

Call to Order: The meeting was called to order by Schelly Olson at 11:35am.

Members Present (33):

Schelly Olson (Grand Fire, GCWC Chair) Katlin Miller (MP Conservation District, GCWC Secretary) Adam Gosey (East Grand Fire, GCWC Treasurer) Merrit Linke (Grand BOCC, GCWC Member) Clancy Philipsborn (GCWC Member) Brad White (Grand Fire, GCWC Mitigation Chair) Tara Gourdin (GCOEM) Kat Conrad (GCOEM) Kat Conrad (GCOEM) Charley Smith (Big Horn Park) Pat Heggy (Fairway at Pole Creek) Terry Ready (Homestead Hills) Dan Rinn (Pole Creek Meadows HOA) Pete Peterson (Pole Creek HOA) Bill Steinmiller? (Sunset Ridge HOA) Kris Schneider (Sunset Ridge Estates HOA) Philip Brinkman (TMC Owners Assoc) Linda Spaet (Trail Creek Estates) Clyde Alley (Trail Creek) Deb & Mike Doberson (Valley at WP Water District) Bob Colosimo (WP Highlands) Charlie Teichmen (WP Highlands) Marty Tod (WP Highlands) Marty Tod (WP Highlands) Terry Ready (Homestead Hills) Nicole Schafer (YMCA) Bob Denaro Rex Garnes Bev & Jerry Keeney Alan & Becky Nazzaro Pat Person Jim Simoni

Review of Past Minutes:

No minutes from April Meeting. See CSFS Updates.

Financial Update:

Schelly presented the checks/deposits report from April 26th to October 17th, 2019; we had a net income of -\$2,760.39 during that time according to the report. Expenses included: food for the April meeting, address signs, mailings for the WiRe project, insurance, accounting expenses, website fees, advertising, chipping days, and cost-share reimbursements. So far for all of 2019, we are at -\$13,946.02 net income. We currently have \$6,448.78 in our US Bank Account and \$30,000 in our BLM ASAP Account.

Mitigation Committee Report:

- Cost-Share
 - \$25,000 matching grant from Colorado State Conservation Board through Middle Park Conservation District
 - Working on getting all participants' projects complete and submitted
- Chipping: See attached results

Education Committee Report:

 Routt County Wildfire Mitigation Conference in Steamboat Springs (May 11th): Schelly gave a report on the Conference

Old Business:

- Fire Danger Signs: Have 3. Will work with USFS to install them in the Spring/Summer 2020.
- Wire Team: Assessments for all 4 communities were performed this summer. Getting ready to mail the surveys to homeowners.



New Business:

- Grant Writers New Partnerships, Funding Sources: We are currently looking for people interested in helping us write grants. We are also investigating new (additional) partnerships and funding sources. Any ideas should be given to Schelly.
- Speaker Presentation
 - o See Attached

Adjournment:

Lunch: We had tacos for lunch from El Pacifico in Grand Lake

GCWC Chipping Days 2019 - June 29, July 13, July 27, Aug 10, Aug 24

<u>Location</u>	<u>Attendees</u> <u>Total</u>	<u>Attendees</u> <u>Towns</u>	<u>acres</u>	<u>hours</u>	<u>Total</u> Loads	<u>donations</u>	
Grand Lake Chipping	59	2 Tabernash, 4 Granby, 1 Fraser, 51 GL, 1 UNK	105.27	302	120		
Fraser/WP Chipping	29	14 Tabernash, 8 Fraser, 3 Granby, 3 GL, 1 WP	106.35	251	64	\$305	27 volunteer hours
Kremmling Chipping	20	1 Granby, 1 GL, 17 Kremmling, 1 Unk	40.95	175.25	41		
Parshall Chipping	7	2 Kremmling, 2 Granby, 1 GL, 1 Tabernash, 1 Parshall	31.2	37	11		
Granby Chipping	43	12 Granby, 13 Tabernash, 15 Grand Lake, 1 Kremmling, 2 Fraser	110.6	339	73	\$273	
TOTAL	158	20 Kremmling, 11 Fraser, 1 WP, 1 Parshall, 30 Tabernash, 22 Granby, 71 Grand Lake, 2 UNK	394.4	1104	309	\$578	

Unique Attendees

134

The Mountain Pine Beetle Outbreak in Colorado: Community Perceptions

> Grand County Community Forum Grand County Wildfire Council October 17th, 2019

Research Team

- Hua (James) Qin, Principal Investigator, University of Missouri
- Hannah Brenkert-Smith, Co-Principal Investigator, University of Colorado Boulder
- Jamie Vickery, Postdoctoral Researcher, University of Colorado Boulder
- Elizabeth Prentice, Doctoral Candidate, University of Missouri
- Christine Sanders, Doctoral Student, Graduate Research Assistant, University of Missouri



Purpose of this Work

Long-term research on risk perception is largely lacking

- Longitudinal understandings of insect-related risk perceptions poorly understood
- Need for more research into human dimensions of insect outbreaks
- Natural resource-dependent communities and environmental change

Study Background

Mountain pine beetles (MPB), or Dendroctonus ponderosae, are native to Colorado, but a number of factors allowed the species to flourish, including:

warmer winters and

- dense, single species forests
- The MPB outbreak has affected 3.4 million acres in Colorado since 1996
- Since 2011, rates of infestation have decreased substantially

Research Objectives

- Explore the dynamic relationship between risk perception and action in response to the MPB outbreak
- 2. Better comprehend how individuals and communities respond to changing understandings of the risks they face
- 3. Understand change over time as it relates to their experiences with hazards, perceptions of the risks they face, and what people are/n't doing in response to the beetle outbreak
- 4. Assess if there are key factors that influence how residents and local leaders understand changing forest conditions

Study Area

- Breckenridge
- Dillon
- Frisco
- Granby
- Kremmling
- Silverthorne
- Steamboat
 Springs
- Vail
- Walden



U.S. Forest Service Aerial Detection Survey

Methods

54 key informant interviews with city/county officials, forest managers, fire fighters, members of local groups/organizations, and residents

1,130 mail surveys (~32% response rate)

