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Northeastern Family Forest Owner Gender Differences in Land-Based Estate Planning and the Role of Self-Efficacy

Marla Markowski-Lindsay, Paul Catanzaro, Rebekah Zimmerer, David Kittredge, Ezra Markowitz, and Daniel A. Chapman

Marla Markowski-Lindsay (marla@eco.umass.edu), Paul Catanzaro (paulcat@umass.edu), Rebekah Zimmerer (rebekah.zimmerer@gmail.com), David Kittredge (dbkitt@gmail.com), and Ezra Markowitz (emarkowitz@eco.umass.edu), University of Massachusetts, Department of Environmental Conservation, 160 Holdsworth Way, Amherst, MA 01003. Daniel A. Chapman (dachapman@psych.umass.edu), University of Massachusetts, Department of Psychological and Brain Sciences, 135 Hicks Way/Tobin Hall, Amherst, MA 01003.

Abstract

Understanding family forest owner (FFO) estate planning decisionmaking is fundamental to ensuring the survival of landscapes that provide many public goods, but little is known about how land-based estate planning differs by gender. Analyses of a survey of FFOs in northeastern United States indicated that female FFOs rate themselves with lower levels of land-based estate planning self-efficacy—being less prepared, confident, and financially able to move forward with planning the future of their land than males. Of the FFOs who had positive levels of land-based estate planning self-efficacy, females were more likely to want to keep their land undeveloped than males. Our research suggests that increasing land-based estate planning self-efficacy of female FFOs may lead to higher rates of keeping land undeveloped for regions with FFOs similar to those of the northeast. We recommend ways in which foresters and programs could play an important role in increasing land-based estate planning self-efficacy.

Keywords: land conservation, family forest, confidence, women, intergenerational transfer

The contiguous United States contains roughly 816 million ac of forest, 36 percent of which are privately owned by family forest owners (FFOs), including individual landowners and families, trusts, estates, and family partnerships (Butler et al. 2016). These 11 million FFOs hold roughly 290 million ac (Butler et al. 2016). As these owners grow older, or when they pass, their land may transfer via succession, sale, or donation to be converted from or maintained as forest (Markowski-Lindsay et al. 2016). Land transfer is imminent for much of the forest, as nearly 45 percent of FFOs owning at least 10 ac are 65 years or older and own 118 million ac, or roughly 40 percent of all FFO-owned land (Butler et al. 2016).

Understanding estate planning decisionmaking of FFOs is fundamental to ensuring the survival of landscapes that provide economic, environmental, and recreational services, and a growing body of literature has begun to explore it in greater depth. Recent studies have developed an FFO ownership transition and formal estate planning decisionmaking framework, analyzed differences in the extent and type of planning by owners, and explored attitudes underlying estate planning decisions (see Bell et al. 2019, for a review).

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Management and Policy Implications

Finding strategic and effective strategies to inform the legacy planning decisions of family forest owners (FFOs) is important to maintaining forest benefits and maximizing the impact of the limited resources of foresters and organizations. Our northeastern United States research demonstrates that female FFOs rate their land-based estate planning self-efficacy lower than that of males. However, those female FFOs who rate themselves as having high levels of estate planning self-efficacy report higher levels of interest in keeping their land forested than males. Therefore, finding ways to increase land-based estate planning self-efficacy of female FFOs may be one strategy to increase the likelihood that land is passed on in a way that keeps forests as forests, meeting the personal goals of women while maintaining public benefits from the land. To increase estate planning self-efficacy, diversified outreach programs should cater to broader forest interests and values in order to appeal to female FFOs and encourage more active engagement with their land through programs of interest to them, including: passing land to heirs, scenic beauty, and protection of biodiversity. Organizations should also consider providing opportunities for women to share their experiences, ask questions, and, for those who wish, to learn in an all-female environment to increase self-efficacy. Further diversifying outreach programs to increase active engagement with the land and offering an all-female learning environment may encourage women to make more decisions about their land and, in turn, increase their level of self-efficacy.

