"Working Lands" Conservation Offers Path to Sustainable Land Use

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Introduction

Global environmentalism has created a demand for sustainable use of resources in all sectors of human enterprise, from energy to agriculture to forestry. Land itself is a resource that presents special challenges because, as Will Rogers so aptly put it, "The trouble with land is they're not making it anymore."

Sustainable land use requires that people be able to meet their basic needs for food, fiber, and shelter and have a good quality of life while also allowing essential ecosystem services such as soil formation, groundwater recharge, and climate regulation to occur. Considerable attention is given to the predominance of urban development and agriculture and how these land uses tend to interfere with ecosystem function. It is also important to consider, however, the degree to which our limited land areas are affected by efforts to conserve soil, water, wildlife habitat, and other natural resources. This report highlights recent trends toward the integration of resource conservation with other land uses and the benefits of a multi-functional approach to land use.

U.S. Conservation Policy

Over the past 25 years, land retirement has been a key component of U.S. conservation policy (though this approach dates back earlier to programs such as the Soil Bank created in 1956) (Cain and Lovejoy 2004). As of 2010, approximately 32 million acres of cropland were retired from production under the U.S. Department of Agriculture's (USDA's) Conservation Reserve Program (CRP).[1] Under the umbrella of "land retirement," however, is a mixture of efforts that can generally be categorized either as temporary set-aside programs (such as CRP) or approaches involving a permanent reduction of rights (typically relating to land development).

Conservation easements, for example, involve voluntary but permanent limitations on how a piece of private land gets used.[2] The limitations depend on the resource of interest and vary widely, ranging from restrictions on growing crops or raising livestock to prohibitions on altering vegetation or building structures. Conservation easements have become increasingly popular as a strategy for protecting land and are used by both non-profit groups and government agencies. According to the 2005 National Land Trust Census, the total acres conserved by local, state, and national land trusts doubled to 37 million acres over the preceding five years, and the pace of conservation by local and state land trusts more than tripled between successive five-year periods.[3]

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[1] Data obtained from http://www.apfo.usda.gov/Internet/FSA_File/historystate.xls. CRP was initiated in 1985 as a voluntary program for agricultural landowners. It provides annual rental payments and cost-share assistance under 10-15 year contracts for the establishment of vegetative covers that reduce soil erosion, improve water quality, and provide wildlife habitat.

[2] A conservation easement is a perpetual, legally binding agreement in which certain rights are sold or donated to a private organization (such as a land trust) or a public agency (http://www.nature.org/aboutus/howwework/conservationmethods/privatelands/conservationeasements/about/art14925.html). The U.S. Internal Revenue Service allows tax deductions for easement donations in the categories of public recreation and/or education, significant natural habitat, historic value, and open space for scenic enjoyment or pursuant to government policy (http://attra.ncat.org/attra-pub/coneasements.html#allowed).

[3] http://www.landtrustalliance.org/land-trusts/land-trust-census/2005-national-land-trust-census

The accelerating pace of land conservation in the U.S. has been lauded, and rightly so. It reflects increasing attention to the value and vulnerability of our natural resources and echoes the efforts begun over a century ago to protect critical resources with a national system of parks, forests, and reserves. There is a limit, however, to how much land can be "set aside" for resource protection, and the set-aside approach is unlikely to be sustainable in the long term. With a growing human population using a finite amount of land, we need to reconsider long-held beliefs about how land should be used and explore new approaches to using it more efficiently. In particular, an ecological approach, in which land is used for multiple functions at once, holds great promise.

Why should conservationists have a positive interest in farming? There are lots of reasons, but the plainest is: Conservationists eat. To be interested in food but not food production is clearly absurd. Urban conservationists may feel entitled to be unconcerned about food production because they are not farmers. But they can't be let off so easily, for they are all farming by proxy. They can eat only if land is farmed on their behalf by somebody somewhere in some fashion. If conservationists will attempt to resume responsibility for their need to eat, they will be led back fairly directly to all their previous concerns for the welfare of nature.

-Wendell Berry, 2002

Below we discuss some of the drawbacks of the set-aside approach, describe an ecological approach to resource conservation, and review federal and state programs that emphasize multi-functional land use. We also provide an international perspective that hints at recognition of the need for more sustainable land use worldwide.

