

A cultural and applied analysis of land conservation

Michael Paolisso^a, Priscilla Weeks^b, and Jane Packard^c

^a(Corresponding Author), Department of Anthropology, University of Maryland, College Park, MD 20742, 301-405-1433, mpaolisso@anth.umd.edu, ^bHouston Advanced Research Center, ^cDepartment of Wildlife and Fisheries Sciences, Texas A&M University

To cite this manuscript (in press): Paolisso, M., Weeks, Priscilla, and Jane Packard. 2013. A cultural and applied analysis of land conservation. *Human Organization* 72(1).

To link to this article: <http://people.tamu.edu/~j-packard/publications/BS12.02.pdf>

Abstract

In this paper we present a cultural model of farmer land conservation. Based on interviews with farmers on the Eastern Shore of Maryland, we identified a set of interrelated knowledge and values that cognitively frames farmer understanding of how best to conserve rural lands. The knowledge represented by this cultural model includes many beliefs and values held by environmentalists and conservationists working on the Eastern Shore to conserve land. However, farmers position those beliefs and values into different arrangements that create constraints and opportunities to integrate farmer land conservation efforts with those of environmentalists and land conservationists. Farmers believe that all land has a best use, that land should be preserved for its best use, and that conservation easements on land and soil conservation practices best support overall land conservation when they help to make agriculture profitable. The cultural model of farmer land conservation emphasizes the active role that farmers can play in rural land conservation, a role that can complement the work of land conservation organizations.

INTRODUCTION

“They should never name a development such and such farm. It’s Meadowbrook Farm, Trapper Woods or Everly Farm...they call them a woods or a farm, but they are 100 percent developed. There’s no working lands left in them, but it’s the perception: ‘Gosh, I’m living on a farm or next to one or in the woods, but they are not’” (Eastern Shore Farmer).

Technology and economic opportunities historically have driven changes in the use of rural lands. In recent years, population factors, such as urban sprawl and urban-to-rural migration, have played increasingly important roles in rural land use. These demographic factors are qualitatively different than other land use drivers for one principal reason: they can more easily lead to development, a land

use change that permanently removes land from its traditional roles of providing food, materials and ecological services.

Today, many rural lands in the United States are at risk of development. Between 1945 and 2000 the population of the United States doubled while in approximately the same time period (1945-2002) the amount of land converted to urban uses has tripled (USDA 2005). Approximately 35% (1090) of all U.S. counties (3142) are now designated as either large or small metropolitan areas (USDA 2006).

During only a fifteen-year period from 1982 to 2007 one out of every three acres ever developed in the United States was developed (USDA 2009). The American Farmland Trust (2011) reports that in this same time span, the U.S. population grew 30 percent while developed land increased 57 percent. Careful consideration about the development of U.S. land is necessary given that “less than one-fifth of U.S. land is high quality,” meaning that land which could otherwise be used for agriculture or other ecologically-based purposes is being lost to commercial buildings, houses, or roads (American Farmland Trust 2011). Nationally, between 1997 and 2001, the average rate of crop, forest and rangeland lost to development was 2.2 million acres per year: 46 percent of this was forestland, 20 percent was cropland and 16 percent was pasture (USDA 2007).

Urban-to-rural migration is contributing to this increased development of rural lands. Throughout the 1990s, more Americans moved to rural areas than to urban ones, resulting in the accelerated development of rural land and changes in rural lifestyles (Darling 2005). In the future, significant impacts will be felt in rural areas by an influx of retirees. Between now and 2020, it is estimated that the age group of 55 to 75 years in rural areas will increase by 30 percent (Comartie and Nelson 2009). Newcomers often do not understand agricultural production and complain about the attendant smells, noises and sightings (Paolisso and Maloney 2000). Higher land prices and inheritance taxes lead farmers and ranchers to worry about their ability to pass land to the next generation, and rural communities struggle to preserve their heritage and way of life (Paolisso and Maloney 2000; Salaman 2003; Jobs 2000; Knott 1998; 2002; Walker 2003; McCarthy 2002 Pfeffer and Lapping 1994). Moreover, new migrants often become politically involved in an effort to remake rural areas according to post-productivist values, bringing to bear significant financial and educational resources to achieve their ends (Yagley et al. 2005). Newcomers can engage in the application of different cultural logics that redefine nature as a place for recreation and nature experiences (Darling 2005; Hines 2010). Productionist and post-productionist views of land can lead to different use and conservation priorities and ensuring political and legal contests over land use (Walker 2003).

In rural regions located near growing urban areas, land conservation policies and programs are being developed by state, federal and local governments, land trust and environmental organizations, and local community groups. These policies and programs have multiple goals, including channeling development into identified growth areas, conserving working lands in farming, ranching and forestry, and protecting areas critical to wildlife, ecosystem health and outdoor recreation. Conserving working lands is of particular urgency for a number of reasons. First, once working land is developed, its capacity to produce food and materials and provide environmental benefits are permanently removed.

Second, in most rural areas, working land is the largest land use group, representing large, contiguous space that can provide many ecological benefits; and third, farmers already have a conservation ethic and strong interests in conserving the land in farming (CBC 2010).

