
CLIMATE CHANGE AND PRIVATE FOREST LANDOWNERS IN ALASKA: A NEEDS ASSESSMENT

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Images Courtesy of US Geological Service

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INTRODUCTION

Most of Alaska's communities live in or next to its forests. Alaska's forests are critical for timber, water, wildlife, subsistence, ecosystem functions, and many other shared values. Of the state's estimated 126 million acres of forested land, roughly 28% is controlled by private landowners (Table 1; Figure 1).¹ Climate change impacts on ecosystem functions such as stream flows, fire regimes, wildlife habitat, and vegetation types are of increasing concern for state and federal land managers and are the subject of much research. Private forest landowners in the Alaska and elsewhere face the same challenges as public land managers with regard to changing forest conditions. However, little is known regarding the understanding private forest landowners have about climate change and the potential impacts on how they manage their forests. Consequently, the degree to which private landowners are prepared to respond effectively is unknown.

Table 1. Alaska forest land ownership in thousands of acres (Alaska Division of Forestry, 2010)

Forest land ownership	Acres (thousands)
Federal government	63,423
State and local government	27,570
Private	35,875
Total	126,868

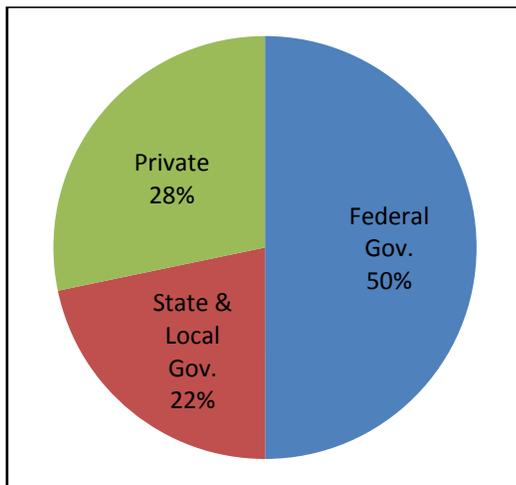


Figure 1. Forest land ownership by percentage of total forest land acres in Alaska (Alaska Division of Forestry, 2010).

As new knowledge about the potential impacts of climate change on western forests is being generated by the research community, extension educators are now beginning to conceptualize education and technology transfer programs for family and private forests owners around climate change, its impacts and forest management implications. To make sure new research and extension programming related to

¹ Alaska Division of Forestry, 2010. Statewide Assessment of Forest Resources. Anchorage, AK. The Alaska Division of Forestry estimates that 95 percent of the private forest land in Alaska is owned by Alaska Native Claims Settlement Act corporations.

climate change and western forests is as useful as possible for private forest owners, we conducted a needs assessment to determine private forest owners' perceptions, understanding, and educational needs regarding the impact of climate change on their forests. Alaska private forest owners were interviewed as part of a larger study of family forest owners in the Pacific Northwest (Idaho, Oregon, Washington and Alaska) that was funded with support from the US Forest Service PNW Research Station.

This report describes our research, presents the findings, and provides recommendations for education and technology transfer programs for private forest owners in Alaska. The information is intended primarily for extension educators but may also be of interest to natural resource management agencies as well as forest landowners.

METHODS

Between September 2009 and September 2010, we conducted a series of focus group discussions held throughout the four Pacific Northwest states. The project was designed to allow comparisons between regions and sub-regions based on general forest type among the four states (Figure 2). Six focus groups were conducted in each state for a total of 24 different groups (Figure 2).

Alaska focus groups ranged from 4 to 14 participants, from areas immediate to the six Alaska locations identified in Figure 1. In the other three states, most participants were family forest landowners that had taken part in education programs through extension. The Alaska focus groups included a larger number of Native corporation and natural resource professionals than focus groups in the other three states. Because Native corporations are such a large percentage of the forest base, we actively recruited representatives for the Alaska focus groups. Recruiting family forest landowners was challenged in Alaska by thinly spread extension staffing, and the recent passing of Alaska's sole extension forester. Recruitment efforts resulted in a mix of participants including family forest landowners, resource managers, and Native corporation representatives.

