

# 5 Markets Are a Frog's Best Friend

Kermit the Frog would have found it easier to be green had he discovered markets and private stewardship, as did his relative, the endangered Houston toad whose friend, rancher Bob Long, describes himself as a “gun toting, redneck, Texas Republican preacher” (McMillan 2003, 5). To that list he should add free market environmentalist. Through the Leopold Stewardship Fund and a Safe Harbor Agreement under the Endangered Species Act, Long has helped provide habitat for the toad. The Leopold Stewardship Fund paid for the fences Long built to keep his cattle away from the toad-breeding ponds and native plants. The Safe Harbor Agreement afforded him protection from onerous land-use regulations that make endangered species the enemy (Environmental Defense 2003). Under the Safe Harbor Agreement, Long agreed to manage his ranch so as to promote Houston toad habitat in return for a guarantee from the U.S. Fish and Wildlife Service that additional endangered species regulations will not be imposed on him. (See chapter 6 for details on safe harbor agreements.)

Market-enabling tools such as the Leopold Fund and the Safe Harbor Agreement are making the environment an asset rather than a liability. As a sage Montana rancher put it, “If it pays, it stays.” Positive incentives provide carrots that often are more effective than regulatory sticks for encouraging environmental quality. Sometimes regulatory sticks may be necessary, but they usually ignore the incentive potential inherent in market carrots.

## Going Global

Before considering more examples of how markets can work in the United States, we must point out that free market environmentalism is a worldwide phenomenon. Making the environment an asset is essential, especially in the developing world, where people living in nature have not yet reached the level of wealth necessary to afford them the time to think about being green.

### *Land of Milk and Honey*

Market solutions have been proven effective even in countries where property rights are poorly defined and often not enforced. In the Los Negros Valley in Bolivia, downstream farmers didn't have enough water for their crops, largely owing to upstream deforestation in the cloud forest of Amboro National Park—a unique ecosystem that creates moisture. As the forest cover was reduced, the Los Negros River began drying up earlier and earlier each year. Although it is illegal to cut down trees in a buffer zone along the river, upstream dwellers often cut timber wherever they please. Given Bolivia's poor legal institutions and insecure property rights, downstream landowners had to find another solution to enhance their decreasing flows.

Natura Bolivia, an environmental group, helped resolve the conflict using a system of payments for environmental services (PES). Through negotiations, Natura Bolivia agreed to compensate the upstream landowners to preserve native vegetation, with payment in beehives and training in honey production. The upstream loggers receive one hive for every ten hectares of water-producing forest they protect. Since PESs were introduced, upstream participants have begun requesting some of their compensation in the form of barbed wire with which to confine their livestock and to clearly define property boundaries and land claims.

The upstream landowners and downstream water users' agreement has not been without its problems. Lacking a well-entrenched

rule of law, creative solutions had to be found to enforce the contracts for watershed services. To clearly define property rights, Natura Bolivia used Global Positioning Systems and natural boundaries, such as rivers and mountains, to draw property boundaries. To enforce the contract, Natura Bolivia has declared that it will not renew the contract if either party fails to comply with the terms. To determine how much additional water has resulted from upstream forest preservation, landowners measure water depth, stream flow, velocity, and rainfall.

The above demonstrates how market solutions can mitigate conflict over environmental resources and have the potential for producing ecosystem services. Even in Bolivia, which lacks an effective legal system and property rights, market solutions have generated gains from trade for both loggers and farmers.

#### *Tree Owners Are Tree Huggers*

How can Niger, an African country with an exploding population growth and ongoing hunger, have added 7.4 million acres of tree-covered ground since 1980? The answer is that landowners now own the trees on their land. In the past, all trees were owned by the state, meaning that the landowners had little incentive to preserve them. Just as no one washes a rental car, no one took care of the trees in Niger. Little thought was given to the environmental costs of harvesting trees for firewood or for construction. Farmers cleared vegetation from their fields, including trees, before planting rows of crops. When the land became less productive, the farmers moved to new plots, leaving behind land devoid of trees. Although government forest regulators were supposed to conserve the trees, they were ineffective in stopping the farmers from clearing trees for their crops.

In 1974, the Niger government, turning to a property rights approach, allowed individuals to own the trees on their land. As a result of both the change in the law and a severe drought in the late 1970s and early 1980s that wiped out vast stands of trees, farmers realized how scarce trees had become and began conserving them. Farmers

and other landowners began cultivating six species of trees that would provide them with additional income. Now landowners can sell branches, pods, fruit, bark, and leaves. Not only have the revenues increased farmers' incomes, but they have softened the ups and downs of farming in such a drought-prone environment.

