
CLIMATE CHANGE AND FAMILY FOREST LANDOWNERS IN IDAHO: A NEEDS ASSESSMENT

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INTRODUCTION

Family forest landowners control 12% (nearly 2 million acres) of Idaho forests (IDL, 2009). In some Idaho regions, the percentage of family forestland is much higher. For example, 44% of all forested land in the panhandle counties is owned by family forest owners (Bundy, 1972). Family forests are critical to timber, water, wildlife, and many other shared values. Since they tend to be located in lower elevations, along stream corridors, and near population centers, they provide critically important ecosystem functions and other public benefits.

Family forest owners often look to extension as a trusted source of education on forest management. To make sure new research and extension programming related to climate change is as useful as possible for family forest owners, we conducted a needs assessment to determine Idaho family forest owners' perceptions and educational needs regarding climate change and their forests. Idaho forest owners were interviewed as part of a larger study of family forest owners in Idaho, Oregon, Washington and Alaska that was funded with support from the US Forest Service PNW Research Station

METHODS

Family forest landowner needs were assessed through a series of focus group discussions held throughout the PNW. The project was designed to allow for comparisons between regions and sub-regions based on general forest type among the four states within the Pacific Northwest (Idaho, Oregon, Washington and Alaska). Six focus groups were conducted within each of the four states for a total of 24 groups (Figure 1). For more information on focus groups, see Krueger (1988) and Morgan (1997).

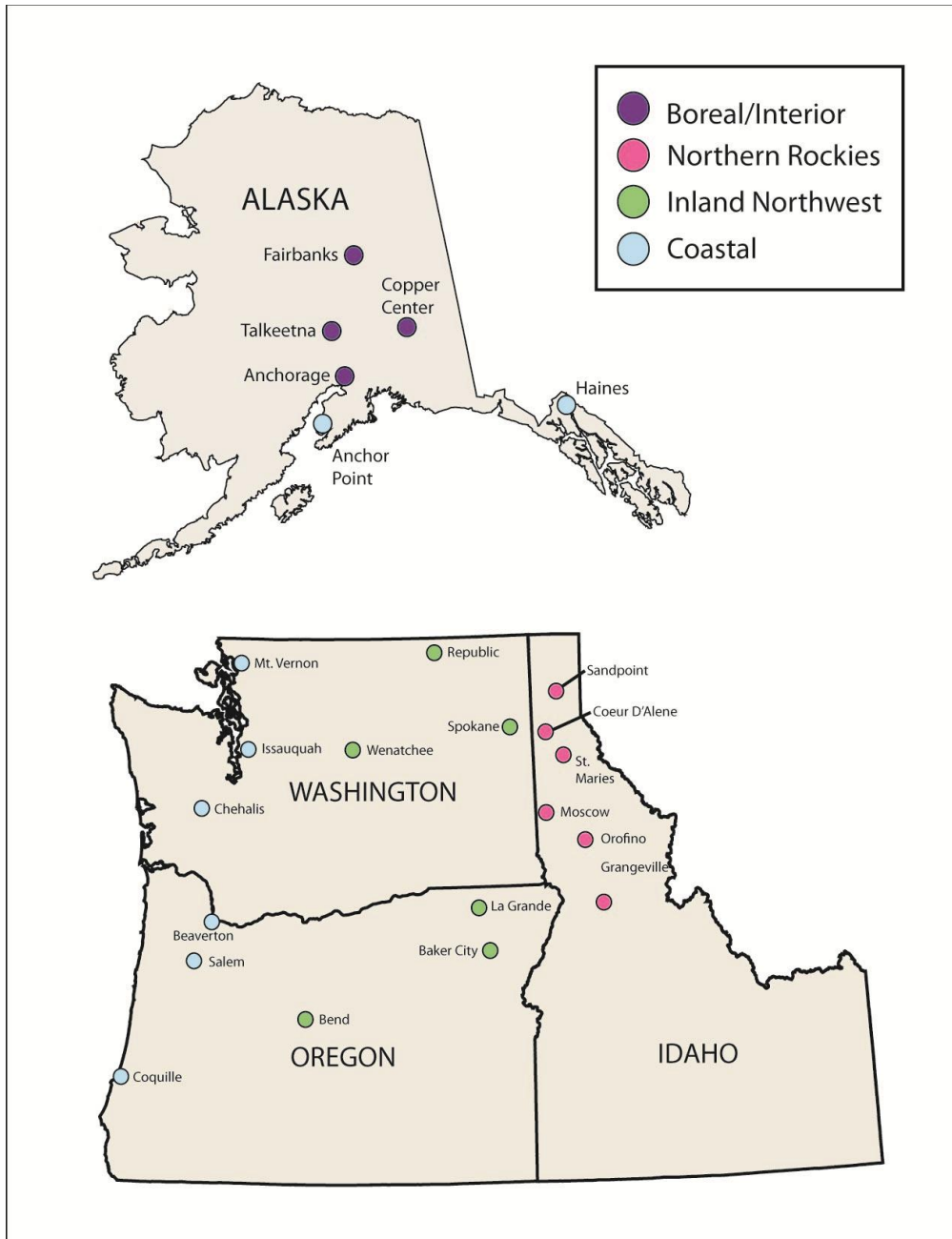


Figure 1. Location of 24 Forest Owner Climate Change Focus Groups in the Pacific Northwest.

The Idaho focus groups were held from December, 2009 through January, 2010. Each group consisted of eight to ten family forest landowners from areas immediate to the six Idaho locations identified in Figure 1. Participants were recruited by local University of Idaho Extension faculty and staff. Most participants had taken part in extension programs. Guiding questions were purposely open-ended, to stimulate active discussion among participants about their knowledge, attitudes, and educational needs regarding climate change and potential forest management consequences (Table 1).

Table 1. Pacific Northwest Forest Owner Climate Change Focus Groups Questioning Route.

Tell us about your forest . . .
Where do you get information about climate change?
How do you assess the validity of the information you receive about climate change?
How do you think climate change may or may not impact your forest?
What are you doing differently on your forest (if anything) as a result of anticipated climate change?
What are your major questions about climate change?
What form would you like to get information about climate change?
Do you have any further questions or comments?

Each session was videotaped and audio recorded with participants’ consent and recordings were transcribed verbatim. Data was also collected on participants’ forest ownership size and tenure (Tables 2 & 3).

Table 2. Number of Forest Owners by Acreage Class in six Idaho Focus Groups on Climate Change.