Media analysis of five local and regional newspapers between 2006-present pertaining to MPB

Secondary socioeconomic and biophysical data analysis

Town/Community	Percentage of Total Respondents (N=1,130)
Breckenridge	11% (n=124)
Dillon	10% (n=111)
Frisco	9.5% (n=107)
Granby	11% (n=129)
Kremmling	11% (n=128)
Silverthorne	16% (n=177)
Steamboat Springs	12% (n=133)
Vail	7.5% (n=86)
Walden	12% (n=135)

Town/Community	Number of Interviews (N=54)
Breckenridge	4
Dillon	1
Frisco	3
Granby	2
Kremmling	2
Silverthorne	2
Steamboat Springs	4
Vail	7
Walden	6
Eagle County*	3
Grand County*	6
Routt County*	6
Summit County*	4
Other*	4



Overview of Findings

- Concerns associated with MPB outbreak
- Risk perception over time
- Perceived impacts of MPB outbreak
- Perceptions of forest management



Findings: Forest Risk Concerns

- Forest fire
- Falling trees
- Loss of scenic/aesthetic quality
- Invasive plant species
- Decline in wildlife habitat
- Increased erosion

- Loss of forests as an economic resource
- Impact on property values
- Loss of tourism and recreation
- Loss of community identity
- Impact on livestock grazing

Findings: Forest Risk Concerns

How concerned are you about each of the following forest risks for your community as a result of the beetle outbreak and changes in forest health?



1 = Not concerned5 = Extremely concerned

Findings: Risk Perception Over Time

- Perceptions of risk have changed with the pine beetle cycle
- Heightened wildfire risk perception when trees were red
- Shared sense that levels of concern and public interest decreased as trees turned gray



Findings: Perceived Impacts

- Creation of jobs and economic opportunity
- Logging and land clearing
- Expanded timber industry
- Loss of privacy
- Emergent view on property with loss of trees
- Affected property values
- Fire hazard
- Soil erosion and runoff
- Falling trees
- Visual/aesthetic loss

- Impact on tourism
- Tree cleaning cost
- Increased ecological awareness
- Trails and forests accessibility
- Availability of firewood
- Wildlife habitat
- Conflict over land use or management
- Emotions such as worry, fear, or anxiety
- Emotions such as grief or sadness

Findings: Impacts from MPB Activity

Perceived Impacts from MPB Outbreak (% Yes)



Findings: Perceptions of Forest Management

Survey findings about management perceptions

- Convergence in acceptance and/or support of proactive forest management
- Importance of community context in understanding forest management relationships
- Acknowledgement of management constraints

Findings: Perceptions of Forest Management

Please indicate your agreement or disagreement with the following statements about forest management in and around your community.

Forests are being managed successfully for a wide range of uses and values

Citizens in Colorado communities have enough say in forest management

Forests are being managed successfully for the benefit of future generations

I have confidence in the US Forest Service to manage forests in Colorado



Findings: Social License for Forest Management

Calls for mitigation since outbreak

Increased following major fires

Decrease in social barriers for management

- Although community concerns exist
- Visual aspects/aesthetics



Findings: Community Context Matters

- Relationship between residents, industry, and forest managers
 - Perceptions of industry and land managers
 - Historical acceptance of/opposition to management and industry
 - Perceptions of residents' voices being valued and included in management decisions

Findings: Management Constraints

General acknowledgement of USFS constraints in managing forests

Resource constraints

- Bureaucratic hurdles
- Balancing concerns within and among communities
- Educating and re-educating



Summary of Key Findings

- Perceptions of socioeconomic risks, such as impacts on tourism and property values, have generally declined while some environmental risk perceptions (e.g., forest fire and falling trees) have remained the same or increased since the last study
- Qualitative data point to a convergence in acceptance and/or support of proactive forest management
- Findings indicate the significance of community context in informing people's experiences of environmental change and risk perceptions

Acknowledgements

- This research is funded by the National Science Foundation (Award ID: 1733990).
- The research team would like to acknowledge the support of their respective institutions, University of Missouri-Columbia and University of Colorado Boulder Institute of Behavioral Science.
- Courtney Flint, Ph.D. (Utah State University) led the original 2006-2007 study and provides support for the current project.
- Forest Health Task Force, High Country Forest Collaborative, and the Northwestern Council of Colorado Governments
- Dr. Daniel Williams at the Rocky Mountain Research Station of the U.S. Forest Service
- Community members and stakeholders

Thank you!

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MOUNTAIN PINE BEETLES AND COLORADO FORESTS

Kremmling Community Report

Introduction

This report describes changes in community reactions to the mountain pine beetle (*Dendroctonus ponderosae*) outbreak and resulting changes in north central Colorado forests. In 2006, a project was initiated to assess community responses to forest disturbance by mountain pine beetles. The full study included nine communities: Breckenridge, Frisco, Dillon, Granby, Kremmling, Silverthorne, Steamboat Springs, Vail, and Walden. This report focuses on responses from the community of Kremmling.

In 2007, 4,027 survey questionnaires were mailed to randomly selected households with addresses in the study communities. 1,348 completed surveys were returned (127 surveys received from Kremmling), yielding an aggregate response rate of 39.2%, accounting for undeliverable surveys. Findings from the 2007 survey provided baseline information regarding community residents' risk perceptions, public relationships with land managers, environmental attitudes about forest management, and local action capacities in the context of forest disturbances caused by bark beetles.

A re-study mail survey was sent in 2018 to those original respondents from the 2007 survey and an additional sample of 3,000 households randomly selected from a database from USADATA. In 2018, 128 of the 1,130 completed surveys were received from Kremmling. Findings from the 2018 survey were compared to 2007 survey results to assess how attitudes and actions within Kremmling have changed over time.