The demographics of FFOs making legacy decisions are evolving as the historical male-centered pattern of land inheritance has been changing in some areas (see Hacker 2010, for a review). Women often end up inheriting the land because they, on average, live longer than men and are typically younger than their spouse (Chen and Volpe 2002, Hacker 2010, Butler et al. 2017). Of the 265 million ac held by FFOs in 10+ ac parcels in the United States, women are primary owners in 21 percent of ownerships and secondary owners in 83 percent of ownerships (Butler et al. 2016). Based on this growing number of female FFOs, it seems important to gain a better understanding of their asset-based decision process.

Existing research has shown that decisions about financial assets, in general, may be approached differently by gender for various reasons. Several studies indicated that women have less enthusiasm for, lower confidence in, and less willingness to learn about personal finance topics than men (Chen and Volpe 2002), and more women are worried about their financial future than men (Whitley and Staples 1997, Hall 2004). It is possible that these gender-based differences result from differing risk perceptions by gender (Gustafsod 1998) or from differences of self-efficacy beliefs. Self-efficacy—the ability to accomplish a task or succeed in an activity—influences task motivation, strategies for learning, and, ultimately, task success (Bandura 1977, 1986, Pajares 2002), and gender differences in self-efficacy have been studied for decades (Junge and Dretzke 1995, Wigfield et al. 1996, Pajares 2002). Similar to how Taylor-Carter et al. (1997) discuss "retirement self-efficacy," we coin the term "land-based estate planning (LBEP) self-efficacy" to reflect individuals' ability to successfully plan the land portion of their estate. As far as we are aware, this topic has not been explored in the FFO literature.

Behavioral and perception differences by gender have important implications for land-based estate planning. Specific to estate planning (though not necessarily land-based), Hacker (2010) found that the decisions women made about wills differed if they were made independently or with a spouse, with women bequeathing to more individuals. Focusing on environmental issues, research has indicated that women express greater concern about local environmental issues than men, and, overall, women are modestly more concerned than men about general environmental issues (see review by McCright 2010). Whether these types of gender differences extend to decisions about the conservation of land-based assets is unclear.

Although research has shown that female forest owners are associated with lower rates of forest management than male owners (Butler et al. 2017), little research exists describing differences in other land-planning behaviors between genders (Huff 2017), exposing a gap that could have consequences for our forests and the benefits they provide. Existing gender-specific forest ownership programs are suggestive of differences that also may exist in the estate planning sphere. Extension tools have reached out to female FFOs separately from males (see Table 1 and Huff 2017) with success, suggesting the need for continued customized outreach approaches for male and female FFOs and a better understanding of why these differing approaches are successful.

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Table 1. Examples of forestry extension tools designed specifically for women.

Sponsor *Program*	Description	Web link
Oregon State University *Women Owning Woodlands Network*	Resource for women landowners to learn about management and share experiences	extensionweb.forestry.oregonstate.edu/wownet
Delaware Highlands Conservancy *Women and Their Woods*	Provides programs to teach women how to effectively care for their land	delawarehighlands.org/watw
USDA, Forest Service and the National Woodland Owners Association *Women Owning Woodlands*	Website to share information and social networks	womenowningwoodlands.net

Identifying distinct groupings of FFOs is a means to tailor outreach, policies, and services (Butler et al. 2007) to ensure the continuation of the benefits forests provide. The heterogeneous nature of FFOs has led many researchers to segment the group multiple ways, including that based on attitudes (Finley and Kittredge 2006), behaviors (Beach et al. 2005), and levels of engagement and interest in forest management (Butler et al. 2007). A common objective of segmenting landowners into groups or typologies is to provide a better understanding of forest ownership in general, and the specific topics addressed reflect a wide diversity of areas (see Ficko et al. 2019, for a review). To our knowledge, no research has segmented FFOs to better understand land-based estate planning.

The critical impact of FFO decisions about the future of their land and the above-described gender-based discussion suggests the need to explore differences in land-based estate planning by gender. The purpose of our study is to fill this research gap by exploring whether there are any gender differences in LBEP self-efficacy. Through our study of the northeastern United States, our goal is to encourage foresters and outreach professionals to use these results to help inform the decisions that landowners are making about the future of their land in order to keep more forests as forest and producing the many benefits on which we all depend.