Purposely open-ended questions were developed 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 2).

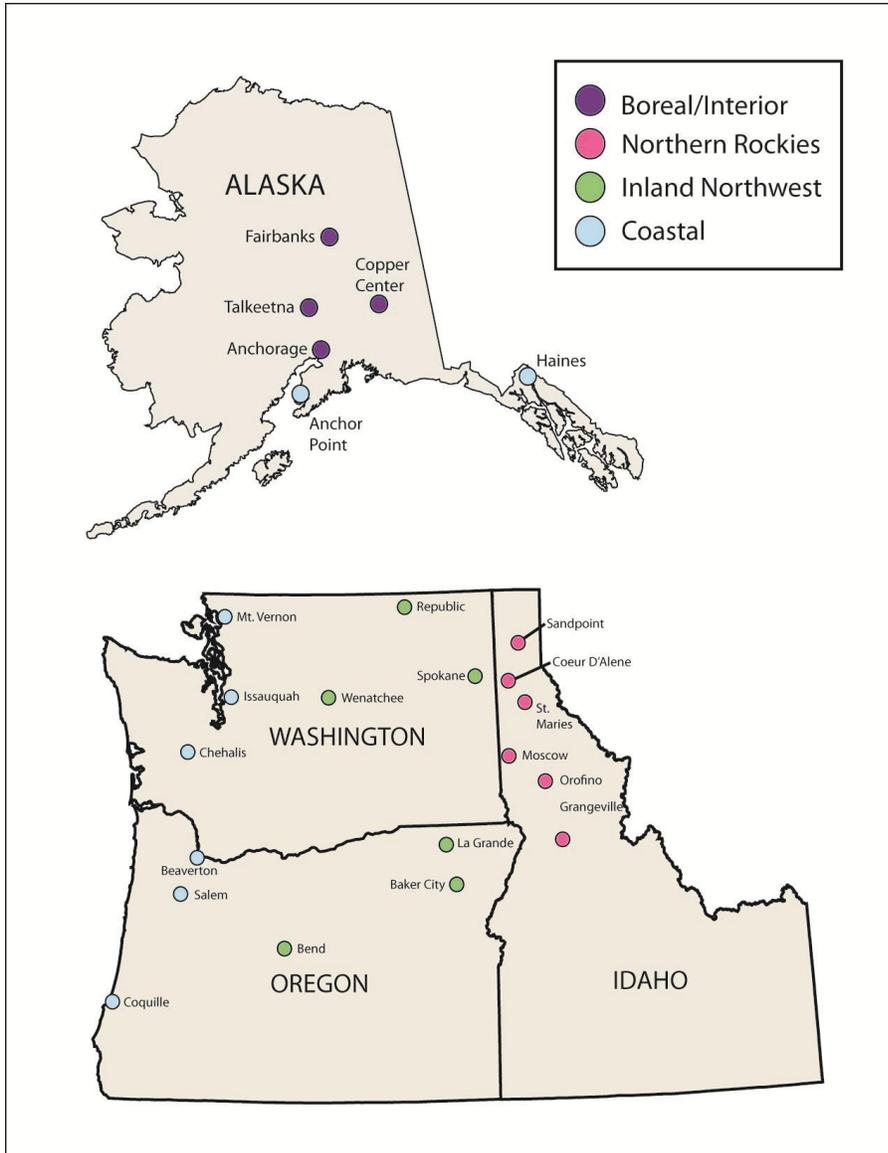


Figure 2. Location of the 24 focus groups in the Pacific Northwest study region.

Table 2. Pacific Northwest 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 with participants' consent and recordings were transcribed verbatim. Data was also collected on participants' parcel size and tenure of forest ownership (Tables 3 & 4).

Table 3. Number of forest landowners by acreage class among participants in five* Alaska focus groups.

Acreage class	Number of forest owners
0-60 acres	13
61-300 acres	7
301-1900 acres	2
90,000 – 1,000,000	2
>1,000,000	1

* Acreage data not available for Anchor Point.