Perceptions of Beetle Impacts

Respondents were asked to indicate perceptions of forest mortality, natural regeneration, and beetle impacts. As in 2007, survey respondents rated the level of tree mortality they observed in and around Kremmling on a scale from 1 (no pines are dead) to 5 (all pines are dead). Similarly, respondents were asked to indicate the extent of regeneration they perceived in and around Kremmling on a scale from 1 (no natural re-growth) to 5 (much natural re-growth). Perceptions of tree mortality and natural regeneration are depicted in Figures 1 and 2. In 2018, survey respondents in the Kremmling area indicated perceiving higher degrees of tree mortality (mean response 3.7 compared to 3.5 in 2007), but also perceived more natural regeneration (mean response 2.8 compared to 2.2 in 2007).





In both years, Kremmling respondents were asked to rate the impacts from the mountain pine beetles on a graduated scale from 1 (very negative) to 5 (very positive). The bars in Figure 3 indicate the percent of respondents who indicated observing each mountain pine beetle impact in and around their community. Respondents indicated lower level of impact regarding most issues compared to 2007. The most frequently indicated observations for 2018 respondents were "falling trees", "visual/aesthetic loss", and "fire hazard". The least frequently indicated impacts in 2018 were "impact on tourism", "loss of privacy", and "affected property values".

The bars in Figure 4 indicate the mean values for each impact according to the

answers of respondents, arranged left to right from most positively perceived impacts to most negatively perceived impacts. Only "availability of firewood" was indicated as a positive impact of mountain pine beetles (having a mean greater than 3.5). Survey respondents also had slightly more positive views in 2018 regarding many impacts such as "forest rejuvenation", "affected property values", "loss of privacy, "emotions such as grief or sadness", and "fire hazard", as compared to the 2007 survey. Notably, respondents had more negative views regarding "availability of firewood", "ecological awareness", "logging and land clearing", "expanded timber industry", "job creation", and "trail and forest accessibility".



Hua Qin • Christine Sanders • Elizabeth Prentice • Jamie Vickery | UNIVERSITY OF MISSOURI-COLUMBIA & UNIVERSITY OF COLORADO BOULDER



Forest Risk Perceptions

Forest risk perceptions were measured with a scale from 1 (not concerned) to 5 (extremely concerned). The bars in Figure 5 indicate the mean values for each concern according to the answers of respondents, arranged left to right from highest levels of concern to lowest levels of concern. While levels of concern for 2018 respondents remained generally elevated, respondents expressed less concern about most issues as compared to 2007. Higher levels of concern were indicated by 2018 respondents for "falling trees", and there was a slightly increased level of concern for "impact to livestock grazing" as compared to the 2007 survey. In 2018, the highest rated concerns were "forest fire", "falling trees", and "loss of scenic/aesthetic quality". The lowest rated concerns for the area were "loss of community identity", "loss of tourism and recreation opportunities", and "impact on livestock grazing".



Figure 6 shows perceptions of wildfire risk. For the questions "has your concern about wildfire hazard changed with the mountain pine beetle outbreak in Colorado forests," "has your concern about the chance that a wildfire/forest fire may start on or spread to your property changed during the past 10 years," and "has your concern about possible fire damages to your home changed during the past 10 years," perceptions were measured on a scale from 1 (strongly decreased) to 5 (strongly increased). For the question "how likely do you think a wildfire/forest fire may start on or spread to your property this year," perceptions were measured on a scale from 1 (not likely) to 5 (very likely). For the question "if there is a wildfire/forest fire on your property, how severe do you think its

damages to your home would be," perceptions were measured on a scale from 1 (not at all severe) to 5 (very severe).

The only question to appear in both survey years was "has your concern about wildfire hazard changed with the mountain pine beetle outbreak in Colorado forests?" Similar to 2007, 2018 respondents indicated an elevated level of concern regarding wildfire risks with the mountain pine beetle outbreak (means of 4.5 and 4.4, respectively). In the 2018 survey, the respondents also indicated elevated levels of concern (mean of 3.5) over the past 10 years regarding the chance that a forest fire/wildfire may start or spread to their property and the perceived possibility of fire damages to their home.





Sources of Forest Information

Respondents were asked to indicate which sources of information they relied on regarding forest issues. The percentages of respondents indicating reliance on the top five sources are displayed in Figure 7. The most popular sources of forest information for respondents in the area included "own observations", "newspapers" and "word of mouth". In the 2018 survey, respondents in the Kremmling area reported a decreased reliance on "newspapers" and an increased reliance on "word of mouth", as compared to the 2007 survey. Respondents' sources of forest information including "own observations", "US Forest Service", and "Bureau of Land Management" were relied upon in similar levels for both 2007 and 2018.



Satisfaction with Management

In both 2007 and 2018, respondents were asked to indicate their level of satisfaction with entities involved with the management of the pine beetle issue on a scale from 1 (very dissatisfied) to 5 (very satisfied). The mean ratings for each entity are displayed in Figure 8. Similar to 2007, respondents indicated satisfaction (mean at or above 3.5) with "private logging companies" in the 2018 survey. Notably, in 2018, Kremmling area respondents also indicated an increased level of satisfaction with "local fire departments" (mean above 3.5), as compared to 2007 respondents. Moderately or slightly increased levels of satisfaction were also indicated for all other land management entities.



Respondents were also asked to indicate their level of support for several industry options in or near Kremmling, including "biomass/biofuels power generation (e.g., pellet plant)," "large scale timber processing (e.g. large sawmill or processing plant)," "small scale timber processing (e.g. small sawmill, post & pole operation)," and "niche marketing/production of wood products (e.g. furniture, wood paneling)." Respondents indicated their support on a scale from 1 (strongly oppose) to 5 (strongly support). Mean values for each option are displayed in Figure 9. Similar to 2007, the 2018 respondents were, on average, supportive of all industry options (means above 3.5), with "small scale timber processing" and "niche marketing/production of wood products" indicated as the most favored industry options. In 2018, respondents indicated higher levels of support for all industry options compared to 2007. "Small scale timber processing" was the most supported option for respondents in 2007 and 2018. However, "niche marketing/production of wood products" was indicated as equally supported as "small scale timber processing" by the 2018 respondents.