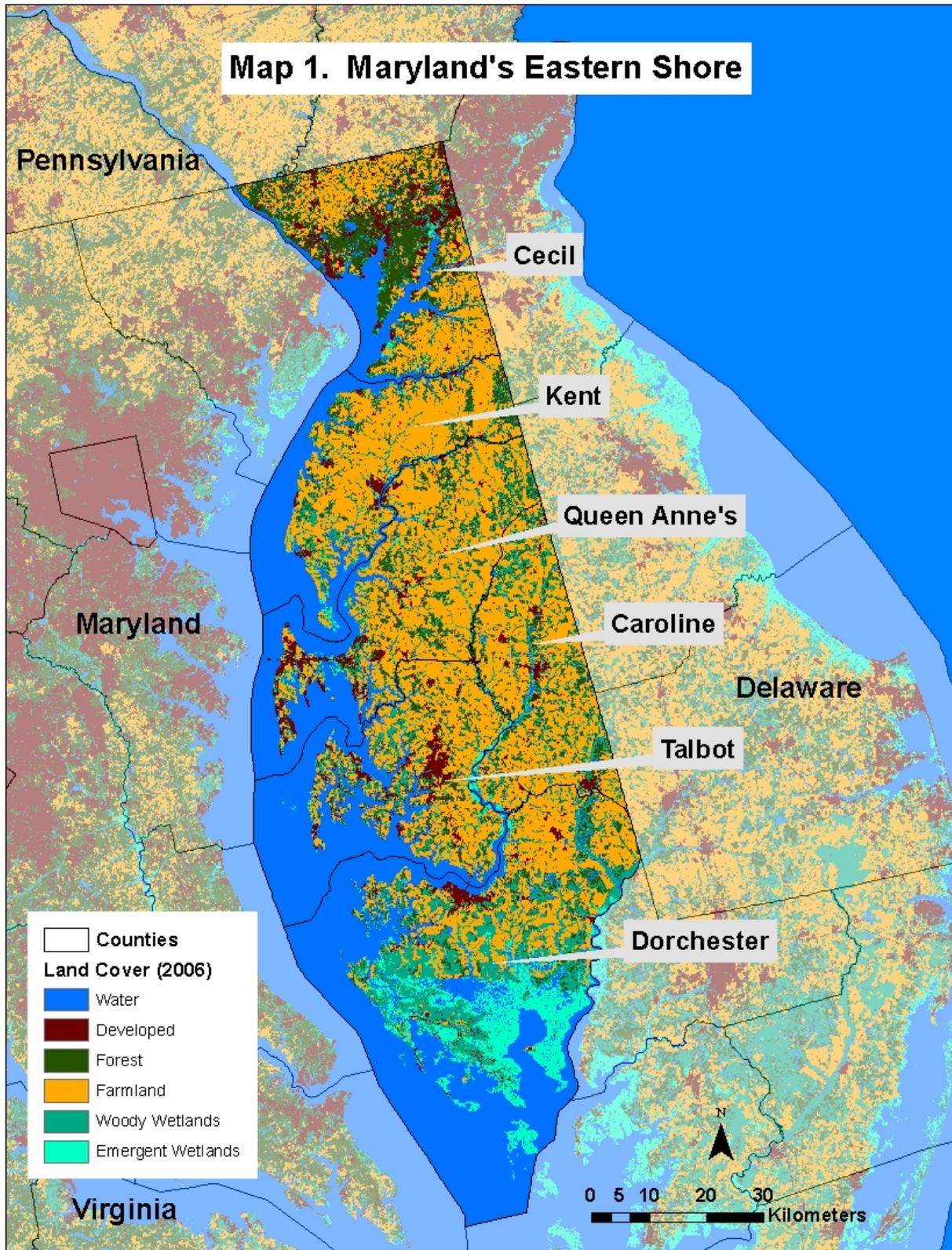
Land conservation policies and programs do target farmers in their efforts for the above reasons. However, there are challenges, including limited funding, a focus on lands that are biologically important, and resistance from farmers who are reluctant to give up full rights in their land. If the goal is to include working agricultural lands into our conservation efforts, it is important to understand land conservation from the perspective of the farmer, not only or primarily as a tool to manage development and protect the environment, both of which are also important to farmers. Farmers may understand and value land conservation for different although complementary reasons to those shared by land conservationists. Questions arise about the compatibility of farmer and conservationist understanding of land conservation, and how any differences or similarities affect future land conservation efforts. Related, farmer understanding of land conservation could also serve as a complementary model for land conservation, one that could be used to generate new opportunities to protect working lands from development.

In this article, we present findings on farmer land conservation on the Eastern Shore of the Chesapeake Bay. The conversion of rural lands to development is acute in the Chesapeake watershed. Not only does the absolute population grow, per capita demands for land grow too as urban dwellers seek to escape crowding. In Maryland's Eastern Shore, the focus of this study, the average new house lot is an acre, five times the average lot size in Maryland's urban areas (ESLC 2002). Such low density housing has been associated with increased land fragmentation in Maryland (Irwin and Bockstael 2007) and it is estimated that the Chesapeake Bay watershed will lose over 600,000 acres of forests and farms by 2020, most of which will occur in coastal counties (ESLC 2002).

We begin with a description of agriculture, development and land conservation on the Eastern Shore of Maryland. We next describe our study of the cultural knowledge of land conservation, focusing on the cultural knowledge of farmers. In this discussion, we present results collected from using a cultural model approach and interviews with farmers. We next present a cultural model of farmer land conservation, and include discussion of that model's fit with key land conservation policies and programs. We conclude with a discussion of opportunities and constraints for using this farmer cultural knowledge of land conservation to benefit both agriculture and environment on the Eastern Shore.

AGRICULTURE, DEVELOPMENT AND LAND CONSERVATION ON THE EASTERN SHORE

Maryland's Eastern Shore (henceforth referred to as Eastern Shore) is a nine county area bordered by the Chesapeake Bay to the west, Delaware and the Atlantic Ocean to the east, and Virginia's Eastern Shore to the south (Map 1). As explained more below, our research focused on the six middle and upper shore counties: Caroline, Cecil, Dorchester, Kent, Queen Anne's, and Talbot (henceforth referred to as the Upper Eastern Shore). The Eastern Shore has been called "one of the last great Chesapeake Bay landscapes, with a distinct natural, historical, cultural, and economic



Source and credit: Chesapeake Bay Program Office.

character and quality of life” (Horton 2007:4, 8). Those “born on the Shore” take pride in being independent (and different from other Marylanders), hard working, religious and politically conservative (Wennersten 1992:3). It was only with the opening of the Bay Bridge in 1952 that the Eastern Shore became readily accessible to all Marylanders and other tourists (Chambers 2006; Meyer 2003).