Data and Methods

We conducted a mail survey of estate planning behavior of FFOs in four heavily forested northeastern states: Massachusetts, Maine, New York, and Vermont. In these states, FFOs own over 46 percent of the roughly 44 million ac of forestland (Butler et al. 2016). We selected eight landscapes, two per state, in consultation with stakeholders based on each having numerous FFOs, extensive forest cover, and "medium to high" levels of housing development pressure (Stein et al. 2005). These landscapes include: Lower Penobscot River and Saco River watersheds (Maine); Millers and Westfield watersheds (Massachusetts); Cortland-Onondaga counties, and Delaware-Greene counties (New York); and Orleans and Rutland counties (Vermont) (Figure 1). Our survey sample frame was based on state and municipal agency property information and focused on a random selection of FFOs owning at least 10 ac of land within those landscapes. We stratified the sample equally above and below 40 ac, segmenting owners to ensure representation of larger ownerships. Within each of the four states, an equal number of surveys were sent to each of two landscapes, for a total of 2,500 surveys.

The mail survey collected information about the owners, their wooded land, and their estate planning intentions and actions. We administered the mail survey in 2015 using a modified Dillman tailored design method (Dillman et al. 2014).

For this research, we focused our analysis on respondents who own a minimum of 10 ac of land with at least 1 ac of that land being wooded. We limited the sample in this way to ensure that these respondents owned a minimum amount of forest. In the northeastern United States, it is common for agricultural land owners to also have woodlots. We wanted to ensure these landowners were not excluded from the analysis because their decisions about the fate of their land have ecological ramifications just as a forest landowner's land would. In addition, as the past has shown, land use can change over time from forest to non-forest and non-forest to forest (Thompson et al. 2013, Olofsson et al. 2016).

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Pairwise Statistical Tests of Association by Gender

To explore patterns in land-based estate planning and other ownership characteristics by gender, we used descriptive analyses to summarize FFO responses to survey questions. We investigated demographic and landownership characteristics, ownership objectives, future plans for the land, and LBEP self-efficacy measures (see Table 2 and Supplement). To do this, we conducted Welch's *t*-tests and nonparametric Wilcoxon

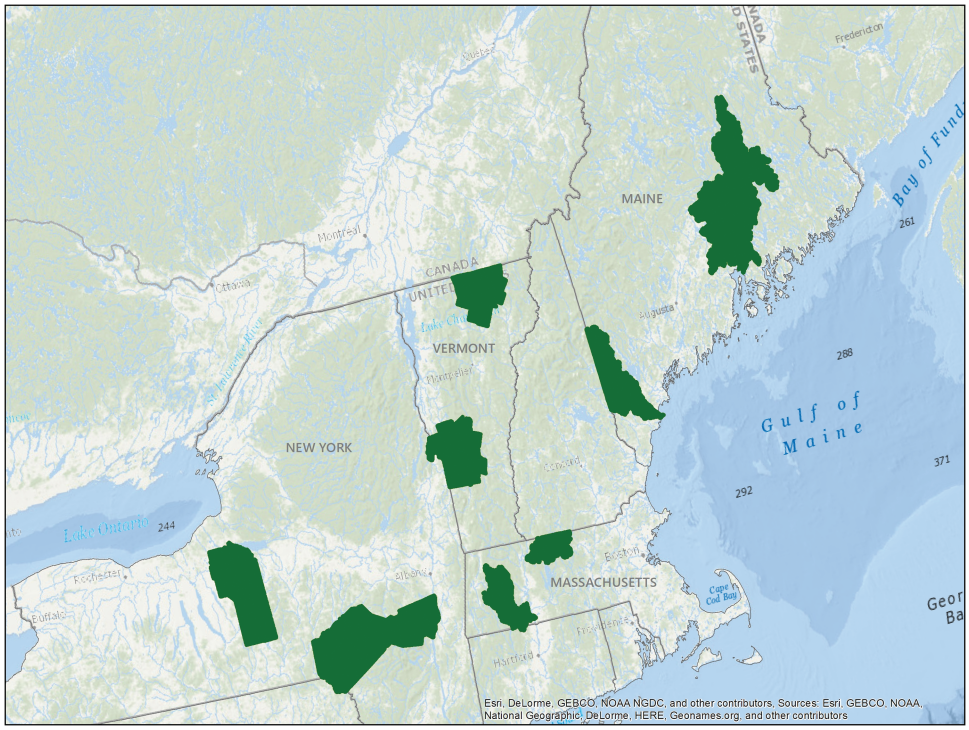

Figure 1. Sample states and landscapes chosen for analysis (Markowski-Lindsay et al. 2018).

