

Absentee landowners of agricultural land: Influences upon land management decision making and information usage

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Abstract: Ownership of agricultural land by absentee owners (individuals who do not reside permanently on their land) is on the rise worldwide, yet researchers and conservation practitioners know very little about these landowners, what influences their land management decisions, and their use of varying land management information sources. Our study focuses on (1) how absentee landowners vary in terms of influences upon their decision making regarding land management and (2) how, or if, this variance predicts sources of conservation information landowners use regarding their land. The findings show three distinct groups of absentee landowner classes: (1) Minimal Recreationists, (2) Moderates, and (3) Recreation and Conservationists. While recreation on the land dominates as the most powerful influence upon decision making regarding land management, conservation was not a prominent land management motivation in two of the three classes. These groups of landowners correspond with differing information usage patterns, with Recreation and Conservationists the most likely to use information from conventional sources (e.g., influential individuals, agricultural organizations, and conservation agencies) while the other two groups have negative relationships with almost all of the information sources. We discuss strategies for tailoring and delivering conservation messages to these diverse absentee landowner groups.

Key words: absentee landowners—decision making—land management

Ownership of agricultural land by absentee owners (individuals who do not reside permanently on their land) is on the rise worldwide. Research in Australia (Mendham and Curtis 2010) and central and eastern European countries (Ciaian and Swinnen 2006; Karppinen and Hanninen 2006) show an increase in absentee ownership of farms over the last 15 years. This increase is also occurring in the United States. Haggerty and Travis (2006) note an “unprecedented level of absentee ownership” of rangelands occurring in the West in the latter part of the 20th century, while in the Midwest, an increasing number of farmland owners are no longer living on their land, or even in the state where their land is located (Duffy and Smith 2008).

Most states, as well as the federal-level US Natural Resource Conservation Service (NRCS) and US Forest Service (FS), have policies and programs to encourage land and related resource conservation among

private landowners by using education, technical assistance, financial incentives, and other means to promote the adoption of best management practices. However, in a synthesis of these state and federal policies as they relate to absentee landowners, few policies or programs at the state or federal levels were identified as having any direct or explicit emphasis on absentee landownership issues. Thus, these policies and programs fail to recognize absentee owners as an important segment of private landowners who may have interests and concerns distinct from resident landowners involving agricultural land (Petrzelka et al. 2013).

Given the increase of absentee ownership of agricultural land, it is time to address these critical gaps that exist in the research and conservation policy and programs. Yet researchers and conservation practitioners know very little about these landowners, what influences their land management decisions, and their use of land management

information. These knowledge gaps make it difficult to develop and tailor conservation outreach to absentee landowners.

We begin to address these gaps in the knowledge through use of latent class analysis (LCA) to aid in understanding and identifying (1) how absentee landowners vary in terms of influences upon land management decisions and (2) how, or if, variation among absentee landowners is related to sources of information landowners use regarding their land.

Absentee Landowners and Land Management. The issue of absentee landowners and the role they play in conservation practices is critically important. The vast majority of research on absentee landowners and land management attitudes and behaviors focuses upon nonindustrial private forest landowners (NIPFs). For example, a study conducted by Rickenbach and Kittredge (2009) in Massachusetts and Vermont found that NIPF absentee owners were less motivated by production or protection, and in general were disinterested in forest management or conservation, leading the researchers to conclude that outreach efforts to these landowners face multiple challenges, not only in actually reaching the landowner, but also requiring “greater effort to overcome the motivational hurdle to land management and protection.”

Kendra and Hull (2005) assessed the goals and forest practices of Virginia landowners and found 41% of the study participants were absentee, and were the least likely of all landowners studied to actively manage their lands due to various reasons, including “they don’t consider their land suitable for management (possibly because they believe their tracts are too small), they don’t have time, and they don’t spend enough time on their land to get involved in its management” (Kendra and Hull 2005). Similar to Rickenbach and Kittredge (2009), Kendra and Hull (2005) argued that challenges to working with absentee owners not only include locating and contacting them, but, even more importantly, motivating them into conservation action and active land management.

In a typology of NIPFs in Utah, Salmon et al. (2006) categorized landowners into three groups: amenity-focused, multi-

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ple-benefit, and passive. The majority of amenity-focused and passive landowners were absentee owners who owned the land primarily for privacy and recreation, were more likely to have an urban background, and were less likely to have inherited the land or to be a farmer or rancher. Finley and Kittredge (2006) classified Massachusetts' NIPF landowners into three groups—Thoreau, Muir, and Jane Doe—based on attitudes towards environmental protection, privacy, and appreciative values of forest. The Jane Doe group was most likely to be composed of absentee owners and the least was known about this group (thus, as the authors note, the anonymous name). Sixty-eight percent of the Jane Doe group did not live on their land, placed little importance on the aforementioned conservation values, and showed disinterest in government programs encouraging forest stewardship and active forest management.