Farming, forestry and small-scale fishing are the keystones of the Eastern Shore economy, landscape and way of life (AFT 2005). As Maryland’s most concentrated agricultural region, it accounts for almost one-third of the state’s agricultural land and produces over 50 percent of the State’s major crops, such as corn, soybean, wheat and barley (ESLC 2002). For the Upper Eastern Shore, resource-based industries such as farming, forestry, fisheries, and mining account for 22 percent of the total value of production, which is more than \$2 billion annually (AFT 2005). Agriculture, food processors, and related services make up 13 percent of the region’s jobs—employing about one of every eight citizens (more than 15,000 in all)—making the food and farming system industry a major Eastern Shore employer (AFT 2005; Horton 2007).

Poultry is the main economic engine on the Eastern Shore, and along with corn and soybeans used primarily for chicken feed, these products account for 69 percent of Upper Eastern Shore farm-gate value. Because of the poultry industry’s need for feed, farmers receive a premium on local grain sales; most corn and soybeans grown on the Eastern Shore are sold directly to the poultry industry. Other important industries include greenhouse and nursery, forestry, dairy, vegetables and commercial fishing (AFT 2005). Moreover, the Eastern Shore’s large contiguous block of farmland makes it possible to support the resource-based industry that is so vital to the region’s economic success. In addition, the size and location of this rural landscape in the heart of the Mid-Atlantic make it an ideal food production and distribution point capable of meeting new and growing food demands for eastern cities such as Washington, D.C, Baltimore, Philadelphia and New York.

The cultural importance of agriculture is also strong: 95 percent of respondents in a survey agreed on the importance of “promoting agriculture, forestry, fisheries to preserve the Eastern Shore’s cultural heritage and way of life” (ESLC 2002: 12).

In addition to its agricultural and cultural importance, the Eastern Shore is also important ecologically with wetlands, sounds, bays, near-shore islands, and creeks and rivers making up the shoreline. Unmodified coastal zones play pivotal roles in maintaining water quality by buffering shorelines from wave action, filtering sediment and absorbing nutrients from agricultural runoff. Nutrient-enriched water can promote excessive concentrations of algae, which in turn deplete water oxygen levels and, in combination with high sediment levels, cause reductions in underwater grasses in tidal shallows. Underwater grasses are critical habitats for many finfish and shellfish. The Eastern Shore is also an important resting station on the Atlantic Flyway, attracting huge flocks of migrating waterfowl and shorebirds (Scott 1991).

Threats and Challenges to Land Conservation

The Eastern Shore is facing significant growth and development pressures due in part to the quality of life, natural resources, and affordable living that long time residents cherish and newcomers desire. Population has increased 88 percent since 1950 and the Maryland Department of Planning estimates that 160,000 new residents will make the Eastern Shore their home in the next 25 years, which translate into a 38 percent growth projection or about 300 new residents every two and a half weeks (Appler 2008:7). Perhaps even more worrisome than population growth, the number of Eastern Shore households are expected to grow rapidly as well, increasing by 43 percent between 2005 and 2030, to a total of 237,200 households (Appler 2008:7). As a result, approximately 450,000 acres of farmland and forests will forever be lost to more than 70,000 new homes (215,000 acres), roads, subdivisions, malls, and parking lots. This acreage is roughly equal to all the tillable farmland in three of the six Upper Eastern Shore counties (Kent, Caroline, and Cecil; Appler 2008; Horton 2007). Given current land use trends and future projections, the American Farmland Trust has ranked the Eastern Shore as one of the most threatened working landscapes in the country (ESLC 2002).

Impacts related to climate change pose additional threats to Eastern Shore land and conservation efforts. In the 21st century, relative sea level for the Chesapeake Bay is estimated to rise approximately 0.7 to 1.6 meters (Najjar et al. 2010; NWF 2008). Tidal range, wave heights, frequency of storms, and flooding are expected to increase (Najjar et al. 2010). While the extent and range of these impacts will vary, it is generally agreed that the low-lying Eastern Shore counties are in the high-risk category, susceptible to land erosion, flooding and inundation (Johnson 2000).

Land Conservation Responses

Maryland is recognized as a national leader in land conservation programs (CBC 2010). A brief description of four major land conservation programs, all of which are active on the Eastern Shore, will illustrate the range of goals and approaches to land conservation that are available to local governments, land trusts, farmers and landowners.

Program Open Space (POS), implemented by Maryland's Department of Natural Resources (DNR), is a 40-year old program that uses a share of each real estate transfer tax transaction (1/2 of 1%) to enable state and local governments to acquire recreation and open space areas for public use. POS funds are used to purchase land for state parks; forests; wildlife habitat; and natural, scenic, and cultural resources for public use (CBF 2006; DNR n.d.). Stakeholders who have benefited from this program have been citizens with access to open spaces and new recreational facilities, farmers who have been able to sell their land for preservation purposes, and timber companies who have been able to gain economically from the sale of their land to the program as opposed to selling for development (CBF 2006).

Maryland's Rural Legacy Program (RLP) was established by DNR, in 1997, and is implemented jointly with the Departments of Agriculture and Planning. RLP seeks to preserve large blocks of working rural lands for future generations (DNR n.d.). Many of these lands contain the state's most

valuable agricultural land, natural resources and cultural heritage. RLP grants funds to local governments and private land trusts to conserve land through easement and fee purchases within designated Rural Legacy Areas (DNR n.d.; ESLC n.d.). There are three designated Rural Legacy Areas that exist within the Upper Eastern Shore counties.

In a direct effort to preserve Maryland's agricultural economy, in 1977 the Maryland General Assembly created the Maryland Agricultural Land Preservation Foundation (MALPF), which is part of the state's Department of Agriculture. MALPF's primary purpose is to restrict development of prime farmland and woodland and to preserve these lands for the continued production of food and fiber for all of Maryland's citizens (MALPF 2010). MALPF funds county-based farmland preservation programs to purchase easements (CBF 2006). Through MALPF, landowners receive significant tax breaks and can apply to sell an easement to the state to preserve the land for agricultural use (ESLC n.d.; MALPF 2010).