<i>Acreage class</i>	<i>Number of Forest Owners</i>
1-49 acres	12
50-99 acres	11
100-499 acres	12
500 - 999 acres	7
1000+ acres	12

Table 3. Numbers of Forest Owners by Length of Tenure in five Idaho Focus Groups on Climate Change*

<i>Years of ownership</i>	<i>Number of Forest Owners</i>
0-10 years	7
11-20 years	7
21-50 years	22
> 50 years	8

* Tenure data was not available for one of the six focus groups

DATA ANALYSIS

All focus group recordings were transcribed verbatim. Each of the four members of the research team reviewed and analyzed a subset of the transcripts and generated potential codes (shorthand categories to capture primary data content). The team then met to categorize and condense these codes into a shared system of 11 broad themes and 94 potential codes. All research team members used this shared system to code the transcripts using NVivo, computer assisted qualitative data analysis software, by QSR. Each transcript was coded by at least two team members to account for intercoder variation.

RESULTS

SOURCES OF CLIMATE CHANGE INFORMATION

Participants cited a wide range of sources of climate change information (Table 4). Some individuals had sought out in-depth information about climate change, but most commented on the general flow of climate change information they received passively through various media outlets.

Table 4. Information Sources Cited by Forest Owners Participating in Six Idaho Focus Groups on Climate Change.

Television & Radio	Newspapers	Books/Periodicals	Websites	Events	Named Individuals	Organizations
<ul style="list-style-type: none"> • History Channel • NPR • Local Radio • Nightly News 	<ul style="list-style-type: none"> • Local newspapers • Capital Press • Coeur d'Alene Press • Gardening magazines 	<ul style="list-style-type: none"> • Textbooks • Extension publications • Maximum Facts • Mother Jones • National Geographic • New York Times • New Yorker • Newsweek • Omni • Science • Scientific journals • Smithsonian • The Economist • The Skeptic's Handbook • Wall Street Journal • World Climate 	<ul style="list-style-type: none"> • Real Climate • What's up with that 	<ul style="list-style-type: none"> • Conferences • Extension programs • Local lectures through civic groups • Professional Association meetings 	<ul style="list-style-type: none"> • Al Gore • Cliff Harris • Conversations with other people • Crop science experts • Professional colleagues • Rush Limbaugh 	<ul style="list-style-type: none"> • NOAA • NRA • USFS • UI Extension • Farm Bureau • Society of American Foresters

Participants consistently expressed concern about the quality of information presented through media.

I usually like to – what I get from the Extension Service 'cause it's usually research-backed, rather than just off-the-cuff for some political reason. [Coeur d'Alene]

I always try to chase down the source references in the articles – because most of the time an online, any kind of a newspaper article, is the opinion of the writer – who may be scientifically backed, or he may not be. I mean he may be just a political commentator and he's giving a spiel on climate change. [St. Maries]

PERSONAL OBSERVATIONS

In addition to media sources, participants often referenced personal observations, including current weather, climate over the course of their lives, historical records, and conversations with long-time residents.

It comes down to where you basically, are forming your own opinion based on what you see around you or maybe what you've read in history. Like I said some of my opinion is based on just observation of what I've seen in the forest stands over here. [Orofino]

Everybody knows around here, it's warmer in September and things than it has been in the past [Sandpoint]

I've kept track of the rain, for 28 years. {passes a paper to facilitator} In the column, the second over here will tell you what each year was: there's one like 11.7 inches, next one after those is 26; and you can tell just what your crop was at that same time and there's no pattern when they're gonna happen, goin' down that line. [Grangeville]

Some participants did not discern a clear climate trend (particularly in north-central Idaho), especially when considering weather cycles and fluctuations common to their region.

I can't say as I see a trend. We've had wet cycles, we've had dry cycles and, during the dry cycles we have a few more trees that die off because they're stressed for one reason or another during the wet cycles. We have a few less trees that die and, all the rest grow that much more. . . in my short little time I mean I can, it seems like we've had, you know years that it's been, above average and years that it's been below average but I guess I couldn't – I don't feel like there's a trend. [Moscow]

I really don't think, right now that we're headed into a warming. I mean when was the last time we had this much rain in July and August? We didn't have a summer this year. When did we have temperatures like we're having right now? It's pretty good to be sittin' here talkin' about global warming and it's zero outside. There are different cycles every year depending on whether you are in a warming or cooling trend. [Orofino]

POLITICS, MONEY, AND VALUES

Most participants expressed concern about the validity of information they received and how much the research or the presentation of it was being driven by politics or ideology.

I too have to really question the political agenda on some of the stuff that I hear on TV and some of the stuff that I read in the newspapers. [Coeur d'Alene]

But the opinion on global warming is like politics; I think there has gotten to be too much politics involved in it. I mean you can hear one side of it where they're sayin', that dominantly the scientists are in agreement but, we're seeing a climate change and then there's the other side of it where the, -- they can say well, a large number of scientists and maybe even the majority of 'em are saying we aren't seeing climate change. [Orofino]

So, that is my biggest concern about this issue: not that it doesn't exist; not that it's a red herring, 'cause I don't believe it is; not that there aren't legitimate concerns; but that the political decisions being made about this issue have nothing to do with the science. They have to do with the advancement of those politicians and those groups that are priming those decisions. [St. Maries]

Many participants were very concerned over the extent to which economic interests were influencing climate change science and discussions.

Well I guess my comments are somewhat similar to everybody else's and I think, it boils down to this: pretty simple, follow the money. [St. Maries]

I guess the way I base my judgment on it is follow the money. Because, anybody that has an economic interest in it, is going to have some methodology for driving their point home. Whether it be Al Gore, flyin' around in his C4 Gulf Stream, at the same time touting that everybody else should be driving a Prius. But everything is revolving around money, and if it does revolve around money, then I discredit that immediately. If there's

actual true science behind it, then I find that it's very credible and it's worth the time to ponder. But the problem with it is, is trying to disseminate whether – or, how much the money is tied to the statement. [Orofino]

PERCEPTIONS AND ATTITUDES ABOUT CLIMATE CHANGE

Participants' expressed mixed views on climate change, but skepticism was common. These views were generally along the following themes.

CLIMATE CHANGE AND NATURAL CAUSES

Many participants acknowledged that climate was changing and that carbon dioxide levels were increasing. But many also questioned the extent to which these changes were being driven by human activity, emphasizing natural causes and cycles in weather and climate.

