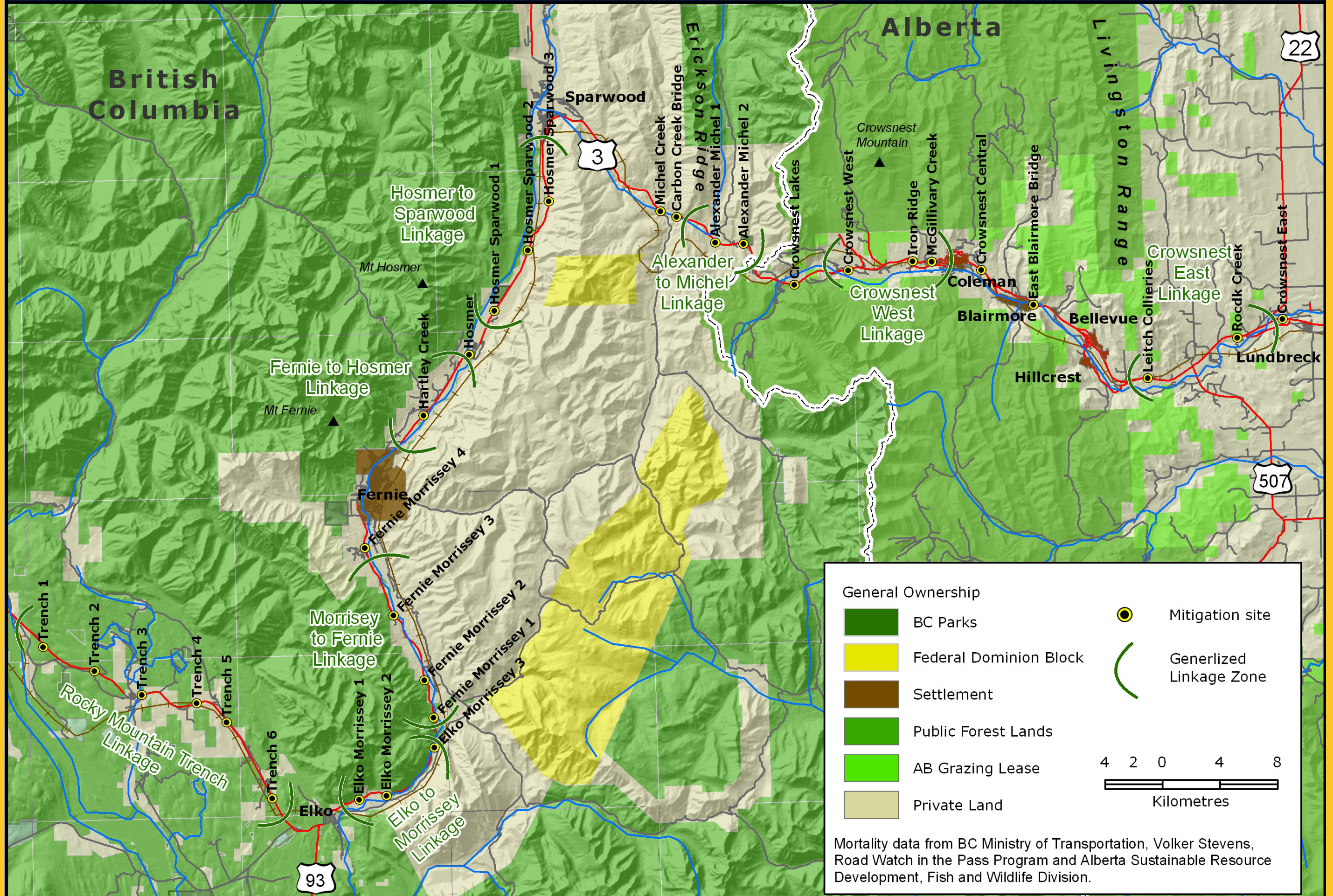


Highway 3 Mitigation Sites



General Ownership

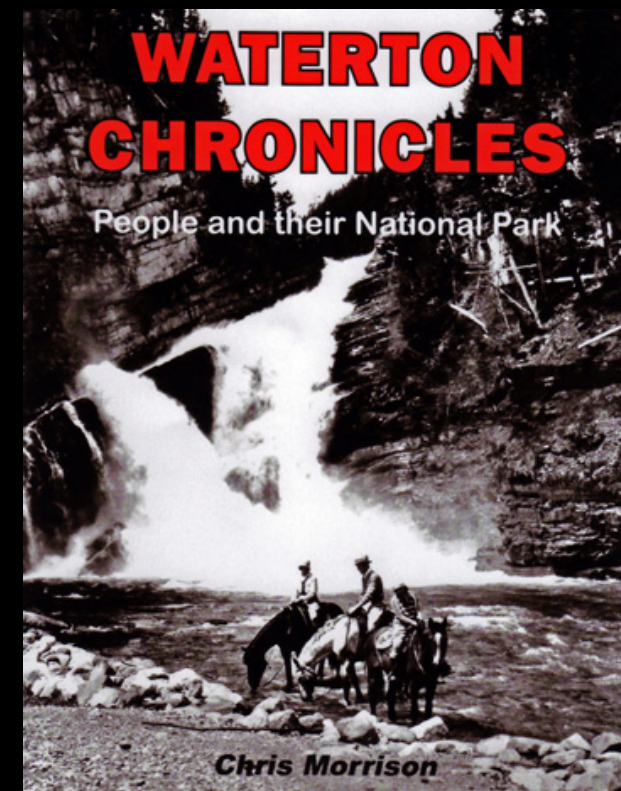
- BC Parks
- Federal Dominion Block
- Settlement
- Public Forest Lands
- AB Grazing Lease
- Private Land

Mitigation site

Generalized Linkage Zone

4 2 0 4 8
Kilometres

Mortality data from BC Ministry of Transportation, Volker Stevens, Road Watch in the Pass Program and Alberta Sustainable Resource Development, Fish and Wildlife Division.



TOWN OF THE CROWN

By JERRY FETZ

As we did a couple of issues ago, when we focused our "Towns of the Crown" feature on Fernie B.C., we are merging again this issue's "Town" feature and our regular "Book Recommendation" by writing about the wonderful and interesting small town of Waterton and the impressive book, Waterton Chronicles. People and their National Park, written by Chris Morrison and edited by Ray Djuff (Waterton Park & Calgary, Gothaunt Publishing: 2008--\$34.95 Canadian). We would like to thank the author and publisher at the outset for permission to use here the cover photo from the book as well as the black-and-white photos included with this piece.