Table 4. Number of forest landowners by tenure class (years of ownership) among participants in five* Alaska focus groups.

Years of ownership	Number of landowners
0-10 years	8
10-20 years	5
20-50 years	12
> 50 years	3

* Land tenure data not available for Anchor Point.

DATA ANALYSIS

Four researchers reviewed and analyzed six transcripts each and simultaneously generated hundreds of potential codes (shorthand to capture the primary content of data) for various kinds of transcript content. These codes were then categorized and ultimately condensed to 11 broad themes including 94 codes. All four researchers then used this shared system to code the transcripts using Nvivo9, computer assisted qualitative data analysis software (CAQDAS) by QSR. Each transcript was coded by at least two of the team members to assess the consistency of coding.

RESULTS

Analysis of the Alaska focus group data reveals several themes regarding attitudes about climate change, understanding of climate science, landowner behavior, interest in receiving further information from extension and preferences for specific delivery formats.

INFORMATION SOURCES

Mainstream media, personal observation and science community were the most commonly mentioned sources of information about climate change.

Mainstream media sources were commonly cited in response to the question: *Where do you get information about climate change*. Reported sources include television, radio, newspapers, and magazines. Specific media sources are listed in Table 5. The internet was often mentioned but specific sites were not offered.

Table 5. Mainstream media sources cited by Alaska participants.

Television	Radio	Newspaper	Magazines	Film
CNN	NPR	The Aquarian	The Economist	An Inconvenient Truth
Fox News	Science Friday (on NPR)	Local newspaper	News magazines	
		New York Times	Environmental magazines	

Other reported sources of information include local or regional individuals with expertise, non-profit and science based organizations (Table 6). In addition, sources related to a participant’s professional context, and personal connections (e.g. “old people,” “people that have been here forever,” Native people, Native elders, “landowners that I work with,” word of mouth, and “village folks”) were cited.

Table 6. Climate change information sources (outside of mainstream media) cited by Alaska participants.

Local/Regional Experts	Organizations	Science community
Paul Hennon, USDA Forest Service, Juneau	Islands & Ocean Visitor’s Center	<i>Agroborealis Magazine</i> - publication from the University of Alaska
Terry Chapin, University of Alaska Fairbanks	Commission on Forestry (EPIR)	NASA
Bob Wheeler, University of Alaska Extension	Society of American Foresters	"Various Universities"
Glenn Juday, University of Alaska Fairbanks	Forest Council (Alaska Community Forestry Council)	USFS PNW Research Station
John Alden, USDA Forest Service (retired)	Nature Conservancy	University Extension
Arthur Mannix, Owner, Top Notch Log Builders	Forestry Commission	Fish and Wildlife Service
Steve Patterson USDA Forest Service, Anchorage	Alaska Forum on the Environment	University of Alaska at Fairbanks
		NOAA

Personal observations were commonly cited as evidence of climate change and seem to be a trusted source of information, although at least one person expressed concern about the reliability of people's memories in terms of weather patterns. Changes participants noted (and attributed to climate change) include receding glaciers, drier conditions, less snow, warmer temperatures, increased pests, flooding, longer growing season, and later freezing.

It’s like Portage Glacier – they built that huge visitor center up at Portage, and now there’s like five ice cubes and it’s like just melting. It’s got this beautiful visitor center, no glacier {laughs}. [Anchor Point]

But yeah just talkin' to the people that've been here forever, and they'll explain about how there was always more snow in the wintertime there's, -- it was a little bit harsher winters, now you get a lot more rain, warmer weather, not as much snow. [Anchor Point]

I've lived here all my life, I see the change. And again I'm not gonna argue about what's causing it, but it's changing. [Anchor Point]

We don't know how fast it's coming – or I guess more of the result, and we don't know exactly what's causing it, but we can kind of put two and two together to see that, there are drastic changes on a big scale that are affecting a lot of areas, so that's what kind of concerns me is, global warming was kind of a thing that, when I was younger we barely knew the term, didn't really understand much about it and we thought it affected other parts of the world. But now we realize that it's right here, it's affecting us a lot. [Anchor Point]

Well all you have to do is fly around and look at what's happening with the glaciers. It's been a radical change in the last two years. [Talkeetna]

TRUST AND INFORMATION SOURCES

Although many people reported that they get their information about climate change from mainstream media sources, they also expressed mistrust of the media. Many were wary of media being influenced by political bias and therefore presenting a slanted view of the topic.