So, the sides are all together on the one issue, of the change in the environment. I think in the issue of global warming, all sides agree, because science, and all sides, if you talk to 'em will agree there's more CO2 in the atmosphere, there's more of this and there's more of that. [Coeur d'Alene]

I don't think there's too much controversy on whether there is climate change or not, it's just who's responsible or what's responsible whether it's people or solar activity or whatever it is. [Sandpoint]

We've taken out some large pine in the last five or six years ago . . . but those trees had to be fair-sized even when the Indians, came through and missed the soldiers. But when you're countin' those growth rings, some of 'em – you guys, we've all done it. Some of 'em, they're pretty close together for quite a few years, you can hardly count 'em. And then there will be some pretty good growth there for awhile. I don't believe that man had anything to do with the growth rings in the old trees that the Indians rode by, and I don't believe we had too much to do with a lot of the early day drought and all that, so, that's kind of where I'm at. / And if I'm following correctly you don't believe man has anything to do with the changes that are going on? / I wouldn't say that, but I don't – I think if man wasn't here, I think we'd be havin' some of the same problems that – I, definitely. [Grangeville]

The thing that bugs me is, they're blaming it all on man, mainly you know, and that – there've been climate changes throughout the history of the Earth, and it swings back and forth, long before man was here. [St. Maries]

I agree we have climate change, yeah. Are we responsible? Well, were we responsible 14,000 years ago when the Ice Age changed? [Sandpoint]

Another thing that I think affects our climate more than anything, even more than the volcanoes and that type of thing that will change things is the activity on the sun. That comes from Cliff Harris [local weather columnist] who has been talking about, there've been no sun spots on the sun for the past couple of years. [Coeur d'Alene]

HUMANS CAN'T/MUST AFFECT PLANETARY CLIMATE

Some participants' skepticism came from a view that humans aren't able to significantly alter planetary climate.

I've always been somewhat skeptical of, of the concept of climate change, especially being man-caused, just because you look at the size of the atmosphere and, just the vastness of the atmosphere that, to think that man is actually pumpin' that much into it. [Orofino]

We're kind of silly to think we're in control. [Coeur d'Alene]

Conversely, other participants indicated human activity has grown too large not to be influencing planetary climate.

When you look at places like Manilla and Shanghai and Peking and, places in India where the smog is – you can cut it with a knife, my thinking is, how can we believe that all this in the air isn't gonna cause some kind of a change? [Orofino]

I guess I might want to say, no, we as humans aren't doing all of it, no; there's the whole thing of volcanoes, there's a lot of – you know, other things too. But I think we are making a substantial contribution to global warming. [Grangeville]

Some participants did not accept that more atmospheric carbon dioxide produced a greenhouse effect. But that was leavened by other participants who were firm that the greenhouse effect was real.

There's more carbon in the air, sure but it's strictly theory that that has a greenhouse effect. [Coeur d'Alene]

. . . it's I think pretty well accepted by most people that there is an increase, and the question is where it's coming from . . . they show that there's a close correlation between the CO2 content in the atmosphere, and the temperature, but it's actually in reverse, where it appears to be that the CO2 content actually follows the rise in temperature, where it's, here it says it's mostly from the oceans as the temperature goes up, the oceans produce basically more CO2, and that's where it says instead of CO2 driving the temperature, I'd say the temperature is what's driving the CO2 for a change in the atmosphere. [Sandpoint]

Temperatures on different planets are higher because of the CO2 in their atmosphere. It definitely does heat up; now whether we're putting enough in the air to make anything change is probably a good question. [Coeur d'Alene]

Oh it's proven a green – that carbon dioxide is an absorber of warmth, of energy. Water vapor, carbon dioxide, they're the two major – I think methane too – but the two major gases that absorb heat. [Coeur d'Alene]

THE ROLE OF INDIVIDUAL VALUES

Some participants suggested people tended to be “for” or “against” human-caused climate change because of their basic values.

If you're a Liberal you'd believe that it's all man-caused, and if you're Conservative you don't believe it. [Grangeville]

I don't know if too many people would believe if they are set in their beliefs – by golly it's their belief and you know a belief doesn't need any evidence. A true belief. / By force of their possession. / Yeah. [Orofino]

No, no there is no reconciliation because it's what you believe, it's what you have built your whole life internalizing. So either you're in one camp or the other. You may be able to rationally discuss it, but what you believe is what you believe. And I think that's what's discounted a great deal in our society. You can't change.

People don't change their minds, they become acceptant of another idea but deep down inside somewhere is still that gnawing feeling that –That instinct? -- Yeah that instinct – a classic up here in north Idaho. [Coeur d'Alene]

BETTER SAFE THAN SORRY

Some participants noted that regardless of the role of human activities and climate, it was better to err on the side of safety.

And I guess I would fall down on the side of, I would rather be safe than sorry . . . and people who would say, "well I don't think we are", I guess I want to say, if I'm wrong we're okay; if you're wrong, we're not. So, I would rather be safe than sorry and do what I can, even if it's just a little bit – it can't help – it can't hurt, but it can hurt if we ignore it, possibly. [Grangeville]

There are natural processes . . . but the question is, at what point do those natural processes come to be defeated? No one knows. And then the answer is: who wants to take the chance? [Coeur d'Alene]

ASSESSING CLIMATE SCIENCE

Many participants expressed frustration over discerning the quality of climate science. Some participants believed some scientists were skewing research results to get grant funding.

. . . there's so much politics in this issue . . . science is now being exposed to the same type of critique, that it used against culture in the general sense. So, I think now it is more difficult for us to say, "oh, okay I accept this as fact." Because many of us are politicized to the extent that we say, "well what generated that research? Who's funding that research? If that research goes on, is that person going to get another grant to get another job, to continue on? Or, if they come up with this answer, will their job be finished?" So now, it's not that we don't believe it, it's just that we're concerned about the background truth and the real truth. [St. Maries]

There's billions of dollars of research funding going into climate change research. And most of that climate change research, and not all of it but, -- or maybe what I should say is most of the climate change research that you hear about the results of, are in favor of a conclusion that mankind is causing warming. [Moscow]

If they are receiving a lot of research dollars that are coming from sources that are going to benefit from evidence of global warming, that, they certainly wouldn't want to have their data show the opposite. I mean you know their funding would dry up, instantaneously if, if they showed a trend toward cooling when their sponsors are going to gain from evidence of global warming. [Orofino]

Well and a lot of your scientists are, geologists that work for oil companies. You know, follow the money. I like my job too, you know. [Orofino]

Several participants referenced "the e-mail scandal", "climategate", or otherwise suggested some scientists were being selective with data.

The research that came out of the university in England, where a lot of emails were discovered and it put a lot of question on the science. And quickly, very quickly it's all "oh, but, just ignore that, just ignore that. You don't need to be worrying yourself with those questions." Why? [St. Maries].