Waterton Lakes is known virtually to everyone as the Canadian portion of the Glacier and Waterton Lakes

International Peace Park and the home of the Prince of Wales Hotel, one of the legendary, grand hotels in this unique, trans-boundary park. Those who have visited the park also know Waterton as the name of a quaint and welcoming village that is nestled between glorious mountains and the grand "Waterton Lakes," a village that offers numerous shops, restaurants, motels and accommodations, as well as a long list of tourist services. Yet, perhaps not as well-known is the fact that Watertown is not just a seasonal, but a year-round town, home to a small but vigorous number of citizens whose ancestors founded the town and negotiated for the past hundred years the challenges of weather, history, politics, changing visitor wishes, and the fact that it is located in a Canadian

National Park as they somehow made their hybrid town work.

This handsome, large format, and weighty book, **WATERTON CHRONICLES**, tells the story (through stories, anecdotes, photos and narrated history) of this "town" that is both home to year round residents and the center of business, services, social and recreational amenities, as well as the administrative offices of the National Park that shares its name. Unlike the other towns that are associated with the Glacier and Waterton Lakes National Parks, this remarkable small town isn't situated somewhere on an edge of one of those parks, but in one of them. As such it has never been a fully independent municipality, and some of the most interesting stories told in this supremely researched

book have to do with the special challenges of negotiating with both the Park administration and Canada's National Parks agency, as well as the changing desires and expectations of seasonal, mostly summer, visitors to be a regular, functioning town and home to that small and hardy citizenry made up of families, business people, artists and scientists, park officials and workers.

WATERTON CHRONICLES boasts some 250 pages, including a very useful index and a fascinating final section that includes photos and brief texts about dozens of the individual houses, cabins, business buildings, and visitor accommodation buildings that have given the town its special man-made physical character for over one-hundred years. I suspect that readers will look at that

section many times, as I have, with great interest, and will gain a visual sense of the history of the town told through its buildings. But most of the information and insights one gets from the book are packed into the first six chapters (of seven) that take up the initial one-hundred-thirty pages. Organized into focused discussions of various aspects of the town's and the Park's intertwined pre-history and history, such as Chapter One, "With Posterity's Blessing," these chapters offer detailed narratives of the town's history, enhanced by textual anecdotes of some of its most colorful and important citizens, or, as in "Camps: the Memory Makers," the story of the importance of variously sponsored camps for youth and adults over time

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and how those experiences transformed many campers into lifelong, loyal supporters of both town and Park and, sometimes, inspired them years later to return and make Waterton their home, usually for the summer season, but sometimes year-round.

Chapter Two, "Accommodations: A Roof Overhead," relates not only the major story of the most famous of them all, the Prince of Wales Hotel, which every visitor to Waterton will want to read, but the varied story of the many smaller hotels, motels, guest cabins, tent and camper parks, and B & B's as well. Through these stories of physical facilities, readers will learn a lot about how the realities of the external world --two World Wars, prohibition, political and social changes—, as well as local floods and fires and changing administrative rules and priorities, affected directly and indirectly the course of the town's and Park's history. Chapters Three ("Entrepreneurs: Like Nobody's Business"), Four ("Golf Course: Grounds for Play"), and Five ("Booze: Prohibition to Privatization") follow the

lead of Chapter Two and offer narratives, sketches, and photos that tell that same history, but with different details and through additional and very informative perspectives. Regardless of whether one is reading about the lives of the various businesses and their owners, or the building, maintaining, and then expanding the initial nine-hole course into eighteen holes, or about how bar, tavern and restaurant owners, as well as their thirsty customers, dealt with prohibition, bootlegging, and administrative regulation, one learns through the details and differing lenses a great deal about Waterton, its visitors, and, most importantly, perhaps, its colorful and inventive people.

The first five chapters, covering pages 4 to 131, can be read as one narrative with several intertwining stories, told from different vantage points, or one can read a chapter or even parts of a chapter separately and still gain great insight into the history of this remarkable place, its people, and its visitors. What the book does not offer, or pretend to offer, is the more spacious story of

Waterton Lakes National Park as a wonder of nature that has grown and expanded and shrunk several times since its inception in 1895 as "Kootenay Lakes Forest Reserve" to its current size, adjusted most recently in 2000. That is an enticing and fascinating story that any one of several other books tells well. What this marvelous book does is tell the story of the town of Waterton. And it is local history at its best, that is, local history that tells of a particular place not in a vacuum, but a place whose history both reflects the reality of the world beyond and is imbedded in it. Available from virtually any of Glacier or Waterton Lakes National Parks' bookshops or directly from Goathunt Publishing in Waterton Park, this book makes a wonderful gift for anyone interested in the Crown and one of its special places and will provide even very knowledgeable Crown fans with new information and insights about a very special place and its people.



CROWN ROUNDTABLE

Integration of Culture, Community and Conservation

by Kim Davitt

When Gwen Phillips of the Ktunaxa Nation shared the Ktunaxa's Creation Story with a group of government agency representatives, tribal members, conservationists, local business people, and local politicians at the 2nd Annual Conference of the Roundtable on the Crown of the Continent last month, people listened. They listened with all their attention, with their heads and their hearts, and they really heard her message: whether embedded in culture and tradition, or informed by science and reason, there is an inextricable link between people and nature in the Crown of the Continent – a link that provides a sense of place and purpose and compels stewardship of the region's landscapes and communities.

This connection between people and nature – characterized as the integration of culture, community, and conservation by the conference hosts, the Confederated Sal-

ish and Kootenai Tribal Council – served as the centerpiece of discussions at the conference. Over the course of the program, participants examined the unique cultural elements that define what it means to live and work in the Crown of the Continent. They explored how the region is adapting to changes across the landscape, in local and regional economies, and to our cultures and traditions. They also informed and invigorated their ideas and work by learning about national and regional initiatives in the United States and Canada. Students from throughout the region helped capture these conversations and ideas and compiled a list of best practices for integrating cultural, economic, and conservation dimensions into decisions being made across this remarkable region.

It was a great opportunity for people who care about the Crown of the Continent to build relationships, exchange information and foster a sense of regional

identity and purpose. "The Crown of the Continent has many meanings for many people," said Gary Tabor of the Center for Large Landscape Conservation, "One of the accomplishments of the Roundtable is that it brings different perspectives together to create some cohesion: a community of people working to protect its unique features and identity."

Building from the discussions at the conference, the Roundtable Leadership Team, comprised of practitioners from all corners of the Crown of the Continent, will work to create a cohesive approach to adaptive management in the region. This group will work with communities, tribes, local governments, businesses, agencies and non-governmental organizations to identify and coordinate existing efforts and to develop a portfolio of projects that will help sustain and enhance the region's communities, landscapes, and culture.

The beauty of a

burned forest

The only thing that's constant in the Crown is change.

