

# *Conservation Watch*

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## SPECIAL EDITION

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### *The Montana Story*

From September 19<sup>th</sup> to 25<sup>th</sup>, 2007, a delegation from the Garden Club of America experienced a magical time in one of the most beautiful places in America – the Big Sky country of Montana. Winter comes early in this part of our country and we witnessed the first snowfall of the year in the majestic Bitterroot Range and drought-suffering Montanans experienced their first significant rainfall since mid-June. Crisscrossing the Bitterroot and Blackfoot Valleys from Missoula to Butte, the myriad of experiences left us with memories and lessons in how neighbors can work together to preserve the land and perpetuate their way of life. Our setting is in the fastest growing part of the United States – the Rocky Mountain area – where new thinking about conservation is taking place from “ridgetop to ridgetop.” This Special Edition of *Conservation Watch* tells but just a small part of our wonderful experience – The Montana Story. *Editor*

Holland Lake and the Swan Peaks of the Rockies, Swan Valley, Montana.



## **Montana: A Visit to Remember**

When some 60 members and spouses of the GCA's Conservation and National Affairs committees landed in Missoula, many had a prior acquaintance with the beautiful state of Montana. Still, there were many surprises in store for us. We were educated primarily by The Blackfoot Challenge, a group of local residents who see the threat to the land and are working to preserve the Blackfoot Valley from uncontrolled development, polluted water and invasive species. They demonstrated to us repeatedly their reach, their sophistication and their success.

We listened to a demographer explain the shifts in Montana's population; heard ranchers' concern for their lands and water supplies; and listened as fishermen explained how the health of trout indicates the health of the land and the health of the stream equals the health of the fish. We learned of previously unknown living organisms extracted by a researcher from the poisonous stew that is the Berkeley Pit, a place where no life would seem possible. These organisms show great potential for the future.

We heard government men and women, both state and federal, talk of their close cooperation with those living on, and from, the land despite the strong regional prejudice against interference from "the Feds". We visited a stream restoration project where a badly degraded stream had newly designed banks that mimicked its old watercourse, making it cleaner and more suited to fish. We watched a working dog being trained to sniff out bear and bobcat scat, helping to assess wildlife populations. And everywhere we found amazing success stories.

The most striking feature of the work going on in the valley lies in the neighbor-to-neighbor nature of the effort. The Blackfoot Challenge concentrates on persuading other residents of the valley to recognize the very solid values, both ethical and economic, inherent in maintaining such features as clean streams and pastures free of invasive species. The Challenge often tries to persuade them to put some of their land into conservation easements. One telling facet of their success is that land with a conservation easement on it is valued at only slightly less than one with no easement, despite the fact that it no longer holds potential for development.

Our hosts, Cindy and Harry Poett, along with their friends and neighbors gave us a wonderful week of both education and hope for the future of this beautiful land. What follows are some of the wonderful stories we wish to share with GCA members.

*Ann Coburn, Village G.C. of Sewickley (Zone V)  
Vice -Chair, NAL Endangered Species*

## **The Blackfoot Challenge**

Can collaboration make a difference in managing contentious issues surrounding natural resources? Absolutely! The Blackfoot Challenge is a prime example. It is a private non-profit organization that coordinates the management of 1.5 million acres of the Blackfoot watershed in Montana, encompassing the Blackfoot River, its tributaries and adjacent lands.

Threatened with government restrictions, increasing development on private lands, and recreational pressures on the 60% of the lands that are public, the Challenge members

resolved to make every effort to preserve a landscape that has traditionally been productive for ranching, fish and wildlife habitat, and forest health. Over 400 landowners, environmental organizations, federal, state, and local agencies and citizens banded together with a mission to “enhance, conserve and protect the natural resources and the rural lifestyle of the Blackfoot River Valley for present and future generations”.

What makes the Blackfoot Valley so special? First, it is a beautiful landscape. Its vast grasslands grow on gently rolling hills surrounded by forested mountains. The views in all directions delight the eye. Ranching is the predominant activity with irrigated fields on the valley floor providing hay that is baled and fed to the cattle in the winter. In addition to ranching, the health of the fishery is a cultural and economic asset. It is laced with streams that are home to the rare Bull and Westslope cutthroat trout prized by fisherman from across the country.