Table 2. Survey measures included in statistical tests of association by gender.

Survey measure	Description
Demographic and landownership characteristics	Age, education, acreage owned, ownership tenure, number of owners, inheritance status, and whether owner lives within 1 mile of the wooded land
Ownership objectives	Respondents rated the importance of various ownership objectives using a Likert importance scale. These ownership objectives were grouped into five categories using a technique similar to that presented in Markowski-Lindsay et al. 2017: amenity, land investment, timber/wood production, family, and recreation objectives. In all cases, having an objective meant the landowner responded "Important" or "Very Important" to at least one of the questions in each category. The Supplement summarizes the data coding for these categories.
Future plans for the land	Respondents indicated whether they intended to keep the land undeveloped in the future. The question provided several options to choose from and we coded responses as "Yes" (2), "Don't know/Undecided" (1), or "No" (0). See Supplement for more detail.
Land-based estate planning self-efficacy measures	Respondent self-reported assessment of their: knowledge of where to go for information/help, confidence in having the knowledge to move forward, perception of whether they have enough financial resources to move forward, and understanding of whether their family agrees on how best to move forward with planning the future of their land. Each land-based estate planning self-efficacy measure was coded based on a five-point Likert scale of agreement where 1 reflects "Strongly Disagree" and 5 reflects "Strongly Agree." See Supplement for more detail.

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rank-sum tests to test significant differences, using pairwise deletion to handle missing data.

We examined the relation between gender and these measures, and had few priors for these relations based on existing literature. We expected more female landowners to have inherited their land and also have fewer timber/wood production and recreation ownership objectives (Butler et al. 2017). We expected (but were unsure) that female landowners would be more likely to want to keep their land undeveloped into the future based on females being more likely to engage in environmentally friendly behavior (Tindall et al. 2003) and to express greater concern for the environment than men (Mohai 1992). However, we were unsure about this likelihood because past studies also indicated contrasting results, including lower rates of environmental activism by women than that by men (Mohai 1992) and mixed relations between gender and "environmental behaviors" (Burton 2014). In the Burton (2014) literature review of agricultural owners, several studies indicated women to be more environmentally oriented than men, whereas other studies observed no significant relation between gender and environmental behavior. We also expected female landowners to hold lower levels of LBEP self-efficacy (sensu Chen and Volpe 2002).

Logit Model Exploring Differences by Gender

To explore patterns of association between gender and the above-described measures, we conducted tests using discrete choice models. Logit models are alternative ways of testing relations between measures; instead of being simple pairwise comparisons, they allow all other variables to be held constant when comparing items (i.e., ceteris paribus conditions). The logit model specifies the conditional probability of gender: prob(y = 1|x) as $F(x'\beta)$, where x denotes the survey measures (i.e., explanatory variables), β the fixed parameters to be estimated, and F the logistic cumulative distribution function $\exp(x'\beta) / [1 + \exp(x'\beta)]$.

Prior to estimating the model, we reviewed the distributions of the independent variables and assessed the correlation patterns to avoid multicollinearity issues using the Variance Inflation Factor test. The LBEP self-efficacy measures (Table 2) were correlated, and Variance Inflation Factor was high for confidence in moving forward and knowing where to go for information. As such, our analysis focused on the broadest measure of LBEP self-efficacy: confidence in knowing how to move forward with planning the future of their land.

We explored the correlative relations between gender and explanatory variables described above (demographic, landownership, ownership objective, future plan, and LBEP self-efficacy) using the logit model. The model provided a means to assess the relation between gender and independent variables for the entire sample.

Tests of Land-Based Estate Planning Self-Efficacy by Gender

The survey data we collected provided a unique means to explore whether there was a multifaceted relation among gender, self-efficacy, and keeping land undeveloped. We sought to explore this in the land-based estate planning domain using logit analyses. Respondents who replied "Agree" or "Strongly Agree" to being confident with moving forward with planning the future of their land were identified as having positive levels of LBEP self-efficacy and others as having lower levels of LBEP self-efficacy.

