



MOUNTAIN PINE BEETLES AND COLORADO FORESTS

Frisco Community Re-Survey 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, Dillon, Frisco, Granby, Kremmling, Silverthorne, Steamboat Springs, Vail, and Walden. This report focuses on responses from the community of Frisco.

In 2007, 4,027 survey questionnaires were mailed to randomly selected households with addresses in the study communities. 1,346 completed surveys were returned (128 surveys received from Frisco), yielding an aggregate response rate of 38.9%,

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, 107 of the 1,130 completed surveys were received from Frisco. Findings from the 2018 survey were compared to 2007 survey results to assess how attitudes and actions within Frisco 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 Frisco 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 Frisco 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 Frisco area indicated perceiving an increased degree of tree mortality (mean of 3.2 compared to 3.0 in 2007), but also perceived more natural regeneration (mean response 3.0 compared to 2.1 in 2007).

Figure 1: Perceptions of Tree Mortality

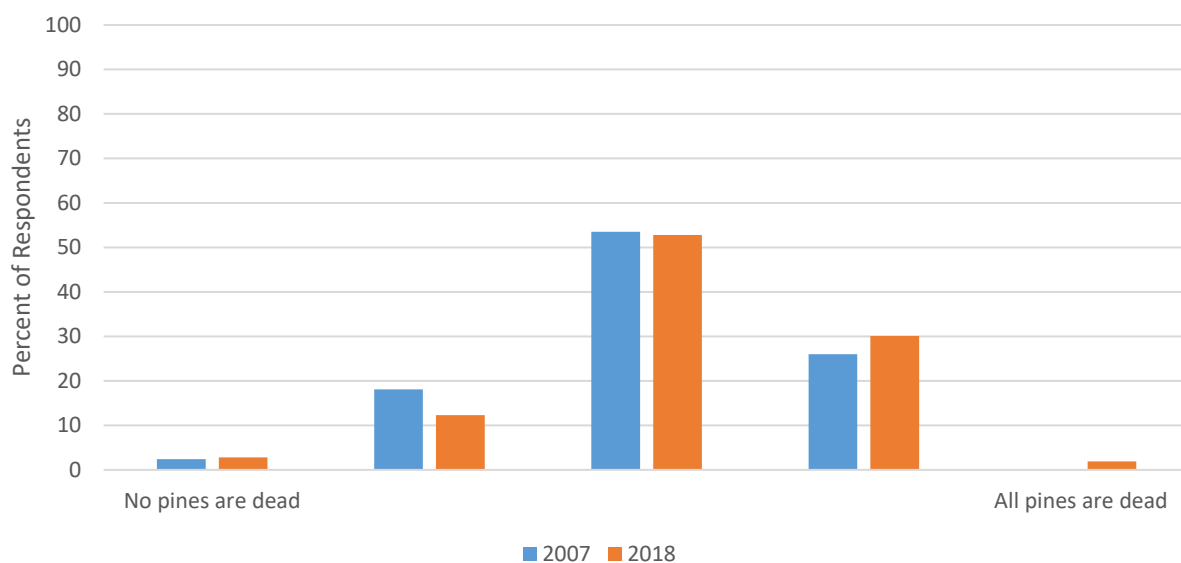
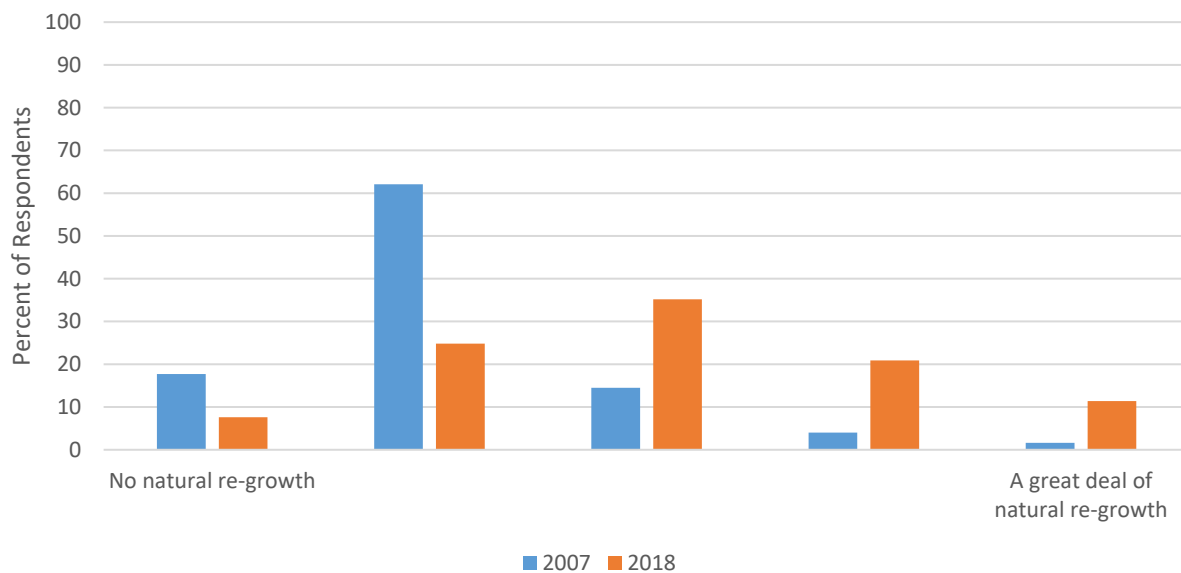
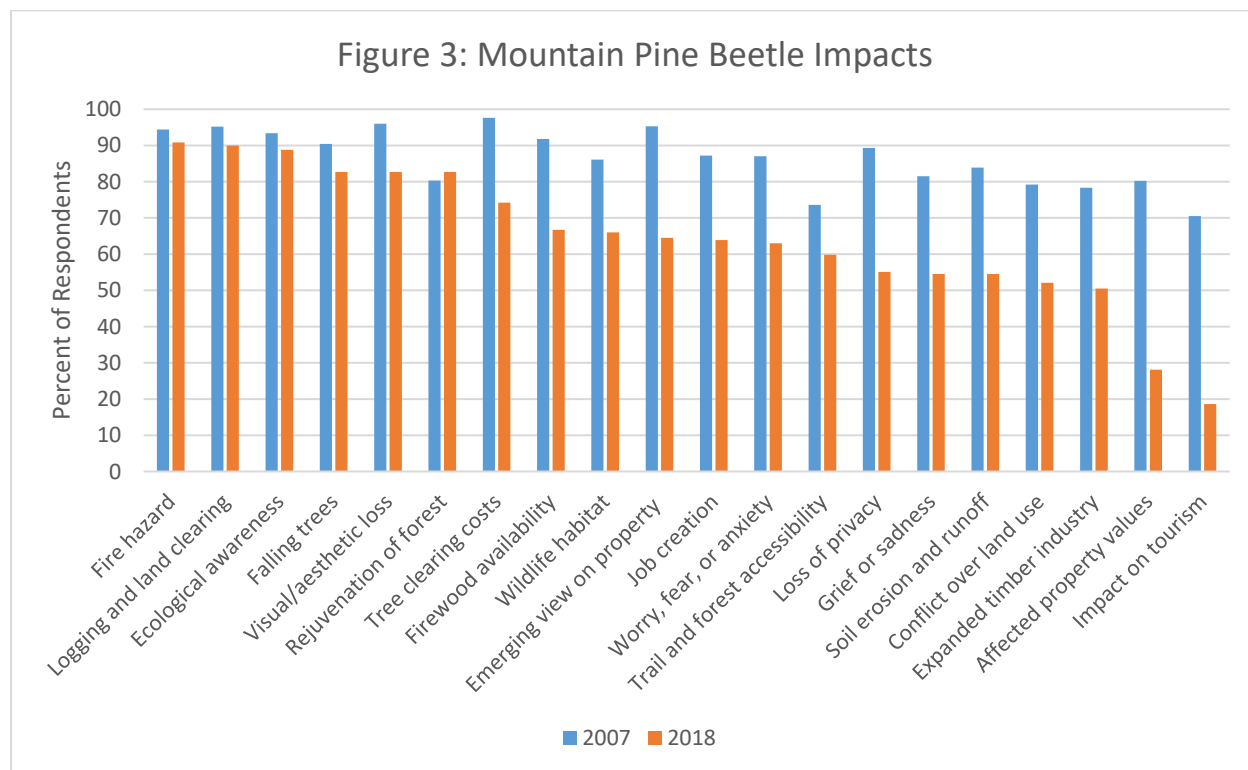


