

# **Forest Health Knowledge and Concerns Among Resort and Campground Owners in Minnesota**

by

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**FOREST HEALTH KNOWLEDGE AND CONCERNS  
AMONG RESORT AND CAMPGROUND OWNERS IN MINNESOTA**

by

Matthew B. Russell<sup>1</sup>, Bridget Bobick<sup>2</sup>, and Ingrid E. Schneider<sup>3</sup>

**EXECUTIVE SUMMARY**

Despite a significant contribution to ecosystem services and local, state and national economies, little to no research exists on resort and campground owners' knowledge or concern with forest health issues and their associated impacts. To address this gap, this project surveyed resort and campground owners in Minnesota to determine their knowledge and concern for specific forest health issues and management strategies to address invasive plants, insects, and tree diseases. Knowledge and concern were generally highest for invasive insects, followed by invasive plants and tree diseases. Fewer than ten percent of resort and campground owners had a forest management plan. These owners indicated a focus on trail maintenance and construction as well as fire prevention management on their properties. These baseline data suggest tourism industries may require assistance from forest and natural resource professionals to manage current and future forest health issues.

Greater awareness of forest health issues could potentially be used to implement forest management strategies to continue the value in tourism that these ownerships provide. However, few resort owners indicated that they have implemented strategies to eliminate or reduce invasive plants and unwanted diseases and insects from their property, indicating that there is the potential to improve knowledge on forest health issues that transfer into forest management actions and promote ecosystem services. Potential educational opportunities should focus not only on increasing resort owners' knowledge of forest health issues, but also on incorporating recreational aspects into forest management plans to enhance the mission of the resort while continuing to meet forest management objectives of the property.

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## **1. INTRODUCTION**

Travel and tourism contribute US \$7.2 trillion to the global economy, accounting for 264 million jobs worldwide (World Travel and Tourism Council 2016). In the United States (US), travel and tourism represent 2.7% of the gross domestic product, generating US \$147.9 billion in sales (US Travel Association 2016). Depending on the surrounding environment, lodging is an important sector in the tourism industry and resorts and campgrounds have varying importance in a destination's economy. In 2012, outdoor recreation generated US \$11.6 billion in direct consumer spending and US \$815 million in state and local tax revenues (Outdoor Industry Association 2017).

Resorts are both supported by and contribute to the tourism industry through their natural resources. Although information on resort size is scant globally and nationally, a 2013 survey of the Minnesota tourism industry revealed a bimodal distribution of resort size with about 25% properties between 1 and 5 acres (0.4 and 2.0 hectares) and another 25% with 25 acres (10.1 hectares) or more (University of Minnesota Tourism Center 2013). Given the geographic location of most resorts in Minnesota's forested areas, their forest management concerns and practices are of interest to sustain healthy forests that support nature-based recreation and tourism economies.

Private forest owners control and manage a large amount of forestland across the world. Nearly 11 million family forest owners control 36% of the total forestland in the US and commonly own their land for amenity-related reasons, including beauty, wildlife, and nature (Butler et al. 2016a). In the US, surveys have assessed the management actions and motivations of non-industrial private forest (NIPF) owners since 1953 (Josephson and Mcguire 1958). Managing forests for tourism and recreation has been identified as more important than thinning or logging practices by resort owners (De Grave 2014). Clearly, forest aesthetics and biodiversity are valued highly by nature-based recreation businesses that are a component of broader NIPF ownerships. Although a plethora of information exists about the characteristics and behaviors of NIPF owners, information on the characteristics of resort and campground owners remains largely absent. As of 2017, management practices among resort and campground owners, specifically in forest health issues, are unknown in Minnesota and elsewhere in the world.

## **2. OBJECTIVES**

This study sought to fill a knowledge gap by assessing Minnesota's resort and campground owner's knowledge of and concern with current and emerging forest health issues. Specific objectives were to:

- (1) quantify resort and campground owner's knowledge and concern on specific forest health issues such as invasive plants, insects, and tree diseases, and
- (2) determine how resort and campground owners use forest management as a tool to mitigate forest health concerns.

### 3. STUDY AREA

Data were collected in the upper Midwest of the United States within the state of Minnesota. Minnesota has a population of 5.5 million individuals (US Census Bureau 2016) and tourism in the state generated US \$13 billion worth of gross sales in 2014, which equated to US \$35 million per day. In that same year, 69 million visitors spent 37% of their budget on lodging and recreation (Explore Minnesota Tourism 2014). Specifically, nature-based recreation and tourism contribute to Minnesota's economy. Brand research suggests a positive image of Minnesota based on its natural beauty and in particular its 'stunning scenery' (Ipsos Reid 2011). Minnesotans identify the environment, recreation and outdoor amenities as important contributors to a high quality of life (Schneider et al. 2013). A branding of Minneapolis as 'city by nature' further attests to the importance of the natural environment as an attraction and economic engine (Ipsos Reid 2011).