This last Climategate scandal that came out, reading between the bottom lines: millions of dollars were at stake from the governments, to push it a certain way. Well, you might be a very honest very reputable professor, trying desperately to get information out, but you're also smart enough to know, if you don't say this is the way you're going to move – you're never gonna get any funding. And I've talked to several recently that have told me that. That is frightening in our society, that money is politically motivated. [Coeur d'Alene]

But other participants emphasized a basic trust in scientists.

I don't happen to be that skeptical of that science because I figure, if the scientists don't know what they're talkin' about, I certainly don't know what I'm talkin' about. I mean they know more about – it's like me going to a doctor and telling him what's wrong with me, when the doctor's really – no doctor, you're wrong, I know what's right. {several laughs} And so, I want to give the scientists a little bit of credit. [Grangeville]

I'm not a, 110% believer but, I don't think that that many scientific reports could be that far off, is kind of the way I'm looking at it. [Orofino]

Some of the most critical discussion of climate science came from participants who had experience with models.

You can tweak the variables, to make things come out the way you would like them to come out, because, partly because, partly because your reputation might be in that area and you don't want to – and if you switch it, a little bit, it might be that it shifts over to your competitor, a ways, or you want more funding from a certain source. So how does one trust that, whichever group or entity was producing a model on this stuff, how do you discern whether they are or aren't tweaking the model to fit their preconceived . . . The only thing you can look for is whether or not there's invested interest, in the results of the model. [Moscow]

Participants commonly expressed a desire for extension to help people sort through all the competing claims and information and distill the science into forms people could digest.

The thing I really do appreciate is when universities or industry or whoever, does their own study – let's check this data out and see if it's really true. That's about the only way I can figure out. [Sandpoint]

Should Extension, should the University, be focusing it down. Saying, "okay this is good science, and therefore an answer is." So, give a few best-management practices, you know, based on that. If it looks like this is something to do that is gonna have a long-term effect or a short-term action, that's what, yeah, I would think that would be a good product out of the universities through the Extension to the landowners to their forests. [Sandpoint]

ADAPTATION

CLIMATE CHANGE COULD BE A GOOD THING

Some participants believed more carbon dioxide, local warming, or more moisture could benefit their forests.

I have a great deal of difficulty accepting that global warming for example would necessarily be a bad thing. For example in our area here, a four degree change, to the warmer would be one thing; a four degree change to the cooler would be a catastrophe. [St. Maries]

I'm anticipating that the increase in carbon in the atmosphere is gonna be used by my trees and they're gonna grow faster. I think at the same time though it, opens up the window for disease and insects. They're gonna be healthier and grow stronger and be able to resist insect and disease better. [Coeur d'Alene]

Whether it's good or bad: one of the predictions that I hear, this area is gonna be warmer and wetter. Well, as far as timber production I think that's the a plus for us . . . That's good. [St. Maries]

WE DON'T KNOW ENOUGH YET

Most participants were not currently managing their forests differently in anticipation of climate change. Many indicated they didn't have enough solid information to change their management.

The B.C. Ministry of Forestry is scared stiff, about this problem or about this conversation we're having, and they've lost millions and millions of hectares of their forests, their northern forests in British Columbia, to disease that is attributed to warming. They're actively putting in research plots from trees that are from Arizona, as well as they've put in plots from some of our trees from northern Idaho, and from around the United States – and that's science . . . So until information from that type of research gets back to me, I'm not inclined to do my own studies. [Coeur d'Alene]

I think decisions will be based on, harder evidence, more voices saying "the trend is this", with fewer naysayers, or naysayers that seem to be giving information off the wall or we consider not to be valid, before anything's gonna be done differently. [Moscow]

How much do I want to invest on the basis of climate change when I kind of – I agree with [him], I don't know that there's enough information out there – like do we know we're gonna have drier summers? I mean, do we really know that ten years from now our summers are gonna on average be drier. Or are they gonna be warmer, but wetter? I mean I don't know. [St. Maries]

Several participants believed climate change would be slow, giving them time to react.

Changing climate whatever way it goes, and I don't see that happening quickly. So if it's changing, even if you consider a timber crop to be 80 years old before harvest, I think you have time to shift species. [Moscow]

It's gonna be a very subtle and slow adjustment that I'll be making; I'm not gonna make any rapid change. It's gonna be, cautious and carefully planned out. [St. Maries]

SPECIES DIVERSITY

Participants often spoke to managing for diversity in the face of both economic and climatic uncertainty.

I mean nobody knows what climate change is gonna do, nobody also knows what the market's gonna be like in fifty years. So you almost have to -- it's like, be investing in the stock market, where you have to diversify. [Sandpoint]

There's a moving target, and so how I'm gonna manage for that is, manage for species that have a wide, ecological amplitude, ponderosa pine, Douglas fir, white pine, lodgepole pine. [Moscow]

MANAGING FOR PAST CLIMATE EXTREMES AS PREPARATION FOR THE FUTURE

North central Idaho participants often indicated that managing for species mixes and densities that were adapted to highly variable historical conditions, was a good strategy to deal with future climate change.

. . .let's say the, word climate change has never come down but, we're talking about resiliency, adaption of species to the site, sortin' out the history of what was there for the last 500 years, 'cause that's a pretty good track record, in terms of genetics and adaptability, what might go on for the next 500. [Moscow]

DROUGHT-RESISTANT TREE SPECIES

North central Idaho participants often speculated about the future becoming warmer and drier. Some discussions focused on managing for drier conditions through species selection.

We're kind of, have been planting I guess you could say for the worst case scenario – we're putting the most drought-tolerant trees out there, and we all know ponderosa pine can also grow with lots of moisture. [Moscow]

You know it's gonna be probably be drier out there. It sounds like that's gonna happen; whether we have a big jump in temperature or not, and the snows gonna go off there quicker in the spring maybe, I think you kind of go in that direction. [Grangeville]

I sure visualize some reduction in rainfall; it seems to me like, the effect in streams and, and I see there's some pines bitin' the dust in arid areas. [Orofino]

STAND DENSITY

Density was also discussed as a way to make forests more resilient to climate change.

If we do go through a cycle with somewhat warmer, drier conditions, why thinning could be a key because, even if you have a fir stand, if you've got the stand thinned so that you don't have a severe competition for moisture, those trees will make it through whatever, if you go through a five-year cycle of, warmer drier conditions, or even a ten-year cycle . . . Thinning's gonna be the key and even if you went through a really severe drought-type condition for a period of years, even within a pine stand you'd want to have it well-thinned to reduce any moisture competition that could have. [Orofino]

Basically based upon time and money, or constrained by time and money, I'm gonna aggressively manage my forest densities, and that can be from day one until the final harvest; and there may not be a final harvest, there may be a continual harvest, on some of these sites. [Moscow]

NON-NATIVE TREE SPECIES

Some participants mentioned experimentation with non locally-native species.