Tree ownership has also positively affected the lives of women and youth. Women who used to spend more than two and a half hours a day gathering firewood now spend just half an hour. More youth stay in their home villages rather than leave for the city because they can earn money by taking forest products to market (Larwanou, Abdoulaye, and Reij 2006). Thus, assigning property rights to private landowners has given them the incentive to improve the environment; their trees are now an asset.

### *The Northern Jaguar*

Jaguars once roamed much of the southwestern United States but were killed off in the past century as ranchers began raising cattle in the region and as federal programs were introduced to eliminate predators that preyed on livestock and other wildlife. The last known jaguar in the United States was shot near the Grand Canyon in 1963. A population of jaguars has survived in northern Mexico, but these too have become increasingly persecuted by ranchers and poachers. In the past two years, ranchers have killed more than twenty jaguars, including females and kittens. Some environmental groups have lobbied the U.S. government to create protected habitat for the jaguars in New Mexico and Arizona along the Mexican border, but these efforts have met resistance from ranchers in the region and thus been unsuccessful to date.

One group, however, is using the market to create a jaguar reserve. The Northern Jaguar Project, in conjunction with Naturalia and Defenders of Wildlife, purchased a 10,000-acre ranch in Sonora, Mexico, where cattle ranching is the principal activity in the rough, rocky mountains. To expand its reserve, partners are currently trying to buy

an adjacent 35,000-acre ranch. The money to carry out this project is donated by private individuals and organizations interested in preserving the northern jaguar (Nistler 2007).

Because a male jaguar's territory can encompass more than 500 square miles, the Northern Jaguar Project is also working to protect jaguars who venture outside the reserve. The project considered a compensation program for cattle killed by jaguars, modeled after the one used in wolf reintroduction (see below), but the area is so remote that it is almost impossible to determine what has killed the cattle, much less find the dead animal.

Instead, the Northern Jaguar Project has launched the "Save a Spot" program that has paid for automatic cameras to be installed on nearby ranches, paid local vaqueros to maintain the cameras, and paid compensation for ranchers. When a jaguar is photographed on private land, the ranch owner receives as much as \$500—making the jaguar worth more alive than dead (Friederici 2006).

Rather than governments' forcing landowners to comply with conservation regulations, market solutions such as those used by the Northern Jaguar Project serve the interests of both landowners and conservationists. The ranchers of the Sonora have an economic rationale for protecting the jaguar, and, as a result, they have become wildlife-friendly vaqueros. Through these efforts, it is possible that people in North America may start seeing the spots of the jaguar again.

### *Into Africa*

The Communal Areas Management Program for Indigenous Resources (CAMPFIRE) program effectively preserves wildlife in southern Africa, primarily in Zimbabwe, despite Robert Mugabe's corrupt regime. Previous conservation efforts on communal lands had been inadequate. Communal lands, generally the least productive land for agriculture, often border areas designated for wildlife, creating a potential conflict between farmers and such wildlife as elephants, buffalo,

crocodiles, rhinos, and leopards that eat crops, livestock, or humans. Occupants of communal lands therefore view these animals as the enemy and seek to eliminate them. As a result, poaching has decimated wildlife populations as farmers try to protect the land and livestock they need to earn even subsistence incomes.

Programs such as CAMPFIRE recognize that people will preserve wildlife if they benefit from its presence. To accomplish this goal, the national government has transferred wildlife management to representatives of the small villages. Although the property rights are not directly held by the village, a district council representing the village controls the wildlife and the income generated from preserving it. Through this devolution of property rights, the people living with the wildlife gain from conserving it.

Under the CAMPFIRE program, wildlife populations and wildlife habitat have increased significantly. Elephant populations in Zimbabwe, for example, have grown from 89,000 to 119,000 since 1979 (Kanhema 2006), even though trophy hunting of elephants has almost doubled (Hess 1997). Countries with local communities that profit from wildlife viewing and hunting, such as South Africa, Zimbabwe, and Botswana, contain the continent's only increasing elephant populations (Kanhema 2006). To promote habitat, villagers are cutting fewer trees, grazing fewer cattle, and lighting fewer bush fires.