The above research findings on absentee forest landowners and their land management attitudes and behaviors emphasize disinterest in management of forested land, and even disengagement from land conservation programs. These findings of forest absentee landowners may or may not be applicable to absentee landowners of agricultural (i.e., crop and ranch) land, a group on which there is minimal research. The research on agricultural absentee landowners that does exist focuses primarily on (1) segmentation of absentee landowners based on use of the land and (2) absentee landowners' use of information sources.

For example, in a study of Great Lakes Basin absentee landowners of agricultural land, the landowners were segmented based on if they rented the land for crop production or used the land themselves for recreational activities (e.g., hunting, fishing, and hiking; Petrzelka 2012). The research revealed those who rented their land out for crop production were more likely to be older, female, and twice as likely to consider themselves a farmer either now or in the past, with 50% indicating either a current or past connection to farming, compared to 23% of those who use their land primarily for recreational activities. Although both groups indicated a high concern for the environment (contrasting with the previously discussed forestry studies), a higher level of concern was expressed by those using their land primarily for recreational or wildlife value.

An earlier study of these landowners indicated while they held a high interest in soil, land, wildlife, and water conservation, no natural resource agency was ranked by the landowners as a “very important” source of conservation information (Petrzelka et al. 2009). However, those enrolled in set-aside programs were significantly more likely than those not enrolled to report having received information from the Farm Service Agency (FSA) (in addition to owning more land, having higher levels of education, and renting their land). The landowners most likely to participate in cost-share programs indicated that the NRCS was an important source of information (Petrzelka et al. 2012).

Redmon et al. (2004), in their work with absentee rangeland owners in Texas, found these owners had little to no knowledge of the land management expertise available to them from conservation organizations, nor were they aware of related government conservation programs. They were “likely to use improper natural resource management strategies based on faulty knowledge or poor advice from well-meaning neighbors or popular press articles” (Redmon et al. 2004). In a California study of hardwood rangeland owners, Huntsinger et al. (2010) found, similar to Redmon et al. (2004), that agricultural absentee owners were less likely to have received information from traditional sources, such as private forestry consultants, Extension, and the NRCS.

A study of female absentee landowners in the Great Lakes found they tended to rely more on their spouses or other co-owners of the land for conservation information than male landowners (Petrzelka and Marquart-Pyatt 2011). Female landowners of agricultural land in general tend to draw upon conservation organizations for information less often than male landowners, in part because the materials produced by these organizations do not resonate with the women landowners (Wells and Eells 2011).

The distance from which an owner resides from their land has also been suggested as a barrier to use of information sources. In Utah, absentee forest owners had little contact with county Extension agents or state foresters, in part due to the distance they lived from the land, leading to the conclusion that absentee owners were “more likely to be isolated from the social networks that seem to play a large role in diffusing forestry information among multiple-benefit

landowners” (Salmon 2006). Rickenbach and Kittredge (2009) also found increased distance of permanent residence from the forestland was highly associated with lack of social relationships with residents near the forestland, leading to lack of contact with those that may provide conservation information. Consequently, absentee landowners that live further from their land tend to be more isolated from local social networks and less attuned to conventional sources of natural resource information.

This review of the literature shows several patterns in the research on absentee landownership and use of conservation information. First, some absentee landowners have concern or interest in conservation, but many others appear to lack interest and/or motivation to partake in conservation behaviors. The vast majority of absentee landowners studied do not appear to use traditional sources of conservation information, such as agencies and social networks with those living near their land, perhaps due to not being aware of these sources, disinterest in active management of their land, or something else. Males are more likely to use the traditional sources, and distance the absentee landowner lives from their land is a barrier to use of conservation information sources.

Conceptual Framework. Most of the typology analyses summarized above use a cluster analysis approach to segment landowners (Salmon et al. 2006). An alternative approach that is increasingly used to discern similarities and differences among landowners is LCA. While still new in the land management literature, LCA has several advantages over cluster analysis. First, it places landowners in groups while estimating the probability that the landowner may belong to another group, providing a more precise classification of landowners based upon their probability of membership in a latent category. As Pouta et al. (2011) state, “compared to cluster analysis, the advantages of the latent class approach are the more detailed output for probability-based classes and the wider selection of statistical tests available to assess the validity of the results” (citing Aldrich et al. [2007] work on validity of classification methods). LCA also yields comparable or slightly better results than nonprobabilistic classifications, particularly when covariates such as landowner characteristics are added to the model (Pouta et al. 2011). For a detailed compari-

son of LCA and K-means cluster methods, and mathematical equations for LCA model estimation, see Pouta et al. (2011).

LCA has primarily been used in studies located outside of the United States to analyze, for example, landowner differences regarding land management decisions (Pouta et al. 2011), conservation program participation (Putten et al. 2011), and responses to land policies (Myyrää and Pouta 2010). We build upon this growing body of landowner literature by applying LCA to absentee landowners of agricultural land in various regions of the United States. Doing so addresses the call in the literature for more typologies of landowners of agricultural land (Pouta et al. 2011; Perry-Hall and Prokopy 2014), to assess variation among agricultural absentee landowners. We then use our typology to identify information sources used by the varying groups of landowners to assist in developing land management outreach appropriate for these landowners. As argued by Maybery et al. (2005), identifying the profiles of landowners by their decision making is important for tailoring conservation organizations' outreach messages to match landowners' values and motivations.

