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Pest Scene Investigators: A Peer-Learning Effort to Improve Forest Health in Oregon

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Abstract: Pest Scene Investigators is a new Oregon State University Extension education program designed to provide current Master Woodland Managers with specialized knowledge and skills in forest health assessment, diagnosis, and management. Seventy-nine volunteers participated in this pilot program from 2008-2010. The program effectively changed participant behavior on their own properties, with over 80% having thinned, planted alternative species, or assessed their land for forest pests and disease. However, participants showed little interest or confidence in helping other landowners or in doing forest health education. The program will re-tool to incorporate increased support and collaboration to increase confidence in providing volunteer service.

Introduction

Forest pest damage, from insects and disease (I+D), and animals, are among the greatest risks facing family forestland in many parts of the U.S. (U.S. Forest Service, 2009). Recent Oregon forest landowner and manager surveys have shown pests and forest health concerns as one of the highest educational and management priorities (Bailey, 2006).

In eastern Oregon, 43% of forest growth is lost annually on family forestland (Azuma, Dunham, Hiserote, & Veneklas, 2002) to dwarf mistletoe, bark beetles, defoliators, or root disease (Campbell, Azuma, & Weyermann, 2003). These same pest groups affect 8-30% of western Oregon forestland acres and 3-17% in the Klamath Mountains (Campbell, Azuma, & Weyermann, 2002).

To improve woodland owner knowledge regarding local forest I+D and increase private mitigation, Pest Scene Investigators (PSI) was developed. PSI program goals are to provide a peer-learning platform (Clark, Heller, Rafman, & Walker, 1997) from which participants help other landowners in the community, working with local Extension foresters to identify pest issues on private forestland and offer management advice.

Master Woodland Manager (MWM) volunteers were chosen as the target audience, because MWM volunteers are already engaged and valued in the community (Fletcher & Reed, 2006; Strong 2006). Additionally, because participants already have volunteer experience, we theorized that it would increase the likelihood that they would help other landowners (Wolford, Cox, & Culp, 2001).

Seventy-nine PSI's have been trained since 2007. PSI training includes a 1-day, hands-on session that incorporates use of several handbooks (Shaw, Oester, & Filip, 2009; Goheen & Willhite, 2006), diagnosis exercises, Pulaski tools, and a 10x lens. The majority of the day is spent in the field finding major agents, diagnosing problems, and discussing management strategies.

Follow up happens through various methods, including field trips, a continuing electronic Oregon I + D circular series, social networking and on-line tools, including a MWM Twitter feed <<http://twitter.com/ormwm>>, a PSI social network <<http://masterwoodlandmanager.ning.com>>, and a "Forest Health Matters" column in the MWM Gazette <<http://extension.oregonstate.edu/mwm/gazette.php>>.

In May 2010, PSI participants were mailed surveys to gauge training impact on behavior and service. Seventy-nine surveys were mailed, 54 were returned, and 52 were used, for a 66% percent return rate. Participant demographics are described in Table 1. An overview of results is provided below.

Table 1.
PSI Participant Demographics

	N	%
Age (years)		
21-30	1	1.9
31-40	1	1.9

41-50	1	1.9
51-60	18	34.6
61-70	17	32.8
71-80	9	17.4
81+	2	3.8
n/a	3	5.7
Years Owned Land (years)		
1-10	10	19.2
11-20	10	19.2
21-30	10	19.2
31-40	8	15.4
41 +	8	15.4
n/a	6	11.6
Gender		
Male	33	63.5
Female	16	30.8
n/a	3	5.7
Geography		
Westside	32	61.5
Eastside	16	30.8
n/a	4	7.7
Acres of Forested Land		
1-50	13	25
51-100	14	26.9
101-200	10	19.2

201-500	5	9.7
501-1000	3	5.8
1001-2000	2	3.8
200+	1	1.9
n/a	4	7.7

Motivations for Becoming a PSI

There were very few significant differences in responses due to land holding size, geography, or land tenure. The only significant differences were between women and men, where women were more interested in meeting other landowners ($p=.02$) and learning management strategies ($p=.01$). This may be due to women having increasing roles in forest management and not as much experience doing the on the ground work (Redmore, 2009).