Response to the Beetle Outbreak

Respondents were asked to indicate if they had participated in a series of actions in response to the mountain pine beetle. Figure 10 shows the percent of all respondents who undertook various activities, both as individuals and as part of community efforts. In both the 2007 and 2018 surveys, the proportion of respondents indicating participation in individual/household activities (on the left side) were higher than the proportion of those indicating participation in community related activities (on the right side). For individual actions, creating wildfire defensible space, removing dead trees, and planting/transplanting trees were the most

actively reported activities for respondents in both 2007 and 2018. Notably, in 2018, higher levels of creating wildfire defensible space, using fire-resistant building materials, and contributing money to Homeowner Association efforts to clear trees were indicated by respondents, while lower levels of other individual actions were reported, as compared to the 2007 survey. Regarding community responses, the resurvey respondents reported lower levels of participation in all community actions with the exception of increased levels of participation in public trail clearing or maintenance activities compared to 2007.



Community Experience and Participation

Both surveys also contained questions related to respondents' community experience and participation in Kremmling. Respondents were asked to indicate their level of satisfaction with Kremmling as a place to live on a scale from 1 (completely dissatisfied) to 10 (completely satisfied). Mean responses for both years are indicated in Figure 11. In both 2007 and 2018, survey respondents indicated a high level of satisfaction with Kremmling as a place to live.





In addition to their satisfaction with Kremmling as a place to live, respondents were asked to describe their personal level of involvement in Kremmling or local area activities or events on a scale from 1 (not active) to 5 (very active). Mean responses for community participation are indicated in Figure 12. In 2007, respondents indicated a moderate level of personal participation in Kremmling community or local area activities (mean greater than 3.0). Notably, the 2018 survey respondents indicated lower levels of community involvement compared to 2007. Respondents were asked to rate certain aspects of community life on a scale from 1 (very poor) to 5 (excellent). Mean responses are indicated in Figure 13. In 2018, respondents indicated more positive views of the various aspects of community life in Kremmling, as compared to the 2007 responses, with the exception of a poorer rating for "availability of affordable

housing". In 2018, Kremmling respondents indicated moderately positive views of "quality of life" and "place to visit or recreate" (means around 4.0), as well as slightly positive views in "providing necessary service", "local economy", and "level and quality of communication among residents" (means in the range of 3.1 - 3.4).



MOUNTAIN PINE BEETLES AND COLORADO FORESTS

Granby Community Report

Introduction

This report describes changes in community reactions to the mountain pine beetle (*Dendroctonus ponderosae*) outbreak and resulting changes in north central Colorado forests. In 2006, a project was initiated to assess community responses to forest disturbance by mountain pine beetles. The full study included nine communities: Breckenridge, Frisco, Dillon, Granby, Kremmling, Silverthorne, Steamboat Springs, Vail, and Walden. This report focuses on responses from the community of Granby.

In 2007, 4,027 survey questionnaires were mailed to randomly selected households with addresses in the study communities. 1,348 completed surveys were returned (158 surveys received from Granby), yielding an aggregate response rate of 39.2%, accounting for undeliverable surveys. Findings from the 2007 survey provided baseline information regarding community residents' risk perceptions, public relationships with land managers, environmental attitudes about forest management, and local action capacities in the context of forest disturbances caused by bark beetles.

A re-study mail survey was sent in 2018 to those original respondents from the 2007 survey and an additional sample of 3,000 households randomly selected from a database from USADATA. In 2018, 129 of the 1,130 completed surveys were received from Granby. Findings from the 2018 survey were compared to 2007 survey results to assess how attitudes and actions within Granby have changed over time.

Perceptions of Beetle Impacts

Respondents were asked to indicate perceptions of forest mortality, natural regeneration, and beetle impacts. As in 2007, survey respondents rated the level of tree mortality they observed in and around Granby on a scale from 1 (no pines are dead) to 5 (all pines are dead). Similarly, respondents were asked to indicate the extent of regeneration they perceived in and around Granby on a scale from 1 (no natural re-growth) to 5 (much natural regrowth). Perceptions of tree mortality and natural regeneration are depicted in Figures 1 and 2. In 2018, survey respondents in the Granby area indicated perceiving largely the same degrees of tree mortality (mean of 3.8 in both years), but also perceived more natural regeneration (mean response 3.1 compared to 2.0 in 2007).





In both years, Granby respondents were asked to identify and rate the impacts from the mountain pine beetles on a graduated scale from 1 (very negative) to 5 (very positive). The bars in Figure 3 indicate the percent of respondents who indicated observing each mountain pine beetle impact in and around their community. Respondents indicated lower level of impact regarding most issues compared to 2007. The most frequently selected observations for 2018 respondents were "falling trees", "availability of firewood", and "visual/aesthetic loss". The least frequently indicated impacts in 2018 were "conflict over land use", "emotions such as grief or sadness", and "affected property values".

answers of respondents, arranged left to right from most positively perceived impacts to most negatively perceived impacts. Both "availability of firewood" and "increased ecological awareness" were indicated as positive impacts of mountain pine beetles (having a mean greater than 3.5). Survey respondents also had relatively more positive views in 2018 regarding many impacts such as "rejuvenation of forest", "logging and land clearing", "impact on tourism", "emotions such as grief or sadness", "emotions such as worry, fear, or anxiety", "tree clearing cost, and "fire hazard", as compared to the 2007 survey. Notably, respondents had less positive or more negative views regarding "job creation", "trail and forest accessibility", and "affected property value.

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The bars in Figure 4 indicate the mean



Forest Risk Perceptions

Forest risk perceptions were measured with a scale from 1 (not concerned) to 5 (extremely concerned). The bars in Figure 5 indicate the mean values for each concern according to the answers of respondents, arranged left to right from highest levels of concern to lowest levels of concern. While levels of concern remained generally elevated, respondents expressed less concern about most issues compared to 2007, with the exception of "falling trees", which was shown to be of greater concern to 2018 respondents. In 2018, the highest rated concerns were "forest fire", "falling trees", and "loss of scenic/aesthetic quality". The lowest rated concerns for the area were "impact on livestock grazing", "loss of community identity", and "loss of tourism and recreation opportunities".