Given the previous research, we hypothesize absentee landowners will aggregate into multiple categories based upon diverse land management motivations, such as reliance upon the land for income, importance of conservation, and importance of recreation. We also hypothesize that these landowner categories will relate to differing types of information that absentee landowners use in making land management decisions.

Materials and Methods

The data for this study comes from two regions in the United States—the Great Lakes Basin and Utah. These areas were chosen for several reasons. In stakeholder meetings held with absentee landowners and NRCS field practitioners in the Great Lakes Basin, both groups independently identified a need for specialized outreach to absentee landowners, particularly in four Great Lakes Basin counties (Manitowoc County, Wisconsin; Tuscola and Arenac Counties in Michigan; and Orleans County, New York; figure 1). Manitowoc County, Wisconsin, lies on the western shore of Lake Michigan. Tuscola and Arenac Counties in Michigan are part of the Saginaw Bay Watershed, which lies on the southwest shore of Lake

Huron. The Saginaw Watershed is listed on the Environmental Protection Agency (EPA) Areas of Concern List for the Great Lakes. Orleans County, New York, is on the southern shore of Lake Ontario.

Manitowoc County has an active dairy cattle industry resulting in aggressive tillage and manure applications. The major land use in Orleans County is cultivated cropland. Tuscola County is made up largely of agricultural land, whereas Arenac County has more land owned for recreational purposes (Agren 2008). In all four counties, corn (*Zea mays* L.) is the dominant commodity raised (Census of Agriculture 2007).

The Utah study site was chosen both (1) to allow for comparison of absentee landowners across geographical regions, different ecosystems, and uses of the land, and (2) for convenience (the authors live in Utah). Three Utah study counties were selected by asking NRCS state and district conservationists to assess (1) the level and location of increased absentee landownership of agricultural land they are observing in the state and (2) their perceived need for conservation outreach with these landowners. Based on this information, three counties were included in the study: Wasatch, Weber, and Summit (figure 1). All three counties are located in the northern part of the state.

For the Great Lakes sample, names of absentee landowners were obtained through the county tax rolls, double checked by local natural resource agency staff, and sorted to include only those landowners living outside the respective counties in the study (to be consistent with previous operationalization of absentee landowners; Constance et al. 1996). A pre-test of the questionnaire occurred in early 2007 with a small number of absentee landowners, with the mail survey conducted in the spring of 2007 using a modified Dillman (2000) Tailored Design Method (TDM). One week after the initial survey mailing, a reminder postcard was sent to all respondents. Three weeks after the initial mailing, a replacement survey was sent to those that had not yet responded. If a "primary contact" was listed on the tax rolls, the survey was sent to this contact; otherwise, it was mailed to the name (or names) listed on the property deed. Overall, 275 absentee landowners responded to the Wisconsin survey (67% response rate), 556 absentee landowners responded in Michigan (66% response rate), and 73 absentee landowners

responded to the New York survey (57% response rate).

For the Utah sample, mailing lists were constructed using property tax rolls from each County Recorder's Office and sorted to include only those landowners whose home address was outside the county in which their land was located (Constance et al. 1996). The Utah survey was administered in the summer of 2012, again using a modified Dillman (2000) TDM. Two weeks after the initial survey mailing, a second survey and letter were sent to all nonrespondents, and three weeks after the second survey, phone call follow-ups were conducted using the same questionnaire. Upon receiving the returned questionnaires, only those landowners who indicated owning agricultural land on which they do not permanently live were included, for a total of 152 usable responses (64% response rate).

Survey questions on both the Great Lakes and Utah surveys included the following topics: land characteristics, decision making on the land, agricultural practices on the land, information sources, and background characteristics. For Utah, the survey was adapted slightly to account for regional differences, primarily addition of ranching terminology and ranching activities. Upon completion of the draft Utah survey, NRCS Utah staff was asked to review the survey (in lieu of a pre-test). Revisions were made based on comments received from NRCS.

Descriptive statistics (percentages and means) were run on various landowner characteristics, influences upon decision making, and importance of information sources. Landowner characteristics included: gender, marital status, method of land acquisition, household income, age, acreage of land, distance lived from land, sole or co-ownership, and primary activities done on the land. Influences upon decision making were measured on a four-point scale in response to the question, "To what extent do the following values or needs influence your decisions about your land?" ("not at all" = 1, "a little" = 2, "somewhat" = 3, and "very" = 4). Influences included need for income, conservation, tradition, and recreation and wildlife. Finally, respondents were provided with a list of information sources and asked to indicate the level of importance of these sources for their land management (measured on a four point scale where "none" = 1, "a little" = 2, "some" = 3, and "very" = 4).

