

Markets, by definition can only reveal preferences for market goods, yet many of the goods and services that enhance human welfare are nonmarket goods.

-Herman Daly and Joshua Farley, 2003¹

Grassland Birds and Dairy Farming in Vermont: Seeking to Value a Nonmarket Good



Regan Brooks, Ecological Economic Theory,
Professor Jon Erickson, Fall 2003

¹ Daly, Herman and J. Farley. 2003. *Ecological Economics: Principles and Applications*. Washington, DC: Island Press.

² Photo credits: Vermont farm: Vance, www.scenicphotographsbyvance.com/NewEnglandFall.htm, savannah sparrow: www.conservation.state.mo.us/nathis/birds/sparrows/, bobolink: Michael McDowell, www.mailbag.com/users/maverick/birdBOBO.html, and grasshopper sparrow: Brad Sillasen, www.rain.org/~ebird/html/grasshopper.html

Introduction:

In his 2000 draft of the Partners in Flight (PIF) Landbird Conservation Plan for the St. Lawrence Plain, Kenneth Rosenberg states that, “bird conservation efforts [within the region] are generally compatible with local economic objectives and receive support from private landowners and local industry.”³ This paper aims to examine this assertion as applied to dairy farming and the maintenance of grassland bird habitat in Vermont. The relationship between grassland birds and dairy farming as well as the origins of habitat loss will be outlined. Additionally, I will characterize the conservation actors (those who are interested in grassland birds as a resource), the nature of grassland birds as a resource, and the economic context in which dairy farmers operate. Finally, existing and potential policy options will be explored and evaluated as I seek to answer the question: is there an ecological economic solution to this problem?

Grassland Birds and Dairy Farming:

History of the relationship and origins of the conflict.

Prior to European settlement and large-scale farming of the North American continent, grassland birds bred primarily in the great plains of the Midwest. With the arrival of the European settler and the subsequent increase in row cropping the birds experienced a decline in great plains habitat (as the birds could not nest in the row crops). However, that habitat decline was met by an increase in habitat in formerly forested regions, such as the Northeast, where forest was cleared for agriculture. Additionally, row crops (in the pre-herbicide era) may have provided additional forage opportunities for birds nesting in

³ Rosenberg, Kenneth V. Draft, 2000. *Partners in Flight Bird Conservation Plan for The St. Lawrence Plain, Physiographic Area 18*. Ithaca, NY: Cornell Laboratory of Ornithology.
Web address: http://www.blm.gov/wildlife/plan/pl_18_10.pdf

adjacent hayfields and pasture. Though late nesting birds ran the risk of losing their nests to mowing of hay fields, many nests had fledged before farmers began their first mowing (usually in early July).⁴

However, in the latter part of the 20th century, advances in available technology and knowledge began to undermine this relationship. In the 1960s Dale Smith, a researcher at the University of Wisconsin made a discovery that was to change haying practices and increase productivity on dairy farms.⁵ Smith's finding, that late-mowed alfalfa was significantly lower in protein than early-mowed hay, was championed by university extension services and promoted to farmers.^{6,7} By mowing earlier and collecting higher protein hay, farmers could increase their milk yield.⁸ The practice was widely embraced and remains the dominant practice today. A recent survey of farmers in Vermont's Champlain Valley indicates that 71% take more cuts today than they did 30 years ago, while 72% make their first cut earlier in the season.⁹

As grassland birds have lost their nesting habitat to early mowing, they have also fallen prey to two technological advances: new mowing machinery and increasingly sophisticated pesticides. On the one hand, new mowing technology allowed farmers to ensure faster drying by crushing (and not just cutting down) hay as they mowed it.

⁴ Bill Murphy, University of Vermont, Plant and Soil Science, personal communication.

⁵ Smith, Dale W. 1962. *Forage Management in the North*. Dubuque, IA: W. C. Brown Book Company.

⁶ Bill Murphy, pers. com.

⁷ Interestingly, Smith went on to win the National Forage and Grassland Council's 1975 "Medallion Award" for "outstanding contributions on behalf of forages and grasslands." (American Forage and Grassland Council web site. Retrieved: December 18, 2003. Web address: <http://www.afgc.org/index.html>)

⁸ Sidney Bosworth, University of Vermont, Plant and Soil Science, personal communication.