Manage density, then manage tree species, and there's something in the back of my head saying "I might just bring in some, exotics". I've got eastern red cedars, I've got 60-foot Norway spruce. [Moscow]

I think we need to continue to do some more research too 'cause we're really in the Dark Ages as far as what species we know grow here. Basically, you go up on that hillside, and that's what we're workin' with. And, somebody sometime, took some Monterey pine, to New Zealand and South Africa, and took a terrible weed and they go down there and they grow tremendous timber. Well, I don't think that happened by accident . . . So maybe there's some kind of a, -- eucalyptus or somethin' or some kind of cottonwood or somethin' that will grow in this climate just for fiber, and we're gonna, distill it. [St. Maries]

Recently I have been trying to introduce oak, and few of the other things that are not natural to the area but, my problem is that, when you do things like that typically you're injecting them into a climate they're not accustomed to and so the survival rate, as your incense cedar, is frankly minimal. [Sandpoint]

MANAGEMENT MOTIVATIONS

ANTICIPATED REGULATIONS

Several participants indicated they would be looking at regulatory changes as much as climate change per se'.

But if Cap and Trade came in, would I take my 319 acres out of hay production and plant it with trees? Maybe. See. But again, it's a response to a political decision, as opposed to a climatic decision – or, response to a climatic change . . . We're trying to read the politics in all this as much as the science. [St. Maries]

I think the way we would respond is, we would first attempt to read the political tea leaves, and see what decision we should make with our place on that basis. For example if my goal, is ultimately to subdivide – I'm just pretending here, -- subdivide and sell it, if there is some political decision that might in some way remove my right to do so, if I could see that on the horizon, driven by climate change or not, it may prompt me to sell the whole place. [St. Maries]

INCOME OPPORTUNITIES

Participants in several groups spoke to the importance of integrating economics into their decisions.

This is the neoclassical explanation for everything, right? Is that if something can make you money, and then people will do it. And if it doesn't make you money, people won't do it. So that's probably the most practical thing for Extension to do is to show people how to make money doing the right thing. [Sandpoint]

It's going to come down to the economics of it. Right now with the market's like it is, if somebody was willing to walk in and pay twelve bucks an acre for me not to touch it [for carbon credits], it'd be very lucrative. You know, but when fir was at 800 bucks a thousand, well, different story. [Orofino]

We'll do it because we think this'll make us more money or it will improve the health of our forest. I don't know if it's going to be based on, a prediction of what's going to happen, 70 or 80 years ahead – it'll be based, what's best right now. [St. Maries]

STEWARDSHIP

Participants also voiced a variety of values related to land stewardship.

That whole 500 acres across from our house. That is our front yard; it's our living room; it's our vacation spot; it's everything and our kids are like really tight and my son is just, begging us to figure out a way for it to continue. [St. Maries]

Whether or not we're skeptical about the scientists say, good healthy forestry, healthy forest management is what we all want to do. [Grangeville]

To add on to what [he] was saying, you from a religious standpoint, we are called, to be a steward too, which is more than, to me, than just not doing anything – we do need to steward our planet, 'cause we wanna look at a broader sense, just as we need to steward or own little, piece of ground that we have control of. [Sandpoint]

THE NEXT GENERATION OF FOREST OWNERS

Participants commonly considered how their actions were going to affect future generations.

We're doing the best and you're doing it for your grandchildren, the generations to come – we want them to be able to look back and say, "they really did the very best they could do, with the information they had at the time." [Grangeville]

That's one of the concerns that we all should have because what are we doing to our future generations. [Sandpoint].

I'm not gonna be alive to see it down the road that far, but you've got think, you know what's the next couple generations down the road, what's gonna work for them? [Grangeville]

Some participants were also concerned about the next generation of forest owners' knowledge, attitudes, and interests regarding their forest.

Who's the next group that's gonna sit around this table? There's a whole bunch of 'em that I haven't got a clue why they're even gonna be sittin' here. Let alone being up to speed on what all of us have done or made careers out of or whatever – natural resources in one form or another . . . around here – even in the local school, like in Tekoa, Washington, what you'd think is an agricultural area – there's virtually no farm kids goin' to school in Tekoa, Washington . . . Hopefully everybody around here can pass on, some of your knowledge over time and what have you but you've gotta have, some new generations there's a whole bunch of people out there that haven't got a clue, about what we're talkin' about here today. . . . And those are the people that're gonna end up reading your, -- or your Extension bulletins and things like that. And those are the folks – and you may be backin' up several steps, climate change or not. On comin' back up to speed on where we're at. [St. Maries]

My nephew and my two sons are all city rats. And I don't know how they're gonna manage the forest after my brother and I are gone – I'm just – you know that that – if it's not self-sustaining, in some way shape or form, that place won't be in place. [Sandpoint]

'cause, the population is aging, there's gonna be a shift, as to what happens with the forest lands. [Orofino]

MITIGATION

CONCERN ABOUT MORE REGULATIONS

Some participants were concerned climate change mitigation efforts could cause economic hardship to larger society and to forest owners specifically if they had to respond to new regulations to mitigate climate change.

My question is whether we're gonna be as affected by the climate change as we will by the regulations, you know as forest landowners . . . we might not see any change on the ground but we might have to change the way we do business or the way we operate on our land. [Orofino]

California started out setting their standard for emissions on diesel equipment, and it started out being highway equipment; it's now coming down to all equipment, whether it's gonna be used for logging or road, highway construction or whatever. And, it may not sound like a big issue and for a small operator maybe it won't be but at some point, someone who is running older equipment is gonna be forced to upgrade, whether

they can afford it or not. I mean it's gonna be a case of you either upgrade your equipment or, or you stop operating. And, you know that's, all coming down from the perceived climate change. Another area will be in slash management. It's, you know the carbon emissions from slash management will probably be perceived as, as a problem. [Orofino]

Cap and Trade as forest landowners it's a bonus to us; it's potential dollars comin' in to help manage a stand. But, are you willing to pay the price ultimately, of receiving those credits, through reduction and other goods or services or what with it? You know, look to CO2 emissions, and the EPA regulations and just coming down the pipe? [Orofino]

CARBON MARKETS AND SEQUESTRATION

Some participants expressed suspicion about carbon markets.