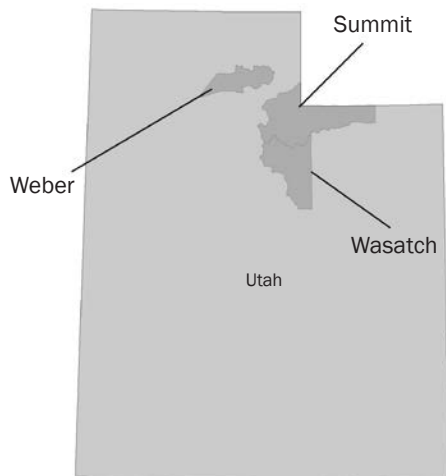
Figure 1

Study regions include four counties in the Great Lakes Basin and three counties in Utah, United States.

Great Lakes Basin



Utah



The LCA sought to distinguish absentee landowners based upon the influences driving their decision making about their land. To ease the interpretation of the latent class model, we recoded the four response categories for influences upon decision making (identified above) into three categories: “not at all influenced,” “somewhat influenced” (which incorporates “a little” and “somewhat” responses), and “very influ-

enced.” Two covariates are also included in the model: agriculture as primary land use (AGPRI), which includes cropping, grazing, agroforestry, etc. (present = 1, not present = 0), and region of residence (REGION, Utah = 0; Great Lakes = 1). We chose these measures to control for anticipated differences among landowners with contrasting primary land uses and regional agricultural produc-

tion differences between the Great Lakes and Utah study areas.

To construct the latent class model, we first determined the appropriate number of classes based on the four land management influences, then proceeded to include covariates. Collins and Lanza (2010) recommend this stepwise procedure to assure face validity in the interpretation and meaning of the latent classes at both stages, as there is potential for class groupings to shift when covariates are introduced. Latent class models were estimated for one-, two-, and three-class models. Formal statistical rules on how to select the appropriate number of classes are not well developed; therefore, we followed the convention of selecting the model with the lowest Bayesian Information Criteria (BIC) (Boxall and Adamowicz 2002). We selected the three-class model as the most appropriate number of absentee landowner classes, as this model had a lower BIC statistic than the one- and two-class models, without covariates. All LCA models were estimated using the statistical package Mplus.

We then conducted a series of binomial logistic regression models to understand the relationship between absentee landowner classes and their use of eight different information sources, shown by the literature and our descriptive results to be of importance to landowners. Individuals made up four of the information sources and consisted of spouses or partners, children, friends or neighbors living near the land, and tenant operators. Four categories of organizational information sources that work with private landowners were also considered—(1) NRCS, (2) Extension, and State Departments of (3) Agriculture and (4) Natural Resources (DNR).

To assess the relationship between class membership and information use, we used class membership as independent measures in the logistic regression models, with individuals assigned to the classes in which they had the highest probability of membership. This approach is referred to as “classify-analyze” (Collins and Lanza 2010). The information importance measures were recoded to a binomial dependent variable, with 0 representing the source was “not important” and 1 representing “a little,” “some,” or “very important.”

We included four covariates in the regression models found to be relevant in the previously discussed literature on landowners’ conservation attitudes and activity and use of information. Gender is a binomial

measure with females used as the reference group. Education is represented in three categories: high school or less, some college, and a Bachelor's degree or more (the latter used as the reference group). The distance variable is a scalar measure of how close absentee landowners live to their land (ranging from 1 = "less than 5 miles [8.05 km]" to 5 = "150 miles [241.4 km] or more"). We include ownership as a binomial measure with landowners grouped as shared or sole owners (latter used as the reference).

Regression models were constructed to compare how different classes used various information sources. Therefore, we did not adjust the independent measures included in each information source model to maximize the amount of variation explained (-2 loglikelihood statistics). Instead, we held the landowner groups and covariates constant across all information source models to facilitate the comparisons across landowner groups. The standard error represents the accuracy of the logistic regression coefficient estimate. The odds ratio represents the odds that an absentee landowner of the given characteristic (independent variable) will use the information source.

Results and Discussion

Descriptive Profile of Survey Respondents. Gender composition of the landowners (with a majority being male) and average age (lower 60s) were similar in both study areas (table 1). Co-ownership situations were also similar, with the most common ownership arrangement involving a spouse or sibling. In general, absentee landowners in Utah were wealthier. The average area in the Great Lakes was 55 ha (135 ac) and in Utah, 40 ha (100 ac). Great Lakes absentee landowners lived closer to their land; 27% lived within 40 km (25 mi) compared to 12% of Utah respondents living within this distance.

Recreational activities were common for both Utah and Great Lakes absentee landowners with almost 50% in both regions indicating this activity is done on their land. As expected, there is much more crop production occurring in the Great Lakes region than Utah, given the dominance of corn production and agricultural activity overall in the Great Lakes counties.

Recreational and wildlife value was the primary motivation for absentee landowners' land management decisions in both study regions, with over 50% of landowners from

Table 1

Demographics and land characteristics. Only dominant response categories are presented, thus percentages may not equal 100%.

Demographics	Great Lakes	Utah
Male	74%	72%
Female	26%	28%
Household income (US\$)		
< \$25,000	13%	11%
\$25,001 to \$75,000	46%	26%
\$75,001 to \$125,000	27%	31%
> \$125,000	14%	31%
Average age	60	62
Average area (ha)	54.6	40.5
Distance lived from land (km)		
< 40.1	27%	12%
40.2 to 80.3	17%	27%
80.5 to 241.2	33%	36%
> 241.4	23%	25%
Own land with others	43%	26%
Agricultural production activity on land (crop, grazing, and agroforestry)	59%	10%
Recreational activity on land	62%	49%

Table 2

Influences upon decision making on land "a good deal." Percentages in bold indicate top influence for each region.