⁹ Troy, A. R., A.M. Strong, S.C. Bosworth, T.M. Donovan, and N.J. Buckley. 2003. Attitudes of dairy farmers regarding adoption of management practices for grassland songbirds. Draft document.

Adoption of this practice further ensured the destruction of any nestlings or eggs that may have previously escaped the mowing blades. On the other hand, advances in herbicide technology allowed farmers to control the weeds under their row crops, weeds that may have previously offered additional forage for birds.

Technological developments, economic growth, and the depletion of a “natural” resource:

With grassland birds and their habitat needs unvalued by the market, their decline remains an economic externality, like air pollution, whose cost is not borne by those who produce it. This story --the story of grassland birds-- is, in many ways, a typical story of market failure. As such, its solution requires means that will address the failure of the market. To devise such a solution, we must develop a thorough understanding of the nature of the resource and the economic context in which it is becoming depleted.

The first step towards understanding the story of grassland birds in Vermont involves a recognition of the ways in which this “typical story of market failure” is somewhat atypical. Primarily, the story is atypical because grassland birds are not a “typical” natural resource. Within the context of Vermont’s natural landscape, grassland birds’ candidacy for the title “natural resource” remains debatable. If we define natural resources as “any parts of the natural environment that are used to promote the welfare of people or other species” we must recognize that the habitat of grassland birds, and thus grassland birds themselves, are not (on any significant scale) parts of the *natural environment* of Vermont.¹⁰ In their book *Wetlands, Woodlands, Wildlands: A Guide to the Natural Communities of Vermont*, ecologists Elizabeth Thompson and Eric Sorenson

¹⁰ Raven, Peter H. and L.R. Berg. 2001. *Environment*. Fort Worth, TX:Harcourt College Publishers

do not identify any grasslands among the natural communities of Vermont; unlike most of the non-human species which conservation organizations are working to protect, the grassland birds of Vermont live in largely man-made habitat.¹¹

This twist, the “unnatural-ness” of grassland bird habitat, makes for an interesting relationship between the resource (grassland birds) and the economic subsystem (dairy farming). Namely, the resource *depends* on the economic subsystem for its renewal. Not only is the dairy farming economy responsible for the current decline in available grassland bird nesting habitat, but it is also largely responsible for the creation and maintenance of such habitat. While the decline in available nesting habitat can partially be blamed on increasing productivity (associated with economic growth), an overall decrease in the percent of Vermont land in agriculture has also contributed to this decline. Available habitat has been lost, therefore, not only because farming practices have increased in intensity but also because, numbers of farms have gone out of business, leaving the land to return to its natural, forested state (Figure 1). The story of grassland birds and dairy farming in Vermont is a story of co-evolution. While this co-evolution

Figure 1:

Landscape Change in Vermont: the past 250 years

With the arrival of European settlers in the mid-1700's, Vermont's landscape began its transition from extensive forest to extensive pasture. By 1830 more than 75% of New England had been cleared of trees.

In the 1850's farmers began to abandon their farms, leaving the rockier, less economically viable lands first.

Today the pattern has reversed and Vermont is now 75% forested. (From: Johnson, Charles W. 1988. *The Nature of Vermont*. Hanover, NH: University Press of New England.

¹¹ Thompson, Elizabeth, E. R. Sorensen, L. Davidson, B. Brigham, and D. McElwain. 2000. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont*. Hanover, NH: University Press of New England.

holds promise for collaboration between agriculture and conservation, finding the means to help farms both create and maintain habitat will remain challenging.

Interested Actors:

Who cares about grassland birds and why?

Despite their “non-natural” status in Vermont (and other formerly forested areas where they now occur) the status of grassland birds remains a concern for several conservation organizations. According to Breeding Bird Survey data, 13 of 25 North American Grassland Bird species have experienced significant declines between 1969 and 1996. 9 other grassland bird species have exhibited non-significant trend estimates and only 3 species have experienced significant increases in population; no other suite of bird species exhibits such a small percentage of increases during this time period.¹² Within Vermont, the trends have been similar to those observed nationally.