Created as a quasi-public entity in 1967, Maryland Environmental Trust (MET) is both a unit of DNR and governed by a private board of trustees. MET was created "to conserve, improve, stimulate, and perpetuate the aesthetic, natural, health and welfare, scenic, and cultural qualities of the [Maryland] environment, including, but not limited to land, water, air, wildlife, scenic qualities, [and] open spaces" (DNR n.d.). This is accomplished by working with citizen land trusts to provide landowners with the information and tools they need to permanently protect, through conservation easements, the state's most treasured landscapes and natural resources for future generations. In terms of the number of transactions completed, MET is one of the largest land trusts in the nation, which is due in part to their successful donated conservation easement program (the first in Maryland) (CBF 2006; DNR n.d.).

CULTURAL MODEL APPROACH

Generally speaking, cultural models are shared perceptions and attitudes about how the world works. They are cognitive tools used by individuals to process and organize information, make decisions, and guide behavior. Of great importance is that cultural models are implicit, taken for granted, dynamic and flexible, and operate below the level of individual consciousness. Individuals construct simple cultural models of how the world works and use these models to guide decision-making, behavior, and as an aid in the transition of understanding of novel, unfamiliar ideas (D'Andrade 1995; Holland and Quinn 1987; Ross 2004; Strauss and Quinn 1997). Cultural models are, if you will, not what you see but what you see with (Holland and Quinn 1987).

Cultural models exist in nested hierarchies in the mind. The models are composed of interconnected building blocks called schemas. Schemas are cognitive frames with default values or open slots which can be variously filled with appropriate specifics (D'Andrade 1995). They may consist of images – *car*, or propositions – *the family breadwinner*. Examples of lower level schemas are filling a mug, starting a car, paying a toll. These are the building blocks of a simple cultural model of *getting to work in the morning*. This simple model is nested within a more complex model of *doing my job*, which is nested within a higher order cultural model of *pursuing my career* or *caring for my family*.

Cultural models research is being used to study the complex interaction of attitudes, values, modes of understanding and discourses surrounding an array of environmental and conservation issues, including global climate change (Kempton et al. 1995) toxic phytoplankton impacts (Falk et al. 2000; Paolisso & Chambers 2001; Kempton & Falk 2000; Paolisso & Maloney 2000), protected areas management (Pfeffer et al. 2001), landscape conservation (Dailey 1999) and coastal planning (Christel et al. 2001). For example, Kempton et al. (1995) used cultural models research strategies to analyze the environmental values shared across American culture. Focusing on the Eastern Shore, Paolisso (2002) and Paolisso and Maloney (2000) have used cultural models research to examine the interplay of values, beliefs and experiences in the ways farmers, watermen, resource managers and scientists frame and take responsibility for their role in managing fisheries and agricultural runoff. Other research has studied how watermen, resource managers and scientists deploy cultural model knowledge to understand oyster restoration (Paolisso et al. 2006; Paolisso and Dery 2010).

In the research discussed above, proximate and explicit statements on environmental issues were linked to more ultimate and implicit cultural beliefs and values. A major advantage in using a cultural model approach is its ability to link a very wide range of cultural beliefs and values to explicit statements/propositions on the environmental issues at hand, situating and contextualizing them. Thus, unless they are overtly identified, stakeholders can be situating explicit information on the resource issue at hand in broader cultural contexts without being aware that these broader cultural frames are present.

Finally, understanding conflicting cultural models can improve dialogue among stakeholders and create policies and environmental solutions that benefit from a combination of lay and expert knowledge (Paolisso 2002). Findings from cultural model research can be effectively used to promote collaboration and learning (competing stakeholders better understand and work with core knowledge and values underlying each other's positions) and to increase public participation in decision-making (environmental policy priorities can be reinterpreted as partially shaped by and responsive to previously unacknowledged cultural knowledge and values) (Morgan, et. al., 2002; Paolisso, 2002; Paolisso and Chambers 2001; Falk et. al. 2000; Paolisso and Maloney 2000; Kempton et. al., 1995).

Applied to the study of land conservation, key assumptions associated with a cognitive approach to cultural analysis include 1) to varying degrees, groups of individuals share understandings of what land conservation is/should be because of what they have learned and internalized over the course of their shared experiences; 2) these individuals, in turn, use shared understandings to comprehend and organize experiences, including thoughts, feelings emotions and actions, theirs' and others'; and 3) these shared and cultural understandings are largely tacit and implicit to the individual holding them (Quinn 2005). Our research thus sought to discover the tacit and shared knowledge that individuals had accumulated and stored cognitively to help them understand the goals, approaches and benefits of land conservation.

Data Collection, Sample and Analysis

Cognitive anthropologists use a range of methods to elicit cultural schemas and models, including interviews, life histories, participant-observation, closed-ended questionnaires, and analysis of key terms using free listing, pile sorting and triadic comparisons (D'Andrade 1995; Holland and Quinn 1987; Paolisso 2007; Ross 2004; Strauss and Quinn 1997; and Quinn 2005).

The cultural model presented in the next section was derived from a cultural analysis of farmer discourse on land conservation. We follow Quinn (2005) in understanding discourse to be either spoken or written language in use, consisting of segments of speech. A cultural analysis of discourse is primarily concerned with the cultural meaning that tacitly and implicitly inform and shape everyday talk and conversation (Quinn 2005).

This "talk" on land conservation that we analyzed was collected during interviews where, while using a set interview guide, we granted a significant amount of the control of the discussion to the interviewee. The primary goal of our interviewing was to collect explicit information that could be analyzed for the underlying and implicit cultural meanings that generated informants' discussions, beliefs, values and reported practices about and related to land conservation. As has rightly argued by Quinn (2005:7), "interviews can provide a density of clues to cultural understanding that is virtually unobtainable in any other way. This is largely because interviews frame the interviewee's task as one of communicating what he or she knows to the interviewer." Cultural analysis of interview data involves looking for expository, explanatory, and or argumentative discourse, which can begin with statements about the "way things are," or a proposition of relationships," followed by a series of reasons for why their statement or proposition is true.