In the Northern Rockies, forests that have escaped fire are rare. In the Crown, fire is just as important as rainfall and sunlight are to plants and animals. For the vast majority of forest types within the region, the predominant fire regime is one of infrequent, intense, stand-replacement fires—not one of frequent, low-intensity, understory burns. With ever-present fire in the system, we might expect that plants and animals have, over evolutionary time, not only come to survive severe fire, but to depend on severe fire for their persistence and success. That is the story I want to tell here.

Despite widespread death associated with fire, severely burned forest systems are neither “destroyed” nor “lifeless.” As an ecologist and teacher who frequently speaks to public audiences, I have become more and more sensitive to the fact that most people have never heard that there are some plant and animal species that are hard to find anywhere outside a forest that was severely burned fewer than 10 years before. Indeed, the biological magic associated with severe disturbance events is apparently one of nature’s best-kept secrets!

Following the widespread fires of 1988, I was curious to see whether the forests of Yellowstone, Glacier and elsewhere between the two parks had become transformed into lifeless biological deserts, as implied by press reports at the time

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story and photos by **RICHARD HUTTO**





(and as implied still by similar reports that follow major fire events even today), or whether the actual story is something different. During the two summer seasons immediately following the 1988 fires, a number of field assistants and I visited 34 different burned-forest sites in western Montana and northern Wyoming and we recorded the bird community composition in each. Contrary to what one might expect to find immediately following a major disturbance event like wildfire, we detected a surprisingly large number of species in forests that had undergone stand-replacement fires.

More specifically, we detected an average of 45 species per site, and a total of 87 species in the sites combined. Some of the most commonly detected species included the Hairy Woodpecker, American Robin, Mountain Bluebird, and Dark-eyed Junco (Figure 1, blue bird photo on right). Further analysis showed that 15 of the 87 bird species were more abundant in the early post-fire communities than they were reported to be in any other major vegetation type within the northern Rockies. Thus, birds were not only present, but the bird communities in recently burned forests were interestingly different in composition from those that characterize other Rocky Mountain cover types (including early-successional clearcuts, which are not at all similar in bird community composition).

The most amazing finding was that one bird species, the Black-backed Woodpecker, *Picoides arcticus*, seemed to be nearly restricted in its habitat distribution to forests that had been burned in the recent past. How did I determine that Black-backs were relatively restricted to recently burned forests? I compiled bird survey data that were available from published studies associated with a dozen different vegetation types. The Black-backed Woodpecker was detected less than 10% of the time in unburned vegetation types, but was detected about 80% of the time in studies conducted in burned forests (Figure 2, photo on left). Because these data were derived from a literature-based meta-analysis of studies that differed in duration and survey methodology and were drawn from a relatively small number of vegetation types, I encountered some skepticism—the pattern could have been an artifact of the incomplete range of vegetation types surveyed, or an artifact of combining results from studies that used different methods used to survey birds. At about the same time, I began working with the USFS Northern Region to develop a bird monitoring program that would involve use of the identical field methods across

as large a range of vegetation types as possible. Now, 20 years later, the USFS Northern Region Landbird Monitoring Program stands as one of the largest bird point-count databases of its kind in the world, with sample locations drawn from a wide range of vegetation types across northern Idaho and western Montana. By combining those data with data collected from locations distributed within more than 50 fires that had burned in western Montana during the past 20 years, I am now able to ask, once and for all, whether the Black-backed Woodpecker is relatively restricted to burned forest conditions.

After summarizing information from more than 50,000 survey locations distributed across nearly every vegetation type occurring in the northern Rockies, it is clear that the restricted distribution pattern is not an artifact of problems associated with my earlier meta-analysis. The Black-backed Woodpecker is, as my ear-

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lier study suggested, nearly restricted in its habitat distribution to burned forest conditions.

Just take the time to look carefully at a Black-backed Woodpecker—everything about it, including its jet-black coloration, seems to reflect a long evolutionary history with burned forests. As I like to point out, the black coloration against a blackened tree is no less impressive than the white coloration of a ptarmigan against snow—both coloration patterns have undoubtedly evolved over long time periods in association with their respective environmental backdrops! The Black-backed Woodpecker capitalizes on the population explosion of wood-boring beetle larvae in burned forests, as do several other woodpecker species. Because many burned trees die, they can no longer defend themselves against beetles by swamping the eggs and larvae with pitch exuded into their burrows. Consequently, the adult beetles have evolved to fly in immediately after fire to lay their eggs on now-defenseless trees that still have plenty of good wood beneath that scorched bark. Some beetle species are so specialized to live in fire-dominated systems like those here in the Crown, that they have evolved infrared sensors that allow them to detect heat from miles and miles away so that they can colonize recently burned forests as rapidly as possible.

Although the Black-backed Woodpecker is the most extreme species in terms of its restriction to, and evolutionary history with, burned forests, many additional bird species reach their greatest abundance in burned forests (15 of 87 species detected in burned forests, as I noted above). These include the Three-toed Woodpecker, Hairy Woodpecker, Olive-sided Flycatcher, Clark's Nutcracker, Mountain Bluebird, American Robin, Townsend's Solitaire, Cassin's Finch, Dark-eyed Junco, Chipping Sparrow, and Red Crossbill. All the woodpeckers feed on the abundant beetle larvae beneath



the bark of standing, fire-killed trees, while flycatchers and bluebirds take advantage of the open conditions for pouncing on or sallying after flying insects, and seedeaters capitalize on the increased availability of seeds from both cone-bearing trees, some of which wait for more than 150 years for fire to heat and open their cones, thereby releasing their seeds.

The story doesn't end with birds, of course. I have barely scratched the surface of the amazing biological story behind severe fire. In addition to the specialized beetles, there are cone-bearing tree species that require severe fire for the heat needed to open their cones, and there's the fire morel, which is also relatively restricted to severely burned forests. It's no wonder that we enjoy a boom year for morel mushrooms at the local farmer's market following a severe forest fire season in western Montana. The seeds

of Bicknell's geranium can wait in the soil for more than 100 years until a severe fire allows them to break from that dormancy, germinate, and complete their life cycle.

By definition, fire specialists such as the Black-backed Woodpecker or the lodgepole pine depend heavily on very specific conditions to realize their own success. Therefore, if we study the patterns of distribution and success of these fire-dependent species across the variety of burn severities within burned-for-

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est perimeters, we can gain insight into the kinds of fires that constitute the naturally occurring fire regime in areas that were historically occupied by the specialists. Very specific kinds of fires must have provided the environmental backdrop against which these specialized native species evolved; so what kinds of historical fires were they? Amazingly, within burned forest perimeters, Black-backed Woodpeckers are almost entirely absent from unburned patches within those fire perimeters, and they become more common as fire severity increases! The same pattern is true of a number of other species, including the American Three-toed Woodpecker, Hairy Woodpecker, Mountain Bluebird, and Tree Swallow. As I expressed in a recent publication—some like it hot! These results are profound because they imply that the very fires often regarded as “unnatural” and “destructive” are the very fires that provide the best conditions for the most fire-dependent plant and animal species.