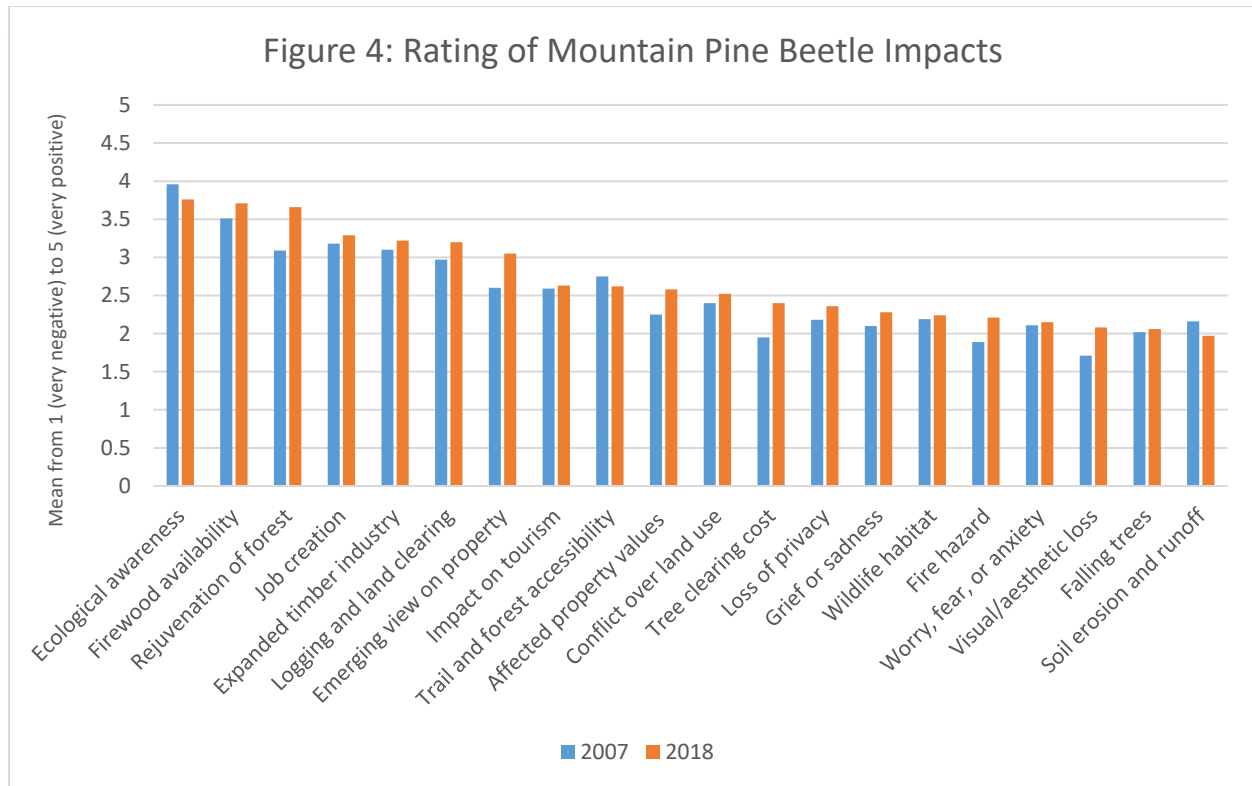
Figure 2: Perceptions of Natural Regeneration



In both years, Frisco 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 “fire hazard”, “logging and land clearing”, and “increased ecological awareness”. The least frequently indicated impacts in 2018 were “impact on tourism”, “affected property values”, and “expanded timber industry”.

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. “Increased ecological awareness”, “availability of firewood”, and “rejuvenation of forest” were indicated as positive impacts of mountain pine beetles (having a mean greater than 3.5). Survey respondents also had relatively more positive or less negative views in 2018 regarding many impacts such as “rejuvenation of forest”, “emerging view on property”, “affected property values”, “tree clearing cost”, “fire hazard”, and “visual/aesthetic loss”, as compared to the 2007 survey.





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 exceptions of “forest fire” and “falling trees”, which were shown to be of slightly 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 tourism and recreation opportunities”, and “loss of community identity”.

