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# CLIMATE CHANGE AND FAMILY FOREST LANDOWNERS IN WASHINGTON: A NEEDS ASSESSMENT

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## **INTRODUCTION**

Family forest landowners control 2.9 million acres of Washington forests. Family forests are critical to timber, water, wildlife, and many other ecosystem services. Family forests tend to be concentrated near key locations for ecosystem functions, such as along lakes, streams, and in low elevation habitats, and are threatened due to increased development. Washington Family forest owners in Washington and elsewhere face many of the same challenges as public land managers with regard to changing environmental conditions.

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 and Washington forests is as useful as possible we conducted a needs assessment to determine Washington family forest owners' perceptions, understanding, and educational needs regarding climate change and their forests. Washington forest owners were interviewed as part of a larger study of family forest owners in Idaho, Oregon, and Alaska that was funded with support by the USFS 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 (Figure 1). Six focus groups were conducted within each of the four states for a total of 24 different groups (Figure 1).

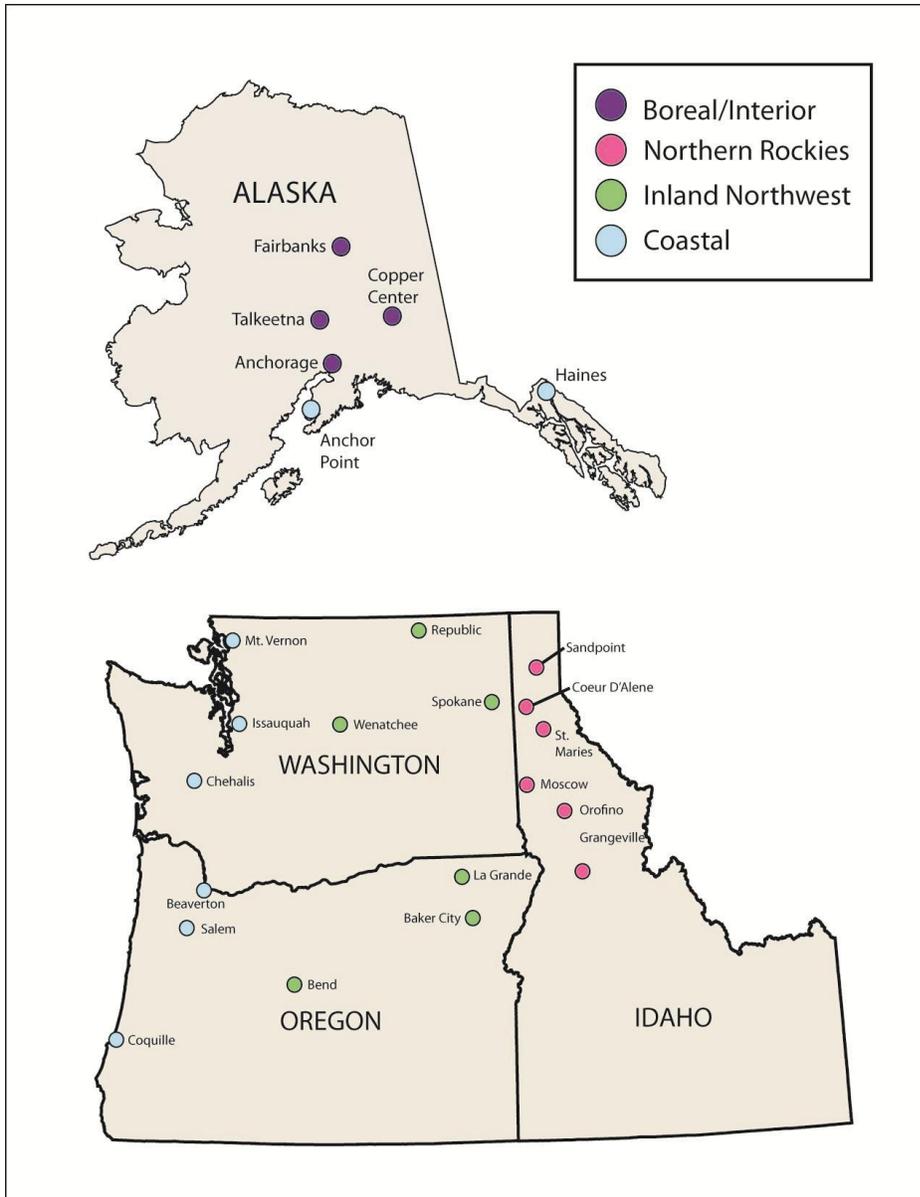


Figure 1. Location of the 24 focus groups in the Pacific Northwest study region.