Thirty-four percent of Minnesota's total land area, or 17.5 million acres (7.1 million hectares), is classified as forestland (Miles and VanderSchaaf 2015). The majority of forestland is located in the northern and eastern portions of the state where aspen/birch (*Populus spp./Betula spp.*) and spruce/fir (*Picea spp./Abies spp.*) forest types are most abundant (Miles and VanderSchaaf 2015). Non-industrial private forest landowners comprise 41% of all timberland ownership across the state (Minnesota Department of Natural Resources 2015a).

### 4. QUESTIONNAIRE

An online questionnaire was administered in Fall 2015 to 963 email addresses of Minnesota resort and campground owners obtained from the state's tourism marketing organization, Explore Minnesota Tourism ([www.exploreminnesota.com](http://www.exploreminnesota.com)). Following a modified Dillman et al. (2014) technique, the questionnaire was sent in mid-September with reminder emails sent three and six days later via Qualtrics, an online survey tool. The survey included a variety of questions focused on the property, property management, forest management practices, and forest health knowledge and concerns.

Relevant property questions included type (e.g., resort, hotel, campground, etc.), total area, and operation (seasonal or year-round). Questions on management and uses of wooded land for resort owners mirrored those of the National Woodland Owner Survey (Butler et al. 2016b), including

- who makes the forest management decisions,
- whether a management or stewardship plan exists for the property,
- if professional advice was received about the care and/or management of the property, and
- preferred methods to receive educational information (e.g., brochures, online material, etc.).

Management questions included (1) management actions implemented in the past two years and (2) the likeliness that management actions will occur in the next five years. Likelihood was assessed along an ordinal scale of 1 (extremely unlikely), 2 (unlikely), 3 (undecided), 4 (likely), and 5 (extremely likely).

Forest health questions assessed the level of knowledge and concern of forest health issues common in Minnesota. Specifically, information was sought on five insects, two tree diseases and five invasive plants deemed of significant impact by multiple agencies (Minnesota Department of Natural Resources 2015b; USDA Natural Resources Conservation Service 2015). Insects included emerald ash borer (*Agrilus planipennis*), eastern larch beetle (*Dendroctonus simplex*), forest tent caterpillar (*Malacosoma disstria*), gypsy moth (*Lymantria dispar*), and spruce budworm (*Choristoneura fumiferana*). Tree diseases included oak wilt (transmitted by the *Ceratocystis fagacearum* fungus) and bur oak blight (transmitted by the *Tubakia iowensis* fungus). Invasive plants included buckthorns (*Rhamnus cathartica* and *Frangula alnus*), garlic mustard (*Alliaria petiolata*), oriental bittersweet (*Celastrus orbiculatus*), purple loosestrife (*Lythrum salicaria*), and honeysuckles (*Lonicera* spp.). Knowledge was assessed along an ordinal scale of 1 (never heard of it), 2 (heard of it but know nothing about it), 3 (heard of it and have some knowledge), and 4 (know a lot about it). Concern was similarly assessed along an ordinal scale of 1 (not at all concerned), 2 (slightly concerned), 3 (moderately concerned), 4 (concerned), and 5 (greatly concerned), or not applicable.

## **5. DATA ANALYSIS**

To quantify and compare knowledge across regions, survey responses were descriptively analyzed both statewide and by three geographic regions: the Northeast, Northwest, and combined Central/Southern regions. Descriptive statistics, including means, standard deviations, and frequencies, were used to summarize knowledge and concern of forest health issues.

Management activity and likelihood were modeled using the LOGISTIC procedure available in the SAS/STAT® software system (SAS Institute Inc. 2011) with independent variables including resort type (resort or resort with campground or not), whether or not the respondent owns more than one property, seasonality of resort operation, total area of the property, whether or not the property has a forest management and/or stewardship plan, and whether or not the property owner has spoken with a professional or received management advice for their forestland. For the analysis on the likeliness to conduct management activities within the next five years, whether or not a resort owner conducted management activities to address specific forest health issues in the past two years was also used as an independent variable in the model.

## **6. RESULTS**

The online response rate of the survey was 18% with a total of 175 responses. Data are reported on property information, knowledge and concern of forest health issues, and management activities.

