

Experiencing Restoration Focused Forestry

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M.N.R. Capstone Presentation

January 5, 2023



Oregon State
University



Presentation Outline

- Sense of Place:
 - Place Meaning, Place Satisfaction and Landscape Perception
 - Place Meaning Framework Applied to Forest Management
- Site Description: Bogus Basin Mountain Recreation Area
 - Forest Management History and Bogus Basin Forest Health Project
- Methods and Survey Design
 - Study questions
- Findings
- Discussion
- Conclusions

Sense of Place

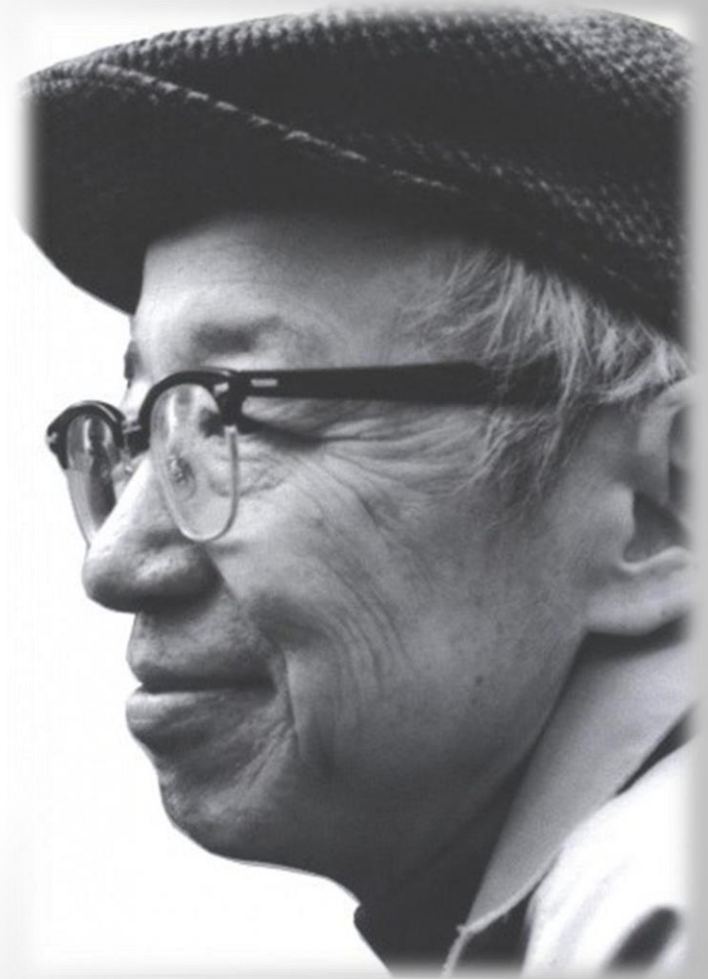
- Theoretical framework describing an individual's or community's cognition of a particular place (Farnum et al. 2005)
- Encompasses
 - One's level of attachment (Moore & Graefe 1994)
 - One's symbolic meaning of place (Stedman 2002)
 - Shared or contested (Creighton et al. 2008)
- Multifaceted and multidisciplinary
- Personal and interpersonal experiences

Sense of Place

“Topophilia, the affective bond between people and place or setting. **Diffuse as a concept, vivid and concrete as personal experience**” (Tuan 1974, 4)

Experience as:

“a cover-all term for the various modes through which a person knows and constructs a reality” (Tuan 1977, 8)



Space and Place 1977

Sense of Place

- Considered in variety of disciplines:
 - Geography
 - Sociology
 - Environmental psychology
 - Environmental philosophy
 - Architecture
 - Silviculture?
 - (McDonald and Litton Jr. 1998)