Washington focus groups each consisted of eight to ten individuals, from areas immediate to the six locations identified in Figure 1. Most participants were family forest landowners that had taken part in forestry education programs through Washington State University Extension. Participants were recruited by local extension faculty and staff. Guiding questions were purposely open-ended to stimulate active discussion among participants about their knowledge, attitudes, and educational needs regarding climate change and the potential consequences for their forest management (Table 1).

Table 1. PNW Forest Owner Climate Change Questioning route.

1. Tell us about your forest
2. Where do you get information about climate change?
3. How do you assess the validity of the information you receive about climate change?
4. How do you think climate change may or may not impact your forest?
5. What are you doing differently on your forest (if anything) as a result of anticipated climate change?
6. What are your major questions about climate change?
7. What form would you like to get information about climate change?
8. 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' size and tenure of forest ownership (see Tables 2 & 3).

Table 2. Number of forest owners by acreage class among those participating in six Washington focus groups.

Acreage class	Number of forest owners
0-40 acres	11
41-100 acres	7
100-300 acres	14
> 300 acres	6

Table 3. Number of forest owners by tenure class among those participating in six Washington focus groups.

Years of ownership	Number of forest owners
0-10 years	3
10-20 years	14
20-50 years	17
> 50 years	3

## DATA ANALYSIS

All focus group recordings were transcribed verbatim. Four individuals proofed 6 transcripts each and simultaneously generated a number of potential topical codes, or subthemes, to the transcript content. These codes were then condensed to 11 broad thematic categories. All research team members used a shared system to code the transcripts using NVivo, computer assisted qualitative data analysis software (CAQDAS) by QSR. Each transcript was coded by at least two team members to account for intercoder variation.

## RESULTS

### INFORMATION SOURCES

Newspapers, magazines, television and radio are major sources of information about climate change (Table 4). Some respondents also cited personal connections with friends and/or relatives who are in the environmental sciences. A few use the internet as an information source but generally only visit sites that they consider to be unbiased, (i.e. National Weather Service, NASA). Some respondents said they

use technical and peer reviewed journals as their major source of climate change information, as well as information from professional associations, either in association publications or at professional conferences. Al Gore’s book and movie, “*An Inconvenient Truth*” was mentioned by some people as a source of climate information.

Table 4. Information sources mentioned by Washington participants

Television	Radio	Named individuals	Newspapers	Books/Periodicals	Websites	Organizations
Fox News	National Public Radio	Cliff Mass (UW)	Wall Street Journal	PNW Science Findings	National Weather Service	Western Forestry & Conservation
Network News	Fox Radio	Al Gore	Oregonian	Outdoor	NASA	Society of American Foresters
60 Minutes		Family member (oceanographer)	Seattle Times	Hunting & Fishing	ClimateAudit	Washington Forest Protection Association
		Steve McIntyre (ClimateAudit)	The Republican	National Geographic	IceCap	Washington Farm Forestry Assoc.
		Family member (atmospheric chemist)	New York Times	Scientific American	RealClimate	American Forest Foundation
		Family member (marine biologist)	Financial Times	Range Magazine		Pacific Forest Land Trust
			Christian Science Monitor	Capital Press		University of Washington
				Professional journals (not specified)		USFS Pacific Northwest Research Station
				Northwest Woodlands		Yale University
				An Inconvenient Truth		Washington State University Extension
				The Chilling Stars		
				Not by Fire By Ice		

#### TRUST IN INFORMATION SOURCES

Given the amount of information that exists in the popular press about climate change, individuals were asked how they assessed the validity of the information they received. Many perceive that the information they receive is biased towards a specific agenda; either political or financial. They find it

difficult to believe what they read and hear about climate change, especially from the media. Much of the skepticism arises from the reported disagreements about climate change, both in terms of its existence and its cause, among scientists. There is, by some, the perception that scientists are biased and operate with agendas, often tied to funding.