Influences	Great Lakes	Utah
Recreational or wildlife value	54%	51%
Conservation/concern for environment	44%	27%
Tradition—that's how it's always been done	19%	16%
Need for income	16%	10%

each region noting this was a main influence upon their decision making (table 2). Conservation or concern for the environment was the second strongest influence upon decision making, although much higher for Great Lakes landowners (44% influenced "a good deal") than the Utah landowners surveyed (27% influenced "a good deal"). Less than 20% of the respondents in both study sites noted "tradition—that's how it's always been done" and "need for income" as influencing their land management decisions "a good deal."

For Great Lakes respondents, two information sources were identified as "very important" by 25% or more participants: the tenant operator (26%) and landowners' spouse (25%; table 3). No sources were as popular among Utah absentee landowners. Rather, Utah respondents indicated that friends or neighbors living near the land were

the most important sources (albeit only 16% indicating) followed by their spouse (13%).

Latent Class Analysis Results. All LCA models are summarized in table 4. The addition of the two covariates (which contain some missing information, hence the smaller *n* in this model) lowered the BIC, indicating improved model fit. Our results focus on three estimates: (1) the proportion of absentee landowners within each class; (2) the conditional response probabilities, which represent the probability that a landowner responds "yes" to a question category; and (3) the covariate class probabilities, which is the average probability that a landowner assigned to a class was classified as a member of the class in the LCA. Class descriptions and probabilities of class membership for the covariate measures are summarized in table 5.

Class 1, labeled Minimal Recreationists, included 85 (10.7%) of the landowners rep-

resented in the LCA. We label them Minimal Recreationists because while the probability that this class is “very influenced” by recreation is low, it is the only type of motivation that they indicate they are influenced by. Class 1 landowners’ management decisions were predominantly influenced by recreation (conditional response probability of being “very influenced” = 0.44), and minimally influenced by income or tradition (conditional response probability of being “not at all influenced” = 0.86 and 0.82, respectively). Utah respondents had a 0.600 probability of belonging to the Minimal Recreationists class. While all landowners in Class 1 had some agricultural activity on their land, agriculture as a primary land use was not a defining characteristic for class membership (conditional response probability = 0.060).

Members of Class 2, Moderates, included 305 (38.3%) landowners, and were characterized as having a low probability of being “very” or “not at all” influenced by any of the four land management motivations. Compared to the Minimal Recreationists landowners, the Moderates may actually be more influenced by recreation, conservation, income, or tradition, but their influences are consistently “somewhat influenced” across the four categories (hence the naming of this group). Absentee landowners with agriculture as their primary land use exhibited a 0.679 probability of falling in the Moderates group. Region of residence had little influence on shaping this class membership.

In contrast, members of Class 3, Recreation and Conservationists, which included 406 (51%) respondents, were characterized as being most influenced by recreation and conservation (conditional response probability of being “very influenced” = 0.95 and = 0.66, respectively). Landowners in this class were less motivated by income generation or tradition (conditional response probability of being “not at all influenced” = 0.86 and = 0.82, respectively). Absentee landowners from the Great Lakes region (probability 0.612) or with a primary land use that was not agriculture (probability 0.801) were most likely to be categorized as Recreation and Conservationists.

Absentee landowners have diverse land management interests, as demonstrated in our three distinct absentee landowner classes. Recreation on the land dominates as the most powerful influence upon decision making regarding land management, as it was

Table 3

Sources of information regarding land (percentage indicating “very important”). Percentages in bold indicate top three sources for each region.

Information source	Great Lakes	Utah
Spouse	25%	13%
Tenant operator	26%	7%
Children	17%	11%
Friends/neighbors living near land	12%	16%
Natural Resources Conservation Service	20%	5%
Extension	15%	8%
State Department of Agriculture	14%	3%
State Department of Natural Resources	23%	6%

Table 4

Latent class analysis (LCA) models and fit statistics.

Model	n	Loglikelihood	AIC	BIC
1 class	871	-3,426.84	6,869.69	6,907.84
2 classes	871	-3,323.39	6,680.78	6,761.86
3 classes	871	-3,231.75	6,515.49	6,639.50
3 classes with covariates	796	-2,782.37	5,531.05	5,689.64

Notes: AIC = Akaike Information Criterion. BIC = Bayesian Information Criterion.

Table 5

Probabilities of class membership for LCA covariates. Numbers in bold indicate the probability that individual with that covariate trait (row) is a member in the class (column).