United States
Department
of Agriculture

Forest Service

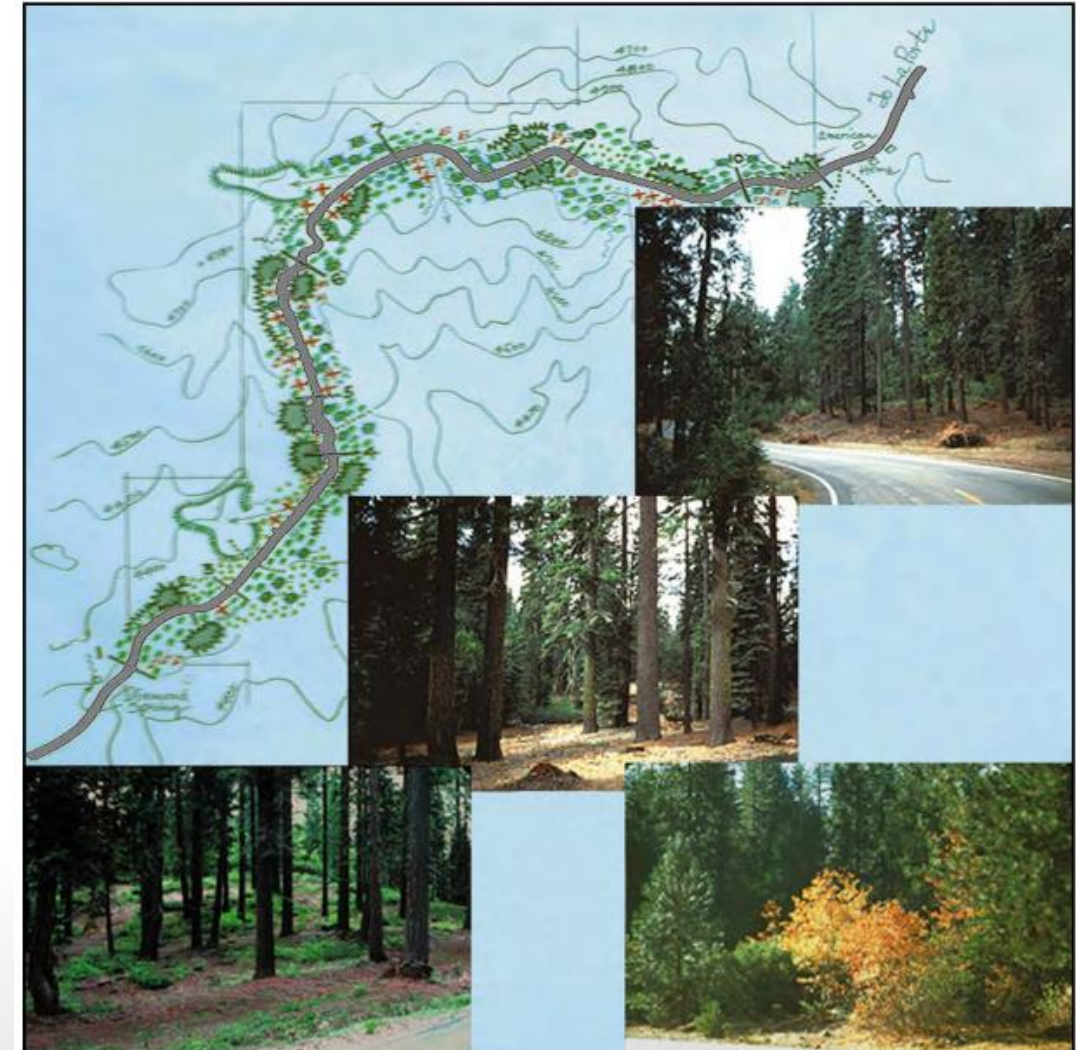
Pacific Southwest
Research Station
<http://www.psw.fs.fed.us/>
Research Paper
PSW-RP-235



Combining Silviculture and Landscape Architecture to Enhance the Roadside View

Philip M. McDonald

R. Burton Litton, Jr.



Physical Environment's Contribution to SOP

- Physical environment provides the range of experiences that lead to place attachment (Stedman 2003a, 2003b)
 - Experiences influenced by
 - Physical environment
 - Human behaviors
 - Social-psychological processes
- Physical environment is important to outdoor recreation

Physical Environment's Importance to SOP

- **Company A:** “We believe a life outdoors is a life well-lived... it’s in the wild, untamed and natural places that we find our best selves, so our purpose is to awaken a lifelong love of the outdoors, for all... working to help you experience the transformational power of nature.”
- **Company B:** “Inspiring everyone to enjoy, love and conserve the great outdoors... Every year, we help more than 200 million people create countless outdoor memories.”