I think a lot of it, you do have to take with a grain of salt but you have to trust somebody somewhere with the information that you're getting. [Anchor Point]

Science based sources of information were mentioned by some as being trusted sources and by others as not to be trusted due to bias introduced by funding sources for research, in particular federal government funding. For some, peer review and multiple sources of the same information lend credibility to information sources.

The closer it is to hard science or the scientific process the more validity it has for me. [Talkeetna]

I typically rely on fellow scientists to test that validity. [Anchorage]

Many people cited personal observation (physical evidence) and personal connections (e.g. friends, people they know with post secondary education) as trusted sources of information about climate change. Named individuals mentioned in the focus groups are associated with the science community either through the University of Alaska, or the USDA Forest Service. Both Native and non-Natives often cited people who have lived in the area a long time, especially Native elders, as an additional trusted source of information.

... talk to the Native elders, and their history. They know things change. [Fairbanks]

UNDERSTANDING CLIMATE CHANGE

Participants in Alaska expressed uncertainty and confusion about the causes of climate change. While participants for the most part seemed certain of changes in climate (or at least in weather patterns) in their lifetimes, they were less certain whether the changes were a result of human or natural causes. Perceptions range from attributing climate change to industrial activities, population growth, and

human activity in general to causes related to El Nino/La Nina, solar output, and volcanoes. A few participants expressed doubt that climate change was happening at all.

I can't buy into [it] at all. It's a bunch of propaganda put out by Al Gore. [Fairbanks]

One theme of note is that changes that stem directly from human activity are more important, obvious or pressing than changes due to climate change (e.g. the introduction of non-native species).

I mean long-term there's gonna be some significant influences there of a warming climate, but there are changes that are occurring that are accelerating from humans. Building the Alaska highway might have brought coyotes, might have brought a lot up here, we talk about invasive plants - non-native plants. Not necessarily invasive but non-native plants. That's a change that's occurring not so much from climate change but human activity. [Copper Center]

IMPACTS OF CLIMATE CHANGE

Alaska participants reported concern about a number of impacts of climate change they said they were witnessing now as well as anticipate in the future. A primary concern among forest landowners in coastal and interior Alaska is increased fire frequency and intensity. Additional concerns include changes related to temperature water supply (including precipitation, snow pack and ice), increased pests and disease, invasive species, species shifts, and forest regeneration problems.

Impacts related to temperature (reported mostly by those in coastal areas) include melting permafrost, receding glaciers, late freezing and late onset of snow, seeing more insects that don't normally survive cold temperatures, increased presence of spruce bark beetle, and shorter hunting seasons.

Impacts related to water supply were noted in interior and coastal Alaska areas alike. Some of these observations include increased rain and decreased snow, drier ground (e.g. what were once swamps, wetlands and lakes are now dry), spruce trees encroaching on bogs, a lower water table as indicated by white spruce regenerating after black spruce, changes in permafrost, low water levels in lakes (not just in summer), less winter snow pack to keep rivers running high, and lack of summer precipitation.

Many Alaska forest landowners (especially Native American communities) depend on forest land for subsistence (hunting, gathering, fishing, firewood). Many participants expressed concern about how climate change might affect subsistence.

A few participants expressed the possibility that climate change could bring about positive changes.