Seeley Lake in the Lolo National Forest  
The vision shared by the participants has produced an amazing array of projects. The conservation ethic is everywhere. Conservation easements which remove development rights from private lands now protect 89,000 acres in perpetuity, and currently efforts are being made to protect an additional 88,000 acres of forest.

The health of the streams has been a major focus, and 38 streams, 39 tributaries and 2600 acres of wetlands have been restored. Major reconstruction efforts have resulted in streams that formerly dried up in summer, flowing year round. Wider shallow streams have been reconfigured to provide the deep pools and depths needed by the fish for habitat and spawning. This issue of water preservation is so important that irrigators and other water users voluntarily reduce water use during drought to assure continued fish passage.

Endangered species are thriving. What a thrill it was to watch endangered trumpeter swans lift off the lake on one of several ranches visited. The owner had collaborated with the U.S. Fish & Wildlife Service to restore this lake and to re-introduce the swans to their former habitat. The area is deemed to be one of the most pristine ecosystems in the country, and

Healthy restored stream.

Wetlands brought back to life.



their goal is to provide the enlightened stewardship that will allow that to continue. Grizzly bears and wolves also make their home there unmolested.

Weed management is another area of involvement. A huge invasive noxious weed infestation of leafy spurge, toadflax and knapweed has involved 380 of the landowners and agency personnel in weed management. The US Department of Agriculture's Natural Resource Conservation Service assists in trying to solve this critical issue and eradicate the weeds. Over 45,000 acres have been treated. Weed mapping has been done on almost 500,000 acres with 34% under active weed and grazing management. Tools include chemical control, sheep and goat grazing, and hand pulling. New landowners are educated and enlisted in the battle. In some other western states invasive weeds have totally pushed out the native species with long range detrimental effects for wildlife and increased risk for wildfire.

To assure that this stewardship ethic is passed down to future generations, education in the schools and for the public is an important part of the Blackfoot Challenge mission. They share information on wetland ecology, geology, plant identification, forest function, mapping skills, stream restoration and a host of other subjects. Their audiences include teachers, students, community members, recreational users and visitors to the watershed. They have hosted, or participated in 19 site tours and 42 presentations. Recently they received the Innovations in American Government Award from the Ash Institute and the Harvard Business School. They were one of only seven groups picked to receive that honor from more than 1,100 applicants.

The Blackfoot Challenge continues to work on collaborative initiatives in order to guide the future development of the area and preserve the natural resources. This is an effort where the people living on the land decided to actively protect their lifestyles and their incredibly wonderful landscape for the future. It is a group that is worthy of our admiration, and an example of what can be accomplished when people work together.

*Joan Murphy  
Columbine Garden Club (Zone XII)  
NAL Resource Committee*



The GCA NAL and Conservation Committees visit the Berkeley Pit

## Amazing Hope from Superfund Toxic Site

One would think that the Berkeley Pit is an unlikely location for possible cures of any sort, or anything positive, for that matter. On the last full day of the trip to western Montana, Dr. Andrea Stierle, a biochemist at Montana Tech of the University of Montana in Butte, made a presentation that included the amazing story of her research with microbes from the Berkeley Pit. Two of these microbes survive the Pit's extremely acidic (2.6) liquid environment that is laced with heavy metal toxins. The Berkeley Pit, 800 feet deep and 5000' by 7000' feet in size, filled with water in 1982 after the Anaconda Mining Company stopped surface copper mining and turned off the pumps that had kept the mine free of water.

In discussing the background of her work, Dr. Stierle told us she realized in the late 80's that the Northeastern Yew trees were being decimated to extract the breast cancer drug Taxol from their bark. Andrea, and her scientist husband Don, after many years of work, were successful in 1992 in finding the source of this compound. A fungus that lives on the bark of the trees, *Taxomyces andreanae* (named for Andrea) is easy to produce, without destroying the trees. Five years later, Bristol-Meyers Squibb purchased the commercial rights to their research.