One problem with CAMPFIRE-type programs is that some of Africa's potential wildlife habitat has been set aside in national parks (see Hess 1997), meaning that too often local people, living at or near the subsistence level, are evicted from their traditional land and forced to compete with wildlife that migrates from the parks and consumes neighboring grazing and cropland. Moreover, the primary beneficiaries of national parks are wealthy foreign tourists and the concessionaires who supply transportation, lodging, and food for the ecotourists.

Recognizing the problem, groups such as the African Wildlife Foundation (AWF) and the Nature Conservancy are experimenting

with leasing land from local groups for wildlife habitat. Near Nairobi National Park, for example, AWF is paying families \$4 per acre per year to not cultivate the land, instead only grazing it and protecting wildlife on it (see Dunkel 2007). From two families and 214 acres in 2000, the program has grown to more than 100 families and 8,500 acres in 2007. Patrick Bergin, CEO of AWF, notes that “private land conservation has had an amazing impact in North America. My feeling is that this conservation approach has great potential in Africa—the surface has not even been scratched” (quoted in Dunkel 2007, 25). Although Bergin is correct in saying that private land conservation in North America has done a lot, the surface in the United States has not been scratched either.

### **YIMBY (Yes, in My Backyard)**

Markets are being applied in many parts of the developing world because people there cannot afford to be environmentalists unless it pays. As mentioned earlier, high incomes are a driving force of demands for environmental quality. People living at or near subsistence levels cannot afford to preserve land for environmental amenities or clean up their air and water at the expense of economic development. Not surprisingly, in the developing world laws mandating greener-than-thou regulations are simply ignored.

Policymakers in rich countries such as the United States, however, can afford to pass and enforce environmental regulations, regardless of their costs or effectiveness. High incomes make it easy to be greener than thou without worrying about how efficacious the regulations are. As we saw in chapter 4, Superfund legislation spent billions of dollars cleaning up toxic waste sites with a relatively small bang for the buck; the Endangered Species Act has cost billions, not counting the costs imposed on landowners and the unrecovered species; and efforts to remove minuscule amounts of arsenic from the nation’s water will cost billions, all in the name of reducing cancer risks by imperceptible amounts.



Popular bumper sticker in Montana

Courtesy of Montana Land Reliance

Moreover, in many cases, despite the billions of dollars spent, adversaries battle over the right way to produce environmental quality while the environment suffers. Timber management on federal lands is tied in such a “Gordian knot,” to use the words of President Clinton’s chief of the Forest Service, Jack Ward Thomas, that wildfires rage while environmentalists sit in air-conditioned courtrooms. “No moo in ’92” and “cattle free in ’93” were slogans aimed at removing cattle grazing from public lands during the Clinton administration, but grazing policies changed little.

Pragmatic environmentalists who realize that rhetoric and regulations are often ineffectual are now “finding the ways that work,” to use the motto of Environmental Defense Fund. When pragmatism supplants green rhetoric, environmental quality flourishes, as the following examples attest.

### *Cows not Condos*

“Cows not Condos,” the motto of the Montana Land Reliance (MLR), a land trust devoted to using privately negotiated conservation easements to preserve farmland and agricultural values, says a great deal about the trade-offs pragmatic conservationists must face.

MLR works with hundreds of farmers and ranchers to place nearly half-a-million acres under easements restricting uses to agriculture and silviculture, yet allowing the landowners to manage their lands. The government gives the landowner tax deductions equivalent to the difference between the unrestricted and restricted values of the land;

otherwise the easements are voluntary transactions that preserve Montana's farm and ranch culture and provide open space and wildlife habitat.

The MZ-Ranch, located near Belgrade, Montana, exemplifies what private landowners can do for conservation even without tax deductions. The MZ allows us to have our fish and graze it, too. On the ranch owned by Tom and Mary Kay Milesnick, the third generation on the property, dozens of Angus cows and calves graze the banks of Thompson and Ben Hart Spring Creeks and others stand in the water for a drink. Across the fence, neighboring acres are growing condos, not cows.

Many anglers think cows and fishing cannot mix, but the Milesnicks are proving them wrong. In the past, the crystal clear waters of Thompson and Ben Hart Spring Creeks were primarily used to water cows, with fish taking a backseat. With cattle wading, drinking, and excreting everywhere, fishers only had a few pools into which they could cast a fly. Like many Montana ranchers, Tom and Mary Kay were willing to share the stream with fishers, but their cattle came first.