There are good things that come out of things that we don't like, the changes in our own life sometimes. [Haines]

So, it [climate] definitely changes, I can agree with that. And global warming? The more we have the better. [Fairbanks]

LANDOWNER BEHAVIOR

The focus groups elicited several insights about what drives Alaska forest landowners to act (or not) in response to uncertainties associated with changes in climate. Climate change per se does not seem to motivate Alaskan participants to act for a variety of reasons. They don't know what to do, they lack financial capacity, feel they have more pressing and immediate concerns, or they simply don't feel there

is a need to respond, either because they don't perceive climate change as a real threat or they feel there is no point because climate change is overwhelming.

should we do something in addition to what we're already doing like clearing more space so that there is a little bit more of a help for the natural species to grow; or thinning or – I mean what is our response with our forest? [Talkeetna]

We've been pretty passive in things. Because of the rules that we operate under, timber really isn't a very profitable thing for us; being a manufacturer, getting into processing and things like that is actually much more profitable than trying to sell timber. The reason being is we've got to give 70 percent of what we make away to other organizations. And so, we've not done anything other than work with villages on managing wild land fire, and accommodating their needs in places where we're able to. [Fairbanks]

We're taking care of problems that we have money for, and critical issues, but that's about it. ... when the Forestry Office says, "your land is burning," we try and mitigate it, or get it shut down as quick as we can, and commit resources and money. But two hours after the fire's out, we all go back to our jobs and there's no connect, there's no reason how did the fire start, why did it start, how did it burn so much and so quickly, or can you do something to help mitigate those problems, and the same thing with forestry issues. [Anchor Point]

I work with a lot of Native corporations as well as individual landowners and it's just, so far I have not seen it on their radar screen. They're much more focused on the immediate problems and needs. Even the largest Native corporation, Sealaska, which is about the most advanced one for forestry, it's just not on their planning horizon at the moment. And they have other issues that are more pressing: subsistence for their shareholders and, income. [Anchorage]

I'd love to know everything there is about how we can enhance things, and avoid global warming issues or make changes, but you're not gonna do anything until the emergency. Like I say, 'till the spill hits the Gulf, you don't really do it. [Anchor Point]

A couple of participants referred to experimentation with planting different tree species but not necessarily because of climate change. Some had planted lodgepole pine in response to the spruce bark beetle problem. Others were interested in planting species for different markets such as Christmas trees or biomass production. The suggestion of provenance testing was met with some interest along with concern about cost. At least one participant noted that managing for diversity was an appropriate strategy for addressing uncertain future conditions.

I think at least for this area, at this point it seems like diversity is really important; not to plant all monocultures, because that's how you have a likelihood of avoiding like a wet forest wipeout or whatever. I don't know what you call it. And I think a diverse [forest] is healthier anyway, even under just normal, ideal conditions. [Haines]

Several people, noting financial constraints associated with managing forests in general, were interested in potential opportunities to make money or receive compensation for their management efforts.

We can't afford the cost to thin 'em because ultimately you'll end up with a tree that doesn't have enough value to cover the cost of even thinning. So it's one of those things that it's more a financial perspective kind of that, dictates what you can really do. [Anchor Point]

So we have a lot of burden now of cost, although there's other opportunity – recreational opportunity and stuff, which could sometimes yield even better return, but the forest aspect is completely off the list basically as far as regeneration in forestland because, it doesn't make any sense to raise a nice forest to have the beetles take it or fire take it, and that seems to be kind of what the system is now. [Anchor Point]

if there's any way that some research dollars can pay a little rent or provide employment for the villages. [Anchorage]

To a corporate standpoint you're gonna look at it and go, "well, we could put a bunch of money in this and then nature or man could just wipe it all out in one fell swoop." And what do you got? Nothin'. The risk is not there. [Anchor Point]

INFORMATION NEEDS

Participants explicitly noted several topics for which they would like more information. In addition to what to plant to adapt to changing conditions, participants indicated strong interest in locally relevant data as well as general forest management practices (e.g. seed harvesting, natural succession versus managed succession, opening forests for wildlife and different tree species). People also expressed interest in information about how to develop business plans and access markets for forest products and services (e.g. bioenergy, biofuels, carbon credits, pharmaceutical and chemical products).