### **6.1 Respondent Property Information**

The highest percentage of respondents (38.9%) came from the Northwest and the rest were from the Northeast (35.4%) and Central/Southern regions (16.0%). The majority of respondents owned resorts or resorts with campgrounds (70.0%). About one in five (19.4%) identified as campground owners and the remaining respondents (10.5%) owned hotels, motels, historic inns,

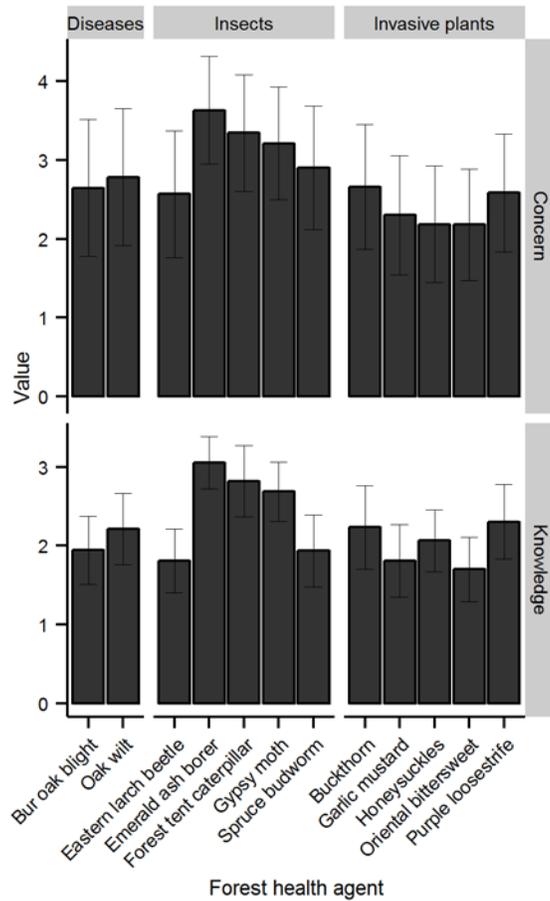
bed and breakfasts, or other. The majority of respondents (66.3%) operated their property on a seasonal basis rather than year-round (28.6%; Table 1). Median size of the property was 14.1 acres (5.7 hectares) with a range from 1.0 to 2237.1 acres (0.4 to 905.7 hectares).

**Table 1.** Property characteristics of Minnesota resort and campground owner respondents from a 2015 survey on forest health issues.

<b>Attribute</b>	<b>n</b>	<b>%</b>
<b>Minnesota region</b>		
Northwest	68	38.9%
Northeast	62	35.4%
Central/Southern	28	16.0%
Unidentified/Unknown	17	9.7%
Total	175	100%
<b>Resort type</b>		
Resort	91	50.6%
Campground	35	19.4%
Resort with campground	35	19.4%
Other	11	6.1%
Hotel/Motel/Historic Inn/Bed and Breakfast	8	4.4%
Total	180	100%
<b>Season of operation</b>		
Seasonal	116	66.3%
Year-round	50	28.6%
Unidentified	9	5.1%
Total	175	100%

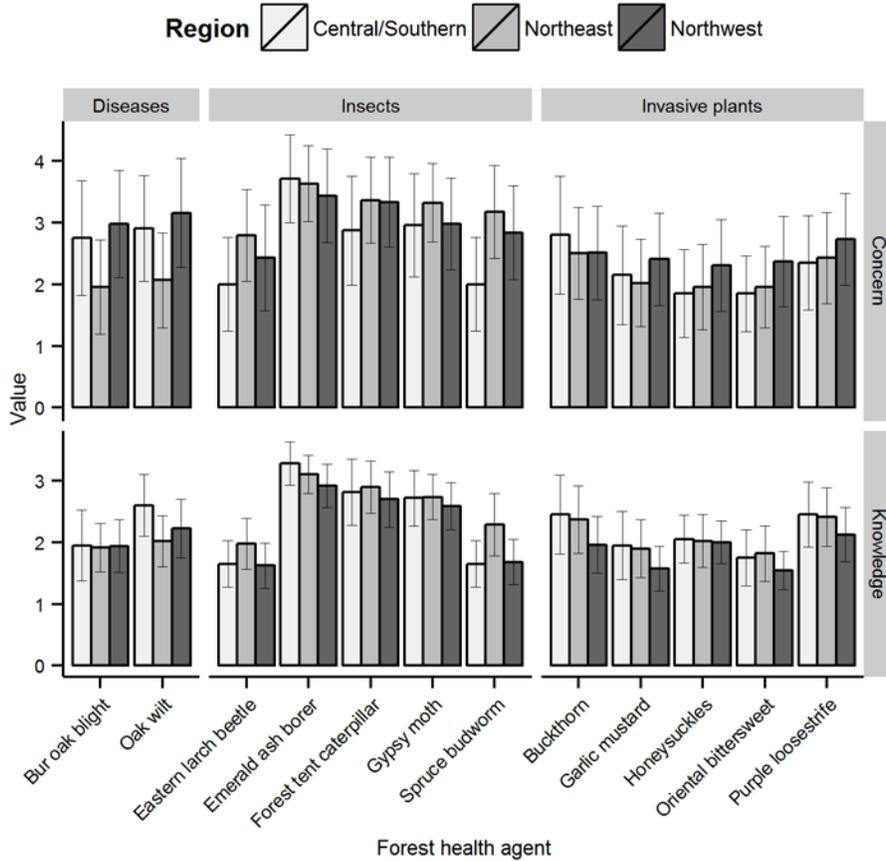
## 6.2 Knowledge and Concern on Forest Health Issues