As the Milesnicks cattle were having the run of the stream, other spring creek owners were capitalizing on the fishing boom sparked by the movie *A River Runs through It*. In the Paradise Valley, south of Livingston, Montana, for example, three spring creeks were charging fishers upward of \$100 per day. Because the streams had become such valuable assets, the cattle took a backseat, with fences keeping the bovines away from riparian areas.

But fencing is expensive, and Tom hoped to find a way whereby his cows and the fish could share the water. His experience as a rancher told him that cows do not like standing in mud, which results when the streambanks sluff into the water and fill it with silt. To eliminate the mud and entice the cattle to drink in selected areas, Tom laid gravel pads on which the cattle could wade into the creek without destroying the banks and causing siltation. He also discovered

that intensive grazing at certain times of the year keeps the weeds along the banks down and allows native grasses to thrive and hold the banks in place.

Now Mary Kay charges fees (\$75 per fisher per day) and limits the number of fishers each day. Because the fishing is so good, the MZ-Ranch is booked a year in advance. More important, the revenues the Milesnicks collect from fishing augment traditional ranching revenues to keep the land in “cows not condos.” When asked what share of the revenues comes from fishing, Tom says only 8 percent, at which point Mary Kay smiles and notes that those revenues account for 40 percent of the ranch’s net income because, after the initial investment, there are few costs (Grewell 2002).

Some might say that the Milesnicks should not profit from nature because nature belongs to us all, but profitability leads to sustainability. As more ranchers capitalize on their amenities, they will become the green thumb in Adam Smith’s invisible hand. As Smith put it, when an individual pursues his or her own interests, “he is in this led by an invisible hand to promote an end which was no part of his intention. By pursuing his own interest he frequently promotes that of the society more effectually than he really intends to promote it.”

### *A Sheep in Wolf’s Clothing*

Market solutions are also working to resolve conflicts between conservationists wishing to protect grizzly bears and wolves and ranchers trying to make a living from cattle and sheep. Hank Fischer, who created the Proactive Carnivore Conservation Fund while working for Defenders of Wildlife, has expanded the use of market tools to protect wolves and grizzly bears in the greater Yellowstone area, which can pose serious problems for ranchers who graze sheep near wolf and grizzly habitat.

The Proactive Carnivore Conservation Fund provides money to help prevent wolf and grizzly predation from occurring by working with ranchers to create prevention mechanisms such as a secure night

pasture for sheep, bear-proof garbage receptacles, and alternative sheep- and cattle-grazing areas where there are no wolves or grizzlies. In 2006 Fisher helped retire 74,000 acres from a grazing allotment in the Gallatin National Forest on which, between 1999 and 2003, bears and wolves had killed more than a hundred sheep. Representing the National Wildlife Federation, Hank paid the rancher \$130,000 to move his sheep from harm's way. As Hank put it, "We aren't getting rid of grazing; we're redistributing where it occurs—away from core wildlife areas near national parks and wilderness areas and closer to low-conflict areas" (Stark 2006). In three years, Fischer's program has retired more than 300,000 acres of grazing allotments near Yellowstone National Park.

#### *Fish in the Sea*

Gordon Fox had been making his living as a bottom-trawling fisher (dragging a net along the ocean floor to catch fish) off the coast of California for years. Owing to bottom trawling's negative effects, however, six species of ground-fish had become severely depleted. Environmentalists initially tried to block fishing with a lawsuit, which failed and, like all lawsuits, created tremendous animosity. The judge in the case ordered the National Marine Fisheries Service to prepare an environmental impact statement, which opened the door for some healing market ointment. Environmentalist Chuck Cook (who has been called a "conservation Nazi"), Rod Fujita, a marine scientist with Environmental Defense Fund, and fishers began working together to develop and submit a plan to preserve the fish (see Christensen 2006).

The accepted plan provided a win-win alternative, with the Nature Conservancy and Environmental Defense Fund teaming up to buy fishing permits and boats from local fishers and, in exchange, fishers agreeing not to bottom trawl in vulnerable areas. Five of the six trawling permits in Morro Bay were purchased by environmental groups, generating several hundred thousand dollars each for the permit holders. The environmentalists are also trying to purchase an additional

ten permits from northern bays. Using markets, environmentalists and fishers have preserved 3.8 million acres of ocean off the coast of central California—an area roughly the size of Connecticut.