Many participants indicated interest in information that would help them understand climate science. In particular, help understanding climate change in "layman's" terms was mentioned including some kind of short, simple description of climate change. It was suggested that forest landowners truly need a better "interface with science and educators." Help understanding how to assess levels of certainty (or uncertainty) associated with climate science was also stated as a need. Desire for information and explanations that are not biased was a common theme.

Several participants noted a lack of information specific to Alaska in general, and to some regions in Alaska in particular (Southeast and South Central). Types of locally relevant data they wanted include information about reforestation, data about what natural forests were like before railroads were introduced, and baseline data for measuring changes. Some participants wanted to know what is going on for their specific piece of property.

INFORMATION DELIVERY

Participants expressed interest in multiple formats for delivering information and education with a strong preference for hands-on and face-to-face education and short, concise printed materials with links to explore further. Suggestions for hands on and face-to-face education include winter time seminars, half day workshops, a forestry "fair" with multiple booths and topics, site visits, field trips, forest tours, and demonstration forests. The value of interacting with and learning from fellow landowners was emphasized. Some people felt that visual materials including video demonstrations were more useful than printed materials. Isolation was a factor mentioned by several people with suggestions for in-person meetings as well as ways to interface with extension through technology (e.g. video conferencing). For the most part, people recognized that different formats work for different people, and that younger generations are much more likely to learn using computer technology. Ideal timing for workshops is generally in the winter or "after hunting season but before fishing season."

IMPLICATIONS FOR EXTENSION PROGRAMMING

Focus group discussions indicate a high degree of interest and need for extension programming directed toward private forest landowners. However, our research indicates that as is true of the general public, climate change is not a top-of-mind issue for private forest owners in Alaska. Therefore extension efforts that are billed as “climate change” programs may have a hard time gaining traction. Integrating climate change as a factor to be considered into existing (or new) programming efforts could be a better approach. For example, a program addressing forest health could address the effects of temperature and moisture patterns on insect populations. Likewise, programming should focus on practical, on-the-ground management strategies, as that information becomes available.

Many landowners continue to approach most of what they hear about climate change with a high degree of skepticism, and are less interested in being further convinced one way or the other than in receiving practical information that they can put to use. It is important to recognize, therefore, that one level or type of program will not suit all landowners’ needs or interests. The most effective and meaningful extension efforts may even arise from individual conversations, rather than as publications or workshops intended for a broad audience.

Specific recommendations for extension programming include:

- Strengthen extension forestry programming in general (forest health and management practices, market opportunities, estate planning, etc.) for Native and non-Native private landowners.
 - ✓ Emphasize managing for healthy, resilient forests in the face of uncertainty and extreme events.
 - ✓ Develop both in-person and distance learning opportunities that are designed to overcome logistical difficulties and long distances associated with conducting extension programming in Alaska.
 - ✓ Incorporate climate information into existing curricula and programs.
- Educational programs should be grounded in and reference local conditions whenever possible.
 - ✓ Focus programming on local issues, build capacity for utilizing local knowledge, and engage forest owners in local data collection
 - ✓ Access locally relevant model projections and provide appropriate interpretation
 - ✓ Determine whether locally relevant data exists among state and federal forest management agencies in Alaska that can be shared with private forest landowners.
- 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.”
- Facilitate landowner involvement in public policy discussions (without extension taking an advocacy role).
- Develop programming and materials aimed to increase science literacy in order to help landowners assess and interpret climate science.

- ✓ Incorporate content on understanding climate models including: applications of climate models, model projections versus model predictions, understanding model uncertainties and how they relate to natural variability, and interpreting landscape model projections for local applications.

SUGGESTED READING

Statewide Assessment of Forest Resources. Alaska Division of Forestry, 2010.

<http://forestry.alaska.gov/pdfs/2010AlaskaStatewideAssessment.pdf>

Alaskan Opinions on Global Warming. http://www.decisionresearch.org/Projects/Climate_Change

Communicating on Climate Change: An Essential Resource for Journalists, Scientists, and Educators

http://www.metcalfinstitute.org/Communicating_ClimateChange.htm

Global Warming's Six America's: June 2010

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

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>

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