We split the sample into two: subsample 1 included respondents having positive levels of LBEP self-efficacy, and subsample 2 included respondents having lower levels of LBEP self-efficacy. We constructed two logit models—one for each subsample—and conducted likelihood ratio testing to test the appropriateness of fitting the model on these data subsets.

Results

A total of 789 participants returned the survey, reflecting a 33 percent cooperation rate after accounting for undeliverables. Of these participants, 772 owned at least 1 ac of wooded land, and of these, 539 were male (71 percent), and 223 were female (29 percent). Ten respondents declined to answer the gender question and were excluded from this analysis. The highest number of respondents came from Vermont (31 percent, n = 246), followed by Massachusetts (28 percent, n = 220), Maine (21 percent, n = 163), and New York (20 percent, n = 159). Nonresponse bias analysis indicated low to no bias, and no adjustments have been made to the data (see Supplement).

Pairwise Statistical Tests of Association by Gender

The pairwise statistical tests indicated areas of differences across gender for several measures (Table 3). Male respondents held more acreage than females; although Table 3 presents these statistics as logged ac (for normality), on average males held 59.7 ac, and

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Table 3. Gender differences on landownership and land-based estate planning measures*.

	Males	Females	Welch's *t*-test *P*-value	Wilcoxon rank-sum *P*-value
	Mean (SD) or frequency			
Age	63.08 (12.02)	63.90 (12.58)	.413	.214
Wooded acreage (log)	3.49 (1.15)	3.32 (1.07)	.059	.039
Tenure owning land (years)	26.17 (14.36)	25.11 (14.10)	.360	.345
College education (1 = received 2-year university degree or higher, else 0)	56.6 percent Yes 43.4 percent No	65.6 percent Yes 34.4 percent No	.020	.022
Number of owners (1 if one, 2 if two, 3 if three or more)	26.9 percent 1 owner 65.1 percent 2 owners 8.0 percent 3+ owners	39.3 percent 1 owner 49.8 percent 2 owners 11.0 percent 3+ owners	.061	.021
Inherited (1 = yes, 0 = no)	15.8 percent Yes 84.1 percent No	22.6 percent Yes 77.4 percent No	.036	.026
Home within 1 mile (1 = yes, 0 = no)	57.5 percent Yes 42.5 percent No	65.75 percent Yes 34.25 percent No	.033	.036
Objective: Amenity (1 = important/very important, 0 = otherwise)	92.8 percent = 1 7.2 percent = 0	90.9 percent = 1 9.1 percent = 0	.398	.376
Objective: Investment (1 = important/very important, 0 = otherwise)	43.0 percent = 1 57.0 percent = 0	37.0 percent = 1 63.0 percent = 0	.128	.131
Objective: Timber/wood production (1 = important/very important, 0 = otherwise)	42.8 percent = 1 57.2 percent = 0	32.4 percent = 1 67.6 percent = 0	.007	.009
Objective: Family (1 = important/very important, 0 = otherwise)	65.0 percent = 1 35.0 percent = 0	63.0 percent = 1 37.0 percent = 0	.605	.603
Objective: Recreation (1 = important/very important, 0 = otherwise)	57.0 percent = 1 43.0 percent = 0	50.7 percent = 1 49.3 percent = 0	.115	.113
Future plans: Keep undeveloped	31.3 percent Yes 53.4 percent Undecided/Don't know 15.4 percent No	35.6 percent Yes 56.7 percent Undecided/Don't know 7.7 percent No	.019	.037
Knows where to go for information/help with planning†	3.44 (1.01)	3.31 (1.04)	.087	.145
Is confident he/she knows how to move forward with planning†	3.50 (1.02)	3.27 (1.15)	.013	.014
Feels he/she has the financial capacity to move forward with planning†	3.57 (1.04)	3.14 (1.22)	.000	.000
Believes family agrees on how to move forward with planning†	3.49 (0.96)	3.43 (1.04)	.499	.503

*Tests conducted on full sample of 772 respondents using pairwise deletion to handle missing data.
†Self-efficacy measured on 5-point Likert scale, where 1 reflects "Strongly Disagree," and 5 reflects "Strongly Agree."