Knowledge among respondents was highest for invasive insects, followed by invasive plants and then tree diseases. Across Minnesota resort and campground owners, the greatest knowledge of forest health issues was of emerald ash borer (mean of  $3.1 \pm 0.7$  [standard deviation]) and forest tent caterpillar (mean of  $2.8 \pm 0.9$ ). The distribution of knowledge generally was highest for invasive insects, followed by invasive plants and then tree diseases. The lowest level of knowledge was for the invasive plants garlic mustard (mean of  $1.8 \pm 0.9$ ) and oriental bittersweet (mean of  $1.7 \pm 0.8$ ; Fig. 1).



**Fig. 1** Mean level of concern and knowledge ( $\pm$ one standard deviation;  $n = 130$ ) of resort and campground owners on forest health issues across Minnesota. Concern was rated on a scale from 1 (not at all concerned) to 5 (greatly concerned) and knowledge was rated on a scale from 1 (never heard of it) to 4 (know a lot about it).

Differences in knowledge of specific species or issues were generally the same for forest health issues when analyzed by region. Respondents had the most knowledge among emerald ash borer for all three regions. Within the diseases category, knowledge about oak wilt was highest in the Central/Southern region (mean of  $2.6 \pm 1.0$ ). The invasive plant category displayed similar results, with each region having similar knowledge for invasive plants. Knowledge on purple loosestrife (mean of  $2.5 \pm 1.1$ ) and buckthorn (mean of  $2.5 \pm 1.3$ ) in the Central/Southern region was highest (Fig. 2).



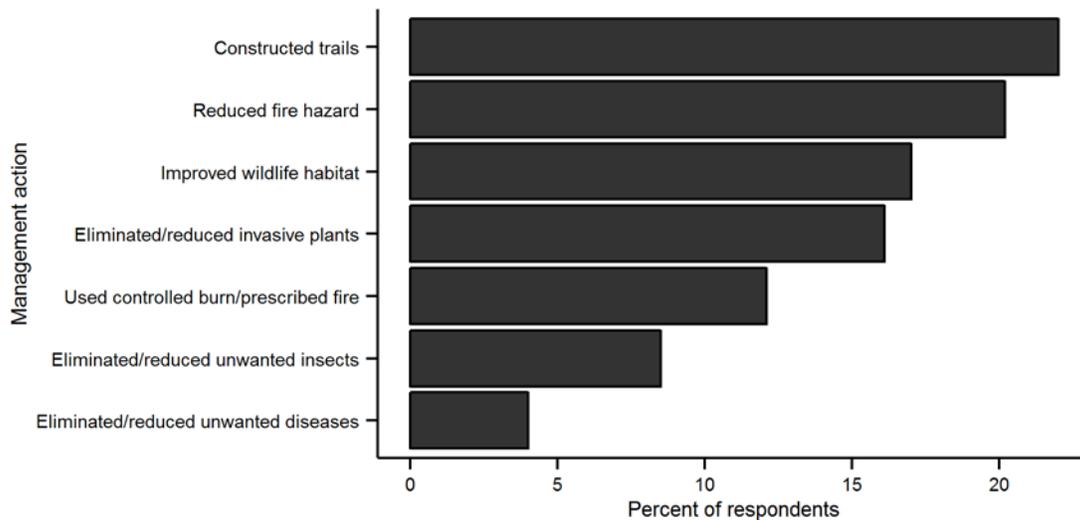
**Fig. 2** Mean level of concern and knowledge ( $\pm$ one standard deviation;  $n = 130$ ) of resort and campground owners on forest health issues by Minnesota region. Concern was rated on a scale from 1 (not at all concerned) to 5 (greatly concerned) and knowledge was rated on a scale from 1 (never heard of it) to 4 (know a lot about it).