The Stierles are using much the same reasoning to study the biota of the Berkeley Pit. "Whether in defense or offense, every microbe uses its chemistry to protect itself," Andrea explained. In other words, bacteria, fungi, and other living organisms manufacture substances that can be poisonous to other microbes. The generic term for such chemicals is "secondary metabolites"— unique compounds that organisms assemble from basic building blocks, such as carbon or hydrogen, that most living things hold in common. "It's among the secondary metabolites," Stierle says, "that we find natural products that can benefit medicine or agriculture."<sup>1</sup>

"No one thought anything could live in the pit," says Stierle. "In the fall of 1995, 342 snow geese caught in a fog bank landed on that water and died." But the simplest tests of the first water sample she received yielded three microbes. She then knew that meant there were probably more. Today, the counters of the lab she shares with Don, both her husband and collaborator, are stacked with petri dishes — a happy family of approximately 132 Berkeley Pit microbes."<sup>2</sup>

“Testing so far has revealed strong anticancer activity in two of the Berkeley Pit compounds, one against type 3 ovarian cancer, and the other against non-small cell lung cancer.”<sup>3</sup> Another ‘slime’ in the pit also holds promise. It’s actually a yeast that pulls 90 percent of heavy metals out of water. Most organic materials can pull only 10 or 15 percent. So, it’s possible that, in the future, the yeast could help with cleanup of the pit and other Superfund sites. “The only place it was ever isolated before,” Stierle says, peering into a beaker of the liquid, “was in the rectums of geese. Geese tend to poop when they’re taking off from water. We call this little yeast the gift of the snow geese.”<sup>4</sup>

From the air, the Berkeley Pit looks like a serene alpine lake. On the ground it looks like an impact crater near what was once the largest open pit mining operation in the world. The promise that lies within its 40 million gallons of water spiked with arsenic, lead and cadmium could truly be a miracle. The impact down the road could be profound. The very place that was drowning in its own poisons could be the source of its redemption.

<sup>1</sup> Dobb, Edwin. New Life in a Death Trap. *Discover Magazine* Dec. 1,2000.

<http://discovermagazine.com/2000/dec/featnewlife>

<sup>2</sup> Judy, Beth. UM Women of Science. *Vision*, The University of Montana. 2006.

<http://www.umt.edu/urelations/vision/2006/14women.htm>

<sup>3</sup> *ibid.*

<sup>4</sup> *ibid.*

[all above direct quotes]

Additional source: Haefele, Fred. “Superfund Savior?” *Montana Magazine*, Sept.-Oct., 2007, pgs. 48-53.

*Tina Freeman, New Orleans Town Gardeners (Zone IX)*

*GCA Conservation Committee, Vice-Chair – Air Quality/Toxic Substances*

## Unique Western Water Rights

Ask someone living in the Eastern half of the United States what a person’s water rights are and he or she might say, “I don’t know. Isn’t it everybody’s water?” But ask that same question to a Westerner, and you will get an entirely different answer! Residents of arid sections of the West are acutely aware of water rights.





Different water rights issues in places like the Maumee River, Perrysburg, Ohio pictured here.

Those of us living in areas where water is plentiful do not even think about water rights, but we are governed by Riparian Water Rights. These rights give property owners along bodies of water the right of reasonable use of the water. Land owners may use the water for domestic use, swimming, boating, fishing and putting up structures on the water such as docks. Riparian Water Rights date back to English common law. Under this doctrine, in its purest form, the courts asserted the riparian landowner was entitled to receive and return water to a stream as it came naturally to their land: that is, the landowner could use the stream without changes to its flow, volume, temperature, and quality. But as water demands increased in agriculture and industry, the courts expanded the reasonable use idea so that maintaining the purely natural condition of the stream was no longer required.

Most Western states operate under the principle of Prior Appropriation. Under the prior appropriation doctrine water rights are assigned by "first in time, first in right." Simply put, if a rancher received a permit to draw water to irrigate in 1890, his claim supersedes all later claims regardless of where the other claims are situated on the river or stream. The water rights are of two different types, direct flow and storage. Direct flow is measured by rate of flow. For example, a direct flow right for "1.0 cfs" means that the rancher may divert water from a stream or a well at a rate of not more than one cubic foot of water per second of time. The rancher may continue to draw the water as long as it is available and is being used for a "beneficial use." The rancher also has the ability to sell the water rights. If the water rights are not used, they are lost. A storage water right is measured in terms of volume. For instance, the owner of a reservoir may have the right to store up to 1,000 acre feet of water each year, to be used at some later time for a beneficial use.