*Nowadays, it's almost like [being a scientists] that's worse than being an economist or an atheist or somethin' that, "oh, I'm gonna be a scientist? All they do is live off the government, the government grants. [Republic]*

*Well it's very difficult, and there's clearly a political agenda by some people. For example, there's a number of people that I know that are in the climate business that make a living, or they continue to hold their jobs I should say, by going around, the Chicken Little "the sky is falling, we've got to do something right now," and the reason they have that attitude – some of 'em don't even believe it, but they know that they can get all kinds of research grants if they say that. And that's a sad truth, that's a very sad truth of the way that the scientific community, particularly in the United States and Europe operates. [Spokane]*

*Why are these – what is the motivation for this claim: I mean is it for money – usually money – or power? Or just plain science. And then in science you've got powers of which university or which whatever is gonna get the funds to do the research. I mean, I don't really know, there's some confusion. [Mt. Vernon]*

Some individuals describe themselves as “skeptics” and feel that the mainstream media does not always provide enough information to help them fully understand.

*We're victims of the media, you know. I mean we have to – we listen to what people are saying and then we kind of filter it out and decide what you think might be right and what's wrong. [Wenatchee]*

*News media is one place, and depending on what you hear or see, depending on who wrote it, you can get totally opposing views on what is happening. [Mt. Vernon]*

*I think that's one reason we don't have a TV anymore because it just infuriates me to see both sides – any side, misrepresent the truth. And that happens all too often. And so the public, if they rely on – and this holds true really for the print media too, particularly newspapers, magazines can get a little more focused and a little bit more in-depth in their articles but even there, it comes short. And so journalism I think, is failing the American public in properly presenting the facts. [Republic]*

With regards to more trusted sources of climate information' organizations and agencies such as National Public Radio, University Extension, NASA, The National Weather Service, and the US Forest Service were mentioned. In addition, some we spoke with indicated that most of the credible sources were from organizations and associations that the participants were either members of or were very familiar with.

*Washington Farm and Forestry Association would be the ones that come to my mind. And they seem to be fairly objective – they don't seem to have the ideological axe to grind as much as some of the other advocacy groups. [Issaquah]*

*I've been lucky enough to get the information in a number of different ways on climate change: Western Forestry and Conservation Association, "Continuing Education" seminars, through WFPA or Society of American Foresters ... I've certainly read a couple of different articles that we're pretty in-depth, fairly good. [Chehalis]*

*...your core question earlier was, what source of information that is most credible, and for those of us that're WSU grads, that would be one good source. But the PNW station, you know, I read every one of*

*those that comes out – aaaah, I don't agree with maybe everything there, but my perception is they're really puttin' out a science document and to the extent that's physically possible, it seems to be kinda devoid of the usual, --political, agenda-driven kind of stuff so, I would trust them before I would trust, anybody else. [Chehalis]*

For others, an expressed lack of bias was an important factor in determining the credibility of a source.

*One of the things that I look for in respect to talk about this subject, is not knowing. Somebody that seems to know all the answers is not somebody I'm likely to trust, 'cause I know they're not out there. So I appreciate people who say, "you know, it could go this way, it could go this way, and these are the factors we considered, and these are why we considered them, but we really don't know. Yeah, that's something that I look for. [Issaquah]*

## UNDERSTANDING OF CLIMATE SCIENCE

Landowners described themselves as being fairly attuned to changes in weather patterns both short and long term, but whether this was due to a larger trend in climate change or the result of normal fluctuations was often a source of confusion. This was exacerbated to some degree by the perceived role of human activity in the climate debate.