In the future, the Nature Conservancy and Environmental Defense Fund plan to lease permits back to fishers with stipulations designed to protect the fish populations and biodiversity in the area. Those leases will be similar to land conservation easements, which have stipulations as to how the land will be developed. In the fishing case, restrictions will be put in place on the type of equipment that can be used for fishing, the areas that can be fished, and the species that can be harvested.

Through solutions such as these, an estimated two-thirds of the overall biodiversity along the coast of central California has been preserved. Like individual fishing quotas (IFQs) (see chapter 4), markets are proving much more effective than regulations in promoting sustainable fish stocks and biodiversity.

#### *Trust Us for Water Conservation*

Mark Twain supposedly said, “Whiskey is for drinkin’ and water is for fightin’,” and if he didn’t he surely would if he were writing about water use today. As municipal and environmental demands for water have grown, conflicts over water have increased. Especially in drought years, claims to divert water exceed stream flows. Famous cases such as the dispute between Los Angeles and the Mono Lake Committee over the diversion of water from streams feeding Mono Lake in the eastern Sierras to a tube 225 miles south to Los Angeles are not unique. In this case bumper stickers from the early 1980s, which declare that the country’s oldest and most unusual lake is being destroyed, can still be seen. Thousands of competing claims for water have reduced instream flows and increased the flow of litigation (Libecap 2007).

One reason for conflict is that the prior appropriation doctrine, which governs water use in the West, typically requires that water be

diverted from the stream lest the water right be forfeited and claimed by another diverter; in other words, “use it or lose it.” Under that doctrine those holding a water right could not opt to leave the water in the stream to ensure stream flows because instream flows are not considered a “beneficial use” of water, thus encouraging the overuse of water and discouraging the development of water markets (see Anderson and Snyder 1997).

As Bob Dylan put, however, “times they are a changing.” Just as miners and farmers hammered out the prior appropriation doctrine in the late nineteenth century, market-minded conservationists are refining that doctrine to allow them to engage in willing buyer–willing seller water trades to increase instream flows. States such as California, Montana, and Oregon have changed their water laws to allow water to be leased to improve aquatic habitat. Other states such as Colorado, Idaho, and New Mexico have authorized their state agencies to appropriate, buy, or lease water for instream flows where it is critical for a healthy aquatic ecosystem (Scarborough and Lund 2007).

The result of this forward thinking has been less money spent on lobbying and lawsuits and more spent on getting water in the stream. For example, in the case of Mono Lake, it took fifteen years of litigation before water began to flow back into the lake, even then the flows have been far short of environmental goals. Water levels in Mono Lake have increased by nine feet, but this is a far cry from the twenty feet required by the state’s ruling. Had the Mono Lake Committee entered into market transactions to increase the lake’s level, restoration would most likely be much farther along (Libecap 2005 and 2007).

By harnessing water markets to save our streams, we can have “whiskey for drinkin’ and water for fishin’.” In ten western states approximately \$300 million has been spent on more than a thousand water transactions to restore stream flows between 1998 and 2005. The result is six million more acre-feet of water devoted to instream

flows, enough to cover the state of New Hampshire with one foot of water (Scarborough and Lund 2007).

*“For the Benefit and Enjoyment of the People”*

Those words are carved on the Roosevelt Arch, the gateway to the north entrance of Yellowstone National Park. Although, as we noted in chapter 2, the park was not created by Teddy Roosevelt, he did visit the park in 1903 to dedicate the arch, saying, “Yellowstone Park is something absolutely unique in the world. . . . This Park was created and is now administered for the benefit and enjoyment of the people. . . . [I]t is the property of Uncle Sam and therefore of us all.”

Unfortunately, the park and many other recreational assets that are “the property of Uncle Sam” have been treated too much like rental cars; they are overused and undercared for. Although national forest deficits are larger for recreation than for any of the other major land uses, users complain that more needs to be spent on recreation (see chapter 4). For example, in 2005, after the Bush administration revised downward the estimates of how much recreation in national forests contributes to GDP, Frank Hugelmeyer, president of the Outdoor Industry Association, contended that those estimates were too low. Arguing that national forests’ contribution to GDP is 2.5 to 4.0 times more than commodity production from the same forests, he concluded that “staffing and funding for recreation in the agency [U.S. Forest Service] doesn’t match up to this reality” and that spending on recreation management and trials is “woefully inadequate” (2005).