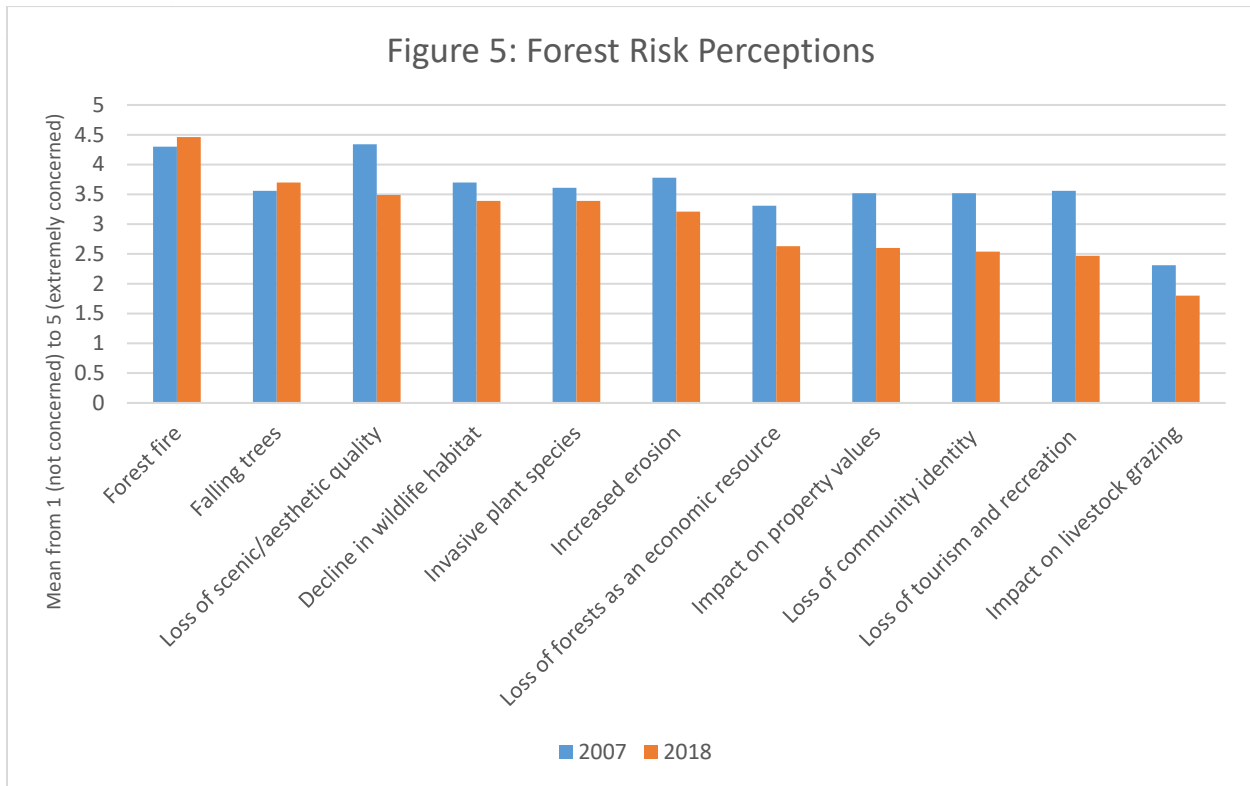
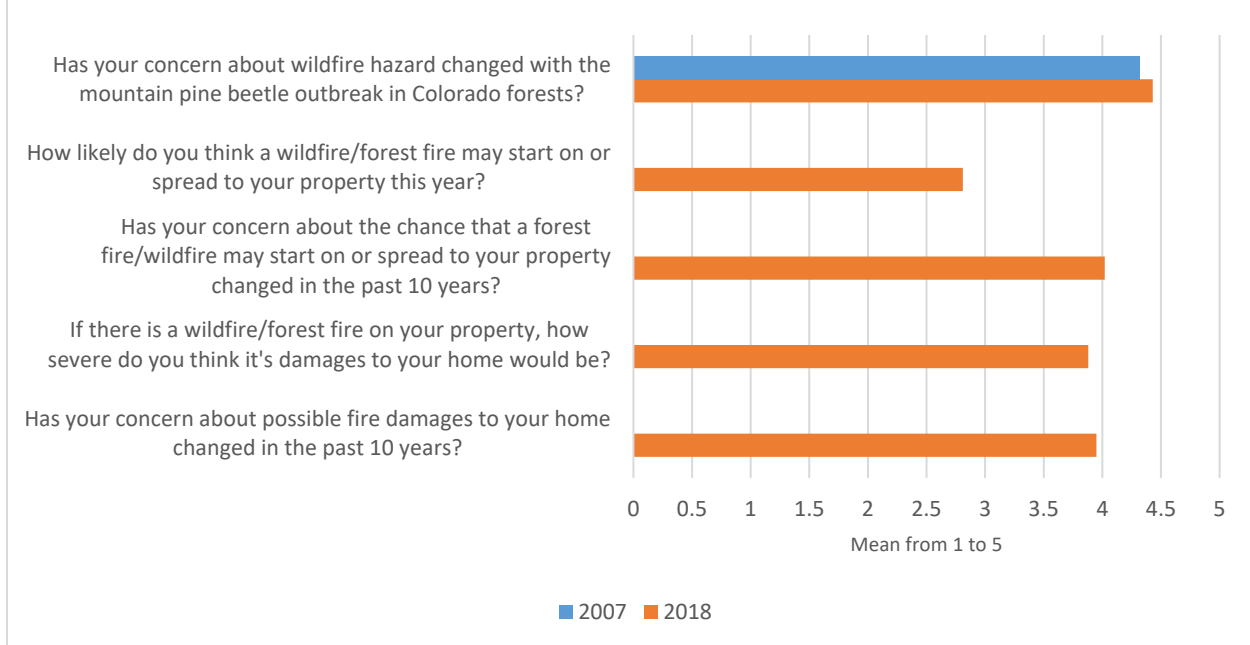