All respondents were highly motivated to learn how to diagnose insects and disease, to identify and better understand different species that occur in their local area and mitigation strategies. They were less motivated to become better volunteers and even less motivated to meet other landowners (Table 2).

Table 2.

Reasons for Attending the PSI Course (Likert Scale 1-5, where 1 = "Know Very Little" and 5 = "Know a Lot")

	Rank	Mean	# of 5 Ratings
Understand how to Diagnose I +D	1	4.63	39
Learn about Diseases	2	4.61	38
Learn about Insects	3	4.57	35
Learn Management Strategies	4	4.41	30
Technical Information	5	4.33	26
Learn how to do an Assessment	9	4.24	27
Become a better Volunteer	10	3.22	6
Meet other Landowners	11	2.98	4

After the course, participants felt that the greatest benefits of the course were improvement of assessment skills and forest management opportunities. Once again, scores were much lower for

"provided training so I can help my neighbor."

Management Practices

Almost all of the participants conducted management on their own property due to PSI training. Over 50 written statements described thinning stands or removing patches of trees infected with root rot or beetles. Eight respondents said they planted alternative tree species, and five said they were "keeping an eye on things." In this regard the program has been greatly successful.

Peer Education

Very few landowners have applied PSI training to their MWM service. Only 29% stated that they used information from PSI to help a neighbor. PSI participants stated that they lacked confidence in diagnosing and assessing problems. The large majority felt they needed more experience. They did not perceive the handbooks to be overly complicated, or that they did not receive sufficient resources (Table 3). They simply need additional practice.

Table 3.
Barriers to Diagnosing a Forest Pest Problem (Likert Scale 1-5, where 1 = "Not a Problem" and 5 = "Very Important Problem")

	Rank	Mean	# of 5 Ratings
I don't have enough experience	1	3.64	6
I lack confidence in diagnosing problems	2	3.27	1
I don't have enough training	3	3.24	8
I don't have enough time	4	2.78	14
We didn't get enough examples in training	5	2.43	1
Resources I received are not sufficient	6	2.16	8
Management guides are too complicated	7	2.02	1
Management guides are too vague	8	1.89	2

Although participants rated utility of the handbook as high, only 23 respondents used the Shaw et al. handbook since training. Eleven said they used it to develop management strategies for their own property, and six used it to help a neighbor.

Discussion

The PSI program has done a great job raising awareness regarding forest health risks, causes, and

mitigation practices. Participants enjoyed the class and materials, are engaged in additional educational activities, continue to practice assessment techniques, and are working on their own lands.

For us to accomplish our peer-learning goals for this program, we need to do a few things differently. Previous studies have shown that if training participants lack sufficient confidence, they will always defer to academic "experts" for teaching (Martinez, 2004 & White & Arnold, 2003). We need to better clarify service expectations of participants, as well as recognize their efforts (Wolford, Cox, & Culp, 2001). To increase confidence and stimulate peer collaboration, we plan to implement a buddy system, pairing participants up to problem solve together during and after training. We will also motivate local groups to practice PSI visits on their own after training. If they get stumped, they can contact OSU Extension, but they should try to do the initial work on their own.

Social network tools have not been used to their full potential. Participants love receiving information via these tools, but only a handful engage by posting questions or photos. Strategies to increase virtual collaboration include incorporating a regular "Forest Pest Quiz" (an unidentified photo to stimulate discussion) with a reward to the first correct response.

It is a natural process for adult learners to need to practice techniques prior to teaching them (Clark, 1997; Grudens-Schuck, Cramer, Ener, & Shour, 2003). As most PSI's have spent the last 1-3 years doing mitigation on their own properties, it may follow that practice sessions, building a more supportive network, and giving encouragement will be sufficient to catalyze these volunteers to help others.

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