Recognizing that significant proportions of some species’ populations now breed in the agricultural habitat of formerly forested areas, concerned organizations such as Partners in Flight (PIF), the North American Bird Conservation Initiative (NABCI), and The Audubon Society have recognized grassland birds as “responsibility species” for the region (species with significant portions of their continental population within the area).¹³ These organizations, as well as The Nature Conservancy (TNC), make their commitment evident in their conservation plans for the region.¹⁴ The habitat needs of the grassland

¹² Peterjohn, B. G., and J. R. Sauer. 1999. Population status of North American grassland birds from the North American Breeding Bird Survey. *In* P. D. Vickery and J. R. Herkert, eds. Ecology and conservation of grassland birds of the western hemisphere. *Studies in Avian Biology*. 19:27-44.

¹³ Bobolinks, for example are estimated to have 18% of their entire breeding population within Vermont’s Champlain Valley. (Rosenberg, K.V. Draft, 2000. Partners in Flight Bird Conservation Plan for The St. Lawrence Plain, Physiographic Area 18. Cornell Laboratory of Ornithology, Ithaca, New York.)

¹⁴ It should be noted that The Nature Conservancy (TNC) is particularly aware of the challenge posed by wanting to conserve a resource whose habitat is not natural. Although they have included grassland birds as a conservation target

birds recognized by these organizations (and their rank by state and North American Bird Conservation Initiative standards) are shown in Table 1.

Table 1: “Priority” grassland birds which breed in Vermont¹⁵.

“Priority” Grassland Bird Species	Habitat needs	Tolerance of non-intensive grazing:	NABCI Rank, State E/T rank ¹⁶
Upland Sandpiper	Large fields (pasture, upland meadow, old field)	Moderate	A, T (proposed E)
Short-eared owl	Emergent marsh and grassland	High	A (note: last observed breeding in 1981)
Bobolink	Old hayfields, pastures, wet meadow, upland meadow	Moderate	A
Sedge wren	Emergent marsh/grassland	Unknown	B, E (note: last observed in 2003, breeding status unknown)
Northern harrier	Mixture of large fields, emergent marsh, pasture, old field	Moderate to high	B
Grasshopper Sparrow	Upland meadow, pasture, old field	Moderate	B, T
American Bittern	Emergent marsh/grassland	Not tolerant	A

Grassland Birds as a Resource:

What services do they provide? Are they a public good?

From the perspective of ecological economics, grassland birds can be characterized as a fund-service resource.¹⁷ The fund-services provided by grassland birds include nature viewing opportunities and pest management, as well as other potential roles they play within their ecosystems.¹⁸ The strong interest of conservation organizations --as

in their eco-regional plan for the area, TNC has also expressed significant commitment to restoration of the natural communities in current agricultural areas. (Elizabeth Thompson, Ecologist and current consultant with Vermont TNC and Ana Ruesink, former Director of Science, Vermont TNC, personal communication).

¹⁵ (As identified by the North American Bird Conservation Initiative Bird Conservation Region (BCR) 13 workshop, Montreal, November 2001.) From Puryear, Kristen. 2003. Draft of M.S. thesis. Department of Botany, University of Vermont.

¹⁶ North American Bird Conservation Initiative (NABCI) ranks explained:

Tier A= Continental/Regional priority, likely to be rare/declining, subject to significant threats, with high area importance within BCR 13.

Tier B= Jurisdictional priority and/or representative of habitat suites throughout the region.

State of Vermont ranks explained (from Vermont Non-game and Natural Heritage Program):

E: Endangered: in immediate danger of becoming extirpated in the state.

T: Threatened: with high possibility of becoming endangered in the near future.

¹⁷ Daly, Herman and J. Farley. 2003. *Ecological Economics: Principles and Applications*. Washington, DC: Island Press. (According to Economists Herman Daly and Joshua Farley, fund-service resources are those resources that cannot be stockpiled and cannot be used up (only worn out). “Stock-flow” on the other hand resources are resources that such as food or fuel that can be stockpiled and can be used up.)

¹⁸ Troy et al. 2003 notes that while there is much literature on grassland birds as agricultural pests, there is, as yet, little literature on their role in managing (through consumption) other agricultural pests.

demonstrated by the significant devotion of financial and human resources to the issue--- suggests that while grassland birds remain a non-market good, significant (and active) portions of society place value on them as a fund-service resource.