The thing about the carbon sequestration, where you'll be paid if you have forest land – and I just find it strange that we're gonna be paid for something that was going on long before we ever got here – just seems a little odd to me but, maybe. [Coeur d'Alene]

When I look at it carefully I think, is this just giving big polluters a way to continue polluting? Instead of cleaning up their act, they can now buy these carbon credits from other people, and they can continue polluting . . . help me to do good forest management, but I don't want to be an excuse for somebody else to continue polluting when they could stop it. [Grangeville]

And the former Russian colonies, now have what they're calling "Russian hot air" for sale, and their industries are all kaput they – no more, -- Georgia and a lot of those countries are not industrialized like they used to be, but yet they still have these credits. So they're selling credits to us, for – to someone who is a high carbon polluter. So, there's actually not – it's not really gonna very much change how much carbon goes in the air, and they've done a lot of studies on this, you know, it really is not gonna change very much; it's gonna make a lot of things more expensive. [Sandpoint]

Nonetheless, many participants were very interested in carbon markets and commented on their appreciation for being rewarded for carbon sequestration and other benefits they were currently providing without financial compensation.

I'm thinking, hey there's some opportunities there, whether or not it's reality or not, you know public perception, drives policy, more than science, and perception and politics . . . those government payments are a lot more reliable than my brother-in-law who rents pasture who, -- you know I mean the government pays on time {several laughs}, you know, more than hay customers and stuff like that. [Grangeville]

We are the group that gives, that sequesters the carbons and so we should be rewarded for our efforts, no matter whether it's a no-growth forest or whether it's a brand new seeding that we just did / Or at the very least, should not be penalized for whatever solution, gets decided. /And we shouldn't be excluded just because we have a 20 or 40-acre piece, well all should be rewarded in some respects. And one of the things of my reading is that the certification process is very expensive, which is – I mean maybe, that in and of itself, one of us needs to be a certified technician on that or something, because it shouldn't be that expensive. [Sandpoint]

Cap, Trade and Cap thing, 'cause I've been following that, talking about that – because the reality is those of those that own forest you've got to keep figuring out ways to bring in an income because you can't log more than once every so many years . . . one part of me wants to say, okay if there's any way that the government,

the taxpayers, the people whoever, are helping us do a public service because in a way that's what we're doing by raising healthy forests: we are providing clean air, clean water, wildlife habitat, forestry products – we're providing those things for the public, and then turning around and paying taxes for doing it. And so, if there is some way that, we can be as forest owners helped financially to be able to do a good job, then I'm all for it. And in some ways we should be getting rewarded for doing a good job, for doing that public service. [Grangeville]

Some landowners were also concerned about their hands being tied by participating in carbon trading programs.

If you sign up for any of the revenue, the money that's supposed to be out there under some of the Cap and Trade, cap and tax, carbon sink programs that are coming, what does it do to tie your hands off forestry management through a whole rotation? What kind of things are they insisting on? What options do you still have on the table to do what you've been doing? . . . It's helpful to know what you should be looking for or what key words you should be thinking twice about. [Grangeville]

While participants expressed concern about regulations to manage carbon, participants in one group expressed pride in what forest owners were already doing voluntarily to mitigate climate change and indicated interest in more information about forest carbon management.

If we take this into the realm of, what we do up here in north Idaho on our forestlands, we're doin' the best we can, because we're in the process of – everybody here has talked about trying to produce healthy forests. Unless I missed something in my early schooling, the trees take the carbon dioxide, and put off the oxygen. So if we're planting more trees, right? We're doin' our part. So I don't know about the rest of you, but I'm doing my part. [Coeur d'Alene]

The question I'd have is, is the carbon released from fossil fuel, equivalent to the carbon released when I cut a tree down? . . . If I burn a tree, am I releasing the same amount of carbon into the atmosphere as if I'm burning lump of coal. [Coeur d'Alene]

I would be interested that to know which ones I want to grow in the forest, for the carbon. . . . what do I want to promote on my trees, to do what I feel is right for the atmosphere? [Coeur d'Alene].

EDUCATION NEEDS

COLLECT AND SYNTHESIZE CLIMATE CHANGE RESEARCH

Participants often expressed desire for extension to collect and synthesize climate change research for them.

How 'bout coalescing the research – you could have one-size fits all where you can at least look at it, maybe trying to get some informed decision. But, it's everywhere – I mean, and maybe have somebody that's a lot smarter than me be able to put some of it together, so that you can make an informed decision. [Coeur d'Alene]

But that's what I guess I look to Extension for is, keep giving me, sharing with me, teaching me, helping me, learn what I need to do to make sure I am doing the best that we know scientifically. [Grangeville]

THE LOCAL PICTURE

Many climate change projections focus on large scales, but participants consistently emphasized the need for local climate change information; that is, anticipated effects on local forest conditions, hydrological cycles, springs, fire, insects & disease, invasive species, etc.

Right now global warming is like, everybody – we’re all gonna get warmer. And this, using just microclimates in a sense and saying, “well not everybody’s gonna get warmer, it’s gonna be different for everybody,” and all of the data seems – they’re not collecting data other than just this national, across-the-board worldwide kind of thing and they’re not really getting into specifics zones and areas. / What does it mean in Athol? / Right, exactly. [Coeur d’Alene]

Of course, we don’t know what’s coming, even if, we’re faced, worse case scenario there’s global warming – severe global warming – what are we going to get, locally? And that might – what good, for me a bit, might be disaster down at Cherry Lane. [Orofino]

I didn’t figure some places are gonna be gettin’ cooler and some places are gonna be gettin’ warmer, I thought, it’s either it could be warmer or it’s gonna get cooler everywhere. . . . Well if that’s the fact, that’s a whole new topic. I mean what area are we in? Do people know which area they’re in? Are they in the one that’s gonna get warmer or the one that’s gonna get cooler? And that’s what things should be aimed at, that I have some concerns about like, invasive species . . . So like the grasses, the weeds, other potential things that might gain a foothold under different climates . . . [Moscow]

There was particular interest in how climate might affect different insects, diseases, invasive species, and hydrology.

When is it gonna get warmer, when is it gonna get wetter within the year, becomes an even bigger question. Are we gonna get all our rain in the spring, and we’re gonna have flooding, that type of thing. [Coeur d’Alene]

Are there insects or diseases that we’re gonna have to look more closely at under different climate regimes? [Sandpoint]

Is my spring gonna be affected? [Coeur d’Alene]

FUTURE PROJECTIONS VS. HISTORIC CLIMATE VARIATION

Several participants wanted to see comparisons of future projections to data for past local climate and weather fluctuations (i.e. over the last few thousand years).