Specifically, we used semi-structured interviews in our study of farmers. These semi-structured interviews consisted of a written list of questions and topics that we covered in a particular order (Bernard 2006). Our questions sought explicit information on the definition and meaning of land conservation, what types and why certain lands should or should not be conserved, and what approaches to land conservation work well or not, with examples. We used interview probes extensively throughout the interview to further promote discussion and clarification (Bernard 2006). Duration of interviews varied from 40 to 90 minutes. We standardized procedures for digital recording, note taking, audio to text transcription, and database storage for all interviews.

Study Sample

We first used informal interviews (n=14) with a broad range of farmers, conservationists, agricultural scientists and local elected or appointed officials, and our previous experience and knowledge of the study area, to identify key informants who were knowledgeable and had experience with land conservation efforts on the Eastern Shore. We found that different types of organizations were active in important land conservation activities (e.g., programs, advocacy, research and education). While regional, state and national land conservation organizations were central, there were important land conservation efforts by organizations with a broader environmental focus and

there were local and county groups engaged in specific land use and conservation issues. Relevant to the results presented below, we identified 14 farmers with a range of experience and involvement with land conservation. These farmers had extensive and often lifetime experiences of farming on the Eastern Shore, and grew corn, soybeans or dairy cows, etc., using owned and leased lands, and most had placed portions of their farms into conservation easements. A number had also served on boards of state and regional land conservation organizations, and had been active in Farm Bureau and county government, including planning commissions.¹

Analysis of Interview Data

We used the text analysis software Atlas.ti to assist us in managing and analyzing the transcribed interviews for the key informant interviews (Lewins and Silver 2007). Using Atlas.ti we marked and coded segments of thematically similar text within and between interviews regardless of which question generated the information. We attached memos to coded text to capture emerging thoughts on themes and questions, and then linked coded text into hierarchical or non-hierarchical networks, features of the program that make managing large numbers of coded text feasible (Lewins and Silver 2007).

Our coding strategy involved a combination of both deductive and inductive coding procedures (Bernard and Ryan 1998) that moved from coding for explicit statements and propositions about land conservation to coding for implicit schemas and cultural models that informants cognitively used to organize and frame their discourse on land conservation during the semi-structured interviews. We first used the questions from the semi-structured interview to develop codes for attributes of land conservation (definition, purpose, meaning, etc.), types of land to conserve (or not), reasons to conserve land (or not), good and bad approaches to land conservation, and benefits of land conservation.

For the 14 farmer key informant interviews, we identified and marked verbatim text that corresponded to these primary codes. This coding represented our first-level, deductive coding of the data, consistent with the structure and focus of our semi-structured interviews, and it produced comparable ethnographic information and explicit statements and propositions on land conservation for both farmer and conservationist study groups.

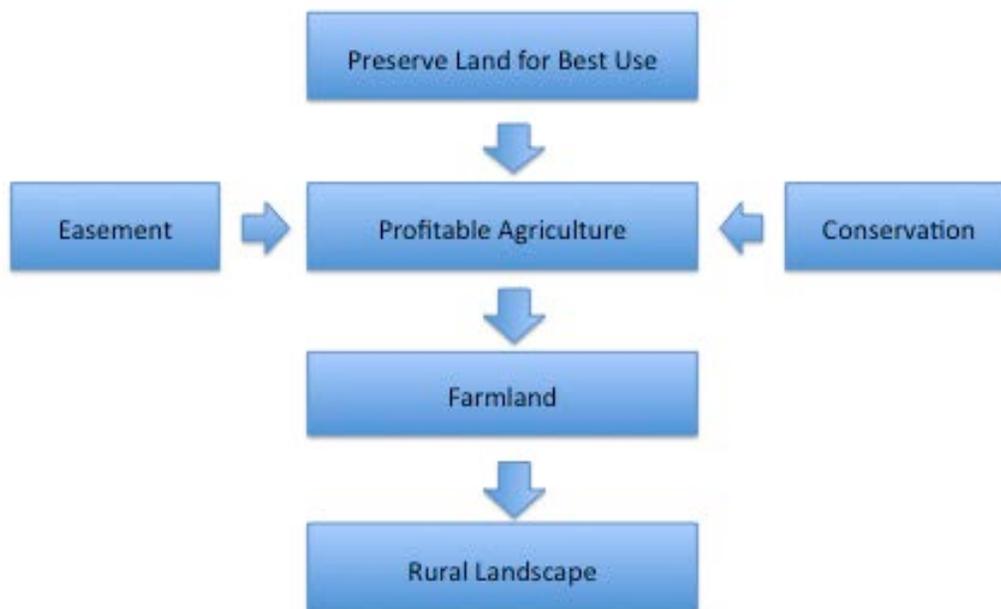
Importantly, this deductive coding was also the first step in identifying the underlying and implicit knowledge that generated the explicit land conservation statements and propositions. To further elicit this implicit knowledge, we completed successive sorting and grouping exercises with the coded statements. This "pile sorting" produced four implicit cognitive domains that fit farmer explicit statements on land conservation. By fit we specifically mean that these domains represent a general level of implicit knowledge that farmers find understandable and that account for their explicit statements. The four cognitive domains identified are land as a resource, threats to land, land conservation actions and landscape. To identify the specific cultural models of land conservation for farmers, we applied the four cognitive domains as meta-codes to all 14 interviews (the original primary codes remained). In the following section, we present an analysis of the explicit statements and

propositions that farmers made related to the four implicit, cognitive domains. We asked of these explicit statements "what one would need to know in order to holds these views/makes these statements." Interpretation of these explicit statements produce schemas for each of the cognitive domains, which when taken together form the farmer cultural model of land conservation.