Company A: REI

- “We believe a life outdoors is a life well-lived... it’s in the wild, untamed and natural places that we find our best selves, so our purpose is to awaken a lifelong love of the outdoors, for all... working to help you experience the transformational power of nature.”
- Recreational Equipment Incorporated
(rei.com/about-rei 2022)



Company B: Bass Pro Shops and Cabela's

- “Inspiring everyone to enjoy, love and conserve the great outdoors... Every year, we help more than 200 million people create countless outdoor memories.”
- Bass Pro Shops and Cabela's (about.basspro.com 2022)



Place Satisfaction & Natural Resource Conflict

- Places ARE NOT interchangeable consumer transactions (resources)
 - Have potential to hold deep emotional and symbolic relationships with users (Williams 2008)

Place Satisfaction & Natural Resource Conflict

- Place satisfaction is independent of place attachment (Stedman 2003a)
 - Differing strengths of attachment (Stedman 2008)
 - Perception that landscape is being damaged may harm place satisfaction but not attachment (Stedman 2003b)
- Natural resource conflict occurs when:
 - Group or individual is dissatisfied with a place or notion of a place changing while having high level of attachment to said place (Stedman 2003b)
 - Place protective behavior

Place Meaning Framework Applied to Forest Management and Outdoor Recreation

- Understanding symbolic meanings applied to a place is important for natural resource management PRIOR to management activities
 - Need to anticipate the continuum of social acceptability

Place Meaning Framework Applied to Forest Management and Outdoor Recreation

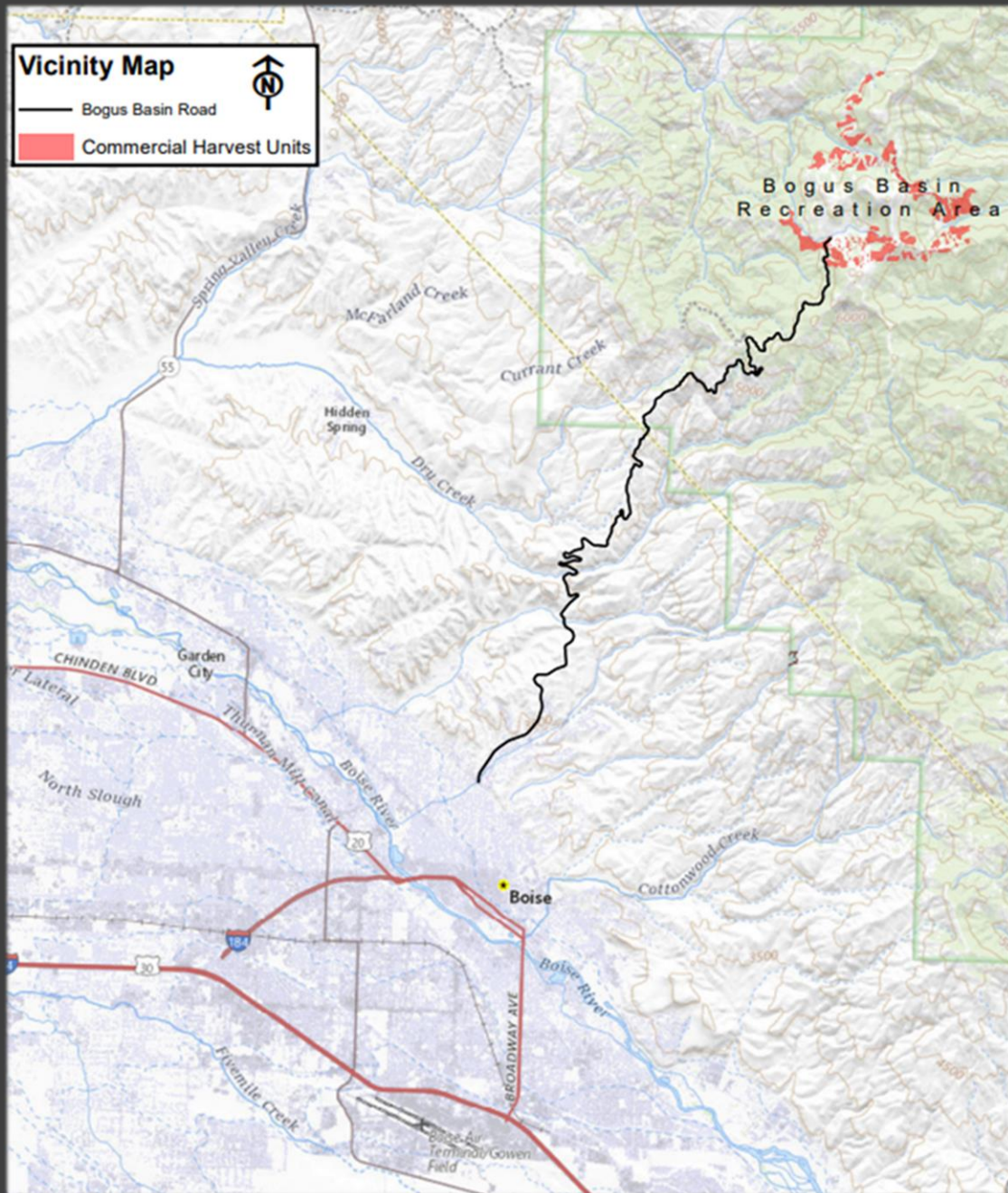
- Focus on place meaning to address social problems in forest management (Stedman 2003b, 2008, Williams 2008, & Brehm et al. 2013)
- Understand stakeholder place meanings
 - Accommodate place meanings on the landscape
- Land management activities affect the natural landscape