In this report, we focus on wildlife (as opposed to other resources) as a conservation indicator because wildlife issues tend to be more visible. We emphasize agricultural land use because of its predominance in the American landscape (as of 2002, 20% of land cover in the U.S. was cropland, with another 26% classified as pasture and range[4]) and because of the long-standing push-pull between agriculture and conservation advocates. In 2002, farmer and writer Wendell Berry wrote an essay entitled, "Conservationist and Agrarian," in which he lamented the often-adversarial relationship between these two camps.[5] To be sure, CRP and other efforts have been building bridges between farmers and wildlife proponents (and other conservation advocates) for many years. But even closer collaboration will be needed in the future for an ecological approach to land use to succeed.

How Much Is Enough?

It is not surprising that land use has evolved into a segregated affair. The Industrial Revolution showed us that widgets could be made more efficiently using mass production and economies of scale. It seems logical, then, to assume that one type of food should be similarly produced on one piece of land (the larger, the better), that people should live where infrastructure can be concentrated, and so on. Certainly many factors have dictated the economic and demographic patterns that recent centuries have generated, but it is helpful to understand the mindset under which our current approach to land use is based.

[4] http://www.ers.usda.gov/Data/MajorLandUses/MLUsummarytables.pdf
[5] Essay reprinted in 2009 in "Bringing It To The Table: On Farming and Food," Counterpoint Press, Berkeley, CA.

As of the 2000 census, 80% of Americans were living in urban areas,[6] and in the same year two crops (corn and soybeans) made up approximately 42% of harvested cropland.[7] Urbanization and the industrialization of agriculture have led people to feel disconnected from food and its production, arguably the most direct link they had to nature for hundreds of years prior (Vileisis 2008). The number of Americans living on farms dropped from one in four in the 1930s to one in fifty today (Cain and Lovejoy 2004). In response to this disconnection from nature, and to some negative environmental consequences of the Industrial Revolution that were becoming apparent by the late nineteenth century, the conservation movement was born. Whether earlier conservationists were pragmatic utilitarian types (who argued resources should be conserved for their usefulness to people, in the vein of Theodore Roosevelt and Gifford Pinchot), or whether they fell into the moral and aesthetic preservation camp (led by John Muir, who advocated for nature's right to exist for its own sake), the approach was generally the same: set aside parks and reserves and accept that other land must be sacrificed to farms and cities.

Acknowledging that the U.S. and other industrialized nations have developed highly segregated patterns of land use as a result of historical factors is not intended to negate the set-aside approach or to minimize the value of those areas that have been set aside. Our national parks, forests, and reserves provide people with an essential opportunity to reconnect with nature while also protecting biodiversity and other resources. Retiring highly erodible land from agricultural production has had undeniably positive effects on soil conservation and water quality protection. Furthermore, certain land uses are clearly incompatible.

The separation of resource conservation from other types of land use has definite drawbacks, however, and these drawbacks intensify as competition among types of land use increases. The attempted separation tends to pit resource conservation against economic development, when most sustainability experts agree that these two efforts work best when integrated (Robinson 2004). Segregated land use also begs a central question: How much is enough? In other words, how much land do we need to set aside from farming and urban development in order to have the clean water, clean air, pollinators, and other ecosystem services on which human life depends?

The "how much is enough" question is a key tenet of conservation biology. Biologists working to protect biodiversity seek answers to this question in part because it allows us to measure the progress of efforts to stabilize populations of vulnerable species or ecosystems (Wilhere 2008). Researchers can estimate the amount of habitat needed for long-term persistence of a particular species, but the estimate is inherently based on a probability of persistence over a specified time period. Given the unpredictability of weather, disease, and other forces of nature, the survival of a species can never be guaranteed. In practice, then, "how much is enough" is a question of the level of risk that society will accept or tolerate (Wilhere 2008). Asking society to answer this question for a high number of imperiled species – many of which have competing needs – is a nearly impossible task. More importantly, if we assume the required habitat for these species is separate from other land uses, the answer to "how much is enough" is likely to be unachievable. In short, there are too many species – our own included – competing for a limited amount of land.

[6] http://www.census.gov/

[7] 73 million acres corn + 73 million acres soybean (from http://www.epa.gov/oecaagct/ag101/cropmajor.html) divided by 345 million acres (total cropland harvested in 2000, from source in footnote 4).