FARMER CULTURAL MODEL OF LAND CONSERVATION

During the interviews, farmers openly shared with us their views, experiences and recommendations about land, development and today's challenges of farming, and many more topics as well. Below, we present what farmers told us about what needs to be done to conserve land. These explicit statements about the requirements and procedures that are needed to ensure that land is not developed and is used in a manner that supports both agriculture and the environment, combined, form an implicit cognitive framework that is a farmer cultural model of land conservation. We present this cultural model in Figure 1.

Figure 1: Farmer Cultural Model of Land Conservation



Preserve Land for Best Use

“Land preservation...it means to me that you look at a piece of property for what its best use is, what God put it here for, and then attempting to use it to its potential in that setting....I think they [lands] need to be preserved for their best use” (Eastern Shore Farmer).

One of the strongest and most consistent beliefs expressed by farmers was that all land has a best use. These "best uses" vary according to qualities inherent in the land. As one farmer explained, "Well, there are some properties to me that are best suited for growing crops and food. There are some that are best suited for grazing livestock. There's some that are best suited for woodland and wildlife. And then there's others that are best suited for urban residential and commercial uses."

Naturally, much of the discussion in interviews with farmers about land preservation focused on farmland. Farmers offered a number of reasons for preserving land that can be farmed. Not surprisingly, in many different ways farmers stated that "farmers grow food for others." As one farmer stated, "I think [preservation] is to keep open space and working lands and the reason to do that is food security.... to ensure that future generations have the availability to provide food and fiber and whatever they need for themselves off that land." Or, as another farmer stated, "Everyone in America has to eat....If less land is available and the fewer farmers that are there to farm it, you know, the food is going to be like in some of these other countries where it's harder to come by and a lot more expensive...." With great conviction, another farmer stated what he thought was the obvious, the given: "you preserve your land for future generations of farmers.... basically for people who want to farm....so that there will be agriculture."

While farmers focused much of their discussion on agricultural lands, they also expressed the belief that other lands have important purposes and should be preserved. As one farmer clearly stated "agricultural land that can produce food or fiber for humans or livestock should be preserved, because we have to have it. Everyone has to eat. But, I think wildlife areas need to be preserved, because, oh, God put all those creatures here for our enjoyment and for our benefit, also, and we definitely need those areas....each type of land needs to be looked at and considered for what its best use is, I mean, if even if it's marshland that you really can't do anything with it, its best use is marshland, it's filtering, it's got a job."

Not surprisingly, farmers expressed great regret and frustration when land best used for agriculture was developed or even left unused. One farmer concisely summed up the sentiment of many farmers: "Well, if it's prime farmland, it shouldn't be preserved for housing and urban development." Or, as one farmer literally pointed out "like that piece of woods over there, if it is flat cut and houses are put there, you know, that's destruction of that environment." It was clear from interviews that farmers consistently used the phrase "preservation" where land conservationists and environmentalists, in similar interviews, used the word "conservation." Regardless of the terminology, they both felt that you needed to protect agricultural lands from being developed. For farmers, preserving the land (or conserving in the language of conservationists and environmentalists) is only a first step. Furthermore, without additional considerations, farmers believe that conservation/preservation of land can end up threatening agriculture. One critical condition is that agriculture needs to be profitable.

Profitable Agriculture

"There are enough farmers out there that will conserve and treat land well, if they can derive

enough income to do that. And that doesn't mean make a lot [of money]. I mean, I think there are still enough people out there that are pie-eyed optimists who would try to do something....it doesn't take a lot per acre to preserve farmland." (Eastern Shore Farmer)

In interviews, farmers repeatedly expressed a strong belief that many of the challenges of preserving farmlands would be solved if agriculture could be made more profitable. Almost without exception, farmers believed that the vast majority of farmers would keep their lands in agriculture if farming was more profitable, and that this would be more effective in preserving lands than any government or non-government land conservation program, which they felt never has enough funding to preserve large tracts of farmland. One farmer nicely summed up this viewpoint: "If we don't do something to get more income coming in or do something to preserve the land it's scary the amount of ground that is currently bought up for development, that there's not development sitting on, but just the farms that I know of that have been bought by development that are scheduled for it."

Easements

For land conservationists and environmentalists, easements are perhaps the most important tool for conserving land since they legally remove the right to develop the land, and in most cases permanently so. Theoretically, land in an easement that is in agriculture can continue to be farmed or left unfarmed as a form of "open space." The farmers we interviewed understood, and generally supported, the conservationist goal of easements, but importantly they viewed easements more as a strategy to help make a farm profitable, which in turn helped them accomplish the goals of preserving farmland. One farmer described this strategic, farm management use of a conservation easement: "You could shorten your mortgage period of time, you can pay down on that so that you're not owing for as many years. You could, if you didn't have a mortgage, you could establish a fund for your children or your grandchildren, you know, for college, or just establish some benefit from the land by having that fund there so that when they come into farming they have something to start with, just a reserve there. Perhaps do some more conservation measures that you may not have been able to afford to do. Perhaps purchase some better equipment to do your job better, you know, those types of things."

A number of farmers talked about conservation easements being too restrictive in general for farmers in that they constrain what farmers can do with their land, and for some farmers, that is "just a non-starter." However, we found farmers also willing to put land into conservation easements because it made "good sense," because they were confident that they or their children would keep farming that land. What constrained some of these farmers was they would have to donate their land, which did give them a tax benefit, or sell for a price that was much lower than market value. Farmers (and some land conservationists) argued that donating easements works best for landowners who do not derive their primary livelihood from the farming of that land. As one farmer commented, "A lot of landowners were absentee landowners, they didn't farm the ground, but they owned it. They bought it for pleasure. They go there and go hunting a couple times a year. Other than that, the agricultural aspect of it was really no value to them. When the conservation easement program came along, they managed to put many acres in and got a tax break or good money for it." This farmer went on to

explain that these absentee landowners could afford to donate their lands or accept a lower price because "they had already made their money elsewhere." We heard in interviews these types of conservation easements described as "the low-hanging fruit," easements on agricultural lands owned by non-farmers who may have moved to Eastern Shore for the rural quality of life.