Class characteristics	Class 1: Minimal Recreationists	Class 2: Moderates	Class 3: Recreation and Conservationists
Estimated class count	85	305	406
Proportion	0.107	0.383	0.510
Average probability of class membership	0.986	0.906	0.965
Covariate AGPRI*			
Not primary use	0.084	0.115	0.801
Primary use	0.060	0.679	0.261
Covariate REGION			
Utah	0.600	0.149	0.254
Great Lakes	0.057	0.331	0.612

*Agricultural production as primary land use.

prominent in both Minimal Recreationist and Recreation and Conservationist landowner classes. Conservation was not a prominent land management motivation in two of the three classes; however, conservation was a key component for the Recreation and Conservationist class, which makes up slightly over 50% of the sample. Of additional interest is the fact that our typology did not identify a distinct group of landowners that were motivated by income, a common attri-

bute assigned to and assumed of absentee landowners (The Progress Report 2002). This suggests absentee landowners vary as much as resident landowners, and while income may be a motivator for some absentee landowners, it is not for all.

Table 6 summarizes descriptive characteristics on the three classes. In addition to the characteristics that influenced class membership (noted above), Minimal Recreationists are predominantly male and

have a household income in the US\$25,001 to US\$75,000 range. This group of landowners is the most likely to have inherited their agricultural land. Approximately one-third of these landowners live between 80.5 to 241.2 km (50 to 149.9 mi) from their land. Moderates have the largest proportion of women absentee landowners in their group (32%), and most members of this class are also in the US\$25,001 to US\$75,000 household income range. They are the largest landowners in terms of land area (72.6 ha [177 ac]). Approximately one-third of them live less than 40.1 km (24.9 mi) from their land, and are much more likely to be from the Great Lakes region. Finally, the Recreation and Conservationists group has the highest proportion of male landowners (81%), with nearly half of them in the US\$25,001 to US\$75,000 household income range. Absentee landowners in this group are the most likely to have purchased their land (61%), live the farthest away from their land compared to the other classes (60% live 80.5 km [50 mi] or more away from the land), and tend to be in the Great Lakes region.

Predicting Information Source Importance Using the Latent Class Analysis Typology.

The next step in our analysis was to assess how these different classes of landowners compared in their use of information sources. Class membership was coded into two dummy variables representing Minimal Recreationists and Moderates, with Recreation and Conservationists (Class 3) as the reference class.

In general, the regression models suggest that Class 1 landowners with some recreation interests (and minimal conservation interests) are not seeking land management information from individuals within their social networks or the traditional organizational sources. Absentee landowners belonging to the Minimal Recreationists class were significantly less likely to use information from their spouses or partners, children, friends, or neighbors than landowners in the Recreation and Conservationists class (table 7). Landowners in the Moderates class were also less likely to draw upon friends or neighbors for information, yet were significantly more likely to rely on their tenant operator for information compared to Recreation and Conservationists. Women were almost 50% more likely than men to draw upon their spouses for information. Landowners in co-owner relationships were more likely to

Table 6
Demographics and land characteristics for three classes of absentee landowners. Only dominant response categories presented, thus, percentages may not equal 100%.

Demographic or land characteristic	Minimal Recreationists (n = 85; 11%)	Moderates (n = 305; 38%)	Recreation and Conservationists (n = 406; 51%)
Male	70%	68%	81%
Female	30%	32%	19%
Marital status			
Married	68%	73%	73%
Widowed	16%	13%	9%
Land acquisition			
Purchased	46%	55%	61%
Inherited	45%	37%	31%
Household income (US\$)			
< \$25,000	11%	11%	14%
\$25,001 to \$75,000	45%	51%	47%
\$75,001 to \$125,000	30%	23%	26%
> \$125,000	14%	15%	14%
Average age (years)	64	60	61
Average land owned (ha)	40.5	71.6	44.5
Distance lived from land (km)			
< 40.1	11%	32%	20%
40.2 to 80.3	28%	16%	21%
80.5 to 241.2	32%	29%	39%
> 241.4	28%	24%	21%
Agricultural production activity on land	100%	98%	98%
Recreational activity on land	48%	32%	85%
Region			
Great Lakes	25%	93%	85%
Utah	75%	7%	15%

use spouse/partners and children as sources of information, while absentee landowners with high school education were more likely to use information from their children compared to those with a college education. Greater distances between the absentee landowner and their land diminished the use of spouse/partners, friends/neighbors, and tenant operators as information sources.

In the model assessing information use from conservation organizations (table 8), the Minimal Recreationist class of landowners were significantly less likely to use any of the four conservation organizations as information sources, compared to landowners who had both recreation and conservation interests. The Moderate landowners, while more oriented towards agricultural production than recreation, were also significantly less likely to use NRCS and DNR sources of information than the Recreation and Conservationist group. Absentee landowners with high school education were more likely to use information from their

state Department of Agriculture compared to those with a college education. Other covariates were nonsignificant predictors of information use.

Landowners across the three ownership classes use different information sources, as evident in the regression analyses, which have implications for how conservation messages may be tailored to resonate with the varying types of absentee landowners. The Recreation and Conservationists (Class 3) were the most likely to identify individuals and organizations as important sources for land management information, and thus represent the absentee landowner group that are most engaged with conservation organizations. While this finding is not unexpected given their interest in conservation, it is contrary to previous study findings that indicate distance from land is a barrier to usage of typical information sources, as this class is the one that lives farthest from their land. Thus, this finding provides hope that distance as a barrier to conservation outreach may be

Table 7
Binomial logistic regression models for use of four individual information sources.