Figure 6 shows perceptions of wildfire risk. For the questions "has your concern about wildfire hazard changed with the mountain pine beetle outbreak in Colorado forests," "has your concern about the chance that a wildfire/forest fire may start on or spread to your property changed during the past 10 years," and "has your concern about possible fire damages to your home changed during the past 10 years," perceptions were measured on a scale from 1 (strongly decreased) to 5 (strongly increased). For the question "how likely do you think a wildfire/forest fire may start on or spread to your property this year," perceptions were measured on a scale from 1 (not likely) to 5 (very likely). For the question "if there is a wildfire/forest fire on your property, how severe do you think its

damages to your home would be," perceptions were measured on a scale from 1 (not at all severe) to 5 (very severe).

The only question to appear in both survey years was "has your concern about wildfire hazard changed with the mountain pine beetle outbreak in Colorado forests?" Similar to 2007, 2018 respondents indicated an increased level of concern regarding wildfire risks with the mountain pine beetle outbreak (means of 4.5 and 4.4, respectively). In the 2018 survey, the respondents also indicated elevated levels of concern (mean larger than 3.5) over the past 10 years regarding the chance a forest fire/wildfire may start or spread to their property and the perceived possibility of fire damages to their home.





Sources of Forest Information

Respondents were asked to indicate which sources of information they relied on regarding forest issues. The percentages of respondents indicating reliance on the top five sources are displayed in Figure 7. The most popular sources of forest information for respondents in the area included "own observations", "newspapers", and "US Forest Service". In the 2018 survey, respondents in the Granby area reported increased reliance on "US Forest Service" and "local fire department" but decreased use of "newspapers" as sources of forest information compared to 2007.



Satisfaction with Management

In both 2007 and 2018, respondents were asked to indicate their level of satisfaction with entities involved with the management of the pine beetle issue on a scale from 1 (very dissatisfied) to 5 (very satisfied). The mean ratings for each entity are displayed in Figure 8. In 2018, respondents indicated satisfaction (mean at or above 3.5) with "local fire departments", and increased levels of satisfaction with all land management entities with the exception of "developers" as compared to the 2007 survey. Notably, Granby area respondents in 2018 indicated relatively higher levels of satisfaction with "local fire departments", "Colorado State Forest Service", "County government", "City government", "US Forest Service", and "Bureau of Land Management."



Respondents were also asked to indicate their level of support for several industry options in or near Granby, including "biomass/biofuels power generation (e.g., pellet plant)," "large scale timber processing (e.g. large sawmill or processing plant)," "small scale timber processing (e.g. small sawmill, post & pole operation)," and "niche marketing/production of wood products (e.g. furniture, wood paneling)." Respondents indicated their support on a scale from 1 (strongly oppose) to 5 (strongly support). Mean values for each option are displayed in Figure 9. Similar to 2007, the 2018 respondents were moderately supportive of all industry options (means above 3.5), with lower levels of support for "large scale timber processing". In general, support for industry options decreased from 2007 to 2018 surveys.



Response to the Beetle Outbreak

Respondents were asked to indicate if they had participated in a series of actions in response to the mountain pine beetle. Figure 10 shows the percent of all respondents who undertook various activities, both as individuals and as part of community efforts. Overall, for both years, the proportion of respondents indicating participation in individual/household activities (on the left side) were higher than the proportion of those indicating participation in community related activities (on the right side). For individual actions, creating wildfire defensible space, removing dead trees, and planting or transplanting trees were the most actively reported

activities for respondents in both 2007 and 2018. Creating wildfire defensible space replaced removing dead trees as the most frequent individual activity in the 2018 survey responses compared to 2007. The resurvey respondents reported increases in all individual actions, particularly the creation of wildfire defensible space, tree watering activity, and the use of fire resistant building materials. Regarding community responses, respondents reported increased or sustained participation in all surveyed community actions with the exception of consultation with public officials or foresters in 2018, as compared to the 2007 survey.


Figure 10: Actions Taken in Response to the Beetle Outbreak

Community Experience and Participation

Both surveys also contained questions related to respondents' community experience and participation in Granby. Respondents were asked to indicate their level of satisfaction with Granby as a place to live on a scale from 1 (completely dissatisfied) to 10 (completely satisfied). Mean responses for both years are indicated in Figure 11. In both 2007 and 2018, survey respondents indicated a high level of satisfaction with Granby as a place to live.



In addition to their satisfaction with Granby as a place to live, respondents were asked to describe their personal level of involvement in Granby or local area activities or events on a scale from 1 (not active) to 5 (very active). Mean responses for community participation are indicated in Figure 12. In 2018, respondents indicated a slightly increased level of personal participation in Granby community or local area activities compared to 2007.



Respondents were asked to rate certain aspects of community life on a scale from 1 (very poor) to 5 (excellent). Mean responses are indicated in Figure 13. Generally, respondents indicated similar views of the various aspects of community life in 2018, as compared to the 2007 responses, with the exception of a poorer rating for "availability of affordable housing" and an improved rating for "local economy". In 2018, Granby respondents also indicated slightly less positive views of "quality of life" and "place to visit or recreate". However, the mean ratings for these two community attributes reported by respondents remained positive (greater than 3.5).



MOUNTAIN PINE BEETLES AND COLORADO FORESTS

A Continuing Study of Community Perceptions and Actions

Hua Qin, Elizabeth Prentice, Hannah Brenkert-Smith University of Missouri-Columbia and University of Colorado Boulder

Introduction

This report describes changes in community reactions to the mountain pine beetle (*Dendroctonus ponderosae*) outbreak and resulting changes in north central Colorado forests over the past 20 years. In 2006, a project was initiated to assess community responses to forest disturbance by mountain pine beetles. The nine communities included in the study were Breckenridge, Frisco, Dillon, Granby, Kremmling, Silverthorne, Steamboat Springs, Vail, and Walden. In 2018, a follow-up study was initiated in the same communities to assess how experiences and perceptions may have changed over time.

In 2007, 4,027 survey questionnaires were mailed to randomly selected households with addresses in the study communities. 1,348 completed surveys were returned, yielding an aggregate response rate of 39.2%, accounting for undeliverable surveys. Findings from the 2007 survey provided baseline information regarding community residents' risk perceptions, public relationships with land managers, environmental attitudes about forest management, and local action capacities in the context of forest disturbances caused by bark beetles.