Another farmer shared similar views about conservation easements: "I know that a lot of the donated easements through the land conservancy are maintained as working farms, but it's not the farmers that donate those easements, it's the wealthy landowners who can use the tax write-off. We cannot afford to donate an easement. We have to sell them. We do have some land that we have sold easements on through these programs. If you are a working farmer, you cannot donate your easements....If he can sell them, you know, the cash flow is important. You can cut down your notes and pay some of your notes off. You have to have an opportunity to sell them. It's a big help when you can sell easements."

Finally, even when farmers can sell land into an easement, their bid price often needs to be higher than non-farmer landowners, and not infrequently their good agricultural land is of less conservation priority than smaller properties owned by non-farmers along creeks and rivers, where easements can be managed as untilled buffers between fields and waterways. One farmer who had land in conservation easements explained how "most programs just buy the land with the lowest bid price. They get the most acres for the dollar. Talbot [County] has a ranking process where they look at the quality of the ground, whether it's contiguous to other preserved land and also how much preserved land has been within a mile and a half of it. They are trying to get these blocks andthey'll pay up to full value for your easement, but you have to be ranked high enough to get chosen. So, they are trying to rank [farmlands] higher than the areas that don't have much reserve land and the quality of land for agriculture is lower. But, we still don't get as many acres for the dollar."

Conservation

"Well, you kind of compare them to the two rails on a train track. Preservation versus conservation, conservation, you protect the soil; preservation, you protect the property. You know, they're running side-by-side, and if you take one away, you affect what happens to the other" (Eastern Shore Farmer)

For farmers, protecting and sustaining the soil is essential if farming is to be profitable and sustainable. Throughout our interviews, farmers were very consistent in using the term "conservation" for protecting and managing the soil and other natural resources on the land. Farmers were equally consistent in seeing this conservation role as part of their stewardship of the land. They were very cognizant that land is limited and it is part of their responsibility to take care of the land, a theme that we have found in previous research with farmers (cf. Paolisso and Maloney 2000). One farmer nicely summed up this viewpoint: "I think that land, the earth, is a limited resource. There's only so much of it here, and I believe that we're called to be stewards of all of it, and to be a steward, you have to be like a caretaker, it's your job to take care of it because there's another generation coming and the ones behind that are going to need to use that same land, and so we need to make the

best use of every inch of it." Another farmer argued that farming was land conservation: "I look at farming as land conservation. I look at timbering as land conservation. You know, those activities that many of rural landowners are involved with. I mean, again, unless you're digging it [soil] up and carrying it away -- as long as you're using it [soil] wisely and not impacting something else, to me that is land conservation." Another farmer was even more specific: "To me conservation is making sure the land is as good or better when you get rid of it, sell it and turn it over to the next generation or whatever. And it's kind of a stewardship type thing, that's what I think of conservation. Making sure you've taken care of it and haven't harmed the soil, the land. That you haven't allowed it to wash away or be depleted of its nutrients or whatever and that it's as good or better than when you got it. Stewardship to me means you're a caretaker and you're taking care of whatever you're in charge of.

For the farmers we interviewed, conservation is active management of the land, water and even wildlife. Time and again they reported seeing themselves as "stewards of the land," and many saw this as a responsibility that God had bestowed upon them, a moral responsibility to be stewards (Paolisso and Maloney 2000). Farmers' stewardship is tested when developers offer farmers large sums of money to purchase their farm. But if a farm is profitable and its natural resources well conserved, farmers are much less inclined to sell and remove that land from its best use.

Rural Landscape

From our interviews with farmers on this project, and based on previous research (Paolisso and Maloney 2000; Maloney and Paolisso 2006), it has become clear that the end result of farmers' management and conservation efforts is a landscape that farmers use and steward. Farming is the best use of land that helps maintain open spaces and provides society with resources we need to survive, and when done right, that farming shapes and sustains the landscape. Farmers explained to us how the tourists and visitors who drive through the Eastern Shore, often on their way to Atlantic beach resorts, see fields and forests and think there little or no human presence, when in fact all the land they see is actively managed and shaped, and has been for generations. For farmers, it is that active engagement with the land that gives open space its beauty and significance. One farmer's thoughts on the topic nicely summarize what many farmers told us: "I think when farming is done right, there are some beautiful aspects to it. Open space just connotes, to me, barren -- not a barren wasteland, it doesn't -- but that land doesn't have any importance. I like to think as farmland, even as wetlands, even as forests, it all has purpose. Maybe for environmental [reasons], maybe for income, whatever, but open space just seems like it does not have a positive benefit, it just doesn't have a negative benefit because it doesn't have a house on it, so that's good, but it's not necessarily good unless it's something positive done with the land."

As a result of farmers' belief and value of actively working the land to preserve and conserve it, they can be suspicious of the motives of different land conservation organizations. As one farmer expressed, "Farmers are a little bit wary of some of these [land conservation and environmental] groups, and just what their motives are.... I guess they [land conservation organizations] are more interested in preserving habitat than they were working lands. Several years ago a land conservancy organization bought a farm down in St. Michael's, which was getting ready to be developed, I guess

and I think they turned over most of it to the town as a park." Related, a farmer expressed the view that "if systems [political and economic] worked the way they were supposed to, [land] conservation wouldn't need to be a movement, something separate from every day life – it would be integrated into our existences, an inherent part of how we live and work the land. Then, what would benefit the individual would also be for the greater good, they would work in tandem and you wouldn't need specific advocacy efforts."

CONCLUSIONS

Conserving the land is a natural and timeless goal of farmers worldwide. While not always successful due to complex social, demographic, economic and ecological reasons, the Eastern Shore farmers we interviewed were motivated and open to programs that would help keep them in farming and keep their lands in agriculture. Their efforts to conserve land are guided by their cultural model of land conservation (Figure 1). This cultural model is a cognitive framework for how farmers understand land conservation should be accomplished. It is implicit knowledge that farmers have accumulated through shared experiences, and it functions to integrate key cultural knowledge and values into a broader cognitive model that allows farmers to understand and evaluate threats and opportunities that affect their goals to conserve farmland. Stated differently, the cultural model in Figure 1 is the holistic, mainly unquestioned, "taken for granted" understanding that farmers have about the "right way" to conserve farming and agricultural lands. The cultural model provides a cognitive template that allows farmers to understand and evaluate the specific land conservation opportunities and land development threats.