There was a relatively similar amount of knowledge on forest health issues within each region, but respondents in the Central/Southern region displayed a greater concern for invasive insects on their property. Emerald ash borer (mean of  $3.6 \pm 1.4$ ) and forest tent caterpillar (mean of  $3.3 \pm 1.5$ ) displayed were of highest concern across the state, mimicking results observed with respondent's knowledge of these insects. The lowest level of concern was for honeysuckles (mean of  $1.2 \pm 1.4$ ) and oriental bittersweet (mean of  $2.2 \pm 1.4$ ; Fig. 1).

Respondents in the Northeast region displayed less concern for tree diseases on their property than the others. Regarding specific pests, respondents had the most concern for emerald ash borer for all three regions identified. Within the diseases category, concern for oak wilt in the Northwestern region was highest (mean of  $3.2 \pm 1.8$ ). Concern for buckthorn in the Central/Southern region (mean of  $2.8 \pm 1.9$ ) and purple loosestrife in the Northwest (mean of  $2.7 \pm 1.5$ ) was highest for invasive plants (Fig. 2).

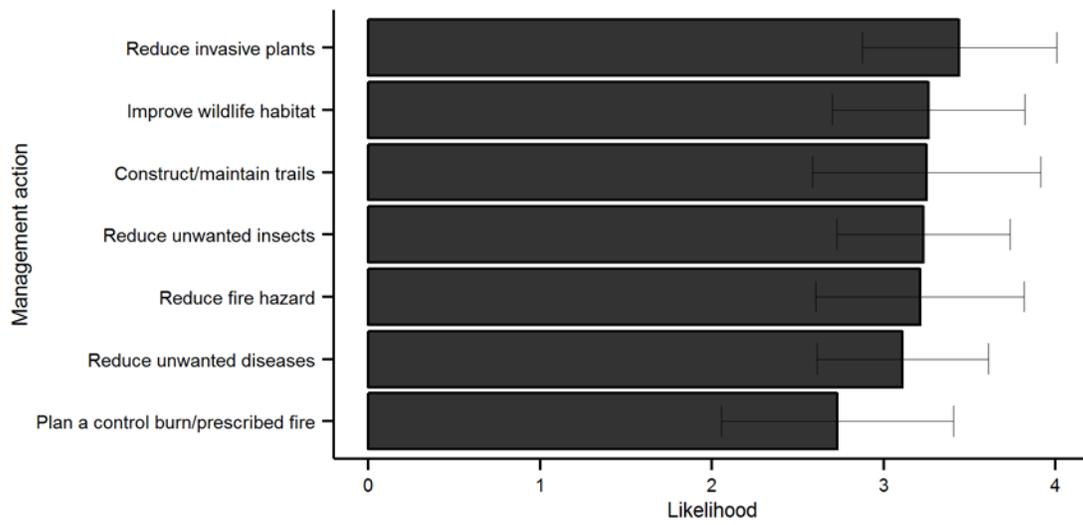
### 6.3 Management Activities

The majority of respondents (80.7%) indicated that they did not have a forest management plan for their property. Respondents indicated a focus on trail maintenance and construction (conducted by 22.0% of respondents) and fire prevention management (conducted by 20.2% of respondents) between 2011 and 2013 than other management activities listed. Eliminating and/or reducing unwanted insects (8.5%) and diseases (4.0%) ranked lowest for management activities that have occurred in the past two years (Fig. 3). Resort and campground owners indicated they were most likely to reduce invasive plants (mean of  $3.4 \pm 1.1$ ), improve wildlife habitat (mean of  $3.1 \pm 1.1$ ), and maintain and/or construct trails (mean of  $3.3 \pm 1.3$ ) on their property in the next five years (Fig. 4).



**Fig. 3** Management actions implemented between 2013 and 2015 by resort and campground owners in Minnesota ( $n = 130$ ).

Management differences emerged based on professional interaction and having a management plan. If a resort owner talked with a professional about managing their land, there was an increased probability an owner reduced fire hazard, improved wildlife habitat, and constructed/maintained trails. If property owners had a management plan, it only increased the probability they managed invasive plants. Models indicated that larger resorts were more likely to have improved wildlife habitat and constructed/maintained trails compared to smaller resorts. Resorts or resorts with campgrounds had a higher probability of managing their land in the past two years compared to other ownership types (Table 2).