Grassland birds can be further characterized as non-rival goods.¹⁹ Presumably, my observation of them does not interfere with your observation of them and, hopefully, neither of our observations interferes with their work on pest management or other ecosystem services. Because grassland birds can occur on private property, access to their nature-viewing service may be limited. However, benefits from additional ecosystem services provided (such as pest management) cannot be limited by the private property owners on whose land the birds may breed. Therefore, they can also be characterized as “non-excludable.”²⁰ The ecological economists Herman Daly and Joshua Farley consider “non-rival” and “non-excludable,” to be the two main characteristics of what they call “pure public goods”.²¹ Therefore, we can categorize grassland birds as a public good: they are both non-rival and non-excludable.

While this point will receive additional attention later, it is important to note here that the dairy farms of Vermont can also be categorized as fund-service resources which provide public goods, some of which are external to the market. The continued existence of Vermont dairy farms provides the benefits of local food production (without which additional externalities associated with transportation would accumulate). Additionally,

¹⁹ The term “rival” refers to the extent to which one person’s use of the good affects another person’s use.

²⁰ Meaning that one’s access to the good (or services provided by the good) cannot be limited by others.

²¹ Daly, Herman and J. Farley. 2003. *Ecological Economics: Principles and Applications*. Washington, DC: Island Press.

the dairy farms contribute to the Vermont tourism economy by maintaining the landscape in a (perhaps idealized) widely appealing pastoral condition. Maintenance of this image also helps support the “Vermont brand,” value added cheeses and other specialty goods which capitalize on the positive associations invokes by their Vermont origins. Although such services support economic endeavors, they are not always, themselves valued by the market. One notable organization, the Vermont Land Trust, has made a significant strides towards remunerating farmers for these nonmarket services by offering them payments (easements) in exchange for development rights on their farmland. However, most of these services remain outside the market.

***Dairy Farming in Vermont:
What is the economic context?***

Like grassland birds, dairy farms are also experiencing a decline. From 1993 to 1998 the total number of dairy farms in the United States fell almost 26 percent - from 157,000 to 116,000.²² In Vermont, where dairy farming forms the bulk of the state’s agricultural economy, such declines can leave a large impact. Though Vermont ranks only 14th nationally in milk production, it ranks first in percentage of state agricultural income dependent on dairy. In 1998, over 74 percent of Vermont’s agricultural revenue was from dairy farming; by 2003 that number had fallen to 72 percent.²³

Another current trend in Vermont dairy is increasing farm sizes and farm production. In order to compete in a highly productive market, many small farmers in the Northeast

²² Statement by Congressman Sanders on the Northeast Dairy Compact, Sept. 21, 1999. ONLINE. Congressman Bernie Sanders. Available: <http://www.house.gov/bernie/statements/1999-09-21-dairycompact.html> [7 Dec. 2003]

²³ United States Department of Agriculture National Agricultural Statistics Service. 1998. Milk, cows and production: final estimates, 1993-1997. Statistical Bulletin Number 952. Washington, D.C. and: Vermont State Fact Sheet from USDA/ERS. ONLINE. 2003. U.S. Department of Agriculture. Available: <http://www.ers.usda.gov/StateFacts/VT.htm> [15 Dec. 2003].

have been increasing herd size as an effort to reduce costs through economies of scale²⁴. From 1950 to 1990, the average number of cows on Vermont dairy farms grew from 26 to 69.²⁵ By 1997 the average number rose to 87.²⁶ Additionally, the production of milk per cow has also risen slightly. While the definitive cause of this rise remains unknown, it is possible that the Northeast Regional Dairy Compact (minimum price fixing that began in July of 1997) has inadvertently led to increases in production (per cow). During the first year of minimum price regulation, overall production (in the Northeast) increased by 1.3%. It is possible that minimum price regulation, by ensuring reduced price risk for farmers encouraged increased production.²⁷

The externalities associated with increasing productivity can vary depending on the management of the farm. Vermont farms (as well as others through North America) employ one of three main management methods:

- Confinement (in which cows are never put out to graze and all forage is purchased or mechanically harvested by the farmer.)
- Traditional (in which <75% daily forage is from grazing on pasture.)
- And Management Intensive Grazing (in which $\geq 75\%$ daily forage is from pasture and pasture is moved within 24 hours when adequate forage is available.

Management Intensive Grazing often involves “clipping” (mowing) of a “past peak” pasture to stimulate new, higher nutrient grass growth.).