A follow-up survey was sent in the summer of 2018 to those original respondents from the 2007 survey and an additional sample of 3,000 households selected from a database purchased from USAData. In 2018, 1,130 completed surveys were returned, yielding a response rate of 32.4% accounting for undeliverable surveys. Findings from the 2018 survey were compared to 2007 survey results to assess how attitudes have changed over time. This working report summarizes these results for the study communities as a whole.

Characteristics of respondents

A number of socio-demographic variables were included in the survey to describe the characteristics of mail survey respondents. The socio-demographic variables used in the analysis were age, gender, years lived in community, ethnicity, household income, educational attainment, employment, and political views. Socio-demographic characteristics for the aggregate dataset are shown in Table 1.

The average age of all respondents was about 60. Female and male respondents accounted for 46.7% and 53.3% respectively in the total sample. A vast majority of the respondents (96.3%) were white. The average household income level of surveyed households was around \$75,000 ~ \$99,999. 44.0% of the surveyed households earned less than \$75,000 and 16.9% earned more than \$150,000 in 2017. The educational level of respondents was quite high. Nearly 70% of all respondents attained four-year college degrees or more. Most respondents (60.3%) were either employed for pay by a company/business or self-employed. 38.2% were retired. Just over 18% of respondents had previous employment in occupations related to forest management, forest products, or timber harvesting. 25% of respondents had previous involvement in agricultural production.

Survey respondents reported living in their communities for an average of 26 years. Over 90% of all respondents were home owners. A large majority of respondents (93.6%) had primary residences in study communities, and 6.4% were second home owners. For the aggregate data, 70.5% of respondents lived on properties less than one acre.

The survey sample as a whole holds balanced political views. Nearly 37% of respondents described their views as liberal or moderate-liberal, roughly 20% as moderate, and 37% as

moderate-conservative or conservative. Compared to respondents in 2007, respondents to the 2018 survey were relatively older, more wealthy, more highly educated, more likely to be retired, and more politically liberal. 2018 survey respondents indicated having resided in their communities for longer, were more likely to own their home and similar to 2007, were overwhelmingly white.

Perceptions of Beetle Impacts

Similar to the results of the 2007 survey, perceptions of forest mortality, natural regeneration, and beetle impacts varied across communities included in the study area. However, certain salient trends are visible at the regional level regarding experiences of ongoing forest changes.

As in 2007, survey respondents were asked to rate the level of tree mortality they observed in and around their community on a scale from 1 (no pines are dead) to 5 (all pines are dead). Similarly, respondents were asked to indicate the extent of regeneration they perceived in and around their community on a scale from 1 (no natural re-growth) to 5 (much natural regrowth). Overall, 2018 respondents indicated perceiving higher degrees of tree mortality (mean response 3.38 compared to 3.08 in 2007), but also perceived more natural regeneration (mean response 2.93 in 2018, 2.21 in 2007). Perceptions of tree mortality and natural regeneration are depicted in Figures 1 and 2.

Figure 3 shows the percent of respondents who indicated observing each mountain pine beetle impact in and around their community. The most frequently indicated impacts for 2018 respondents were, "increased fire hazard," "falling trees," and "visual and aesthetic loss." The least frequently indicated impacts in 2018 were, "conflict over land use," "affected property values," and "impact on tourism." In both years, survey respondents were asked to rate the impacts from the mountain pine beetles on a graduated scale from 1 (very negative) to 5 (very positive). The bars in Figure 3 indicate the mean values for each impact according to the answers of respondents, arranged left to right from most positively perceived impacts to most negatively perceived impacts.

In 2007, only "availability of firewood" and "increased ecological awareness" were indicated as positive impacts of mountain pine beetles (having a mean larger than 3). While survey respondents still held neutral views regarding "job creation" and "expanded timber industry," respondents to the 2018 survey indicated a slightly more positive view of "logging and land clearing" and "forest rejuvenation" than in 2007. Consistent with the results from 2007, the most negatively perceived impacts of mountain pine beetle were "visual/aesthetic loss," "fire hazard," and "falling trees." Certain impacts such as "emerging views," and "affected property values" were viewed as less negative, or relatively more positive than in 2007, and perceptions of "trail/forest accessibility" became more negative. Perceived impacts of mountain pine beetles among 2007 and 2018 survey respondents are displayed in Figure 4.

Socio-demographic characteristics	2007 Mean /Survey %	2018 Mean /Survey %
Age (2007 n=1308) (2018 n=1103)	52.0	59.7
Gender (2007 n=1315) (2018 n=1113)		
Female	44.3	46.7
Male	55.7	53.3
Ethnicity (2007 n=1294) (2018 n=1102)		
White	96.6	96.3
Non-white	3.4	3.7
Years in community (2007 n=1324) (2018 n=1120)	19.0	25.9
Home ownership (2007 n=1331) (2018 n=1123)		
Yes	89.6	90.3
No	10.4	9.7
Total household income (2007 n=1227) (2018 n=921)		
Less than \$35,000	14.1	13.4
\$35,000 to \$74,999	39.1	30.6
\$75,000 to \$149,999	33.0	39.1
\$150,000 or more	13.8	16.9
Education (2007 n=1320) (2018 n=1113)		
High school degree or lower	10.9	7.6
Some college or technical/associate degree	30.1	23.9
Bachelor's degree or higher	58.9	68.4
Employment situation (2007 n=1322) (2018 n=1113)		
Employed	43.9	36.4
Self-employed	31.4	23.9
Unemployed	1.4	.5
Retired	20.3	38.2
Homemaker	2.9	.9
Employment in forest management/industry (2007 n=1318) (2018 n=1120)		
Yes	16.8	18.3
No	83.2	81.7
Involvement in agricultural production (2007 n=1315) (2018 n=1119)		
Yes	25.0	25.4
No	75.0	74.6
Political views (2007 n = 1280) (2018 n=1087)		
Liberal or moderate-liberal	34.8	36.9
Moderate	23.7	21.5
Moderate-conservative or conservative	37.0	37.1
Other	4.5	4.5

Table 1: Socio-demographic Characteristics of Respondents for the Aggregate Dataset









Forest Risk Concerns

Forest risk concerns were measured with a scale from 1 (not concerned) to 5 (extremely concerned). The bars in Figure 5 indicate the mean values for each concern according to the answers of respondents, arranged left to right from highest levels of concern to lowest levels of concern. While levels of concern remained generally elevated, respondents expressed less concern about most issues as compared to 2007, with the exception of "falling trees," which was shown to be of greater concern to 2018 respondents.