Landowner characteristic	Spouse/partner			Children			Friends/neighbors			Tenant		
	Estimate	Std. error	Odds ratio	Estimate	Std. error	Odds ratio	Estimate	Std. error	Odds ratio	Estimate	Std. error	Odds ratio
Minimal recreationists	-0.977	0.285	0.376***	-0.946	0.296	0.388**	-0.822	0.266	0.440**	-0.807	0.332	0.446*
Moderates	-0.260	0.167	0.771	-0.162	0.165	0.851	-0.349	0.173	0.705*	2.017	0.189	7.517***
Gender (male)	0.338	0.185	1.474*	-0.0187	0.182	0.829	-0.069	0.188	0.933	-0.159	0.207	0.853
Education (high school)	0.029	0.196	1.029	0.559	0.194	1.749**	-0.305	0.200	0.737	-0.012	0.221	0.988
Education (some college)	0.303	0.183	1.354	0.217	0.182	1.242	-0.060	0.191	1.061	0.131	0.203	1.140
Ownership (shared)	0.469	0.158	1.598***	0.029	0.157	1.030*	-0.189	0.163	0.828	-0.089	0.176	0.915
Distance†	-0.168	0.065	0.009***	-0.146	0.064	0.864	-0.182	0.068	0.834**	-0.306	0.073	0.736***
Constant	0.205	0.336	1.228	0.292	0.331	1.339	1.696	0.358	5.450***	0.487	0.367	1.627
-2loglikelihood	949.732			961.798			908.923			805.355		
n	717			725			721			727		
% using source	51.5			43.6			64.5			49.3		

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

†Distance is scaled with 1 = "less than 5 miles (8.05 km)" to 5 = "150 miles (241.4 km) or more."

overcome. For landowners like those in the Recreation and Conservationists group, outreach messages should engage landowners' interests in conservation, yet include practices that are flexible to incorporate compatible recreation activities. For example, outreach messages tailored to this group should emphasize that conservation programs can enhance wildlife habitat and scenery.

The findings on information use are more discouraging when examining the Minimal Recreationist and Moderate absentee landowner groups. Minimal Recreationist landowners were less likely than those in the Recreation and Conservationist class to draw upon any individuals or organizations for land management information. For this group of absentee landowners, outreach personnel should take advantage of the greatest, albeit weak motivation experienced by these landowners—recreation—and craft outreach messages associated with recreation activities. This messaging strategy could then attract landowners to conservation programs, if primary focus is on the recreation-oriented benefits that are embedded within land conservation activities. How to access these landowners, however, remains an issue, and is discussed shortly.

Moderate landowners were also less likely to use information from individuals or organizations compared to Recreation and Conservationist landowners for seven of the eight information sources. Our research

findings do not point to a clear, single outreach strategy that would resonate with the Moderate class, given that these landowners are consistently "somewhat" interested in a range of land management motivations. This finding is similar to earlier research on private forest landowners, many of whom face a "motivational hurdle" that must be overcome before engaging in land management activities (Rickenbach and Kittredge 2009). The Moderate landowners, however, were the most likely to draw upon their tenants for information, consistent with previous research on the owner-tenant relationship, which shows landowners rely on their tenant for information regarding their land (Gilbert and Beckley 1993). Thus, it is clear that to access absentee landowners in the Moderate class, it is critical to reach the tenant operator. Such contact may already be occurring since conservation agency personnel in Extension, NRCS, and FSA often work with agricultural producers. Therefore, stressing the importance of conservation to improved agricultural production to both operators and landowners may be the most effective strategy to build relationships with this class of landowners.

The findings also reveal natural resource personnel are more likely to encounter female landowners in the Minimal Recreationist and Moderate groups of landowners. This is important to note as research conducted in Iowa on female landowners

of agricultural land found when it comes to conservation information, most female landowners are not familiar with language used when discussing conservation programs (Wells and Eells 2011). Thus, for this group of landowners, the message and materials need to be developed in a way that resonate with female landowners—including materials that contain photos of women as landowners and discussion of land as not solely a commodity to be used, but an important aspect of family and community (Wells and Eells 2011).

While conservation organizations are critical sources of land management information, these organizations are not the sole communicators of conservation practices or programs. Individuals within landowners' peer networks are also important, as evidenced by the significant use of friends and neighbors for the Recreation and Conservationist group and the tenant for the Moderate group. Thus, the findings suggest that the mechanisms through which landowners become engaged in land management may have as much, and at times more, to do with the messenger than the message. For landowners without specific land management motivations (such as our Moderates group), seeking information from conservation agencies and organizations may feel too formal, or may be thought of as resources that only large, agricultural production landowners draw upon. Thus, one strategy that conservation organizations

Table 8
Binomial logistic regression models for use of four organizational information sources.