²⁴ Rust, J.W., C.C. Scheaffer, V.R. Eidman, R.D. Moon, and R.D. Mathison. 1995. Intensive rotational grazing for dairy cattle feeding. *American Journal of Alternative Agriculture*. 10: 147-151.

²⁵ Vermont Department of Agriculture, Dairy Division. Montpelier, VT.

²⁶ Winsteen, J.R., R.L. Parsons, and G.D. Hanson. *Agricultural and Resource Economics Review*. 2000. 29: 220-228.

²⁷ Nicholson, C.F., B. Resosudarmo, and R. Wachernagel. 2001. Impacts of the Northeast Interstate Dairy Compact on Northeast milk supply. *Agricultural and Resource Economics Review*. 30: 93-103.

A 1996 survey of 1,837 dairy farmers in Vermont and Pennsylvania yielded 1,098 responses. Of those, 30% used confinement feeding, 58% used traditional feeding, 12% used management intensive grazing (Winsteen, Parsons, and Hanson 2000). On a confinement or a traditional farm, an increase in productivity likely means an increase in mowing intensity as well as an increase in fossil fuel consumption associated with the production and transfer of high nutrient, low starch feeds such as cotton seed.²⁸ On a management intensive grazing farm, an increase in productivity means increased grazing pressure on their fields and an associated loss in available nesting habitat.

***Conservation ends and the three pillars of ecological economics:
Where are we trying to go?***

Before examining the policy options relevant to grassland bird conservation I would like to discuss the possible ends that these policy options might seek to achieve. While the specific objectives of interested conservation organizations might entail specific numbers of breeding pairs or acres conserved, I would argue that, given the role of economics in the protection (and destruction) of biodiversity long-term solutions that address (rather than displace) problems must be considered.²⁹

In particular, the three pillars of ecological economics (just distribution, sustainable scale and efficient allocation) offer a well defined set of goals towards which policy can be

²⁸ Jim Miller, USDA Economic Research Service, Personal Communication, December 2003. Mr. Miller noted that because cows could only tolerate so much starch --without getting a belly ache-- farmers seek feeds that are high in nutrients and low in starch. As a result of the growing requirements of cottonseed, it can only grow in warm climates, there has been an increase in the transportation of feed as cows everywhere consume a food that is only produced in a few locations. (Need additional sources to confirm/expand.)

²⁹ Czech, B. and P.R. Krausman. 1997. Distribution and Causation of Species Endangerment in the United States. *Science*. 227:1116.

targeted. Additionally these goals offer a benchmark against which the current system can be evaluated. For example, does the current economic subsystem of Vermont dairy meet these goals? And, if so, to what extent?

While thinking in these terms may seem out of sync, or “out of culture,” for conservation organizations interested in habitat maintenance, evidence suggests otherwise. Already, the Audubon Society is politically active in campaigns for global family planning, recognizing that population, consumption, and the destruction of biological resources are inextricably linked. How far away is an adoption of the goals of ecological economics and a commitment to their advancement? While the goals of ecological economics (in particular, just distribution) may threaten the very economic structure which supports these organizations, failure to recognize the economic roots of our ecological crises cannot lead to long-term solutions.³⁰ For the purposes of this paper, I will assume that the conservation organizations interested in grassland birds will, when selecting from available policy options, place high priority on long-term solutions that promote and support healthy ecosystems.

Policy Options:

What specific tools are available?

Policy options for the promotion of grassland bird habitat include the purchase of property and/or easements by conservation organizations as well as two 2002 Farm Bill

³⁰ The reliance of many non-profit organization on wealthy donors for support may undermine these organizations ability to support the three pillars of ecological economics. The notion of just distribution could prove threatening to the wealthy few who financially support these organizations.

programs: the Grassland Reserve Program (GRP) and the Wildlife Habitat Incentives Program (WHIP)³¹.

While the purchase of land by conservation organizations (for the purpose of managing the land exclusively for grassland birds) represents a solution, it is a limited solution only. Peter Senge, in his book *The Fifth Discipline*, suggests that, often, “today’s problems come from yesterday’s ‘solutions’”.³² Will purchasing land from dairy farms (to manage for grassland birds) create problems tomorrow? If another Vermont dairy goes out of business, where will that loss of production be met?³³ Will farms elsewhere increase in productivity? What externalities will be associated with the displacement of the dairy in question?