Land managers can't create the magic through severe cutting—fire is critical.

One could argue that any loss of burned forest acreage due to past fire suppression activity has been compensated for, at least in part, by timber harvesting activities. As evidenced by letters submitted to the editors of local newspapers after any major fire event, many people believe that the conditions present after a clearcut or following one of the newer green-tree retention or forest restoration cuts are basically the same as those present after a severe fire. They are wrong. Conditions created by a stand-replacement forest fire are biologically unique at the very least in terms of the biomass of standing dead trees that remain, and to a much greater extent, in terms of ecosystem structure and function. While timber harvesting is a form of ecological disturbance, it is a poor substitute for fire-based disturbance because it does not result in numerous, burned, standing-dead trees. Such trees are the most critical component of a biologically diverse post-fire ecosystem and that single component contributes significantly to the production of unique successional pathways and unique wildlife communities that we see after fire.

“NATURAL” FIRE REGIMES IN THE CROWN

People have slowly come to accept the fact that low-severity fires burned historically, but they still view severe events as “unnatural” events. How often have you read the following? “Dry, ponderosa pine-dominated forests of the western United States are widely

believed to have experienced a buildup of fuels in the past century due to a combination of over-aggressive fire suppression efforts, overgrazing, and overharvesting. As a result, those western forests suffer from more extreme fire behavior because they burn with unnatural or unprecedented intensity.” Unfortunately, we may be inappropriately extrapolating results from ponderosa pine systems that are quite common the Southwest, to the more mesic ponderosa pine systems and the mixed-conifer forest types that make up the vast majority (about 85%) of forested area in the Crown.

Indeed, severe fires are routinely referred to as “catastrophic” events in the popular press regardless of forest type, and such terminology even appears in proposed congressional legislation drafted to deal with severe fire's aftermath. Given the current rate at which land managers are implementing forest restoration projects specifically designed to prevent severe fire sometimes well outside the dry, ponderosa pine system, one would hope that generalizations about the state of our forests are broadly applicable.

The ecology and life history adaptations of living organisms are greatly underused as sources of reliable information in the debate about what constitutes “natural” forest conditions and fire regimes in any forest type. This is surprising, given that the goal of forest restoration is to return forests to conditions that reflect their evolutionary past. Through their precise selection of suitable habitat, plant and animal species carry an abundance of historical information about the environments within which they evolved. Moreover, that evolutionary history is valuable because it runs much deeper than the 100- to 500-year reach of most historical (e.g., fire-scarred tree-ring) studies. The plants and animals featured here are talking through their adaptations about the importance of severe fire on our landscapes; are we listening?

Because most have not heard this story, there is considerable public pressure to “salvage” what little remains after severe fire

One of the most common management activities following forest fires is salvage logging (Figure 8). Perhaps we need to change our thinking when it comes to logging after forest fires. With respect to birds, no species that is relatively restricted to burned-forest conditions has ever been shown to benefit from salvage harvesting. In fact, most timber-drilling and timber-gleaning bird species disappear altogether if a forest

is salvage-logged. Therefore, if we want our land-use decisions to be based, at least in part, on whether a proposed activity affects the ecological integrity of our forest systems, burned forests should be the LAST, rather than the first places we should be going for our wood.

For birds, standing dead trees are one of the most special biological attributes of burned forests. They house equally unique beetle larvae that become abundant because they feast on the wood beneath the bark of trees that have died and are, therefore, defenseless against attack. If we value and want to maintain the full variety of organisms with which we share this Earth, we must not only recognize that burned forests are quite “healthy,” but must also begin to recognize that post-fire logging removes the very element — standing dead trees — upon which each of those special bird species depend for nest sites and food resources.

WHY DO WE FIND IT SO HARD TO CELEBRATE SEVERE-FIRE EVENTS?

The biological facts are unambiguous and readily apparent to anyone who wants to venture out and look for him or herself, so why do we so often fail to embrace the early successional stages—burned trees and all—that follow stand-replacement fires? There are a number of reasons, but the most important is that the public continues to be told that all fires are bad, which, as I have outlined here, is patently false. Even if the public were to become convinced that severe fires are natural and necessary for ecosystem health, we now have a problem because humans have settled nearly everywhere. That human presence requires fire suppression to be a priority nearly everywhere. Wilderness, parks, and roadless areas are really our primary hope for the maintenance of naturally severe fire regimes, and we are lucky in the Crown of the Continent to have an abundance of such areas along with an abundance of non-wilderness areas far enough removed from the urban interface to allow severe fire to burn naturally.

SEVERE DISTURBANCE MAKES THE WORLD A DANGEROUS BUT INTERESTING PLACE

Burned forest habitat is one of nature's best-kept secrets because the public really hasn't been told about the magical transformation a forest undergoes after severe fire. And I barely touched on some of the more fascinating stories about plants and animals that are restricted to burned-forest conditions. Being unaware of these stories, people naturally want to harvest trees

after fire because the only thing they can see is wastefulness. But there is no waste in nature. Burned forests, even severely burned forests, are forests that have been “restored” in the eyes of numerous plant and animal species and in the eyes of an informed public. The burned trees are essential for maintaining an important part of the biological diversity we value today, and are the foundation for the forests of the future. Fire (and its aftermath) should be seen for what it is: a natural process that creates and maintains much of the variety and biological diversity that we see in the Northern Rockies. The next time you are lucky enough to walk through an intact, severely burned forest, I hope you can now properly recognize it as a beauty mark rather than a scar on our magnificent Crown of the Continent landscape.

Dr. Richard L. Hutto is Professor and Director of the Avian Science Center at the University of Montana in Missoula. Hutto has conducted research on migratory landbirds in Mexico in winter, the Southwest during spring and fall, and in the Northern Rockies in summer for more than 30 years. He developed and continues to supervise the USFS Northern Region Landbird Monitoring Program, which is now in its 20th year of operation, and he has been studying the ecological effects of fire on bird communities for 20 years as well. Dr. Hutto was host of “Birdwatch,” a nationally televised PBS series that ran from 1999-2001. Because he is moved by what birds have to teach us about land stewardship, Hutto established the Avian Science Center on the University of Montana campus to promote ecological awareness and informed decision making through the synthesis and dissemination of science-based information on western birds (<http://avianscience.dbs.umt.edu/>).

“It's no wonder that we enjoy a boom year for morel mushrooms at the local farmer's market following a severe forest fire season in western Montana. The seeds of Bicknell's geranium can wait in the soil for more than 100 years until a severe fire allows them to break from that dormancy, germinate, and complete their life cycle.”