Similarly, national park supporters call for larger budgets to cover both operating and capital expenditures. In February 2007, the National Parks Conservation Association launched a campaign called Make National Parks a National Priority. Some 40,000 activists signed petitions asking Congress to increase national parks funding. To their delight, the 2008 House Interior Appropriations bill budgeted \$2.5 billion for the NPS, a \$223 million increase from 2007. The National Parks Conservation Association website said, “This is *great* news for



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Congestion in Zion National Park

our national parks, providing much-needed funding to maintain hiking trails, restore critically-needed visitor services, including guided tours and educational programs, address park-related expenses and fill more than 3,000 seasonal ranger positions which had been lost over the years to budget crunches” (House Budget 2007).

Despite these calls from special interest groups for more spending, indications are that recreation on public lands is subject to the tragedy of the commons. Try to find a place to photograph Old Faithful without getting another person’s head in the picture; try to find a campground or a room in Yosemite in the summer without reservations far in advance; try to find a trailhead to a popular wilderness area that is not packed with cars; or try to find a place to hunt on public lands on the opening day of the hunting season that is not overrun with other hunters. Indeed, recreation on public lands is down in many cases, and part of the reason for the decline is dissatisfaction with the recreational experience. *Consumer Reports* found that overcrowding and facility maintenance are the top concerns of park visitors (1997).

Yosemite National Park closes the park entrance several times a year because of gridlock in the valley. On average, 6,500 cars arrive at the South Rim of the Grand Canyon, but there are only 2,400 parking spaces (see Fretwell 1999). And Zion National Park implemented a mandatory shuttle bus system to reduce traffic congestion.

As crowding and overuse have grown on public lands, entrepreneurs have turned their attention to recreational profit opportunities. When Roosevelt visited Yellowstone in 1903, guest ranches provided city slickers with a chance to experience the Old West. As mentioned in chapter 2, in the late nineteenth century, long before environmentalism was fashionable, private entrepreneurs in Seattle were saving giant old-growth Douglas fir trees from sawyers. In Oregon, Sea Lion Caves were protected by an entrepreneur who capitalized on nature by protecting the sea lion habitat and providing viewing opportunities to tourists.

Today the entrepreneurial spirit lives on, despite that fact that it must compete against low-cost or even free recreational opportunities provided by local, state, and federal governments. Consider this short list of examples.

*Rock climbing*—When most people think of rock climbing, they think of Yosemite National Park where El Capitan, Half Dome, and Lost Arrow tower above the valley floor. To climb these faces, however, requires more than skill; it requires queuing to get your place to start a route and then racing to stay ahead of following climbers. Human feces are not uncommon on ledges, chalk used to keep hands dry marks routes, and sometimes equipment is left on the routes.

Although climbers may aspire to Yosemite, most climb smaller faces closer to home, many of which are found on private land. An excellent example is Laurel Knob, a 1,200-foot towering rock on forty-seven acres of private property surrounded by upscale home sites in North Carolina. The owner, Dr. Tom German of Charleston, South Carolina, was not fond of having climbers trespass on his property



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Traffic jam on the cables on Half Dome in Yosemite National Park

because climbers often placed permanent anchors and bolts on the rock and because liability for the private landowner can be scary.

The Carolina Climbing Coalition (CCC) came to the rescue. Led by John Myers, an avid rock climber and experienced conservationist, in 2006 the CCC negotiated with German to purchase the Laurel Knob property for \$5,000 per acre, substantially less than the going price (in the area of \$15,000 per acre). In seven months the CCC raised \$100,000 from people in thirty-five states and seven foreign countries. As a nonprofit organization, the CCC is hosting fund-raisers to pay off the \$150,000 loan. A member of the coalition, Harrison Shull, notes that “this [purchase] legitimizes groups like mountain bikers, paddlers and climbers. Not only do we know what we’re doing, but it proves we can make things happen” (quoted in Chavez 2006).

*Mountain biking*—Proving Shull’s point, some entrepreneurs are building mountain bike parks. Andy Myers, for example, recently converted a private landfill near the airport in Tempe, Arizona, to a slalom biking course. The route offers bikers a thrill, dropping 50 feet in 22 seconds. And rancher Paul Nolan’s friends convinced him to turn some of his horse trails into mountain biking trails. Now he rents out his ranch to the Houston Area Mountain Bike Riding Association for bike races. Fellow Texas rancher Trey Hill now supports himself full time with a bike resort that offers forty miles of trails, camping facilities, trailer hookups, and a restaurant. He also holds a renaissance festival each year and is working on hosting outdoor concerts. Typically, around 150 riders come every Saturday.