*I think what's important is, to distinguish between global warming that's a natural process, that's millions and billions of years in the making, and what we as humans have contributed to it and it's very rarely distinguished in any article I read. It's mostly like, "we're causing global warming." Well we're not. You know, I think we may be adding to it, accelerating it in some way, and I would like to see that more quantified. [Centralia]*

*I mean we could argue forever about who is causing climate [change]; in fact, the recent trends the last ten years and especially the last three years are so counter-intuitive to the plan, the idea we should just be progressively warming up that, it makes a lot more difficult – it's all based on what is going to happen down the road. And meanwhile the real problem is not being addressed. [Centralia]*

*Let's talk about global warming. Now if we talk global warming, and the methodologies that are used to collect that data, such as satellites and things like that, there's virtually no question, in anyone's mind that is in the scientific community, whether they're a Republican or a Democrat, it doesn't matter – there's virtually no question that global warming is happening. Now the question is, is it one of the natural cycles? The Earth has actually been much hotter in the past than it is now and everybody knows that, and there's good science that can prove it. The fact of the matter is, the Earth is indeed warming, globally. Now maybe Spokane isn't, maybe Moses Lake isn't, but the world is, and there's some dramatic effects that are gonna happen as that continues. [Spokane]*

## CLIMATE CHANGE IMPACTS

Respondents were unsure about potential impacts of climate change on their forests. However, possible changes to environmental conditions overall were mentioned as potential impacts their forests may face. Drought, increased insect and disease activity, invasives, and fire were mentioned as conditions that might worsen in the face of climate changes. Yet, the lack of local information makes long-term planning difficult for many of those we spoke with. Many respondents expressed concern with immediate problems that need to be addressed, such as thinning, fuels and brush control, etc., and speculated that these conditions might worsen in the face of climate change.

*Yeah the drier summers are particularly a concern. We were trying to revegetate an area that has been logged and I think that at least the experience that we had in the last few years is that it's been much harder; that you actually had to go and irrigate where that wasn't necessarily an issue. So it's a labor, and survival I think issue. [Issaquah]*

*I see global warming in the way that we are getting more moisture, at different times a year and it's causing us to have more things that impede trees from growing, like elderberry, salmonberry. Even – what is that? Snake grass. We have snake grass that's this tall, as tall as me, which I've never seen. [Mt. Vernon]*

*Bud worm. I mean the B.C's seeing horrendous forest lost because they haven't had sufficiently cold winters to kill the worm. And so they're losin' thousands – millions of hectares of forest land, of timber. [Republic]*

*My ground seems to be drier than ever. I'm losing a lot of trees to bugs. It seems as fast as I can plant 'em, I'll have this really nice re-prod growth comin' up that's four or five years old and I look over here at trees that are 40 years old and the, needles area startin' to fall, everything's turnin' red and they're dyin' on me and the bugs are everywhere, and I'm thinking, "well okay, how do you keep up with this?" Now, is that because of climate change? I don't know, but in the short time I've been involved in this, it's only been 20 years, I've seen a lot of change on my own property. And again I don't attribute that necessarily to climate change but something's going on. [Spokane]*

In addition to speculations about environmental changes, there was some real concern expressed about the social and policy implications of climate change, especially in western Washington.

*I'm not so worried about climate change as I am concerned about the impact of climate change policy, on my ability to manage my tree farm. I do see more stress on our ground, particularly in the last ten years that I think is somewhat related to drought, whether or not there's a tie to that, to climate change, goes back to the conflicting information somebody needs to sort out. But I'm definitely seeing more stress on the landscape, but it's not clear to me that there's a tie yet to climate change. But I think the agenda behind some of the more extreme groups pushing the climate change policy has far more implications for how we can manage our forest. It looks to me like it's ---the next spotted owl. [Centralia]*

*The social implications or, policy implications might impact my life and other things in my life more than climate will impact my tree farm. [Centralia]*

*Well one of the other impacts that I do expect to see here is that people will be moving. I mean if the Southwest gets seriously dead and water becomes a very serious issue, this is a pretty attractive area. I think over the next 20, 30 years, while other place may become much more difficult to live in, our area may look very much more attractive so, we may have an influx of people coming in, you know and I think property values, taxes and all that. [Issaquah]*