Advocates of such a solution (purchasing former dairy land to be managed for grassland birds) may reasonably argue that it is the economic hardship of dairy farming, not conservation pressure, which drives farms off the land. However, this argument ignores the potential role such organizations could play in alleviating the economic pressures on farms. By compensating for the failure of the market to recognize the value of grassland

³¹ Both programs are federally funded and are administered by the Natural resource Conservation Service (NRCS) (formerly the Soil Conservation Service) a division of the U.S. Department of Agriculture (USDA).

³² Senge, Peter. 1990. *The Fifth Discipline*. New York, NY: Currecy Doubleday. (From: Erickson, Jon. 2003. (Draft workbook) *Chapter 1: Introduction*, publisher unknown.)

³³ This concern is most salient if the dairy consumption needs of Vermont would cease to be met by its dairy production. More information is needed to determine how dairy production currently corresponds with dairy consumption in Vermont.

birds, conservation organizations may be able to both support small, local agriculture while also maintaining grassland bird habitat.³⁴

The two Farm Bill programs mentioned above represent partial attempts to meet the multiple goals of habitat conservation and economic support of farmers. By offering payments to farmers who engage in alternative management practices such as grazing and limited mowing (GRP) or limited mowing without grazing (WHIP), these programs act as Pigovian subsidies.³⁵ But can these Pigovian subsidies work as they are intended to? Can they compensate for the market failure (lack of value afforded to grassland birds and their habitat) by successfully enticing farmers to engage in practices that protect grassland bird habitat?

While they hold great promise, these two programs have dramatic practical drawbacks as solutions. The newly established (June 2003) Grassland Reserve Program offers an exciting opportunity to engage farmers in less fuel intensive practices, potentially lower their capital costs, and decrease the frequency of mowing and the subsequent impact it has on grassland birds.³⁶ Offering rental payments or easements the program pays

³⁴ It should be noted that Daly and Farley, in outlining the policy design principles of ecological economics, suggest that economic policy must always have more than one goal (if it is to meet the objective of a just, sustainable solution). Purchasing land for the exclusive management of grassland birds has only one goal. If however, it was determined that a certain proportion of such land was essential for the maintenance of grassland birds elsewhere on the landscape, this means (purchasing land for exclusive management) could meet the principle (and hopefully the objectives of ecological economics) if combined with other strategies to meet multiple goals.

³⁵ Pigovian subsidies are subsidies designed to address a market failure. See: Daly, Herman and J. Farley. 2003. *Ecological Economics: Principles and Applications*. Washington, DC: Island Press.

³⁶ Troy, A. R., A.M. Strong, S.C. Bosworth, T.M. Donovan, and N.J. Buckley. 2003. Attitudes of dairy farmers regarding adoption of management practices for grassland songbirds. Draft document.

farmers in exchange for limitations on farmers mowing schedules.^{37, 38} However, it must be noted that farmers entering into this program have no restrictions on use of the grassland for grazing. While officials at the Vermont offices of the Natural Resource Conservation Service express confidence that many farmers will sign up for the program, Jim Miller, of the USDA Economic Research Service, points out that grazing has the potential to “pretty much give you bare earth in terms of wildlife habitat. Maybe it’s not quite a lawn with cow dropping on it, but that’s coming pretty close.”³⁹ Certainly, the intensity of grazing will be a factor that determines this program’s ability to protect grassland bird habitat.

The Wildlife Habitat Incentives Program(WHIP), on the other hand, offers contracts containing restrictions designed specifically to ensure grassland bird habitat.⁴⁰ Updated to reflect the most recent findings of grassland bird research, the program offers farmers a payment in exchange for following a set mowing schedule on non-grazed hayfields.⁴¹ However, despite its name, the program is, by law, prohibited from providing economic incentives for changing management practices and adopting these restrictions. Offering

³⁷ Limitations include one of three options:

- no cutting before July 15
- delayed cutting on one half or less of acreage
- cutting once prior to May 25th and then delaying all other cuttings until after August 1st. (From Troy et al, 2003 and NRCS, 2003)

³⁸ For example, the GRP offers \$9.50/acre (\$23.47/hectare) per year in rental rates in Addison county Vermont. According to Keith Hartline, District Conservationist, NRCS, permanent easements will probably be offered at about \$700.00 to 800.00/ acre. These payments will be designed to match the value of the land less the grazing value (pers. com.).