Richard Hutto, professor and director of the Avian Science Center University of Montana

Building a university for the **UM 2020** **GLOBAL CENTURY**

story by **WILL KLACZYNSKI**

As important as it is to know the history of the University of Montana in Missoula and the accomplishments that have made this institution what it is today, it is perhaps even more important to know where we are going and how we will get there. Although it is impossible to see into the future, we now have a clear picture of the directions that the university is headed in over the next decade. Outlining these directions in five issues is UM's Strategic Plan, entitled "UM 2020: Building a University for the Global Century," which covers every aspect of the university from facilities management to international research.

Central to the plan is the concept of the "Global Century," referring to the fact that we live in a much smaller world where technology has overcome the traditional barriers of geographic and political boundaries that once impeded communication and cooperation across the globe. Now, breakthroughs and discoveries made at places such as UM can impact the world in a way that was once unheard of. This interconnectivity also brings global issues and challenges to light and gives students and faculty at UM the chance to address them head on.

Yet, in this global community where the sharing of information and cooperation are so important, there still exists the need to remain competitive and stay ahead of the curve.

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photo by Rick & Susie Graetz
On the campus of The University of Montana in Missoula – Main Hall

In this sense, UM's Strategic Plan ensures that UM will be a leading generator of highly-educated scholars and professionals capable of solving complex problems in a way that will benefit communities at the local, national, and global scales.

At the heart of the strategic plan is the University of Montana's mission:

The University of Montana pursues academic excellence as demonstrated by the quality of curriculum and instruction, student performance, and faculty professional accomplishments. The University accomplishes this mission, in part, by providing unique educational experiences through the integration of the liberal arts, graduate study, and professional training with international and interdisciplinary emphases. The University also educates competent and humane professionals and informed, ethical, and engaged citizens of local and global communities; and provides basic and applied research, technology transfer, cultural outreach, and service benefiting the local community, region, State, nation and the world.

To fulfill this mission and to guide the plan as part of a greater vision for UM, four core values have been emphasized – leadership, engagement, diversity, and sustainability. Leadership refers to the fact that faculty are expected to be leaders in their fields of expertise and graduates are expected to exit the university with the skills and knowledge necessary to become leaders at the local, state, regional, national, and international levels. Engagement speaks to the passion students and faculty share regarding discovery, learning, and service and how it can lead to societal and cultural contributions. Diversity involves promoting and embracing the varied social make up of the university community and how it makes UM such a unique place. Sustainability refers to achieving economic, environmental, and cultural sustainability at the university and to showing students how ecological, social, and economic issues are all connected.

These four values are what the administration, faculty, and staff members at the university considered when drafting the plan and outlining the five strategic issues that are of greatest concern over the next decade. Each strategic issue comes with a set of objectives, approaches to reaching those objectives, and indicators for success. In addition to the long-term goals in each category, biennial priorities are also put forth.

The first strategic issue, Partnering for Student Success, addresses a main responsibility of an institution of higher learning – to help its students succeed academically and personally so they graduate well-prepared for their careers or further education. Though mostly geared towards preparing high school seniors for their transition to college and improving freshmen retention rates, this issue is also focused on giving students all the support they need throughout their college careers and encouraging graduation. Ways to reach this goal include addressing incoming students' preparedness for college-level work, improving their transition to college during orientation, providing an integrated early curriculum, increasing student engagement in campus life, and emphasizing faculty and staff development in terms of promoting graduation.

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“In this global community where the sharing of information and cooperation are so important, there still exists the need to remain competitive and stay ahead of the curve. In this sense, UM's Strategic Plan ensures that UM will be a leading producer of highly-educated scholars and professionals...”

Will Klaczynski,
University of Montana
student



photo by Todd Goodrich
Montana Tech students in the field on a research project

Indicators of success include a growing percentage in first-year retention (83% by 2020 compared to current 74%), 100% of students declaring a major by their 45th credit hour, and increasing in the availability of need-based financial aid.

The second strategic issue, Education for the Global Century, addresses what is being taught at the university and how it is taught to prepare students for the world we live in. This means that two-year programs will provide students with hands-on, practical experience that will prepare them to meet local, regional, national, and global needs. Four-year baccalaureate programs will encourage students to think about how their individual interests and course of study fit into the world as a whole. This kind of interdisciplinary approach will promote internships, hands-on research opportunities, and study abroad experiences to encourage the development of leadership skills for our global society. At the graduate level, programs will encourage students to take advantage of the intellectual and cultural resources that the campus provides in order to become leaders in their own field and society in general.

Examples of indicators of success include 90% of doctoral students publishing their work in a peer-reviewed journal or book and 800 students enrolling in the Global Leadership Initiative, which is a program encouraging students to address global questions by interacting with renowned scholars/leaders and conducting international research.

The third strategic issue, Discovery and Creativity to Serve Montana and the World, addresses the amount and relevance of innovative research and creative scholarship that students and faculty produce at the university. The overall objective is to create an atmosphere where discoveries through research and scholarship and creativity through the arts lead to future applications, products and services, inno-

ventions, jobs, and business opportunities that will benefit the economy and culture of our state and the rest of the world.

Indicators of success include more than doubling external grant funding from \$68 million to \$140 million by 2020 and an increase in international recognition and awards.

The fourth strategic issue, that of a Dynamic Learning Environment, involves enhancing the character of UM as a place that fosters learning, discovery, and growth. This includes recruiting, retaining, and developing the highest quality of students and faculty possible, highlighting the successes of athletic, cultural, and entertainment programs, building and maintaining a sustainable infrastructure that showcases the very best technology and learning facilities, and creating an environment conducive to engagement and positive experiences. Adding to this environment is UM's campus itself, which is consistently recognized as one of the most attractive in the nation and has as its backdrop one of the most historically, ecologically, and geologically interesting natural settings the country.

Indicators of success include having 100% of classrooms and laboratories outfitted with the most up-to-date technology, 100% of students having participated in experiential learning at one point of enrollment, and the campus reaching 100% climate neutrality by 2020.

The final strategic issue, the Planning-Assessment Continuum, deals with the plan's budget, implementation, and assessment. The executive leadership of the university provides the overall mission-driven goals, parameters, and accountability at one end of the continuum, while faculty, staff, and students offer their own ideas, improvements, and action on behalf of the plan and the university. To ensure transparency and that the university is making the best use of its resources, plans and budgets are made

public, and broad-based participation is encouraged through various advisory committees, implementation teams, task forces, focus groups, and town hall style discussions. The strategic plan is constantly being revisited and is evaluated yearly to identify whether or not the university is on track to meet its goals.

Indicators of success include having the strategic plan available to the public in its entirety and allocating 70% of the university's General Funds budget to instruction, academic support, and student services.