*But, everybody who lives in south Florida has to be somewhere and, so the pressure on conversion of forest land, which is an issue in the background for most people who would be like us, will become more intense. And if there aren't ways to figure out how to, in some way protect, either just through social policy or, monetizing ecosystem surfaces, and all that sort of stuff, the small urban interface landowner, in the Puget Sound region is just gonna have huge pressures to give it up, in terms of growing trees. And it's only gonna get worse I think. [Mt. Vernon]*

## CLIMATE CHANGE AND LANDOWNER BEHAVIOR

Very few landowners were doing anything substantially different on their lands in response to anticipated climate change. Some speculated that if seed zones change, they would consider planting different species. But by and large, the feeling was that any change that might occur will be gradual

enough and that species may adapt to the changing conditions. Any planting of off-site species was not necessarily done in response to changes in climate, but rather was experimental in nature.

*So we're doing things for what we perceive to be relatively near-term forest health. Spacing of the trees, cuttin' out the brush, and maybe changin' from, firs to pines, or pines to firs, -- but should we be doing anything different long-term? Or if, if there is climate change, we don't do this? [Wenatchee]*

*To answer your question Chris about what I'm thinking about in terms of my own forest and future climate change: it's difficult to come to an answer without proper data. [Issaquah]*

*I would think, it would be very difficult for individual tree farmers to make a decision to change species, because of the uncertainty of what change is going to happen, and -- so I would think that there would -- they'd look to people like the Extension service and others to make the kinds of recommends. [Mt. Vernon]*

By and large, most participants continue to manage their forest lands to meet objectives such as providing wildlife habitat, increasing biodiversity, improving forest health, and seeking financial gain, but the threat of climate change was not a primary reason for their management decisions.

*The other thing too that's really changed recently along with climate change in wanting to work ecologically is of course the financial situation. And, you know we're having to look at, okay, you know how can we save money, how can we possibly make money? And there might be situations where that kind of trumps the best environmental decision. [Issaquah]*

*I've wondered about the genetic seed source thing. And again, you know looking at the Willamette Valley, if that's the precursor maybe that would be of use -- but I think the shift is too slow. So I -- yeah, still plant Douglas fir and western red cedar 'cause that appears to be the markets but, that's as far as you can look out. [Issaquah]*

*Well my course is planting the right tree in the right soil conditions, that's as far as I guess I want to go. And I would say too, keepin' the trees apart gives 'em a better chance of living. If they're too close, they grow slow. [Mt. Vernon]*

*I'm looking at the next 15 years and I'm not looking 40 years down the road, -- or longer, or a thousand years down the road. I'm looking at, I've got a specific problem short-term, right now that I've got to do something about, and that's beat the brush. And that's what I do. [Wenatchee]*

## LANDOWNER INFORMATION NEEDS

Focus group participants recognized the complexities and uncertainties that revolve around the issue of climate change and suggested that University Extension should play a major role in helping to decipher through the conflicting information.

*That would be really useful from a land grant university perspective if we can try to establish a process that allows people to look at the pros and cons, the credibility in the background, and you know try to come to the -- an answer, or at least a position that you can support, and acknowledge the dissenting opinions. [Centralia]*

*We're not able to transcend the political rhetoric and get to the core issues, and I think that would be a great, great process for a university to try to sort that out. Or give us the tools to sort that out. 'Cause I mean how do you make your mind up when you've got 1,500 PhDs on one side and 2,300 PhDs on the other side and they're diametrically opposed? [Centralia]*

*I would like to see a clear distillation from the primary literature of what the status is on global changes, without all the mumbo jumbo, but with reference to it so we can look it up. But to really distill it from a scientific standpoint: where are we today in our understanding of the climate? [Republic]*

The majority of landowners expressed a desire for information that addressed local conditions, such as long-term trends in rainfall, temperature, precipitation, etc., and how these have changed over time.