³⁹ Keith Hartline and David Hoyt, Natural Resource Conservation Service; Jim Miller, USDA Economic Research Service, personal communication.

⁴⁰ The WHIPS program also offers contracts for many other types of wildlife including, beavers, shrub nesting species, and wetland species.

⁴¹ NRCS and Noah Perlut, personal communication.

only 75% of the cost of implementation, the program does not even begin to approximate the cost of production lost.

By only offering 75% of the cost of implementation, WHIP seems to place little importance on the goal of offering genuine economic support to farmers in exchange for their maintenance of a nonmarket public good. As such, it does not appear to offer a potential solution to the problem of grassland bird habitat loss. However, two important points must first be considered when evaluating this program: 1. In some parts of the country (not Vermont) where public land is scarce and grasslands are home to several species of coveted game birds (pheasants and introduced Hungarian Partridges, for example) farmers who maintain grassland habitat are able to sell hunting access to their land. In this way, wildlife becomes a market good, the farmers are (potentially) compensated for their production costs lost, and the nonmarket (non-hunted) grassland bird species may also benefit.⁴² 2. The law which prohibits the USDA from paying a farmer more than 75% of the cost of implementation, places no restriction on the contribution of state and non-profit agencies to the farmer in exchange for his/her participation in the program. In essence, it would be possible for state or non-profit agencies interested in promoting grassland bird habitat to “incentivize” the program by offering additional payments. This provision may be the key to a successful partnership between the federal government and conservation organizations. By adding a financial incentive to the WHIP contracts, conservation interests could achieve the goal of secured grassland bird habitat while relying on the government for management and enforcement of the program.

⁴² Jan Lewandrowski, Wildlife Specialist, USDA Economic Research Service, Personal Communication.

But how could this happen? How much money would it take for farmers to benefit (economically) from entering into a WHIPS mowing contract? Would the payment need to exceed the costs of production lost? By how much? And, ultimately, would the conservation organizations ever consider entering into an arrangement in which the offered payments to farmers?

In their survey of Champlain Valley farmers, Troy et al. asked farmers to identify the amount they would need to be compensated for delaying certain cuts. Only 14% reported that they would willingly delay the first cutting on some of their fields. 30% of respondents said they would willingly delay their last cutting. (When acreage distribution among farmers is accounted for: 9% of acreage could be willingly delayed for first cut; 43% for last.) While estimated compensation for delay of the first cut was \$238.00 per hectare (mean for first cut, n=54) compensation for delay of the last cut was \$119.00 (mean for the last cut, n=56).⁴³ Though critics may claim that these estimates could have been inflated, Jim Miller, dairy specialist at the Economic Research Service of the USDA, judged them to be reasonable.⁴⁴ Clearly, creating economic incentives for alternate mowing schedules will not be cheap. However, purchasing land for the creation of grassland bird reserves would not be cheap either.

Beyond the financial demand this policy would place on conservation organizations, lies the consideration of institutional values. When questioned about the Audubon Society's

⁴³ Troy, A. R., A.M. Strong, S.C. Bosworth, T.M. Donovan, and N.J. Buckley. 2003. Attitudes of dairy farmers regarding adoption of management practices for grassland songbirds. Draft document.

⁴⁴ Jim Miller, pers. com.

potential role in creating economic incentives for farmers to maintain grassland bird habitat, John Cecil, director of Audubon's Important Bird Areas program pointed out that such a policy would involve paying the farmer not to destroy something that maybe isn't their's (the farmers') to destroy in the first place. Citing the complaints of western farmers who request compensation for tolerating wolves, his argument followed the logic often used to argue against pigovian subsidies: why reward the polluter by paying him/her not to pollute?