A branch of the Blackfoot River, recently restored, in Ovando, Montana.

The stream in Montana, pictured above, is a good example of how prior appropriation water rights and conservation practices can work together to preserve water flow and still maintain a water source for a rancher. Working with Montana Fish and Wildlife, the rancher and owner of this land recently restored this stream bed from a wider, shallower stream to a narrower, deeper stream. This prevented water loss from seepage and evaporation. Then the rancher put a portion of his water rights in a conservation easement. Montana Fish and Wildlife helped him install efficient, solar powered pumps which made the land more productive on half the amount of water. As a result, this stream is viable year round when in the past it was completely dry by mid summer. In addition, the restored deeper and narrower stream is a more suitable habitat for local species of fish.

Water and water rights are becoming bigger and bigger issues each year as our needs keep increasing. The supply of fresh water is finite. Nowhere in our country is this any truer than in our western states. Wherever you live, you should check out your state's laws concerning water rights.

Sources:

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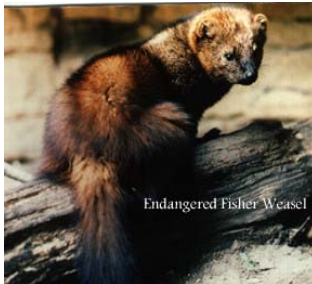
*Gretchen Downs, Country Garden Club (Zone X)  
GCA Conservation Committee  
Vice Chair - Water, Wetland and the Great Lakes*

[riparian - Relating to or living or located on the bank of a natural watercourse (as a river) or sometimes of a lake or a tidewater.] *Editor's Note*

**Montana Dog Detectives**  
**The Nose Knows - Dog Smell Out Invasives**



The 2007 GCA Conservation trip participants met Pepin, a Belgian Malinois, and his trainer Meagan Parker from the Working Dogs for Conservation Foundation (WDCF). Working Dogs for Conservation Foundation was organized in 2000 by four wildlife professionals who were looking for non-invasive methods to do wildlife monitoring and research. With the recent advances in DNA technology, a great deal of information may be obtained from scats (the excrement of animals) and the DNA material contained within them. Pepin, a new trainee, is qualified to find three different mammal species. He is presently working on his first project looking for fisher (a member of the weasel family) scat. In addition to scat detection WDCF has been working with Montana State University and Kim Goodwin's novel approach to early weed detection.



The first dog enlistee in the war against Spotted Knapweed in Montana was a dog named Knapweed Nightmare. Kim Goodwin, a grad student and staff member of MSU knew that the USDA was using dogs to search for illegally imported plants and exotic animals. She said why not enlist dogs in the fight against invasives. "Nightmare" and two other detection dogs were tested by Kim's methodology.

The training began with scent imprinting. From the time a professional working dog is born, it never experiences "play" the way a family pet might. Instead, a dog in training plays with an object bathed in the scent it's learning to detect. Handlers praise the dog when it reacts positively to the scent.

Noxious weeds displace native plants and animals and can permanently damage ecosystems. Spotted knapweed alone has a \$46 million annual impact on Montana cattle production. Weeds affect fish and wildlife habitat, which in turn hurts the recreation and tourism industries. The work started with spotted knapweed and has expanded to the detection of dyer's woad.



Amber Burch, a county coordinator, said that the benefit of the dogs is that they can get into the taller sagebrush and willows where humans can't see well. The drawback, however, is that training requires that some weeds not be pulled or sprayed when first found. The training, in effect, requires "just-in-time" weed management at training sites.

Alice Whitelaw a co-founder of WDCF has been working with Kim since 2005 as project trainer for both knapweed and dyer's woad projects. She and her dog Camas, as well as Nightmare and her handler Charles Whelan, have been training on dyers woad detection since early spring of this year. Once identified, the new blooms can be pulled off, new growth removed, or entire plants removed.