The farmer cultural model of land conservation cognitively organizes knowledge and values in ways that are not always consistent with the general policies and programs of land conservation organizations. Implicit in many land conservation policies and programs is the belief that land needs to be preserved to protect nature, and in turn by protecting nature the ecosystems that sustain life will be allowed to function according to their own natural dynamics. Farmers, on the other hand, while not denying that nature "has a job" to do, believe in a much more active management of the land, that every piece of land has a best use. Furthermore, a primary purpose of using land for its best use is to have farms on lands best suited for agriculture in order to provide food for society, now and into the future. Farmers reconcile the twin goals of preserving land for ecological reasons, the land conservation program goal, with their own goal of preserving lands for agriculture, by understanding agriculture as an activity that both produces food and conserves the land. For agriculture to accomplish these twin goals it needs to be profitable, it needs to provide a livelihood that can be transferred to future generations of farmers, who will continue the important work of providing food for people and keeping land in farming, which keeps development from changing the rural landscape and threatening ecosystems.

For agriculture to be profitable, farmers' cultural model integrates strategies that are also recognized by land conservation programs: easements and soil conservation practices. However, the farmer cultural model integrates these two land conservation actions as components of making agriculture profitable, not as directly linked to preserving the land. Particularly in the case of

easements, land conservation organizations use easements to protect, "lock up" land so that it cannot be developed; it is of secondary concern whether that land is in agriculture or unfarmed open space, though most land conservation organizations are supportive of farming, but again their primary goal is to use easements to protect land from future development. In contrast, farmers use easements as part of the successful management of a farm, for example using the money to purchase new equipment or pay down the mortgage. Furthermore, land conservation organizations use donations or pay lower prices for easement lands, tapping into landowners' values to use their land to protect the environment. For farmers, their environmental values are located in their efforts to conserve soils and be good stewards of the land, not primarily in a willingness to donate land for a conservation easement. Thus, there is a subtle but important difference in how the land conservation ethic is situated in the cultural model for farmers, compared to the efforts of land conservation organizations and programs: farmers use easements mainly to increase the profitability of farming, and use soil conservation and stewardship to help ensure that agricultural lands are good for the environment. Land conservation is achieved by actively farming the land, sustaining that farming with profitable agriculture, and conserving the land through soil conservation and land stewardship.

Finally, farmers' cultural model of land conservation includes an understanding of the rural landscape as one where people are actively engaged in using the land for its best purposes. Embedded in belief in using land for its best purpose, is the value that you should not harm the land (by taking it out of its best use), and again you should be a steward of the land. For farmers, the landscape should not be an "open space" landscape with large areas reserved for nature to attend to its restorative work. They do believe that some areas, marshlands for example, have a job to do, such as filtering nutrients from runoff to protect waterways. However, since agriculture is needed to feed people, and if agriculture is profitable and the farmer a good steward, the rural landscape can be an open one but filled with farms. Aesthetically, for farmers there is nothing "prettier on the land than well managed farms," which conveys to them more than fields of crops but a history of farmers and their families who have worked those lands.

The cultural model of land conservation presented in this paper helps us better understand some of farmers' core knowledge and values about land conservation. Not surprisingly, these core beliefs and values are embedded within using land for farming. The central role of farming within farmer's cultural model of land conservation is not, at a general level, inconsistent with the goals of land conservation organizations. Over the last 30 years, the environmental and land conservation communities have broadened their approach to farming, away from a focus on the negative impacts of pesticide use, which brought it into conflict with farmers, towards a more inclusive set of concerns such as erosion, water quality and habitat diversity (Kash 2008). The conservation NGOs are increasingly trying to find common ground with farmers in order to conserve rural lands and communities (Male and Bauer 2003; Noah and Zhang 2001; Walt & Mearsheimer 2003). Conservation organizations working on the Eastern Shore recognize the value of conserving agricultural land if they are to achieve their goals of preventing over-development and environmental degradation. The cultural model findings presented here can help land conservation organizations and farmers better understand their shared goals and develop new policies and programs that allow conservation

programs to support farmers in their efforts to continue farming and fulfilling their role as stewards of the land.

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Notes

ⁱ We also identified and interviewed 16 key informants involved in different programs and activities to conserve land, undertaken by either regional or national land trust organizations (e.g., Eastern Shore Land Conservancy, American Farmland Trust, Cecil County Land Trust, Conservation Fund, The Trust for Public Lands), environmental organizations (e.g., The Chesapeake Bay Foundation, Chesapeake Wildlife Heritage, The Nature Conservancy, Atkins Arboretum), or county associations or community civic groups involved (e.g., Dorchester Citizens for Planned Growth, Queen Anne's Conservation Association, Chester River Association). A comparative analysis of their cultural model of land conservation will be forthcoming.

AUTHORS' STATEMENT

Michael Paolisso is a Professor in the Department of Anthropology, University of Maryland. Priscilla Weeks is a Senior Research Scientist at the Houston Advanced Research Center (HARC). Jane Packard is an Associate Professor in the Department of Wildlife and Fisheries Sciences at Texas A&M University. The research for this article was supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under Award No: 2005-35401-16012. The authors would like to thank Nicole Dery and R. Shawn Maloney for their assistance with interviews and analysis of transcripts. We also would like to acknowledge Drs. Russell Brinsfield and Sarah Taylor-Rogers of the Harry R. Hughes Center for Agro-Ecology, Inc for their support and guidance on many topics and issues related to agriculture and conservation on Maryland's Eastern Shore. Finally, we owe a special thanks to the farmers who shared their time and knowledge with us.