*So, in Idaho and in eastern Washington well, there's so many different areas I don't know how you break that up but, for areas that share a similar climate historically, how has that varied by key parameters, the first and last frost. Or, on a growing degree basis. Or, anything that would help those people that are growing timber but also farming and ranching. [Republic]*

*I know you can't make any hard and fast predictions or anything but, maybe if you could come up with something that would kind of suggest which trees would be expected to thrive and which ones maybe would decline. That sort of practical information would be very helpful. [Mt Vernon]*

*What would be an impact of a couple of degrees change and long-term temperature – how would that impact local mixed-forest, forest – certain species, at maybe different elevations. [Wenatchee]*

There was some interest in information on carbon markets and carbon sequestration, but for the most part the issue of cap and trade was met with a fair amount of skepticism and was often viewed as another area for increased regulations.

*I'd like to know what, what is my hundred acres of trees, what am I doing' for the community? When I go down and talk to the tax appraiser, what can I say? Can I say something' like ... by keeping these trees I'm not developing. I mean I know financially if I sold 'em for houses, along the creek it'd be great but, what is this contributing to the community as far as sequestering CO2. Can anyone quantify that? I mean it's kind of crazy for us to, -- if somebody's charging people and I'm sitting' here with a forest that is sequestering so much CO2, well then what's my involvement in Cap and Trade? [Spokane]*

*I've always had the question of: does a mature tree, a large – let's take a conifer of any – or deciduous – have any better oxygen-carbon dioxide exchange than a younger, faster-growing tree? I've never found that answer. [Wenatchee]*

## EDUCATIONAL PROGRAMMING AND DELIVERY METHODS

The landowners we spoke with expressed an interest in a variety of delivery methods. While face-to-face classes, workshops and tours are always helpful, those we spoke with realized the value in other forms of delivery such as fact sheets, downloadable on-line publications, email notices, bulletins, short summaries, and articles in association newsletters.

Our results indicate that climate change is a controversial topic; one that was expressed through a lens of values and beliefs. When addressing the issue of climate change in educational programs it may be prudent in some situations to focus on managing forests in the face of environmental uncertainty and extreme events that include climate change. It is important to remain transparent when addressing topics such as climate change and allow participants to incorporate and assimilate the information on their own terms. Although there were differing opinions with regards to the existence of climate change as a cause, everyone we spoke with acknowledged that there were significant changes in the conditions of their forests; whether it was insect damage, difficulty in regeneration, increased fire risk, or drought. The overarching information need was managing for resiliency, regardless of cause.

Although there were varying degrees of skepticism regarding climate change, there was an interest in understanding more about climate science, and extension was often suggested as an appropriate vehicle for providing this information. Perceptions of research bias and the highly visible disagreements among members of the scientific community have provided the foundation for this skepticism. University Extension is viewed as an un-biased resource that does not operate with political or economic agendas. Therefore, Extension educators would be well served to increase their own understanding of climate science and its inherent uncertainty.

## RECOMMENDATIONS

- Be aware that climate change can be a value-laden term for many people. Avoid approaching the topic as a “belief that needs to be changed”.
- Educational programming on climate change may be better received in terms of managing forests in the face of environmental uncertainty and extreme events.
- Incorporating climate information into existing curricula and programs.
- Develop educational programs in science literacy to help landowners assess and interpret climate science; for example, adding modules on understanding climate models into existing curricula or programs with such topics as: the application of climate models, model projections versus model predictions, understanding where model uncertainties lie and how these relate to natural variability, and interpreting landscape model projections for local applications.
- Focus attention of potential impacts of climate change on forest insects, diseases, and invasive species.

## SUGGESTED READING

Global Warming’s Six America’s: June 2010

<http://environment.yale.edu/climate/files/SixAmericasJune2010.pdf>

Communicating on Climate change: An essential resource for journalists, scientists, and educators

[http://www.metcalfinstitute.org/Communicating\\_ClimateChange.htm](http://www.metcalfinstitute.org/Communicating_ClimateChange.htm)

Western Forests: recommendations and guidance for addressing climate change

<http://www.landtrustalliance.org/policy/emerging-issues/climate-change/CWSF-CC-Forest-4-27-10.pdf>

Psychology and global climate change: addressing a multifaceted phenomenon and set of challenges

<http://www.landtrustalliance.org/policy/emerging-issues/climate-change/CWSF-CC-Forest-4-27-10.pdf>

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