A debate between Ducks Unlimited and Delta Waterfowl over how to manage North America's waterfowl populations highlights why "How much is enough?" may be the wrong question (see Case Study sidebar). Whether a strategy of habitat conservation is used alone or in combination with more active management strategies, both approaches have assumed (at least until recently) that agriculture – the primary competitor for duck habitat – will be practiced as it is today into the foreseeable future. Below we explore the potential for an alternative framework to provide a new direction for minimizing competition among land uses.

Waterfowl Conservation: A Case Study in the "How Much Is Enough" Debate

Biologists working in the realm of waterfowl management in North America are familiar with a long-standing case of what may best be called sibling rivalry. Delta Waterfowl, a scientific research station and hunting advocacy group based in Canada, and Ducks Unlimited, Inc., a non-profit organization headquartered in the U.S. and dedicated to conserving, restoring, and managing wetlands and associated habitats for waterfowl, were both brought to life in the 1930s by sportsmen concerned about declining waterfowl numbers. While they share roots and an overall goal of working internationally to maintain the health of North America's waterfowl populations, their approaches to waterfowl conservation have some key differences.

Ducks Unlimited (DU) is focused on habitat conservation, with over 12 million acres conserved in the U.S., Canada, and Mexico as of 2010.[8] They use public and private partnerships to implement a variety of strategies, including research, monitoring, policy advocacy, habitat restoration, land acquisition, and easements in over 30 priority areas across North America.

Delta Waterfowl also works to conserve habitats important to waterfowl. They have been instrumental in Canadian efforts to launch a program called Alternative Land Use Services (ALUS), which provides farmers with incentives for adopting conservation practices. They also have a long-standing program known as Adopt-A-Pothole, in which landowners sign perpetual easements agreeing not to drain wetlands and associated uplands. Where Delta has diverged from DU is in the use of active management techniques such as hen houses, which are artificial structures that provide ducks with safe places to nest, and predator control, in which mammalian predators are removed from blocks of land with high densities of breeding waterfowl.

The Prairie Pothole Region, reprinted from http://www.npwrc.usgs.gov.

Delta's advocacy for predator management has led to an ongoing debate between the two organizations and within the broader waterfowl management community. DU contends that habitat alone is the key to healthy duck populations and that predator management programs are counterproductive, while Delta contends that habitat conservation needs to occur in combination with more active tools such as predator management.[9]

[8] http://www.ducks.org/about-du
[9] http://www.deltawaterfowl.org/media/magazine/archive/2003-04/ducksunlimited.php

In support of its approach, Delta cites a study showing that ducks typically fail to achieve population-expanding nest success unless 40 percent of the landscape has grass nesting cover.[10] Delta argues that the socio-political realities of rural economies mean that establishing grass cover in 40 percent of the Prairie Pothole Region (the so-called "duck factory" of North America, which, incidentally, overlaps with some of North America's most intensive row cropping) is a nearly impossible goal.[11]

Indeed, the idea of setting aside 40 percent, or 72 million acres, of the Prairie Pothole Region's 180 million acres is daunting at best. As mentioned above, only about 32 million acres of cropland were enrolled in CRP across the entire U.S. in 2010 (though the cumulative total since program inception in 1985 would be higher, given that some acres have come and gone from enrollment). Efforts to acquire land for conservation purposes or otherwise to retire it from agricultural production have in fact met with resistance – and sometimes even legal actions – from communities concerned about property tax loss and other economic or social implications of losing productive farmland (Blann 2006).

The debate between Delta and DU over how to manage North America's waterfowl populations is not a matter of right or wrong. Both groups are acting on the basis of subtle differences in organizational mission. But the case does highlight why "How much is enough?" may be the wrong question. *Setting aside* 40 percent of the Prairie Pothole Region (or a large percentage of any major region) may not be attainable, but *establishing grass cover* on the same area may be.

The key is in looking beyond the assumption that agricultural production will continue indefinitely in its current form, with large-scale row crop production predominating. In fact, both Delta (through its promotion of ALUS and other programs) and DU (by advocating for an increase in the degree to which practices such as haying and grazing are allowed on certain easement lands) are working toward a landscape where waterfowl can co-exist with crop and livestock production. What would efforts to conserve waterfowl – or any other resource – look like, if agriculture were increasingly approached as part of an ecological system?