Figure 6 shows perceptions of wildfire risk. For the questions “has your concern about wildfire hazard changed with the mountain pine beetle outbreak in Colorado forests,” “has your concern about the chance that a wildfire/forest fire may start on or spread to your property changed during the past 10 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 (with means of 4.4 and 4.3, 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 severity of possible fire damages to their home.

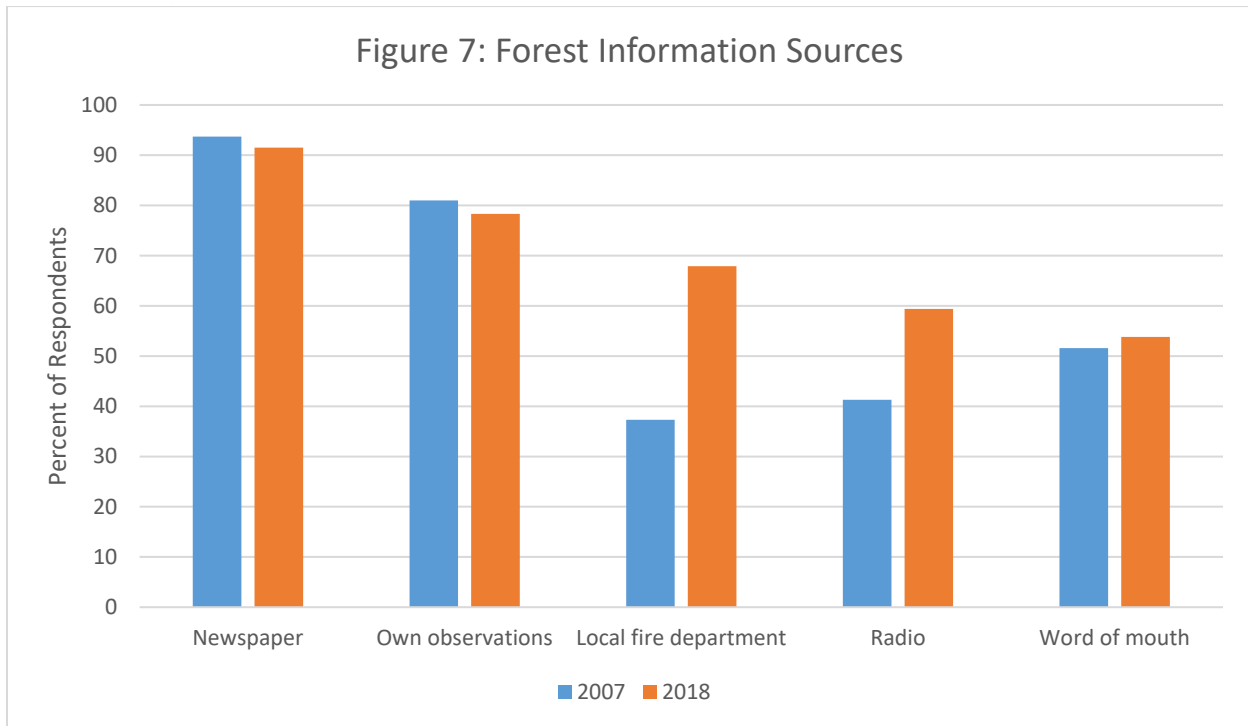
Figure 6: Perceptions of Wildfire Risk



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 “newspapers”, “own observations”, and