females held 49.8 ac. Female respondents more frequently were college-educated, associated with one-person ownerships, inheritors of the land, and residents of their land than male respondents. Male respondents more frequently had ownership objectives associated with timber/wood production than females. There were statistically significant differences between male and female FFO intentions to keep land undeveloped in the future. The trends between genders were similar across categories. The most common response for both males and females was that they were undecided about keeping the land undeveloped in the future. The second most common response for each gender indicated interest in keeping the land undeveloped. The least common response for each gender indicated that it is not a goal to keep the land undeveloped. Despite there being common trends to the ordering of the responses, there were some significant differences between the genders. Female FFOs more often wanted to keep the land undeveloped (36 percent) or were undecided (57

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percent) than male FFOs (31 percent and 53 percent respectively), and male FFOs (15 percent) more often than female FFOs (8 percent) indicated they had no goal or plan to keep their land undeveloped. In addition, males generally had more positive levels of LBEP self-efficacy than females. Specifically, male respondents had higher self-reported assessment of their knowledge of where to go for information/help, of their confidence in having the knowledge to move forward with land planning, and of their perception that they have enough financial resources to move forward with land-based estate planning than female respondents. There was no difference by gender in respondents' understanding of whether their family agrees on how best to move forward with planning the future of their land.

Logit Model Exploring Differences by Gender

The logit model indicated various measures differed by gender (Table 4), as expected from the pairwise statistical tests; however, some characteristics showed differences by gender with the logit model that did not show up in the pairwise tests. Specifically, the model results indicated that older respondents were more likely to be female, and those holding shorter ownership tenure were more likely to be female.

Table 4. Full sample (n = 629) logit model results of differences by gender (dependent variable: female = 1; male = 0)*.

Independent variable	Coefficient estimate
Age	0.02†
Wooded acreage	–0.13
Tenure owning land	–0.01†
College education	0.37†
Number of owners:	
"2 owners" versus "1 owner"	–0.55§
"3+ owners" versus "1 owner"	–0.01
Inherited	0.45†
Home within 1 mile	0.49‡
Objective: Amenity	–0.37
Objective: Investment	–0.03
Objective: Timber/wood production	–0.36†
Objective: Family	0.06
Objective: Recreation	–0.18
Future Plans: Keep undeveloped	
"Undecided" versus "No"	0.68‡
"Yes" versus "No"	0.82‡
Estate planning self-efficacy	–0.17†
Constant	–0.97

*χ^2, 19 degrees of freedom = 47.9; P = .0; pseudo-R^2 = .06; Akaike information criterion = 643.3.
†$P \leq .10$
‡$P \leq .05$
§$P \leq .01$

The logit results were consistent with the pairwise statistical test results (described in Section 3.1). Respondents who were college-educated, associated with one-person ownerships, inheritors of the land, or residents of their land were more likely to be female. Respondents who had ownership objectives associated with timber/wood production were more likely to be male. Respondents who wanted to keep the land undeveloped or were undecided about those plans were more likely to be female. Respondents having positive levels of LBEP self-efficacy were more likely to be male than female.

Tests of Land-Based Estate Planning Self-Efficacy by Gender

Subsampling the data based on self-efficacy resulted in gender proportions similar to that of the pooled sample. For those with positive levels of LBEP self-efficacy, 249 were male (74 percent), and 86 were female (26 percent). For lower levels of LBEP self-efficacy, 198 were male (67 percent), and 96 were female (33 percent).

The logit results of each self-efficacy-based subsample support the pairwise and pooled logit model results reported previously. Of those having positive levels of LBEP self-efficacy, those having plans to keep their land undeveloped (or be undecided) were more likely to be female. Plans to keep land undeveloped did not differ by gender for the subgroup having lower levels of LBEP self-efficacy.

Gender differences with other characteristics were split across subsamples (Table 5). Of note, lower self-efficacy FFOs having timber/wood production objectives were more likely to be male, but there was no difference in this objective by gender with the positive self-efficacy group.

Likelihood ratio tests and Akaike information criterion comparisons indicated that the subsample logit models were superior to the pooled logit model.