What Do We “Mean” by Place Meanings? (Stedman 2008)

- Land managers should pay attention to the numerous ways their actions:
 - (a) Change the natural landscape via land management activities (e.g., commercial logging)
 - (b) Allow or prohibit certain activities (e.g., motorized vs non- motorized recreation)
 - (c) Can teach meanings through environmental communication and interpretation (e.g., interpretive signage)

What Do We “Mean” by Place Meanings? (Stedman 2008)

- Three emerging themes from place meaning:
 - (1) Settings can have multiple meanings
 - (2) Settings are shaped by physical environment, land management, and power interests. Meanings can be packaged or marked by power interests (e.g., Company A & Company B)
 - (3) Place meaning is not always tied to emotional attachment. But understanding place meaning may help managers understand land use conflict



Study Site: Bogus Basin Mountain Recreation Area

Recreation Area	Distance (mi)	Drive Time
Bogus Basin	18	40 min.
Soldier Mountain	112	1 hr. 55 min
Tamarack	102	2 hr. 15 min.
Brundage Mountain	116	2 hr. 30 min.
Sun Valley	154	2 hr. 40 min.

Travel distance and approximate drive time from downtown Boise, Idaho to similar recreation areas

Bogus Basin Mountain Recreation Area

- Opened in 1942
- Largest non-profit recreation area in the United States
- 1,800 vertical feet
- 7 chairlifts
- 2,600 acres of skiable terrain
- 200 acres of night skiing
 - Night skiing 7 days a week at peak season

Bogus Basin Alpine Trail Map



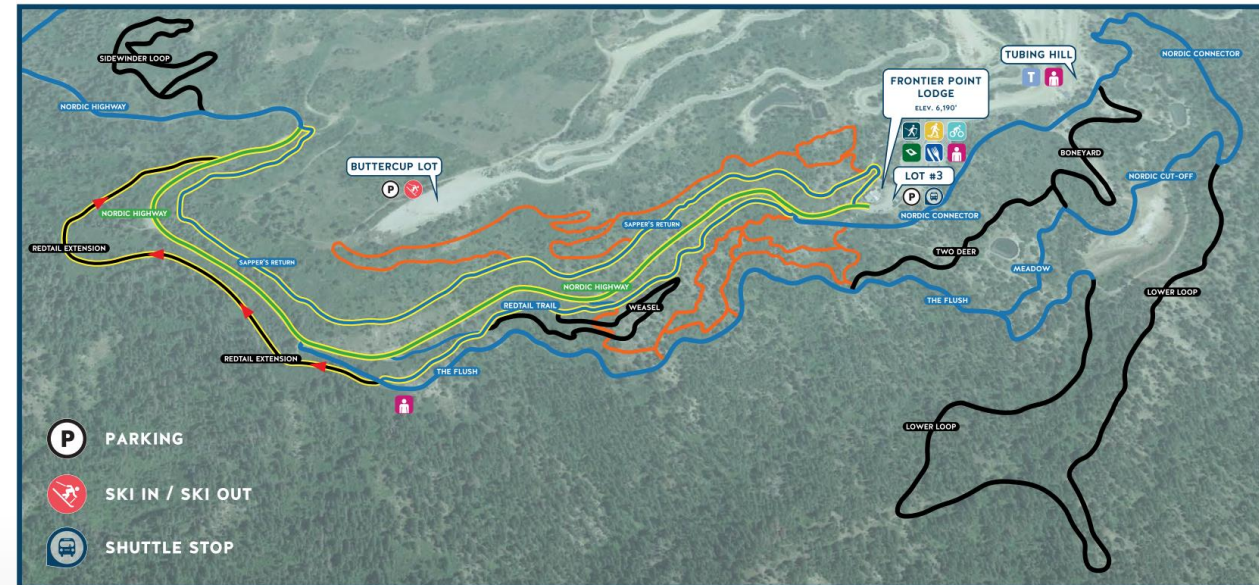
Bogus Basin (2022)