The dual benefits of this plan, providing students with a world-class education and providing the state of Montana with a highly educated and creative workforce, cannot be understated. By sticking to this strategic plan and incorporating the values of leadership, engagement, diversity, and sustainability that have been repeatedly highlighted through the individual issues, the University of Montana is on track to fulfill its vision and become the driver of economic, cultural, and social development in Montana and the Northern Rockies.

For more detailed information or to view UM's Strategic Plan in its entirety, please visit: www.umt.edu/planning-assessmentcontinuum/default.aspx

Will Klaczynski is a second-year master's student in the geography program at the University of Montana. Originally from Maryland, he came to Montana in 2005 and graduated four years later with a B.A. in Geography with German as a minor. Over the last six years, he has crisscrossed the country numerous times and made it to all the Lower 48. In addition, he participated in UM's faculty-led study abroad experience in Vienna, Austria, giving him the opportunity to travel across Western Europe. As an avid hiker and photographer, Will has made it his mission to get out and explore the Crown of the Continent as much as possible and is excited to be part of the university's effort to enhance the knowledge about this unique region of North America.

photo by Todd Goodrich
At The University of Montana
Western in Dillon



CROSSING THE CROWN

story by **RICK GRAETZ & WILL KLACZYNSKI**



Marias Pass

In a 250-mile stretch of the Crown of the Continent, from Canada's Crow's Nest Pass south to Rogers Pass in Montana, Marias Pass is the only year round crossing of the Continental Divide. And at just 5,213' above the sea, it is the lowest crossing of the divide in Montana and one of the lowest in the Rocky Mountains.

On its north side the fast

rising rock walls of Glacier National Park's Lewis Range tower above the wide gap of Marias's east flank. Looking south, lower timbered hills climb slowly towards the higher peaks of the wilderness of the Bob Marshall Country. And pointing in that direction, no other roads are encountered for more than 100 miles.

The Marias summit is a

perfect break in the mountain barrier that separates wet warmer Pacific weather of the west from the drier and colder continental climate that the topography east of the divide experiences. When systems are strong, high, warm, dry winds flowing from the west descend through the pass, creating Chinook winds on the Rocky Mountain Front. In win-

ter when frigid arctic outbreaks flow south from the polar regions and submerge the Montana prairie in temperatures well below zero, if the dome of cold air is deep enough, Marias Pass will serve as a conduit for icy winds to carry the cold into Montana west of the Continental Divide.

Also in winter northerly

[See next page](#)



photo by Will Klaczynski

LEFT: Looking south from GNP towards the lower hills of the Great Bear Wilderness.

photo courtesy Dale Jones

ABOVER: Clearing the tracks



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Also in winter northerly and northeast winds blowing towards the mountains create an upslope condition that, when they are carrying significant moisture, will deposit considerable amounts of snow in the lower elevations but less at the higher altitudes. Marias Pass in these situations can pile up substantial snowfall. The pass holds the Montana record for a single storm, when in January 1972 seventy-seven inches of snow fell. A total of 131 inches was deposited on the pass that month.

Long before the European invasion of these parts, indigenous people – the great Native American Nations – knew of this passage across the mountains, and tribes from the west used it frequently to “go to buffalo” on the prairie. Some of the white immigrants who came to Montana heard of this route but knew little about it. Fur traders and others stayed away from the area, fearing the Blackfeet who jealously guarded the lands flowing east of the heights, considering them as their hunting grounds.

This area was mapped as early as 1840, and one map produced by historian Robert Greenhow, had noted in the proper place what would become Marias Pass, labeling it “Route across the Mts”. No record exists, however, of him ever traversing the gap; the thought was that Indians and trappers who occasionally ventured there told him of its existence.

Finding a way to ascend the pass from the east would have been easy to ascertain in the early 19th

photo by Rick & Susie Graetz
A BNSF train heads into Marias Pass from the east.

century, but recognizing the trail from the Flathead Valley on the west was another matter. A narrow canyon pointing directly east from Columbia Falls carries the Flathead River's Middle Fork, and the way up river is precipitous and twisting with several wide side canyons encountered on the way. Travelers then, with no paved road to guide them, could just have easily continued following the Middle Fork well into what is today's Great Bear Wilderness, getting lost in the process.

When thoughts of a transcontinental railroad entered the nation's plans in the mid 1850's, attempts were made to find this "mysterious" pass to establish a northern route. Wrong trails, worries over the Blackfeet and the passage of too much time led to an abandoning of the effort, and tracks for the nation's first transcontinental railroad eventually met in northern Utah.

It wasn't until 1889 when James Hill, a railroad man from Minnesota, reached Havre, Montana, that serious efforts were made to find a corridor across the Northern Rockies.

To accomplish this, Hill hired engineer John F. Stevens. After traveling over 160 miles from Fort Assiniboine to the Blackfeet Agency, Stevens enlisted the services of a Salish man named Coonsah, who had been living with the Blackfeet, to help him locate the elusive pass. On December 11, trudging through heavy snow and braving below-zero temperatures, Stevens walked through a wide gap in the mountains and spent a night west of the Divide. The pass's exact location, which had been sought for so many decades by various parties, was finally recorded. Just two years later, the first locomotive steamed through Marias Pass, and the history of the Crown of the Continent was forever changed.

Today, there is a monument to Stevens on the Divide at Marias Pass along with an interpretive display detailing the geology and history of the area.

With the Great Northern Railroad having become history, through mergers and buyouts, the engines of the Burlington Northern Santa Fe now climb through this path that in the not-too-distant past witnessed only native use. And because the geography flanking this historic pass is protected by federal designation, the setting has changed little with time.

Will Klaczynski is a University of Montana Masters student and a research assistant with the UM Crown of the Continent Initiative. Rick Graetz is a UM Geography professor and Co-Director of the Crown initiative

For more photos by Dale Jones, a railroad enthusiast, visit his Website www.railroads-of-montana.com for photos and good information for all who love railroading.

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”

Rick Graetz

photos by Dale Jones

BELOW: A freight train begins the descent on the west side of the Continental Divide.

RIGHT: A freight train climbs up the west side of Marias Pass.





The Rocky Mountain Front **HERITAGE ACT**

Editor's Note: In the following section of this issue we want to introduce our readers to some background for and then an outline of what has become known as the proposed "Rocky Mountain Front Heritage Act" that Senator Max Baucus introduced in Congress recently. As one will read below, this proposed Act exemplifies the process of hard work, collaboration across different points of view and interests, and the willingness to listen to other perspectives and to compromise when necessary for the sake of moving forward. As case study after case study shows in land disputes in Montana, across the country, and elsewhere, without such collaboration and compromise, contentious disputes and issues of great (or even lesser) importance rarely if ever get resolved. The process that was followed in developing this proposed Act seems to reflect best practices in the kinds of "Conflict Resolution" that students in many disciplines at the University of Montana are exposed to in their courses and special projects.