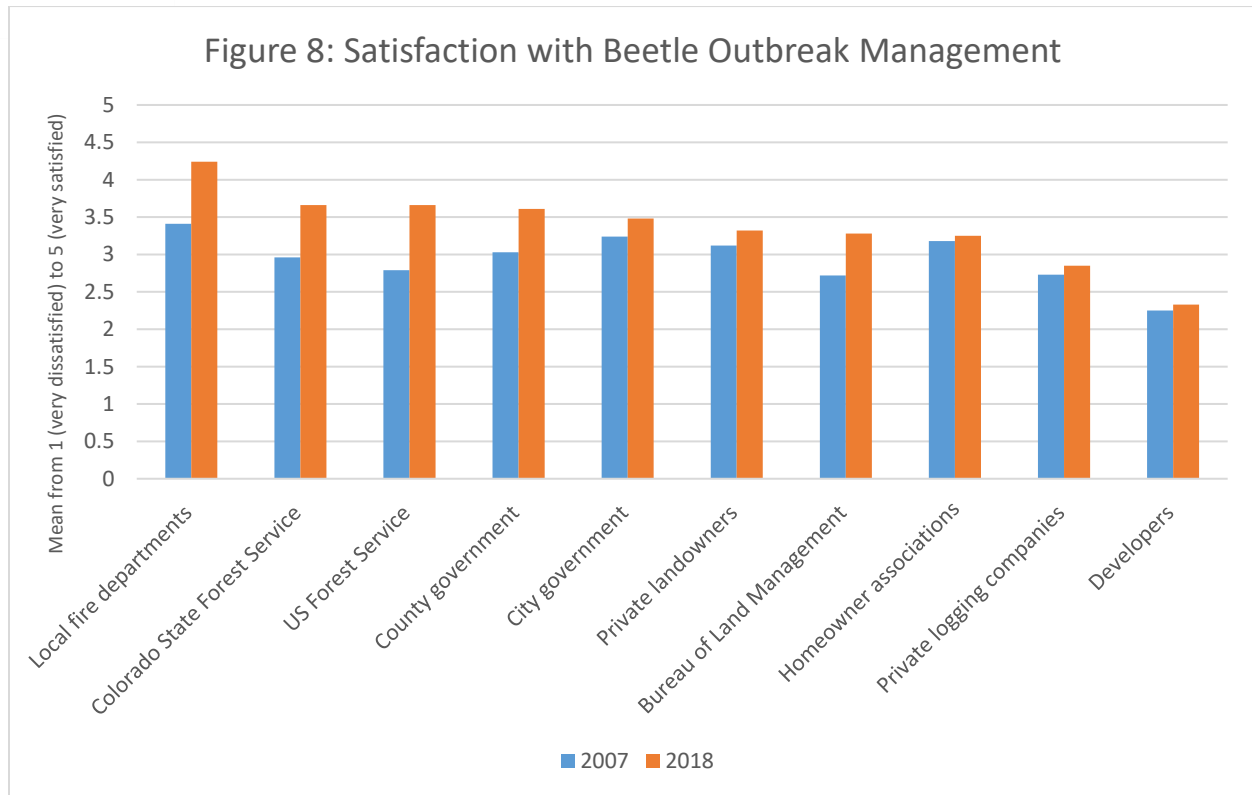
“local fire department”. In the 2018 survey, respondents in the Frisco area reported increased reliance on “local fire department”, “radio” and “word of mouth”, but decreased use of “own observations”, and “newspapers” as sources of forest information compared to 2007.



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”, “county government”, “Colorado State Forest

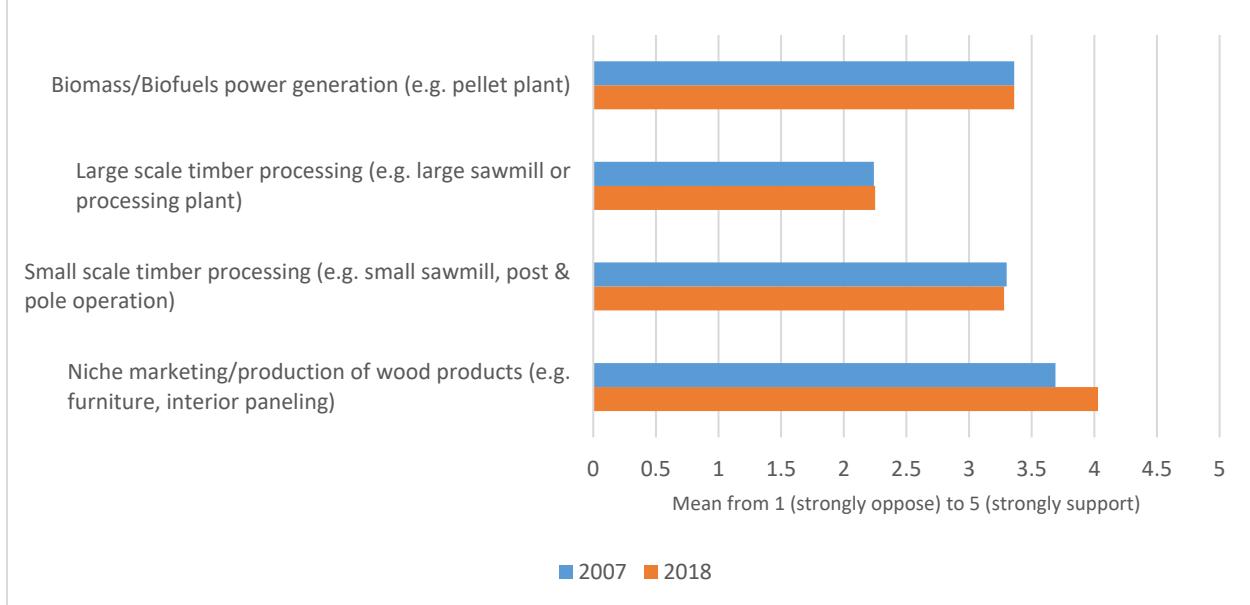
Service”, and “US Forest Service”. Increased levels of satisfaction with all land management entities were indicated as compared to the 2007 survey. Notably, Frisco area respondents in 2018 were more satisfied with “local fire departments”, “county government”, “Colorado State Forest Service”, “US Forest Service”, and “Bureau of Land Management”.