Bogus Basin Mountain Recreation Area

- ~30 km of cross country (Nordic) ski trails
- ~15 km fat tire bike trails
- ~4 km snowshoeing specific trails
- 800 ft snow tubing hill
- 4,330 ft mountain coaster

Bogus Basin Cross Country, Fat Tire Biking, and Snowshoeing

**NORDIC SKIING
FAT TIRE BIKING
SNOWSHOEING**

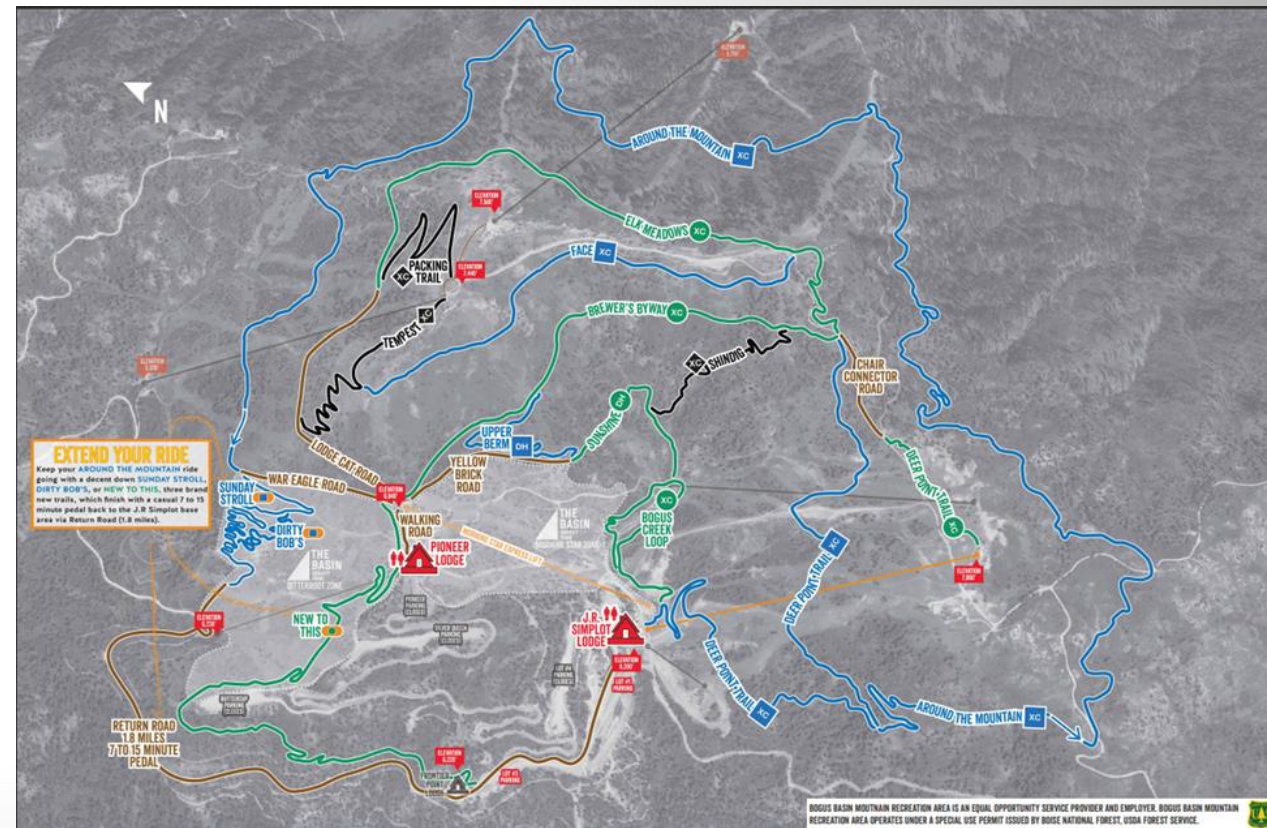


Bogus Basin (2022)