*Golf*—Hazards on fairways take on a new meaning when you realize that entrepreneurs are taking advantage of cheap land associated with Superfund sites. An example is the Old Works Golf Course built on the site of an old copper-smelting facility in Anaconda, Montana. The Anaconda Smelter, a company that extracted metals from ore mined in Butte, Montana, was shut down in 1980 after contaminating more than 1.5 million cubic yards of soil with arsenic, copper, lead, cadmium, and zinc (Superfund 1999). Anaconda residents were wor-



Photos courtesy of Old Works Golf Course.

Above is a stage in the cleanup work done on the site of an old copper-smelting facility in Anaconda, Montana. The site was redeveloped as the Old Works Golf Course, shown below.



ried that their home would turn into a ghost town without the hundreds of smelting jobs and with the severe environmental degradation.

Rather than succumbing to that fate, members of the community partnered with the EPA and the site owner, Atlantic Richfield Company (ARCO), to clean the site and allow redevelopment. The partnership searched for viable solutions that would attract visitors to Anaconda and preserve its historic significance. City Manager Gene Vuckovich suggested making a golf course, which was initially met with skepticism because it had never been done, but eventually his plan was adopted.

The county hired Jack Nicklaus to create a course that successfully incorporated unique historic characteristics from the smelting site, including filling the bunkers with harmless black “slag” that was similar to the by-product left behind by the smelter’s furnaces. The Old Works website flaunts that it has “been reborn on the site of Anaconda’s historic century old copper smelter. The first course ever built on a federal EPA superfund site.” *Golf Digest* praised the Old Works Golf Course as “One of America’s 100 Greatest Public Courses” (History 2007).

### **Who Owns Kermit?**

Just as no one washes a rental car, everyone takes care of cars they do own because they are valuable assets. Similarly, until we make the environment an asset, it will not receive the attention it deserves. When landowners benefit from preserving endangered species habitat, they preserve it; when stream owners benefit from improving water flows, they improve aquatic habitat; when fishers own fish or at least a share of the allowable catch, they better manage the fishery; and when producers are held accountable for their emissions, they reduce them.

Unfortunately, it is not always easy to make the environment an asset because doing so requires establishing property rights to environmental resources. A neighbor can hold you accountable for any

garbage you dump in her backyard, but it is harder for her to hold you accountable for your carbon emissions. It is relatively easy for a person bitten by your dog to hold you accountable for your dog's actions, but it is more difficult for a livestock owner to hold anyone accountable for wolf predation on his livestock or for brucellosis transmitted to his livestock by wild elk or bison.

Establishing property rights to the environment requires defining and enforcing property rights. Harken back to "those thrilling days of yesteryear," to take a quote from the *Lone Ranger*, to understand this process. On the western frontier, it was not always clear who owned the cattle, land, or water (see Anderson and Hill 2004). Cattlemen defined their rights by branding their cattle and registering their brands, first by brand books published by cattlemen's associations and later by registration with the state. In the absence of a formal process for claiming land in the public domain, cattlemen established customary grazing territories to prevent overgrazing of the commons and hired cowboys to enforce those rights until the invention of barbed wire made property boundaries clear. Water rights were established by diverting water, with priority in drought years given to the earliest diverters. Before those efforts, however, it would have been difficult to imagine how ownership would evolve. But through the imagination and entrepreneurship of people confronted with preventing the tragedy of the commons, property rights did evolve to make the West "not so wild."

Similarly, environmental entrepreneurs, or "enviropreneurs," are taming the environmental frontier. By changing laws to allow leasing and purchase of water for instream flows, water trusts are making stream flows and water quality assets. By establishing shares in a sustainable harvest of fish, anglers are taking the tragedy out of the fisheries commons. And by establishing tradable permits for emitting SO<sub>2</sub> into an airshed or nitrogen and phosphates into a watershed, policymakers have induced people to reduce emissions at a lower cost.

Such success stories seem simple in retrospect, just as do the prop-

erty rights solutions of the cattlemen. Solving ownership issues for large airsheds (e.g., the global atmosphere), however, are not so simple and may defy market solutions far into the future. If so, we can be sure that applying property rights and markets to the simple problems will leave more collective resources for solving the tough problems.