**Fig. 4** Mean likelihood ( $\pm$ one standard deviation;  $n = 130$ ) of Minnesota resort and campground owners to implement management activities in the next five years. Likelihood was rated on a scale from 1 (extremely unlikely) to 5 (extremely likely).

**Table 2** Logistic regression results of Minnesota resort owners' characteristics with their past management actions and likeliness to undergo future management actions for different forest health concerns. Parameter estimates include SE in parentheses. \* and bold denotes significance at  $p < 0.05$ .

	Invasive plants	Invasive insects	Invasive diseases	Reduce fire hazard	Perform controlled fire	Improve wildlife habitat	Construct or maintain trails
Management conducted in the last two years							
Intercept	1.21 (1.1)	-1.52 (1.4)	-1.03 (1.5)	-0.62 (1.0)	-1.25 (1.3)	-0.41 (1.2)	0.26 (1.1)
Resort type	-0.29 (0.6)	-0.75 (0.9)	-0.09 (1.0)	-0.13 (0.5)	-0.89 (0.8)	<b>-1.53 (0.7) *</b>	-0.41 (0.6)
More than one property	0.06 (0.6)	0.24 (0.82)	-1.27 (0.9)	-0.30 (0.5)	0.57 (0.8)	0.59 (0.7)	-0.15 (0.6)
Seasonal	0.02 (0.5)	0.12 (0.6)	-2.01 (1.6)	0.38 (0.4)	0.20 (0.6)	-0.15 (0.5)	-0.05 (0.5)
Forest area	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)	0.01 (0.00)	<b>0.01 (0.0) *</b>	<b>0.02 (0.01) *</b>
Management plan	<b>-2.16 (0.9) *</b>	-0.25 (1.3)	-1.37 (1.4)	0.85 (0.9)	-0.68 (1.0)	-0.61 (1.0)	-0.74 (0.9)
Talked with a professional	-0.74 (0.5)	-0.43 (0.6)	0.78 (1.2)	<b>-1.12 (0.4) *</b>	-0.98 (0.6)	<b>-1.18 (0.5) *</b>	<b>-1.04 (0.5) *</b>
Likeliness to conduct management in next five years							
Intercept	2.96 (1.6)	2.34 (1.3)	-0.31 (1.4)	-1.54 (1.4)	0.81 (1.5)	<b>4.03 (1.5) *</b>	3.11 (2.0)
Resort type	0.17 (0.6)	-0.21 (0.5)	0.27 (0.6)	-0.50 (0.7)	-0.40 (0.8)	-0.94 (0.7)	-0.43 (0.9)
More than one property	-0.80 (0.7)	-0.59 (0.58)	-0.48 (0.6)	-0.40 (0.7)	-1.05 (0.7)	-0.42 (0.7)	-0.72 (1.1)
Seasonal	-0.15 (0.5)	-0.43 (0.50)	-0.85 (0.6)	<b>1.39 (0.63) *</b>	-0.15 (0.65)	-0.48 (0.6)	0.57 (0.7)
Forest area	0.01 (0.01)	0.00 (0.0)	0.00 (0.0)	0.01 (0.01)	0.00 (0.0)	0.00 (0.0)	0.01 (0.01)
Management plan	-0.69 (1.3)	0.66 (0.9)	2.12 (1.3)	-0.39 (1.2)	2.19 (1.6)	-0.29 (1.3)	-0.22 (1.7)
Talked with a professional	0.20 (0.6)	-0.57 (0.49)	-0.73 (0.52)	-0.21 (0.6)	0.19 (0.7)	-0.82 (0.6)	0.70 (0.97)
Performed this management in last 2 years	<b>-2.48 (0.64) *</b>	<b>-2.20 (0.8) *</b>	-1.40 (0.8)	<b>-3.00 (0.6) *</b>	<b>-3.83 (0.8) *</b>	<b>-3.50 (0.7) *</b>	<b>-4.75 (0.9) *</b>

Past management activity conducted in the last two years increased the probability that future management would occur in the next five years in all cases. Model results also indicated that resorts operating on a year-round basis would reduce fire hazard on their property in the next five years (Table 2).