However, can the Vermont farmer really be viewed as a "polluter" of the resource when they are also its benefactor? And, even if the farmers are viewed as "polluters", does following a "polluter privilege" model -- a model in which individuals/institutions are offered incentives (Pigovian subsidies) not to pollute-- inevitably conflict with the culture of Audubon's domestic conservation practices? Given the aforementioned advocacy platforms of the Audubon Society, this is unlikely. More likely, Mr. Cecil's comments illustrate the diversity of values and perspectives which can be held within large institutions, regardless of their official positions. Interestingly, the December 2003 issue of the Audubon Society magazine, Audubon, contains an article celebrating a program through which North Dakota farmers are being paid *not* to farm prairie pothole wetlands on their land. Because of the value of thee potholes as carbon sinks, farmers are compensated for their production lost (by not farming the potholes) in the form of payments for the carbon-sink service provided by the un-farmed potholes.⁴⁵ Could the publication of this article indicate potential acceptance (on Audubon's and other

⁴⁵ Kloor, K. 2003. Pots of Gold. Audubon. December 2003: 58-65.

conservation organizations' part) of a model in which farmers are paid for production lost?

While such ideas may sound fantastical, there exist small scale evidence of their possibility. The Nature Conservancy, for example has already engaged (through other WHIPS programs) in covering the remaining 25% of implementation cost for farmers.⁴⁶ And in Holland, researchers have experimented with actually paying farmers for the number of successful nests (nests in which baby birds survive to leave the nest) on their land.⁴⁷ By creating a market value for grassland birds, they argue, this policy is superior to policies designed to compensate for production lost. By offering a solution which highlights the compatibility of agriculture and conservation, this policy can work to build common ground.

Conclusions: Returning to Rosenberg's Assertions and Looking Beyond.

Are grassland bird conservation efforts "generally compatible with local economic objectives?"

Do they "receive support from private landowners and local industry?"⁴⁸

From the perspective of Vermont dairy farming, the answer --to both questions-- is "No... not yet." While the potential for collaboration between non-profit conservation organizations and the WHIP program offers great potential, such an investment on the part of conservation organizations may require a significant paradigm shift. When

⁴⁶ Ana Ruesink, pers.com.

⁴⁷ Musters, C.J., M. Kruk, H.J. De Graaf, and W.J. Ter Keurs. 2001. Breeding birds as a farm product. *Conservation Biology*. 15: 363-369.

⁴⁸ Rosenberg, K.V. Draft, 2000. Partners in Flight Bird Conservation Plan for The St. Lawrence Plain, Physiographic Area 18. Cornell Laboratory of Ornithology, Ithaca, New York.

questioned on his organization's potential interest in such solutions, Allen Karnatz, Regional Co-Director of Vermont Land Trust, Champlain Valley, expressed that although the Vermont Land Trust would not be likely to have a value clash with such policies, he suspects that they would be prohibitively difficult to fund. Would the same be true for other organizations? Would the amount of energy devoted to garnering such funding be better spent elsewhere?

According to systems thinker Peter Senge, "small changes can produce big results but the areas of highest leverage are often the least obvious."⁴⁹ What **are** the as yet unexplored areas of highest leverage in this system? The role of the consumer has been largely overlooked in this discussion. Could consumers' attitudes prove to be an area of high leverage? What if conservation organizations devoted their resources not to land acquisition and promotion of government programs but rather to consumer education and support for "grassland bird-friendly" producers? What if consumers were willing to pay more for milk produced on farms that managed a portion of their hay fields for grassland birds?

Could the maintenance of grassland birds could be given a market value? If so, an interested public could reveal their preferences for this good through their purchasing power. And, if so, the destruction of grassland bird habitat would cease to be an externality. Could this work? Could a grassland bird-friendly label follow the model of

⁴⁹ Senge, Peter. 1990. *The Fifth Discipline*. New York, NY: Currecy Doubleday. (From: Erickson, Jon. 2003. (Draft workbook) *Chapter 1: Introduction*, publisher unknown.)

organic certification and song bird coffee? If so, it would represent a powerful ecological economic solution to a perplexing problem.

“The easy way always leads back in,” Senge reminds us.⁵⁰ While targeting land directly for conservation may represent a more tangible, immediate solution, it may prove also to be “the easy way” and lead us back into a new or similar problem. Seeking a market solution based on a shift in consumer consciousness may seem like risky behavior for the interested conservation actors, but if it worked, it could really work. The market is a powerful tool.

⁵⁰ Senge, Peter. 1990. *The Fifth Discipline*. New York, NY: Currecy Doubleday. (From: Erickson, Jon. 2003. (Draft workbook) *Chapter 1: Introduction*, publisher unknown.)