The Rocky Mountain Front! Here where the tide of the Montana prairie heading towards the sunset collides with the soaring reefs of the Northern Rocky Mountains is a legendary landscape of colossal geography and a wildlife population to match any on the planet!

It is legendary because in this sprawling space, almost 100 years ago, folks from every political persuasion and interest joined hands for the sake

of conservation to restore wildlife to the Rocky Mountain Front and to what would become the eastern frontier of the Bob Marshall Wilderness Area. By 1904 the native, wild population had virtually disappeared.

What played out here in those earliest years of the 20th century became part of Montana's proud heritage of placing conservation and the preservation of wildlife amongst our highest priorities.

Today, because people have toiled

together for so many years, the RMF has the second largest migratory elk herd in the nation as well as one of the biggest native bighorn sheep and goat populations. Forty-three mammals and at least 100 types of birds call this meeting of the mountains and plains home. It can be said, with the exception of bison, that every species that was here when the Corps of Discovery came up the Missouri in 1805 is still or once again in residence here!

And the good work of those years

progresses today.

In these times, threats have dictated that more assurances were needed so that wildlife would continue to have the room it needs to thrive. At the same time, if plans were to be considered to expand habitat and wild lands, then the sustainable economic activity of this spectacular topography, as well as other user concerns, needed addressing also. In keeping with the old tradition of collaboration and compromise for the sake of preservation, it

was once more time to roll up sleeves and craft a workable plan.

So, as they have done so many times in the past, Montanans from both political parties and many vocations and interests joined to collaborate and design legislation that has become known as The Rocky Mountain Front Heritage Act. What makes it work and supportable is that the planners avoided trying to reach consensus, a process that too often results in little more than gridlock. There are

those on both ends of the political spectrum who don't support it, to be sure, but it is the kind of well-thought-out agreement of the majority that is likely to make it succeed and be effective. This kind of collaborative agreement is also one of the cornerstones of a healthy democracy.

To make the proposal a reality, Montana's Senior Senator, Max Baucus, a long-time champion of Montana's outdoor and wildlife traditions, has put his shoulders to the wheel and

agreed to commemorate these efforts and nearly 100 years of cooperation for conservation by introducing legislation, Senate Bill 1774, in the U.S. Congress to create the Rocky Mountain Front Heritage Act.

Rick Graetz
The University of Montana
Crown of the Continent
Initiative Co-Director

ROCKY MOUNTAIN FRONT HERITAGE ACT

Section-by-Section Summary

SECTION 1 The title of the Act.

SECTION 2 Defines terms used throughout the legislation.

SECTION 3 Establishes the "Rocky Mountain Front Conservation Management Area," a layer of protection and management direction for 208,160 acres on the Lewis and Clark National Forest and BLM lands on the Front. Developed in collaboration with local ranchers, private landowners, and others, this customized designation is intended to ensure: 1) people can continue to make their livelihood from the land; 2) keep the Front the 'way it is' -- allow recreational uses as currently exist but address the threat of future expansion in motorized uses; 3) safeguard the public process.

The main parts of Section 3:

- A** PURPOSES – explains that the Conservation Management Area is designed to protect now and for future generations this area's recreational, scenic, historical, cultural, fish, wildlife, roadless and ecological values. "Recreational" is a broad term that includes hunting, hiking, fishing, horseback riding, bicycling, rock climbing, and many other activities.
- B** MANAGEMENT – makes clear that the Conservation Management Area will be managed consistent with all current laws and regulations and in a manner that furthers the purposes stated for the Conservation Management Area.
- C** MOTORIZED USE – motorized vehicles shall be permitted where currently designated for use (as of the date of enactment of the Heritage Act). Land management agencies retain discretion to reroute or close a road or trail because of natural resource damage.
- D** ROAD BUILDING – construction of temporary roads for motorized vehicles is permitted to carry out vegetation management projects within ¼ mile of the Teton, South Teton, Sun River, Benchmark or Beaver Willow roads. Temporary roads must be obliterated within three years of project completion.
- E** GRAZING – makes clear that grazing will continue where currently established, subject to applicable regulations and policies, and in manner consistent with stated purposes for the Conservation Management Area.
- F** VEGETATION MANAGEMENT – Vegetation management projects permitted within the Conservation Management Area if allowed by current regulation and policy and consistent with stated purposes for the Conservation Management Area.

SECTION 4 Designates wilderness additions to the Bob Marshall and Scapegoat Wilderness areas totaling approximately 67,112 acres on the Lewis and Clark National Forest. This section includes management language that reiterates Congressional intent that:

- A** Livestock grazing and the maintenance of existing facilities relating to grazing shall continue where this was an established use at the time of designation.
- B** The Forest Service may take any measure needed in Wilderness to control fire, insect and diseases.
- C** No buffer zones are to be created and non wilderness (including overflights) can continue over/adjacent to wilderness areas.