## 7. DISCUSSION OF FINDINGS

A survey of Minnesota's resort and campground owners revealed they had the most knowledge and concern about forest insects followed by invasive plants and diseases. The risk of insects impacting forest health is of particular interest to resort and campground managers as the transport of firewood has the potential to harbor insects and pathogens and facilitate their establishment in new areas (Jacobi et al. 2011). The finding of high knowledge and concern for insects is not surprising because of recent policy and advertisement campaigns surrounding insects that are a detriment to forest health. Specifically addressing emerald ash borer and gypsy moth, agencies such as the state Department of Agriculture and Department of Natural Resources have employed marketing campaigns to limit the transport of firewood as a potential vector for forest pests. These campaigns could have contributed to the greater knowledge and concern for insects relative to other forest health issues. When investigating regional differences across the state, there were very few differences in knowledge or concern for invasive plants, diseases, and insects.

Compared to results obtained from the National Woodland Owner Survey, fewer resort owners in Minnesota indicated that they have a management plan than family forest owners across the US (9% compared to 13%, respectively; Butler et al. 2016a). Similar numbers received professional advice in the past five years (22 and 20%, respectively; Butler et al. 2016a). These similarities between resort owners in Minnesota and family forest owners across the US (which includes a diverse ownership of individuals, family partnerships, trusts and estates, and others) could indicate that professional assistance and services are marketed to these ownerships at a similar rate.

Although eliminating or reducing invasive plants ranked fourth in management activities conducted in the past two years (Fig. 3), resort and campground owners indicated that this management activity was the most likely one to be carried out in the next five years (Fig. 4). In contrast to family forest owners (e.g., Butler et al. 2016a), resort and campground owners have constructed and/or maintained trails and reduced fire hazard on their lands at a higher rate in the past two years. Similar to family forest owners, reducing unwanted insects ranked low as a past management activity, perhaps due to more complex forest management strategies are available for mitigating or reducing the impacts of invasive insects in forests.

These findings on resort owners are analogous to those of Ní Dhubháin et al. (2010) and Kilgore et al. (2015) who found that receiving assistance through a professional could indicate a greater likelihood of a landowner conducting forest management activities. Similar to Kilgore et al. (2015), the kind of assistance that a resort owner has received (i.e., a management plan or some interaction/advice with a professional) may matter less than contact with a professional. In many countries, the number of new private forest owners is increasing and they may have limited knowledge on forest management strategies (Hogl et al. 2005; Ní Dhubháin et al. 2010). Hence,

forest managers, policy makers, and natural resource professionals may need to diversify or expand mechanisms to assist resort owners to address current and future forest health issues.

The information collected from this survey of resort owners in Minnesota serves as baseline information of owner knowledge, concern, and management actions that address forest health. Although a relatively low response rate of 18% is a limitation of the study, this could reflect the awareness that Minnesota resort owners have on a variety of forest health issues including invasive plants, diseases, and insects. However, the response rate observed here was similar to several surveys conducted by Explore Minnesota Tourism (e.g., a survey on Minnesota lodging and camping properties conducted in 2015 had a 14.9% response rate [Explore Minnesota Tourism 2015]). To expand the survey, more specific questions that separate the various kinds of invasive species (e.g., aquatic or terrestrial invasive species) would have been helpful to understand the knowledge and concern of specific invasive plants, insects, and diseases. Future research may focus on uncovering the values and motivations of resort and campground owners for their forests (e.g., production- or consumption-oriented management types; Ní Dhubháin et al. 2007) and the role of multifunctional forest management within this ownership group (e.g., Hoogstra et al. 2005).

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**APPENDIX A**

**Questionnaire used to assess forest health knowledge and concern  
among Minnesota resort and campground owners**

1 - In what Minnesota county is your property located?

2 - What type of property are you associated with? Check all that apply.

- Resort
- Resort with campground
- Hotel
- Motel
- Historic inn
- Bed & Breakfast
- Campground
- Other (please specify):

3 - Do you own more than one property?

- Yes
- No

4 - Is your property a seasonal or year-round operation?

- Seasonal (please specify season(s)):
- Year-round

5 - What recreational amenities do you offer? Check all that apply.

- Hiking/walking
- Bicycling
- Horseback riding
- Skiing or snowboarding
- Off-road motorized vehicles
- Snowmobiling
- Fishing
- Swimming pool
- Wildlife viewing
- Golf course
- Beach
- Geocaching
- Other (please specify):

6 - Approximately how many acres is your property? If unknown, enter "Don't Know".

7 - What percentage of your land do you consider forested? Consider a forest to be defined as an area of extensive tree cover.

8 - Who makes the management decisions, (e.g. whether or not to harvest trees) for your forested land?