Discussion

Ensuring the perpetuation of the many benefits our forests provide is dependent on informing the estate planning decisions of FFOs. Our results showed that, in four northeastern US states, the majority of male and female FFOs alike are undecided about keeping land undeveloped into the future. This large segment

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Table 5. Logit model results of differences by gender, subsampled by land-based estate planning self-efficacy (dependent variable: female = 1, male = 0)*.

Independent variable	Subsample 1: Positive levels of land-based estate planning self-efficacy† (n = 335)	Subsample 2: Lower levels of land-based estate planning self-efficacy‡ (n = 294)
Age	0.02	0.02
Wooded acreage	–0.22§	–0.05
Tenure owning land	–0.01	–0.02§
College education	0.37	0.48§
Number of owners		
"2 owners" versus "1 owner"	–0.51§	–0.74‖
"3+ owners" versus "1 owner"	–0.04	–0.11
Inherited	0.71¶	0.23
Home within 1 mile	0.03	1.12‖
Objective: Amenity	–0.51	–0.39
Objective: Investment	–0.13	0.13
Objective: Timber/ wood production	–0.22	–0.53§
Objective: Family	–0.01	0.20
Objective: Recreation	0.14	–0.55§
Future plans: Keep undeveloped		
"Undecided" versus "No"	0.88¶	0.37
"Yes" versus "No"	1.02¶	0.27
Constant	–1.71	–1.31

*Values provided for each subsample are coefficient estimates.
†χ^2 test, 15 degrees of freedom = 25.0, P = .05; pseudo-R^2 = .0654; Akaike information criterion = 388.67.
‡χ^2 test, 15 degrees of freedom = 33.0, P = .00; pseudo-R^2 = .0889; Akaike information criterion = 370.42.
§$P \leq .10$.
¶$P \leq .05$.
‖$P \leq .01$.

of male and female FFOs represents a significant opportunity for outreach and policies to inform and incentivize landowners to keep their land undeveloped.

In identifying women as a strategic audience, we found differences in LBEP self-efficacy when considering gender, suggesting the need for diversified outreach approaches. Our results also show that female FFOs are more likely to be single owners and to have inherited the property, findings that support the notion that women generally live longer than men and become the final decisionmaker as to the future ownership and use of the land (Butler et al. 2017). As more women become landowners, it is critical to learn more about and use our understanding of these differences to engage with these FFOs and help inform their decisions (Butler et al. 2017).

Our results suggest that, in the northeastern United States, female FFOs rate themselves as having lower levels of LBEP self-efficacy than males, despite having higher levels of education (consistent with Butler et al. 2017). Female FFOs rated their confidence and financial capacity lower than males (consistent with Chen and Volpe 2002), likely contributing to their feeling less prepared to move forward. Gustafsod (1998) discussed that when women and men face similar risks, women may perceive those risks as being a greater challenge than men. If so, these perception differences may result in women reporting lower levels of LBEP self-efficacy. Lower rates of self-efficacy may result in female FFOs engaging in less conservation-based estate planning and/or less effective planning, a hypothesis worth testing with further research.

The good news is that our results also suggest that increasing LBEP self-efficacy of women may lead to higher rates of keeping land undeveloped in the northeast. Of the FFOs who rated themselves as having positive LBEP self-efficacy levels, female FFOs were more likely than male FFOs to respond that they are interested in keeping their land undeveloped. Although there may be many reasons for this finding, and regardless of whether this finding is related to greater environmental concern or not (McCright 2010), it does suggest that focusing on female FFOs may be effective. If policy or program goals include keeping forests as forest, then targeting female FFOs and focusing on initiatives to increase their self-efficacy may provide a way to have the largest impact with limited time, energy, and resources.

These findings provide important reasons for those foresters and programs interested in keeping forests as forest to initiate or expand current gender-focused offerings. Offering programs that attract female FFOs, find ways to encourage their engagement with the land, and pique their interest in making decisions about their land is one way to help build self-efficacy. When considering possible programs of interest to female FFOs, our Northeast study shows female FFOs have indicated an interest in specific areas and values for certain land characteristics. In particular, interests included: how to pass the land on to children or other heirs, a place to raise the family, and keeping land for privacy. Female

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FFOs also identified several specific values associated with landownership: enjoying it for beauty or scenery, wanting to protect the nature, biodiversity, wildlife habitat, or water resources. Diversifying programs to address these topics primarily and directly could lead to greater participation and engagement with their land, and such diversified programming could incidentally lead to more traditionally discussed topics such as how timber management can be a tool to satisfy their interests and support their values.