As in 2007, the lowest rated concerns for the region were "loss of tourism and recreation opportunities," "loss of community identity tied to the forest," and "impact on livestock grazing." The highest rated concerns were, "forest fire," "loss of scenic/aesthetic quality," and "falling trees."

Figure 6 shows perceptions of wildfire risk. For the questions, "has your concern about possible fire damages to your home changed during the past 10 years," "has your concern about the chance that a wildfire/forest fire may start on or spread to your property changed during the past 10 years," and "has your concern about wildfire hazard changed with the mountain pine beetle outbreak in Colorado forests," perceptions were measured on a scale from 1 (strongly decreased) to 5 (strongly increased).

For the question "if there is a wildfire/forest fire on your property, how severe do you think its damages to your home would be," perceptions were measured on a scale from 1 (not severe at all) to 5 (very severe). For the question "how likely do you think a wildfire/forest fire may start on or spread to your property this year," perceptions were measured on a scale from 1 (not likely) to 5 (very likely).

The only question to appear in both survey years was, "has your concern about wildfire hazard changed with the mountain pine beetle outbreak in Colorado forests?" Similar to 2007, 2018 respondents indicated a strong increase in level of concern regarding wildfire with the mountain pine beetle outbreak.





Opinions on Forest Management

As in 2007, in 2018 respondents were asked a series of questions related to their opinions on forest use and management. Respondents were given a series of statements regarding Colorado forests, and asked to indicate their level of agreement from 1 (strongly disagree) to 5 (strongly agree). Figure 7 shows mean values for each statement. Compared to 2007, 2018 respondents indicated agreement with a more preservationist view of forests, including statements like "forests should have the right to exist for their own sake, regardless of human concerns and uses," and indicated less agreement on average with statements like, "forests that are not used for the benefit of humans are a waste of our natural resources."

Respondents were similarly presented with a series of statements about forest management in Colorado and asked to indicate their level of agreement from 1 (strongly disagree) to 5 (strongly agree). Figure 8 shows mean values for statements regarding trust in forest management. Respondents consistently indicated stronger agreement (less disagreement) with most statements than in 2007. While agreement with various statements concerning trust in forest management was relatively higher than in 2007, the means for most statements remained below 3 (neutral), indicating a persistent lack of trust in forest management overall.

In 2007 the only mean value to exceed 3 was for the statement, "people in communities close to the forest should have more say than people in distant communities." Respondents in 2018 also agreed with this statement, as well as with the statements, "forests are being managed for a wide range of uses and values, not just timber," and "forest management does a good job of including environmental concerns."

Respondents were asked to indicate their level of support for several industry options in or near their community, including "biomass/biofuels power generation," "large scale timber processing (e.g. large sawmill or processing plant)," "small scale timber processing (e.g. small processing plant, post & pole operation)," and "niche marketing/production of wood products (e.g. furniture, wood paneling)." Respondents indicated their support on a scale from 1 (strongly oppose) to 5 (strongly support). Mean values for each option are displayed in Figure 9. Similar to 2007, on average respondents were moderately supportive of all options other than "large scale timber processing." "Niche marketing/production of wood products" was the most supported option for respondents in 2007 and 2018.

Figure 7: Opinions on Colorado Forests



Figure 8: Opinions on Colorado Forest Management





Sources of Forest Information

Respondents were asked to indicate which sources of information they relied on regarding forest issues. The percentages of respondents indicating reliance on the top six sources are displayed in Figure 10. The most relied upon sources of information for forest related issues for both sets of respondents included "own observations," "newspaper," "US Forest Service," "word of mouth," and "radio." Notably, 2018 respondents also indicated an increased reliance on local fire departments for information about forest issues, consistent with an increase in satisfaction with local fire departments indicated in Figure 13.

While the most popular sources of information were relatively similar between the two years, there were notable shifts in which sources were considered most trustworthy. Figure 11 shows the five information sources deemed most trustworthy by 2018 respondents. In 2007 the five most trustworthy information sources were, "own observations," "newspaper," "US Forest Service," "local loggers," and "environmental organizations."

Figure 12 displays 2018 respondents' *least* trusted sources of information. Interestingly, in 2018 "my own observations," "word of mouth," and "US Forest Service" were indicated among both the most and least trustworthy sources of information. This was the case for the US Forest Service in 2007 as well. The five least trusted sources of information in 2007 also included word of mouth, environmental organizations, newspaper, and local loggers.







Satisfaction with Management

In both 2007 and 2018, respondents were asked to indicate their level of satisfaction with entities involved with the management of the pine beetle issue on a scale from 1 (very dissatisfied) to 5 (very satisfied). The mean ratings for each entity are displayed in Figure 13. Though nearly all entities were ranked near neutral (3), 2018 respondents indicated higher levels of satisfaction with all management entities than in 2007 with larger increases for "local fire departments," "Colorado State Forest Service," "Bureau of Land Management," and "US Forest Service."



Response to the Beetle Outbreak

Respondents were asked if they had participated in any of a list of actions in response to the mountain pine beetle. Figure 14 shows the percent of all respondents who undertook various activities, both as individuals and as part of community efforts.

For both years, the proportion of respondents indicating participation in individual/household activities (on the left side)

were higher than the proportion of those indicating participation in community related activities (on the right side). For individual actions, creating wildfire defensible space, removing dead trees from private property, and actively watering trees saw the greatest increase between 2007 and 2018. Greatest increases in community actions were for neighborhood tree clearing, clearing of public trails, and attending informational meetings.