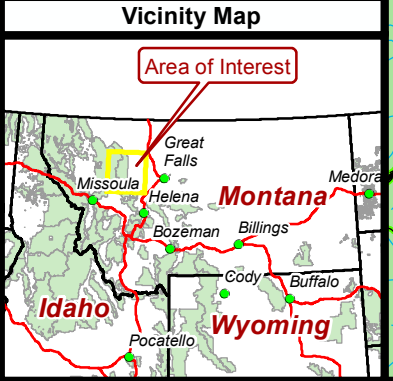
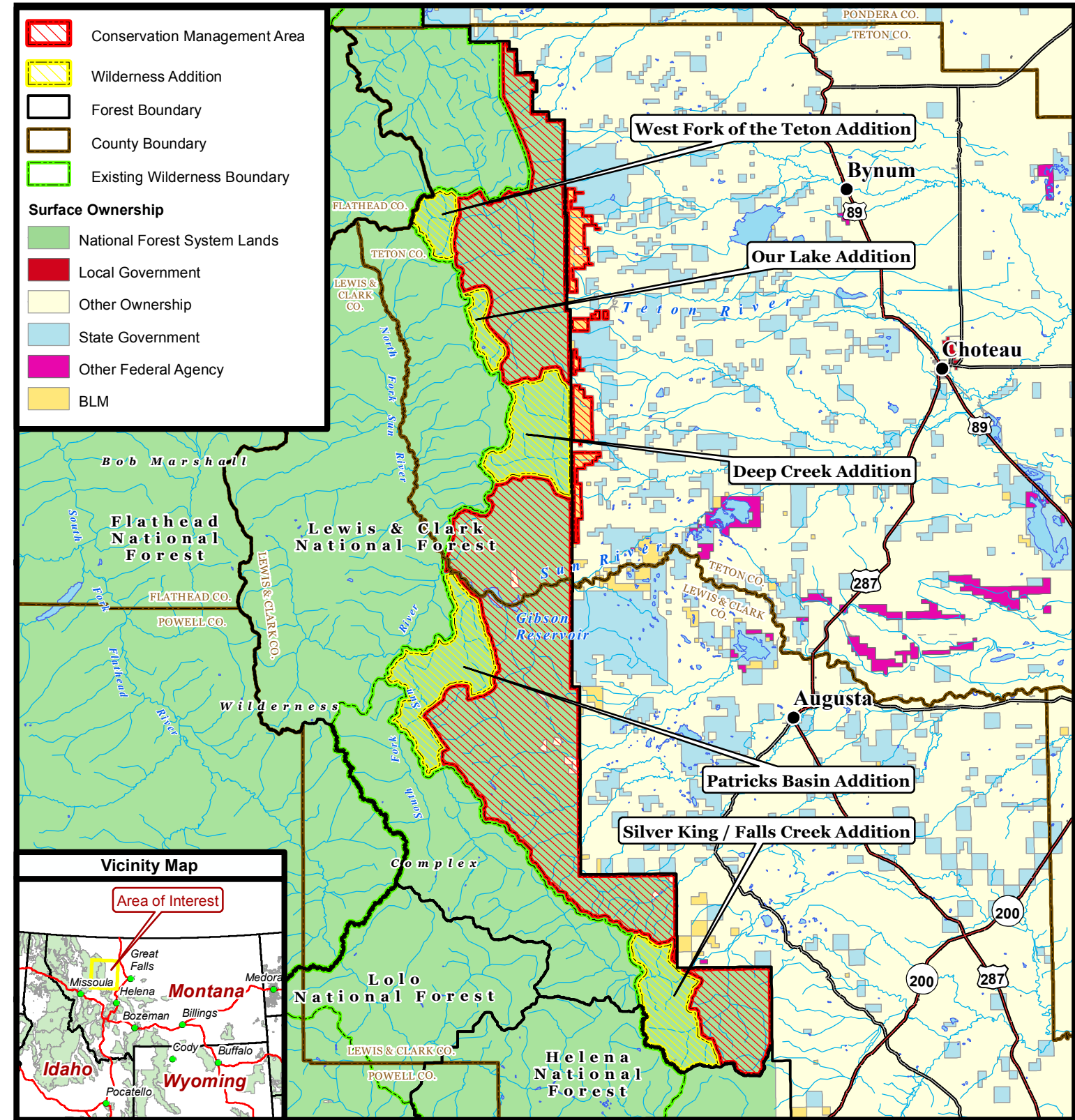
SECTION 5 Standard language that states that maps of the Conservation Management Area and Wilderness additions will be prepared and made publicly available.

SECTION 6 Requires development within one year's time of a comprehensive noxious weed management strategy for all Forest Service lands addressed in Sections 3 and 4 plus the Badger-Two Medicine area of the Lewis and Clark NF. Consultation with local and tribal government and the interested public is required.

SECTION 7 Requires the Lewis and Clark National Forest to develop a study, in consultation with mountain bicyclists, within two years, to provide for improved cycling opportunities on the Front.

SECTION 8 Clarifies that the State of Montana retains jurisdiction over managing hunting and fishing on the Front.

SECTION 9 Standard language that authorizes money to be appropriated as necessary to implement this Act.



This act will establish approximately 208,160 acres of Federal land managed by the USFS and the BLM as the Rocky Mountain Front Conservation Management Area, and designate approximately 67,112 acres of land in the Lewis and Clark National Forest as additions to existing components of the National Wilderness Preservation System. All lands are within Lewis and Clark and Teton Counties, Montana

References
 Map prepared by the U.S. Forest Service, Region 1 Automated Lands Program (ALP) staff, at the request of Senator Baucus, Montana. For more information about this map contact U.S. Forest Service Region 1 ALP Staff. The boundaries of the proposed Conservation Management Area and Wilderness Additions were created by American Wildlands. For more information about the creation of these boundaries please contact American Wildlands.
 Surface ownership and boundary data within USFS Forest boundaries are from the Region 1 ALP database. Other surface ownership data are from the Montana Cadastral Mapping Project.

Sheet 1 of 1
 Map Creation Date - 10/19/2011
 Map Revision Date - 10/27/2011 Rev. 3
 Author: Will Pedde
 Path: C:\alp\Projects\LegislativeMaps\RockyMtnFront\RockyMtnFront2011_8x11.mxd

Rocky Mountain Front Heritage Act

Legislative Map, 2011 Rocky Mountain Front Heritage Act

U.S. Forest Service - Northern Region
 Lewis and Clark National Forest
 USDI Bureau of Land Management - Lewistown Field Office
 Montana At-Large U.S. Congressional District

Copies of this map are available for public inspection in the Office of the Regional Forester, Northern Region, Missoula, MT.

DISCLAIMER: The USDA Forest Service makes no warranty, expressed or implied regarding the data displayed on this map, and reserves the right to correct, update, modify, or replace this information without notification.

THANK YOU

Missoulian

Missoula Montana's daily newspaper, "The Missoulian," has permitted us to re-print a number of wonderful articles that originally appeared in the newspaper. We have recently "formalized" our partnership, and "The Missoulian" has become an affiliate of The University of Montana's Crown of the Continent Initiative.

Several of its reporters frequently write feature stories on all of western Montana as well as pieces detailing landscapes, people and issues of the Crown that we are certain are, and will be of interest to our readers.

So we are pleased to be able to re-print some of them, as we have in this issue with an article by Rob Chaney, and thereby make them available beyond the newspaper's usual readership.

The "Missoulian's" on-line edition is excellent and available to anyone who has an internet connection. Here is the website address www.missoulian.com. The editor of the paper is Sherry Devlin. sdevlin@missoulian.com. 523-5250.

Big Sky. Big Land. Big History. **Montana** **Historical Society**

The Montana Historical Society has recently become an affiliate of The University of Montana's Crown of the Continent Initiative and, as such, will share articles from its highly acclaimed "Montana, The Magazine of Western History" with our Crown E Magazines and other relevant publications. We are very pleased to welcome the MHS as a partner and look forward to what we all anticipate will be a productive and exciting collaboration.

Membership in the Society brings a subscription to its magazine as well as other benefits, The MHS Museum in Helena, Montana, is considered one of the finest state historical museums in the nation. If you haven't had a chance to visit it, it is worth every mile of a trip to Helena to do so.

Montana's history is an exceedingly colorful and tells us a lot about both our past and our present. What you read in the Historical Society's magazine or see on display in the museum shows, among other things, how closely the state's history is connected to its geography and diverse landscapes, large pieces of which we also highlight in this "UM Crown E Magazine."

To become a member of the Montana
Historical Society view their website
www.montanahistoricalociety.org
or call 1 800-243 9900

CROWN OF THE CONTINENT
AFFILIATES

As we continue this work,
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