Give us some sense of – like you’re seeing we have these drought periods and, wet periods and whatnot, what’s that look like in the past, and then – lookin’ over all those trends, are we lookin’ at peaks that are bigger than we had historically, or valleys that are bigger than we had historically or something, that is timing – how the timing varies historically, and what might change on that. [Grangeville].

Compare a future projection to a past of currents. And we can learn from history. [St. Maries]

They have weather data and in that sense climate data for this region for the last century, and if a person went back through that, you know, through that data – I mean you’re – what they’re giving is average rainfall for an area that’s based off of, the cumulative data and averaged out. So if you can see a trend let’s say, if you went back to the 1950s and looked at, at the precip. data there, how is it compared to what we have now? [Orofino]

FOREST MANAGEMENT ALTERNATIVES

Some participants wanted prescriptive forest management alternatives for different types of sites and stands keyed to different climate projections.

You know alternatives, it might be this, this, this, or this. What would you do in it is. I don't know what the right strategy is going to be. / Kind of the best and worst case scenario and the middle? / I don't know, but, it would be useful if a certain scenario unfolds to have a little idea: okay, this is the recommended way to go. [Orofino]

If you had something that said, "well this is what your – if your stand fits this," then a prescriptive kind of – I think that'd be a useful tool to people. [Grangeville]

Some participants also wanted information on different species or seed sources to consider planting.

I think some seed source trials would be very interesting. I mean we all think we know that, particularly on the ponderosa pine because that's mostly what we're all planting that, site-specific is better than not knowing where your seed came from but, we don't really know that taking seed from some, 500-year old ponderosa pine down on the Salmon River breaks, that's had everything thrown at that you can think of, that, planted up here if our climate is gonna get hotter and drier might not be better than the ones we have planted . . . like [he] said you'd want to make sure and find some place to do that is gonna be in it for the long-haul, but I think that would be very interesting to have seed sources from all over planted side-by-side and, see what they look like. [Moscow]

I would want to know well, if we're expected to get warmer and wetter then, I should start managing for the types of trees that that's gonna benefit if you look at it that way. [Coeur d'Alene]

REGULATORY AND MARKET FORECASTS

Some participants wanted extension programming on potential regulations related to climate change, including government regulations and fine print associated with participation in carbon markets. They also expressed interest in markets related to carbon trading, forest biomass, and traditional forest products.

The one thing I would like to see from, Extension office or whatever is, kind of an analysis of what regulations will be coming down to use and what, you know maybe a kind of an analysis of like a long-term whether the – to buying this carbon credit thing and to put your property in there where you get the money back from the carbon credits or if you're thinking further down the road they'll be, so much – either something better, there'll be enough regulation and stuff put onto that conservation easement that you won't be able to cut a tree when you want to or you won't be able to do this or that when you want to. And it kind of – that's what I would be interested in knowing. You know, because there's no way to, -- for me to look through all the regulations and figure out – it's just a waste of time to try to follow it and so. [Orofino]

Perhaps even projecting markets, somehow dealing with the economy, looking to the future, when's home construction gonna come up – a crystal ball, maybe, a little crystal ball would help. [St. Maries]

If the university would help us with how to be on the edge of economic solutions, and to be a little more specific, is, the cap and trade programs: how do we become – can we, as a group, certify ourselves, how do we become players so that we can be compensated for our good deeds. [Sandpoint]

I have an awful lot of downed bio-fuels in my forest, that – is this gonna eventually be viable for bio-fuels? And I know they're, they're doin' some work, there's a Washington plant that's working on it. Is that somethin' that would be worth learning about for those of us who burn our woody debris. [Sandpoint]

Occasionally participants mentioned reaching to people who hadn't necessarily been coming to extension programs, including urban audiences, youth, and the U.S. Forest Service.

If you can get kids more interested in the forestry, somehow penetrate the schools a little bit, but also reality speaks and I think you're gonna have to make, some effort to get forestry information available to those people who actually own the land and they might not be people like us. [St. Maries]

Extension needs to, you need to include the Forest Service with some of the management too. [Grangeville]

To me, the biggest outreach program is to make urban people really understand what the forest is about and what the woods is about. [Sandpoint]

EDUCATION FORMAT

Overall, participants didn't identify a clear preference or any one kind of educational format, though some preferred printed publications over internet-based content.

The whole range of things like we talk about in Master Forest Stewards about different forms of adult education. [Coeur d'Alene]

Yeah the web is great to Google something up if you're researching something but, say the guy that's in the back 40 in Weippe and they can't get the internet, he needs to have a chance at that information too and either go to, -- do workshops or have the print to, -- to an extent anyway. [Orofino]

What do you guys think of web versus print kind of media? / Depends on if you have dial-up still. / I think you ought to do both anymore. / The internet's not really all it's cracked up to be. [Coeur d'Alene]

If it's on that screen in front of me, I tend to just scroll scroll – oh okay, that's fine and I can go onto the next thing. You know I don't, I don't concentrate – if I really want to concentrate, I have to print it off, and then sit and read it on the piece of paper 'cause that's the way we grew up learning. [Grangeville]

Web is great, but for actually going back and pulling information – Woodland notes. It's nice to have that stack and go back through and say "okay this is connection point". Try to go through the web and find that issue that maybe you wrote a little note on somewhere, because all the other junk on the computer – good luck. At least the way it is on my computer. [Orofino]

One participant cited peer to peer learning as a valuable extension programming attribute, in part because it reduces the potential for an extension educator to be seen as a condescending expert.

I might suggest that when you have some of these meetings that you're looking for with, outside of groups of this, other landowners that may not have as much background in forestry. To include some of the individuals as we have here. In other words, in that way, you're not elevated as the, educational guru from some university talking down to people because, look here, they have a neighbor right here or at least another, a common folk, somebody that might not be as well-educated that they can chat with. [Coeur d'Alene]

Some landowners were interested in helping to generate data on how climate was changing and adaptation strategies for it.

Data collection any of these things is a huge point as you mentioned for data like climate records for the state of Idaho for some of the forts you can get back to the 1800s and, I know National Weather Service has a program for cooperative weather stations, and you can become essentially a site with – I don't know how much effort there's involved in that but, I wouldn't mind our parcel collecting data to contribute to the record for this area – you've got to start at some point, and a higher density of valuable data for future analysis probably lends some – I don't know, at least some data for people that handle that so. I know that the state climatologist on their site has a link to, become a partner in this network for collecting weather data. [Coeur d'Alene]

Because the idea of experimenting with non-native species came up frequently in the earliest PNW focus groups, we added a probe to see how open forest owners were to hosting provenance tests on their property – most were very positive about that.