Ecological Agriculture

The negative environmental consequences of farming with large monocultures and inputs of synthetic fertilizers and pesticides have been well established: loss of biodiversity, soil erosion, and impaired water quality including major pollutant flows to the Gulf of Mexico (Keeney and Kemp 2003). Adverse economic and social impacts of industrial agriculture are also well known, including lower financial returns to farmers and severe reductions in farmer numbers (NRCS 2001, Keeney and Kemp 2003).

A growing awareness of these negative effects, an increasing interest in local food economies, and other factors have been driving interest in alternative farming methods. One approach to the competition between urbanization and agriculture for land area is to adopt urban agriculture, a burgeoning movement but one we leave for a separate discussion. The other approach is to adapt the way agriculture in rural areas is practiced, so that resource conservation becomes an integral part of farming rather than a parallel but separate effort.

What we call "ecological agriculture" goes by a variety of names, ranging from "eco-friendly farming" to "sustainable agriculture" to "permaculture." We prefer "ecological agriculture" because it highlights the use of practices and systems that resemble as much as possible the

[10] http://www.deltawaterfowl.org/media/magazine/archive/2004-01/newdirection.php
[11] http://www.deltawaterfowl.org/media/magazine/archive/2003-03/perspectives.php

structure and function of natural ecosystems within their ecoregional context (Blann 2006). It's a classic case of "what's old is new again," or in the words of J. Russell Smith, the father of temperate-zone agroforestry, you've got to "fit the farming to the land."[5] For thousands of years, people adapted their production of food and fiber to local conditions, and farms were generally small and diversified (though certainly not all historic farming practices involved an ecological or sustainable approach).

At a time when row crops rule and the small family farm seems but a quaint collective memory, it can be hard to envision agriculture in a form other than what we know today. There is evidence, however, that a transition to ecological agriculture is underway, and that it can be both environmentally and economically sustainable – that food and fiber can be produced while providing healthy soil, clean water, wildlife habitat, and a good quality of life for farmers and other rural residents (Soule and Piper 1992, Jackson and Jackson 2002, Pretty 2006). The shifts are apparent even from a demographic perspective; the number of farms is increasing for the first time in over a century, and farms are now operated by younger people and more minorities and women, while farms themselves are becoming smaller (in terms of annual sales) and more diverse.[12]

What ecological agriculture looks like in practice depends largely on the context. In ecoregions that were historically dominated by prairies or prairie-forest transition zones, for example, integrating perennial grasses and rotational grazing by domestic livestock allows agriculture to mimic the structure and function of the natural ecosystem (Blann 2006). Agroforestry, including maple syrup production and fruit and nut crops, may have value in historically forested ecoregions. Conserving wetlands wherever they remain has well-established flood control benefits but becomes especially important where wetland habitats once dominated the landscape and are critical to biodiversity, as in the Prairie Pothole Region (Blann 2006).

The environmental and economic benefits that can be attained under an ecological approach to agriculture will vary among and even within regions, as suggested by a study of two Minnesota watersheds. Boody et al. (2005) examined four scenarios developed in conjunction with watershed residents, in which each successive scenario built upon current agricultural trends to incorporate conservation practices, wetland restoration and increased crop diversity, and increased vegetative cover. Overall, environmental benefits included improved water quality, healthier fish assemblages, increased carbon sequestration, and decreased greenhouse gas emissions. The economic benefits included social capital formation, greater farm profitability, and avoided costs due to reduced sedimentation and flooding. There were slight differences in benefits between the two watersheds depending on the scenario. Boody et al. (2005) suggested that policies emphasizing the multiple functions of agriculture could reorient taxpayer-based farm payments to support agricultural diversification and enhance nonmarket ecosystem services instead of commodity production while also being adaptable to local conditions.

[12] http://www.sare.org/about/census_sust_ag.shtml

"Working Lands" Conservation

As implied earlier, our discussion on the benefits of ecological agriculture and our references to policies that promote it are not intended to overlook the conservation practices already widely implemented by farmers and the extensive programs already in place. Between 1982 and 1997 soil erosion declined by nearly 40%, wetland restoration exceeded wetland losses, and the increased availability of permanent vegetative cover benefitted wildlife, largely as a result of CRP (Claassen et al. 1991). Reynolds et al. (2001). For example, researchers estimated that CRP land within their study area in the Prairie Pothole Region contributed 12.4 million ducks to the fall migratory population between 1992 and 1997. This number of recruits from the nesting season was equivalent to 33% of the harvest of the five species addressed during the study period (Reynolds 2005).