Human weed control efforts can only be partially effective. There will be small weeds unseen or moderately sized weeds hidden by shrubs. In field trials in 2006, three dogs averaged finding 92 percent of the knapweed, while humans found 76 percent. Using multiple dogs as a team, however, the dogs' success rose to 100 percent. Beaverhead County in Montana plans to follow human detectors with trained dogs to achieve nearly 100 percent control.



WDCF has initiated their own research project investigating the use of dogs to detect the federally listed threatened species, Kincaid's lupine (*Lupinus sulphureus kincaidii*). This plant is host to the endangered Fender's blue butterfly. Several plant and animal species are imperiled by the loss and degradation of savanna and prairie communities. WDCF is hoping that detection of these rare populations will assist in preservation of these fragile habitats.

Thanks to the study of Kim Goodwin at MSU and the

Working Dogs for Conservation Foundation a new ally in the eradication of invasives and protection of endangered species and plants has been found in man's best friend, the dog.



*Diana Neely, Seattle Garden Club (Zone XII)  
GCA Conservation Committee, Partners-for-Plants Chair*

## Water Howellia

One of the many fascinating and diverse components of the NAL/Conservation Committees' trip to Montana was learning about the efforts of botanists Steve Shelly and Linh Hoang to restore and preserve the habitats of a threatened plant species, water howellia.

*Howellia aquitalis* or water howellia has been listed as threatened on the USDA Threatened and Endangered Species List since 1994. Threatened species are species that are likely to become endangered within the foreseeable future throughout all or a significant part of their range.



Water howellia is an annual aquatic species that is a member of the Campanulaceae or bellflower family and is the only member of its genus. To survive, it requires small vernal, freshwater wetlands, glacial pothole ponds, former river oxbows and edges of ponds surrounded by deciduous forests that have an annual cycle of filling in the fall, winter and spring and drying during the summer months. Its seeds germinate as the ponds dry and they are exposed to air and they then root in the firm, consolidated

sediment that is associated with these types of wetlands. It has two kinds of flowers that appear both below and above the surface of the water and it completes its entire life cycle in one growing season. In its short life, the plants produce two kinds of flowers. Early flowers

remain underwater and never open. Even so, they consistently produce seeds, which are necessarily the result of self-pollination. Flowers produced later emerge above the surface of the water and open into what look like tiny white lobelias. The above-water flowers, which are also primarily self-pollinating, do have the potential to accept pollen from other plants. Due to the predominance of inbreeding, *Howellia* has an extremely uniform genetic makeup throughout its entire range

Botanists Thomas and Joseph Howell first discovered water howellia in 1879 on Sauvie Island, which is near Portland, Oregon, a state in which it has since become extinct. It subsequently was found in Washington, California, Montana and Idaho. However, the loss of habitat due to dams, timber harvesting, livestock grazing, residential development and competition from non-native species have altered or destroyed its very specific habitat requirements and have threatened its continued existence. Now only very small populations, usually less than an acre in size, have been found in Montana, California, Washington, and in only one place in Idaho. Surveys and monitoring are being conducted throughout its range to evaluate population levels.



Garden club members surround the GCA sponsored sign in the Flathead National Forest.

Cindy Poett (kneeling in center front), an affiliate member of the Hillsborough Club who lives in Montana partnered with the Montana Native Plant Society and a federal botanist did a GCA Partners for Plants project that provided funds to aid the habitat restoration efforts for water howellia in the Flathead National Forest in Swan Valley, Montana. The Partners for Plants program gave funds to provide fencing to keep cattle out and for an educational plaque that informs the public about these restoration efforts. The plaque also recognizes the efforts and contributions of the Garden Club of America's Partners for Plants program. The key component to all conservation efforts is education and conservation projects such as this not only accomplish great things but also are valuable educational tools.

*Katie Heins, Stony Brook G.C. (Zone IV)  
GCA Recording Secretary  
Executive Committee Liaison to NAL 2007-08*

### Memorable Montana Quote

“Nature bats last.”

Hank Goetz, Montana Rancher and Land Steward for The Blackfoot Challenge

In spite of all man does to try to control his environment and in spite of the mistakes he may make in doing so, the folks of Montana reminded us that Nature is in charge.

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## *Conservation Watch*

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*Elva Busch, Editor*