- Resort/campground owner
- A land manager or forester
- Other (please specify):

9 - Do you have a written management plan or stewardship plan for any of your forested land?

- Yes
- No

9b - If you do not have a written management plan or stewardship plan, why not? Check all that apply.

- I don't want/need one
- Too busy
- Too expensive
- Too complicated
- Don't understand how to get one
- Other (please specify):

9a – If you do have a written management plan or stewardship plan, have you taken actions to implement your management plan or stewardship plan?

- Yes
- No

9b - If you do have a written management plan or stewardship plan, but have not taken actions to implement your management plan or stewardship plan, why not? Check all that apply.

- Too busy
- Too expensive
- Too complicated
- Other (please specify):

9b - Who wrote your plan?

- The resort/campground did
- Private consultant forester
- Forest industry forester
- Federal or State government forester
- Other (please specify):

10 - Have you talked with a professional or received advice/information about care, management, or protection of your forest land in the last 5 years?

Yes

No

10a – If you have talked with a professional or received advice/information about care, management, or protection of your forest land, what was it about? Check all that apply.

Insects

Plant diseases

Invasive species

Wildlife or wildlife habitat

Timber production

Land conservation

Fire safety

Other (please specify):

10b - How did it happen? Check all that apply.

Talked with someone (specify type of person (e.g., forestry or tree care professional)):

Someone visited my land

Received a brochure or other written material

From the internet

Attended a conference or workshop

Other (please specify):

10c - Who was involved? Check all that apply.

- State or local government employee
- University/Extension
- Federal government employee
- Private consultant
- Another landowner
- Family member or friend
- Other (please specify):

10a – If you have not talked with a professional or received advice/information about care, management, or protection of your forest land why not?

- I live in a remote location
- I do not prefer advice
- I am too busy
- Other (please specify):

10d - Where do you prefer to get your information? Check all that apply.

- Newsletter
- In-person
- Conference or workshop
- Fellow resort/campground owner
- Internet
- Other (please specify):

11 - Please indicate your level of concern for the following forest health issues.

Concern categories:

Greatly concerned	Concerned	Moderately concerned	Slightly concerned	Not at all concerned	Total
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Questions:

Invasive plant species

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Unwanted insects

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Unwanted plants

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Unwanted diseases

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Wildfire

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Firewood movement

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Other (please specify):

12 - Please indicate your level of concern on your property for the following specific forest insects, diseases, and invasive plants.

Concern categories:

Greatly concerned	Concerned	Moderately concerned	Slightly concerned	Not at all concerned	Total
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Questions:

- Emerald ash borer (EAB)
- Eastern larch beetle
- Forest tent caterpillar
- Gypsy moth
- Spruce budworm
- Oak wilt
- Bur oak blight
- Buckthorn
- Garlic mustard
- Oriental bittersweet
- Purple loosestrife
- Honeysuckles
- Other (please specify):

13 - Please indicate your level of knowledge of these below specific forest insects, disease and invasive plant species.

Knowledge categories:

I know a lot about it	Heard of it and have some knowledge of it	Heard of it, but know nothing about it	Never heard of it
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Emerald ash borer (EAB)

Eastern larch beetle

Forest tent caterpillar

Gypsy moth

Spruce budworm

Oak wilt

Bur oak blight

Buckthorn

Garlic mustard

Oriental bittersweet

Purple loosestrife

Honeysuckles

Other (please specify):

14 - From what source(s) have you gained knowledge about forest insects, diseases and invasive plant species. Check all that apply.

MN Department of Natural Resources
MN Department of Agriculture
MN State Fair
University/Extension
Private consultant
State or local government official
Informational pamphlet
Fellow resort/campground owner
Other (please specify):
Total

15 - Which of the following actions have you implemented on your forest land in the past two years? Check all that apply.

Eliminated or reduced invasive plant species
Eliminated or reduced unwanted insects
Eliminated or reduced unwanted diseases
Reduced fire hazard
Controlled burn/prescribed fire
Improvement to wildlife habitat
Trail construction or maintenance
Other (please specify):

16 - How likely are the following to occur on any of your forest land in the next five years?

Likelihood categories:

Extremely likely | Likely | Undecided | Unlikely | Extremely unlikely

Reduce fire hazard

Improve wildlife habitat

Eliminate or reduce invasive plant species

Eliminate or reduce unwanted insects

Eliminate or reduce unwanted diseases

Control burn/prescribed fire

Trail construction or maintenance

17 - Please share any additional concerns or questions about forest insects, diseases, invasive plant species, or management on your property.