Respondents were also asked to indicate their level of support for several industry options in or near Frisco, 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 supportive of all industry options (means above 3.0), with the exception of “large scale timber processing”. In general, support for industry options were similar in the 2007 and 2018 surveys, with the exception of increased indications of support for “niche marketing/production of wood products” in 2018.

Figure 9: Support for Forest Industry

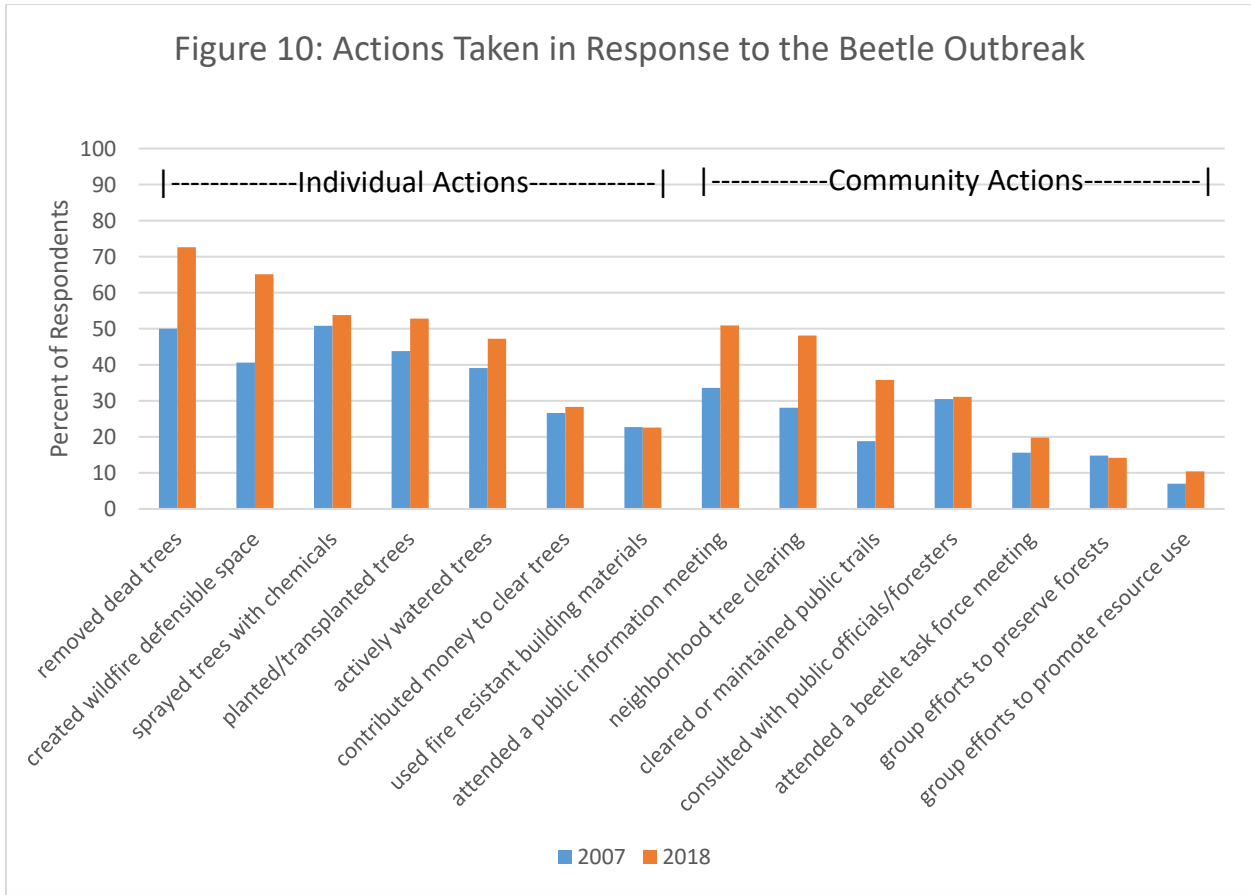


Response to the Beetle Outbreak

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, removing beetle killed trees, creating wildfire defensible space near structures, and spraying trees with chemicals were the most actively reported activities for