Environmental Behaviors

Finally, respondents were asked to indicate whether they or a member of their household participated in a list of activities related to the environment and/or environmentalism. Figure 15 shows the percentage of respondents who indicated "Yes" for each survey year. The activities "reduced your use of lawn and garden chemicals," "stopped buying a product because it caused environmental harms," and "voted for or against a political candidate in part because of his or her position on the environment" were more frequently indicated in 2018 than in 2007, while all other options were indicated less frequently.



Community Experience and Participation

Both surveys also contained questions related to respondents' experience and participation in their communities. Respondents were asked to indicate their level of satisfaction with their community as a place to live on a scale from 1 (completely dissatisfied) to 10 (completely satisfied). While respondents were satisfied with their communities as places to live in both years, residents indicated a higher level satisfaction in 2018 than in 2007. Mean responses for both years are indicated in Figure 16.

In addition to their satisfaction with their community as a place to live, respondents were asked to describe their personal level of involvement in community or local area activities or events on a scale from 1 (not active) to 5 (very active). Mean responses for community participation are indicated in Figure 17. Respondents indicated being slightly more active in 2018 than in 2007.

Respondents were asked to rate certain aspects of community life on a scale from 1 (very poor) to 5 (excellent). Mean responses are indicated in Figure 18. Respondents indicated more positive or similar views of the various aspects of community life in 2018 than in 2007 with the exception of "availability of affordable housing." Respondents were asked to indicate their personal experience or their community's experience with various emergency situations in the past 10 years. Figure 19 shows percentages of respondents for each survey year who indicated they had personally experienced nearby wildfire, avalanche or landslide, flooding or toxic contamination (e.g. gas or mining spill, or chemical exposure), and the percentage of respondents who indicated that their community had experienced each emergency situation. Wildfire was the most common personal and community experience for both survey years, with a noted increase in both personal and community experiences of wildfire in 2018. Personal and community experiences with all other emergency situations were indicated less in 2018 than in 2007.

Finally, respondents were also asked about their household's participation in community activities during the past 12 months in a series of Yes/No statements. Percentages of respondents who indicated Yes are displayed in Figure 20. Reported involvement was consistently lower in 2018 than in 2007, with the exception of "voted in an election" which saw a marginal increase in 2018 from 2007.











Lunch: We had tacos for lunch.

Call to Order: The meeting was called to order by Schelly Olson at 12:05pm.

Members Present (24):

Schelly Olson (Grand Fire, GCWC Chair) Katlin Miller (MP Conservation District, GCWC Secretary) Adam Gosey (East Grand Fire, GCWC Treasurer) Merrit Linke (Grand BOCC, GCWC Member) Brad White (Grand Fire, GCWC Mitigation Chair) Pat Person (Homeowner, GCWC Education Chair) Nicole Boeckers (YMCA) Pat Heggy (Fairway at Pole Creek) Bill Wolf (CSFS) Ryan McNertney (CSFS) Angie Bass (Sunset Ridge HOA) Amy Sidener (Grand DNR) Henry Chapman (Lewis & Clark College) Delbert Cook (Big Horn Park) Todd Like (USFS) Linda Spaet (Trail Creek Estates) Richard Franklin (Shores at Shadow Mountain) Ray Johnson (Mountain Shadow Estates) Janie Johnson (Mountain Shadow Estates) Todd Holzwarth (East Grand Fire) Mark Pillar (Grand Lake Fire) Tyler Campbell (DFPC) Geoff Elliot (Grand Environmental) Doug Cupp (Greater Eagle Fore District)

Review of Past Minutes:

The group reviewed the Minutes of the January 2018 Steering Committee Meeting. *Nicole moved to approve the minutes. Todd seconded the motion, and when called for a vote, the MOTION PASSED!*

Financial Update:

Schelly presented the checks/deposits report from July 27th to December 31st, 2018. Gross profit for all of 2018 was \$71,688.74. The bulk of the income came from grant income, cost-share income, and donations. We also sold about \$1500 worth of address sign in 2018. Our expenses for 2018 totaled \$62,386.27. Most of the expenses were spent on the chipping program and cost-share reimbursements. Other expenses included: accounting fees, postage, printing, advertising, community events, fire danger signs, meals, lodging, travel, workshops, our Junk the Juniper voucher program, insurance, and office supplies. Our Net Income for the year totaled +\$9,302.47. *Ryan moved to approve the financial report. Katlin seconded the motion, and when called for a vote, the MOTION PASSED!*

Mitigation Committee Report:

• Cost-Share Program 2018: Dispersed \$33,000 to landowners for mitigation work. Will do again in 2019.

Education Committee Report:

- Era of Megafires 2018: Hosted 2 screenings in Fraser and 1 in Grand Lake. Will look at doing more in 2019 (especially in Grand Lake).
- 2018 CO Wildfire Conference: Pat gave a report.

Old Business:

- Fire Danger Signs: Have 3. Waiting for the USFS to determine where they will be installed this spring.
- Colorado Gives Day 2018: We received \$6,588 in donations through CO Gives Day.
- Wire Team: The team will be meeting soon to train the assessors on performing consistent and correct assessments. Assessments for all 4 communities will be performed this summer.



New Business:

• CSCB Grant Award: Katlin applied for a grant from the Colorado State Conservation Board through the Middle Park Conservation District to assist with our cost-share program and chipping days. We were approved for \$25,000 in matching funds. \$20,000 goes to the cost-share program and \$5,000 goes to the chipping days.

Election of Directors

• Schelly and Merrit's terms have expired. Thus, we had two board member positions up for election. The only nominations were Schelly and Merrit. Thus, *Todd moved reelect Schelly and Merrit to the Board of Direction by acclamation. Pat seconded the motion, and when called for a vote, the MOTION PASSED!*

Simtable Exercise

• Doug Cupp, Fire Chief at Greater Eagle First District was present with his simtable to demonstrate how fire activity can be modeled on the landscape using a projector and walnut shells. Pretty cool!

Adjournment:

• Meeting adjourned at 1:25pm with a motion by Pat and a second by Merrit.