Landowner characteristic	Natural Resources Conservation Service			Extension			Department of Agriculture			Department of Natural Resources		
	Estimate	Std. error.	Odds ratio	Estimate	Std. error	Odds ratio	Estimate	Std. error	Odds ratio	Estimate	Std. error	Odds ratio
Minimal recreationists	-2.021	0.302	0.132***	-1.555	0.290	0.211***	-1.754	0.318	0.173***	-1.815	0.277	0.163***
Moderates	-0.660	0.170	0.517***	-0.247	0.164	0.781	-0.147	0.165	0.863	-0.951	0.174	0.386***
Gender (male)	0.226	0.187	1.253	0.150	0.182	1.162	0.025	0.184	1.025	0.219	0.187	1.245
Education (high school)	0.114	0.202	1.121	-0.185	0.195	0.831	0.532	0.198	1.702**	-0.013	0.205	0.988
Education (some college)	0.234	0.191	1.263	-0.068	0.183	0.934	0.318	0.182	1.374	0.070	0.193	1.073
Ownership (shared)	0.233	0.164	1.262	-0.040	0.157	0.961	-0.082	0.158	0.921	0.013	0.166	1.013
Distance†	-0.073	0.066	0.930	-0.073	0.064	0.930	-0.037	0.064	0.963	-0.046	0.067	0.955
Constant	0.767	0.468	2.153*	0.698	0.333	2.010*	0.243	0.333	1.275	1.118	0.350	3.058
-2loglikelihood	903.15			960.91			946.26			891.02		
n	724			726			721			729		
% using source	60.1			55.6			52.8			63.5		

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

† Distance is scaled with 1 = "less than 5 miles (8.05 km)" to 5 = "150 miles (241.4 km) or more."

should consider is to promote information sharing among landowner peer networks to ensure correct land management information is available.

For example, in their work on the impact of gender on agricultural conservation knowledge, Druschke and Secchi (2014) note that "Peer-to-peer learning networks offer a strong option for improving conservation outreach to female landowners," with their study findings showing both female and male landowners looking "to neighbors and friends more than any other source for information about conservation." The researchers argue agencies such as NRCS and Extension "should continue their efforts to identify active landowners and farmers and recruit them to participate in and lead peer-to-peer education programs." We suggest this be done not only by government agencies, but all organizations interested in conservation, including Land Trusts, watershed management groups, and civil society organizations.

Summary and Conclusions

Absentee landowners are increasingly common on agricultural landscapes, but the types of influences upon their land management decisions, and how these influences are related to information use, are not well understood. As noted in a recent article by Perry-Hill and Prokopy (2014), there is "little existing research comparing differ-

ent types of rural landowners and their land management decisions."

Through use of LCA, our study begins to address this gap and makes three contributions to the literature. First, the LCA results show that absentee landowners are not a homogenous group and, for the landowners studied here, there are three distinct groups of landowners as defined by their motivations for land management decisions. Second, many absentee landowners do not have specific or strong interests in land management. Finally, these groups of landowners correspond with differing information usage patterns, with absentee landowners interested in conservation and recreation finding information from conventional sources (e.g., influential individuals, agricultural organizations, and conservation agencies) more useful than the other types of landowners.

The findings raise several additional questions for future research. Almost half of the landowners studied herein do not use the traditional sources of conservation information used for conservation. What explains the dissociation between these landowners and conservation organizations is unknown—further work is needed to elucidate the division between these agencies and the landowners. For example, who and where are these landowners turning to for their information (if anyone), and what does this lack of use of traditional sources

mean for conservation implementation on the land? With the agricultural production focus within the Moderate class, the significant negative relationship with NRCS and DNR is troubling, given the role these organizations play in facilitating federal and state conservation programs on agricultural land. The reason(s) behind this finding are also unknown, yet an important research topic. Is it dislike for "big government," lack of awareness of the information resources available to the landowner, or something else?

We also recommend that future research with absentee landowners considers the ways in which absentee landowners who are not using the traditional sources of information may be effectively engaged in conservation outreach without these landowners necessarily seeking information from the traditional sources. Such research would examine in more depth how individuals share conservation information with one another, and the conditions under which organizational programs and information sources are communicated among landowners, outside of the organization.

We recognize several limitations of the study. First, the analysis is based on self-reported behavior, not actual behavior. Thus, an additional step for future research is to measure and analyze actual land management practices of absentee landowners. Operationalization of absentee landowners as only those living outside of the county is a

limitation as well, as we suspect some absentee landowners are individuals who have moved off of the farm and to the nearby town within the same county. This operationalization, then, may partially bias the results toward recreation and wildlife values being the strongest motivation, explain the lower level of female respondents in our study, and exclude women landowners who tend to rent their land more often than male landowners (Duffy and Johanns 2012; Jackson-Smith and Petrzelka 2014).

Despite these limitations, this study builds upon the limited information that exists about absentee landowners of agricultural land and begins to untangle and delineate the varying characteristics of these landowners. Our findings extend the research on absentee agricultural landownership and how land management motivations are related to information source usage. Understanding how absentee landowners' interests differ, and how they use various sources of information, are key steps in designing land management outreach for this growing and important type of agricultural landowner.

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