respondents in 2018. Removing beetle killed trees replaced spraying trees with chemicals as the most frequent individual activity in the 2018 survey responses, as compared to the 2007 survey. The resurvey respondents reported increased activity in all surveyed individual actions, with the exception of the use of fire resistant building materials. Regarding community responses, respondents indicated increased frequencies of participation in all surveyed community actions with the exception of group efforts to preserve forests. Notable increases were reported in public information meeting attendance, neighborhood tree clearing, public trail clearing or maintenance.

Figure 10: Actions Taken in Response to the Beetle Outbreak

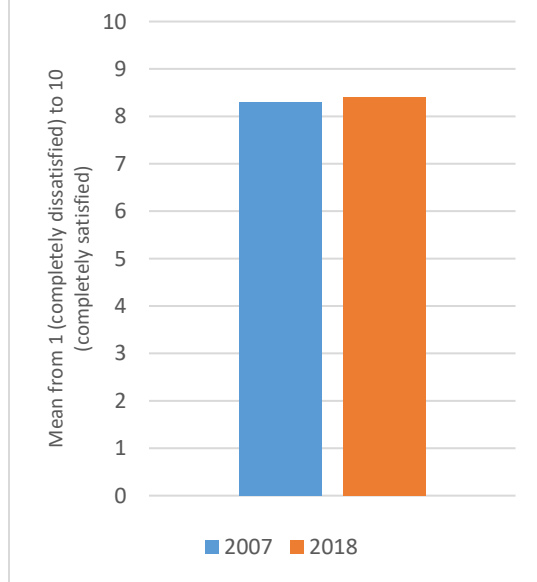


Community Experience and Participation

Both surveys also contained questions related to respondents' community experience and participation in Frisco. Respondents were asked to indicate their level of satisfaction with Frisco as a place to live on a scale from 1 (completely

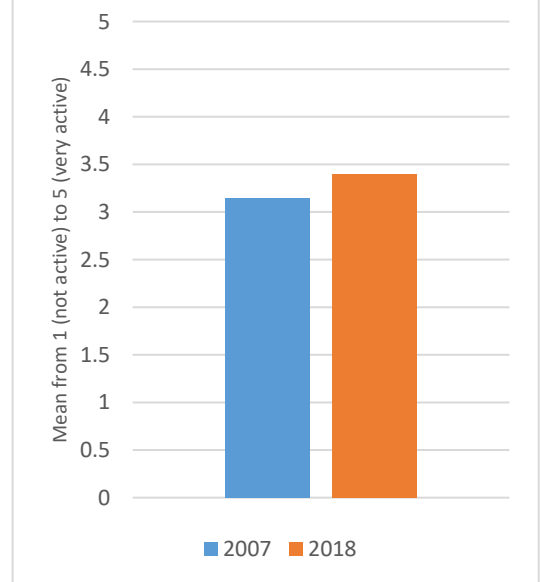
dissatisfied) to 10 (completely satisfied). Mean responses for both years are indicated in Figure 11. In both 2007 and 2018, survey respondents indicated a high level of satisfaction with Frisco as a place to live.

Figure 11: Satisfaction with Frisco Community



In addition to their satisfaction with Frisco as a place to live, respondents were asked to describe their personal level of involvement in Frisco or local area activities or events on a scale from 1 (not active) to 5 (very active). Mean responses for

Figure 12: Community Involvement in Frisco



community participation are indicated in Figure 12. In 2018, respondents indicated an increased level of personal participation in Frisco 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. In 2018, Frisco respondents indicated all surveyed community attributes as positive (greater than 3.5), with the exception of “availability of affordable housing”. Generally, respondents indicated slightly increased or

similar views of the various aspects of community life in 2018, as compared to the 2007 responses, with the exception of slightly less positive views of Frisco as a “place to visit or recreate”. Notably, “local economy and “level/quality of communication among residents” were indicated as more positive in 2018.