Another approach for increasing self-efficacy is to build on current successful models. The Women Owning Woodland (WOW) network exemplifies a means to build LBEP self-efficacy in women. The WOW network offers programming of interest to female landowners, including guidance on how to pass land onto children or heirs and land management. It is important to consider not only the content of a program but the setting. WOW networks provide all-female environments to hear one another's stories, share experiences, ask questions, and find resources. Offering mixed-gender programs may not provide the supportive environment that some women prefer (Henderson 1989). Single-gender groups such as WOW networks are likely to provide some women with greater freedom to talk more openly and gain confidence (Debebe 2011), thereby increasing the likelihood participants would ask questions necessary for them to build self-efficacy and move forward with achieving their goal of keeping the land undeveloped.

Although this manuscript describes differences in estate planning and self-efficacy by gender, future research could increase our understanding of gender dynamics further for this critical research area of intergenerational transfer of land. For example, specific cohorts of owners (older, single female owners, perhaps because of the death of a spouse) could potentially be different in attitudes and behaviors, including LBEP self-efficacy, than other cohorts (younger, married female owners); and these cohorts may differ across regions. Our analysis lays out an initial attempt at looking at estate planning for land-based assets and how that may be influenced by gender, but more needs to be learned in terms of cohorts and family decisionmaking with surveys in general.

To better understand cohorts and family decisionmaking, more effort needs to go into designing a framework to better understand the influence of a plurality of legal owners, social networks, and extended family on the attitude- and decisionmaking process, and how gender may influence intentions or decisions under these structures. Although developing this framework was beyond the scope of our analysis, our analysis provides the foundation for looking more deeply into the larger family decisionmaking process and raises several additional issues worth testing with further research. Specifically, we considered looking at only one-person owners in our study; however, focusing only on one-person owners (e.g., male single owners versus female single owners) is not enough to remove the influence of a plurality of legal owners within a family. Of the one-person owners in our sample (31 percent of respondents), 34 percent already had conversations with family or friends about the future of their land, and 18 percent said they are having those conversations currently. Over half of one-person owners have already involved others in their decision process, and this likely played into their answers of self-efficacy in the survey. Just because there is one owner does not mean that the decision is solely one person's. Further, 5 percent said they would have those conversations in the following year. Only 9 percent said they did not plan to talk to family at all, 21 percent said they thought about talking with family/friends but had not done so yet, and 13 percent said they had not thought about this at all. Independent data from a follow-on survey that sampled with the same methodology as reported in this manuscript (Markowski-Lindsay et al. 2018) tells a similar story. In that survey (Markowski-Lindsay et al. 2018), respondents provided information on legal ownership and number of decisionmakers about the future of their land. Of the one-person owners (34 percent of respondents), 30 percent said there were two or more decisionmakers, and of the two-person ownerships (55 percent of respondents), nearly 20 percent involved three or more decisionmakers. This indicates to us that our goal of understanding the relation between gender and self-efficacy requires a more complex survey and modeling approach.

Conclusions

In the coming years, many landowners will be making estate planning decisions about their land. These decisions will have significant and likely permanent impacts on the amount of forest cover and the size of the parcel, both of which determine the type and amount of public benefit that land provides. Developing effective policies and programs is critical to ensuring continuation of the public benefits we all depend on from this land. Crafting strategies tailored to FFOs is one way to

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increase the impact of this work. Our work suggests that there are important gender differences when it comes to land-based estate planning. As important as female FFOs are to the future of our forests, it is likely that their decisions are typically not made in isolation. Future research should consider the role children, heirs, multiple owners, and social networks play in influencing or informing the estate planning decisions of FFOs.

Supplementary Materials

Supplementary data are available at *Journal of Forestry* online.

Supplement 1. Details on land-based estate planning self-efficacy survey and analysis.

Supplement 2. Woodland Connections for Women gathering at the home of a Massachusetts landowner. (Photo credit: Wendy Ferris. Used with permission.)

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