*Broadly speaking, **working lands** are those lands used for crop, timber, and/or livestock production. Some programs use more specific definitions for "working lands" than others. As an example, the U.S. Conservation Stewardship Program has a relatively comprehensive list of conservation practices that fall into the following categories:*

- *air quality*
- *renewable energy/energy conservation*
- *plant/animal habitat and diversity*
- *soil quality/conservation*
- *water quality/quantity*

These practices are eligible to be implemented on the following types of land:

- *cropland*
- *grassland*
- *prairie land*
- *improved pastureland*
- *rangeland*
- *nonindustrial private forest lands*

Further details on these examples of working lands conservation practices are available at http://www.nrcs.usda.gov/programs/new_csp/csp.html#jobs.

It is noteworthy, however, that between 1986 and 2002, approximately 70% of federal agricultural conservation expenditures in the U.S. went toward land retirement programs (Claassen et al. 2001). A relatively small proportion of funding was used to promote conservation on "working lands." Beginning in 2002, however, a shift was underway in U.S. agricultural policy (Keeney and Kemp 2003). Below we describe this shift and other associated trends in how conservation dollars are being allocated in relation to agricultural production.

Under the 2002 Farm Bill,[13] conservation spending nearly doubled and a holistic new initiative called the Conservation Security Program (CSP) was launched (Keeney and Kemp 2003). In the 2008 Farm Bill,[14] the program was re-named the Conservation Stewardship Program and expanded to nationwide coverage with continuous sign-up.[15] The CSP is innovative in that it provides incentives to farmers for integrating environmentally beneficial practices into economic production activities, rather than for retiring land from production. Thus CSP is a "working lands" conservation program, one that rewards farmers who produce food and fiber while also providing society with the benefits of improved surface water quality, groundwater protection, healthy soil, carbon sequestration, enhanced biodiversity, and other ecosystem services.

[13] Formally known as the Farm Security and Rural Investment Act of 2002 (http://www.ers.usda.gov/Publications/AP/AP022/).
[14] Formally known as the Food, Conservation, and Energy Act of 2008 (http://www.ers.usda.gov/FarmBill/2008/).
[15] http://www.ers.usda.gov/FarmBill/2008/Titles/TitleIIConservation.htm#working

Other countries are engaging in similar efforts. Canada's Alternative Land Use Services (ALUS) program is a voluntary program that was first adopted in Prince Edward Island in 2008.[16] Although taking sensitive land out of production is an eligible activity within ALUS, other practices integrate resource conservation with actively farmed land. Farmers receive annual incentive payments for the practices they have implemented. The program is being piloted in other provinces, including Manitoba and Ontario.[17] Across the Atlantic, an organization called Natural England champions multi-functional land use in the United Kingdom, in part through a program called Environmental Stewardship.[18] Farmers can choose from among 80 management options that promote conservation on working lands, thereby receiving periodic payments for the ecosystem services they provide on their land during five-year agreements.

Placing a value on ecosystem services is at the heart of working lands conservation, and there is a trend toward compensating farmers and other landowners for the provision of ecosystem services on various fronts. The Millennium Ecosystem Assessment was initiated by the United Nations in 2000 in order to assess the consequences of ecosystem change for human well-being and to establish a scientific basis for actions needed to enhance the conservation and sustainable use of ecosystems (MEA 2005). In the U.S., the Forest Service is exploring national opportunities to advance markets and payments for ecosystem services,[19] while its parent agency, the USDA, recently created the Office of Environmental Markets to catalyze the development of these markets.[20] In April 2010, the U.S. Secretary of Agriculture testified before the House Committee on Agriculture and outlined five key areas of emphasis for the 2012 Farm Bill, most of which will impact working lands conservation efforts:

Ecosystem services *include production of food, fiber, and timber; regulation of climate and water flow; supporting services such as soil formation and nutrient cycling; and aesthetic and spiritual benefits (MEA 2005).*

1. Broadband Internet Access,
2. Renewable Energy and Bio-fuels,
3. Regional Food Systems and Supply Chains,
4. Forest Restoration and Private Land Conservation, and
5. Ecosystem Market Incentives.