CLIMATE CHANGE EXTENSION PROGRAMMING FOR FOREST OWNERS

While participants expressed varying kinds and degrees of skepticism about climate science, most were interested in learning more about it, to the extent they could trust that the programming was not unduly influenced by political or economic agendas. Many participants wanted extension to help them to make sense of climate science and any decisions they might make related to it. An alternative or companion response to extension screening climate research could be to give forest owners better tools to assess the quality of climate change information they receive.

TRANSPARENCY

Because of the perception of “politics and money” and similar problems many forest owners associate with the issue of climate change, extension should strive to make the research that supports climate change programming as transparent as possible. Some possible approaches include clarifying how grant funding does and does not affect the type of research that is done and research results and clearly outlining peer review processes and other research quality controls.

ACCESSIBILITY

The complexity and sheer volume of information about climate change could be a source of distrust in it. There are probably limits to how much learning about complex phenomena can be simplified, but some approaches to making climate change science more accessible could include, avoiding arcane language (e.g., “human-caused” rather than “anthropogenic”) and putting information in forms people can readily apply (e.g., maps, management scenarios for different types of forest sites, etc.). Developing online and printed materials on climate science that allow people to dig as deeply as they wish to (or not) may also be a useful approach.

INCREASING MODELING LITERACY

Given how common modeling is becoming as a form of science to understand climate and other complex phenomena, there might be some value in extension programming that increases forest owners' literacy on: how modeling works, the extent to which models are based on empirical data vs. theoretical influences, how models are used (e.g., predictions vs. projections), and how model quality is evaluated. Discussing model projections many people use every day (e.g., weather forecasts), and models that have long been used within forestry (e.g., forest growth and yield models) may be a helpful part of such programming.

Some people may not want to learn about modeling in all its depth and complexity. Indeed one thing that could be inferred from some of these discussions is that the more complex the scientific explanation is, the less people will trust it - the "Occam's razor" idea – that when faced with competing hypotheses that are equal in other respects, one should choose the one that makes the fewest new assumptions. More knowledge about models could cause some individuals to put less stock in them.

LOCAL CLIMATE PROJECTIONS AND COMPARISONS TO LOCAL HISTORY

Discussions of climate change in the media tend to focus on what is happening or could happen in other parts of the world, or over broad geographic regions. Participants strongly emphasized information that focused locally on temperature, precipitation, and potential consequences. Since most climate change models are designed to look at larger geographic scales, landowners should be made aware of the potential errors in trying to apply those projections to finer, local scales.

North central Idaho participants indicated they believed future climates would likely fall within the range of past variations. Information comparing historical climate variation and future projections would likely help inform such forest owners' intuition about climate change.

CLIMATE ADAPTION IN CONTEXT OF ONGOING FOREST MANAGEMENT

Most participants in the Idaho focus groups discussed climate change and possible response strategies in relation to ongoing forest management activities, rather than taking action primarily on the basis of climate change projections. Structuring extension programming in this manner may make sense as well. For example, participants in these focus groups often indicated interest in climate change effects on forest insect, disease, and invasive species. Integrating climate projections into forestry programming focused on making forests more resilient to insects, disease, fire, and other threats may be a better alternative to developing programs focused exclusively on climate change. Looking at best, middle, and worst-case climate change scenarios and related forest management implications would likely be valued by many forest owners.

EXTENSION PROGRAMMING ON FOREST POLICY

Given participants' concerns about new regulations related to climate change, programs that enable forest owners to anticipate new regulations would be highly valued. Training that helps forest owners participate in processes that set such regulations or incentive programs may also be appropriate.

Extension has a strong tradition of that in community development programs and some volunteer programs.

ECONOMICS

Many participants talked about how climate change might affect their forest operations' economic viability. Programs that help forest owners assess new markets that develop in relation to climate change (carbon credits, biomass fuels, etc.) would be very welcome. Income through carbon trading programs was of particular interest, though participants were as concerned about activity restrictions from voluntary carbon market programs as they were about new state regulations. Such programming should emphasize the key questions and language forest owners should understand before participating in new markets. Programming extension has offered on timber sales, land lease agreements, or conservation easements could inform such efforts.

FOREST OWNERS AND CARBON MITIGATION

Focus group participants often expressed pride in their forest stewardship, and what they were already doing to sequester carbon. Programming addressing carbon sequestration practices would likely be of interest to forest owners irrespective of whether they receive carbon market payments.

EDUCATION FORMAT

Extension programming in agriculture and natural resources has traditionally focused on discrete, experimental science that can be demonstrated in the field. Climate science is often deeply intertwined with projections based on complex computer models, which is quite different from much of the science extension has worked with historically.

Idaho focus group participants frequently spoke to personal observations as way of assessing climate change. Enlisting forest owners in efforts to understand local climate change could engage their natural learning through observation and provide meaningful data to others. One example of this would be forest owners' participation in collection of local climate data, such as the National Weather Service (NWS) Cooperative Observer Program (COOP).

Most Idaho focus group participants voiced assent to participating in provenance tests for different species and seed sources on their forests. Such provenance tests could simultaneously provide long-term data on different species' and seed sources' adaptability to new climates, enfranchise forest owners in climate science, and provide sites that could be visited in future field programs that touch on the suitability of different genetic sources to evolving local climate. There is some lack of control over such plots if the forest owners' management objectives change (e.g., the property is sold). But given the aforementioned benefits and the disproportionate location of these ownerships on low-elevation forests, it may be worth addressing those issues through conservation easements or by setting up adequate redundancy in the trials to compensate for plot losses.

While most participants saw things inevitably drifting to electronic media, many confessed preference for reading printed materials over reading from a screen. Some of this stemmed from slow internet

connections and finding these materials online, but there was also some innate desire to read through things in printed form. Making sure online material is “printable” may help alleviate this.

One could interpret some of the distrust of science expressed in these focus groups as distrust of “experts” as much as science per se’. Engaging forest owners’ peer-peer learning (as opposed to relying exclusively on experts), may help engage forest owners in the discussion. There was certainly ample evidence in these focus groups that forest owners were already doing this about this topic and others as well.

CONCLUSION

Information from these focus groups will be used to adjust existing programming to touch upon climate change where needed and to develop new extension curricula on climate change as well. Some of this may be new standalone curricula or it may developed or added to as part of ongoing existing efforts such as the eXtension Climate, Forests, & Woodlands Community of Practice.

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