Although our discussion has focused on agricultural production and on lands that were historically prairie, efforts to promote conservation on working lands are occurring in other sectors as well. The Forest Legacy Program, for example, is a widely used program for protecting working forests in the U.S. with conservation easements. It was established in 1990 and is administered by the USDA in collaboration with individual states. The program seeks to prevent conversion of forests for development while allowing forests to continue providing forest products as well as water quality, wildlife habitat, and recreational benefits (Fernholz et al. 2006).

[16] http://www.gov.pe.ca/growingforward/index.php3?number=1024407&lang=E
[17] http://www.norfolkalus.com/
[18] http://www.naturalengland.gov.uk/ourwork/farming/funding/es/default.aspx
[19] http://www.fs.fed.us/ecosystemservices/
[20] http://www.fs.fed.us/ecosystemservices/OEM/index.shtml

State-level programs are also emerging. In 2005, the Minnesota Department of Natural Resources established a Working Lands Initiative in partnership with the U.S. Fish and Wildlife Service, Ducks Unlimited, the Nature Conservancy, Pheasants Forever, and the Minnesota Waterfowl Association.[21] The partnership seeks to identify, map, and protect the most productive wetland areas in the state's portion of the Prairie Pothole Region using voluntary, non-regulatory, incentive-based programs compatible with agriculture. Wisconsin signed three new programs into law in 2009 under a Working Lands Initiative.[22] The purpose of the initiative is to offer farmers a more secure future by protecting farmland from urban sprawl and conflicting land uses and by enhancing income tax credits in return for keeping land in agricultural use and implementing conservation practices. One of Wisconsin's three programs is called the Purchase of Agricultural Conservation Easements (PACE) program. Like other similar programs, PACE is intended to prevent non-agricultural development, but unlike many conservation easements, the landowner is allowed to continue farming the land. Thus the Wisconsin program is using easements (in addition to certain income tax credits) to promote land use for farming and resource conservation at the same time.

Global Perspective

We have been referring to the concept of multi-functionality in land use rather generically, when in fact the term carries with it a history that is important to understand. The concept of multi-functional agriculture, in particular, originated in the context of international trade (DeVries 2000). From an international perspective, multi-functional agriculture encompasses not only ecosystem services in addition to food and fiber production but also rural community values, food security, cultural heritage, and farm animal welfare. The concept's roots have given it its share of controversy, namely as a point of contention in world trade negotiations. Some countries have viewed multi-functional agriculture as a route for maintaining policies that support farmers and rural communities, while others have seen it as a protectionist mechanism (DeVries 2000).

This controversy notwithstanding, agriculture is undeniably and fundamentally a multi-functional enterprise, in that it has economic, ecological, and social impacts regardless of how it is practiced or shaped by policies. Paying attention to this multi-functionality will improve the sustainability of agriculture in the future (Pretty 2008). While the technologies and social processes for expanding sustainable agricultural systems are becoming established, the policies needed to support such systems are still not well understood. Pretty (2008) reported that only three countries (Bhutan, Cuba, and Switzerland) had adopted explicit national support for sustainable agriculture, though several other nations (Bolivia, Brazil, Burkina Faso, China, India, Indonesia, Kenya, Philippines, Sri Lanka, and Sweden) offered examples of regional support. Given the central nature of agricultural production to human survival, these international policies are likely to have important implications for the sustainability of land use overall.

[21] http://www.dnr.state.mn.us/workinglands/index.html
[22] http://datcp.wi.gov/Environment/Working_Lands_Initiative/index.aspx

Conclusion

There is evidence of a growing trend away from the approach of setting aside land for resource conservation and toward the integration of conservation strategies on working lands. Given that the human population will continue to grow and place competing demands on our limited land areas, a more efficient, multi-functional approach to land use is needed to sustain people and ecosystems into the future. Numerous challenges lie ahead, in terms of learning how to address the inherent regional differences in ecological agriculture and developing programs and policies that will facilitate multi-functional land use. A foundation for meeting these challenges is already in place. Stakeholders will need to act multi-functionally themselves – incorporating the perspectives of conservationists, farmers, foresters, economists, policymakers, and others – as the U.S. prepares for debate over the 2012 Farm Bill and other efforts that impact the future of land use.

The two sides need to enter into one *conversation. Conservationists have got to know and deal competently with the methods and economics of land use. Land users have got to recognize the urgency, even the economic urgency, of the requirements of conservation.*

-Wendell Berry, 2002

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