Bogus Basin Mountain Recreation Area

- Summer activities increased in the past 10 years
- 20+ miles of non-motorized recreation trails
- 2 chairlifts for downhill mountain biking or scenic chairlift rides
- Base area activities
 - Summer tubing
 - Climbing wall
 - Bungee trampoline
 - Summer concert series

Bogus Basin Cross Country Mountain Biking and Hiking Map



Bogus Basin (2022)

Bogus Basin Forest Health Decline

- 1982: DF dwarf mistletoe detected at Bogus Basin
- 1986: Environmental Assessment Complete
 - Finding of no significant impact
- 1989: Lowman Complex Fire
 - 45,000 acres burned
 - BNF resources diverted to salvage and reforestation efforts
- 1996 Eighth Street Fire
 - 15,300 acres burned
 - 5 miles south of Bogus Basin
 - BNF resources diverted to salvage and reforestation efforts
- 2003: New draft EA prepared.
 - Never signed
- 2016: Bogus Basin Forest Health Project signed
 - Supported by Boise Forest Coalition

Douglas-fir heavily
infected with dwarf
mistletoe at
Smuggle/Smuggler
Cut-off ski trails
September 2019
(Dwyer)



Bogus Basin Forest Restoration

Residual Douglas-fir
along the Redtail
Extension Nordic Trail.
September 2019



Bogus Basin Forest Restoration

Residual ponderosa
pine and Douglas-fir
stand near Lower Loop
Nordic Trail.
December 2019



(Dwyer 2019)

Bogus Basin Forest Restoration

Residual Douglas-fir
stand around
Smuggler/Smuggler
Cut-off ski trails.
September 2019

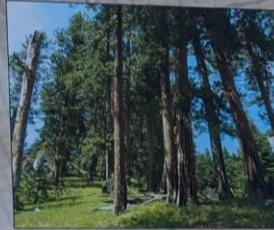


Bogus Basin Forest Restoraton

Nearly 500 truckloads
delivered to regional
mills and forest
products outlets. Nordic
Highway. August 2019

Working Together to Restore a Healthy Landscape

At Bogus Basin we are using land management tools to restore health to the forest. The removal of dying trees, prescribed burning, and planting Ponderosa Pine will help repair the landscape, for future generations to enjoy!



100 years ago:
-Forests featured large, widely spaced, sun-loving trees, like Ponderosa Pine.
-Frequent, light fires cleared competing vegetation.



Over the last century:
-Large trees were harvested.
-Fires were suppressed, allowing shade-tolerant species to fill the understory.



As a result:
-Forests feature smaller, densely grown, shade-tolerant trees, like Douglas-fir.
-Dense understories create fuel build-up.

Through the Good Neighbor Authority, the Boise National Forest, Idaho Department of Lands, and Bogus Basin Mountain Recreation Area have partnered on this Forest Health Project.

For more information visit these links:



Damaged VS Managed



(Dwyer 2020)

Bogus Basin Forest Restoration

Sign by Flynn, Gempler, and Songster. August 2020



(Dwyer 2020)

Bogus Basin Forest Restoraton

Sign by Flynn, Gempler, and
Songster. August 2020

Bogus Basin Forest Health Project

Before restoration treatment July 2018

Legend

Unit 2

Google Earth

1000 ft



Bogus Basin Forest Restoration

Logging Unit 2
encompassed Lower
Loop XC (winter) and
the beginning of
Eastside Trail (summer)

Bogus Basin Forest Health Project

After restoration treatment June 2022

Legend

Unit 2

Google Earth

3000 ft

N

Bogus Basin Forest Restoration

Logging Unit 2
encompassed Lower
Loop XC (winter) and
the beginning of
Eastside Trail (summer)

Methods and Study Questions

- Design a Survey Based off Stedman (2008)'s three place meaning themes:
 - (1) Does Bogus Basin Mountain Recreation Area have multiple place meanings?
 - (2) Assess respondents' landscape perception, perception of land management, and sense of power interests
 - Perception that landscape is being damaged may harm place satisfaction but not attachment (Stedman 2003b)
 - (3) Regardless of user attachment, see if Bogus Basin Forest Health Project implementation fit within the recreation area's place meaning

Methods

- Survey formatted to Qualtrics XM
 - Bogus Basin email list
 - Bogus Basin Facebook page
 - Bogus Basin Instagram
- Survey open for 2 weeks in May 2022
- Formatted for
 - Computers and smartphones



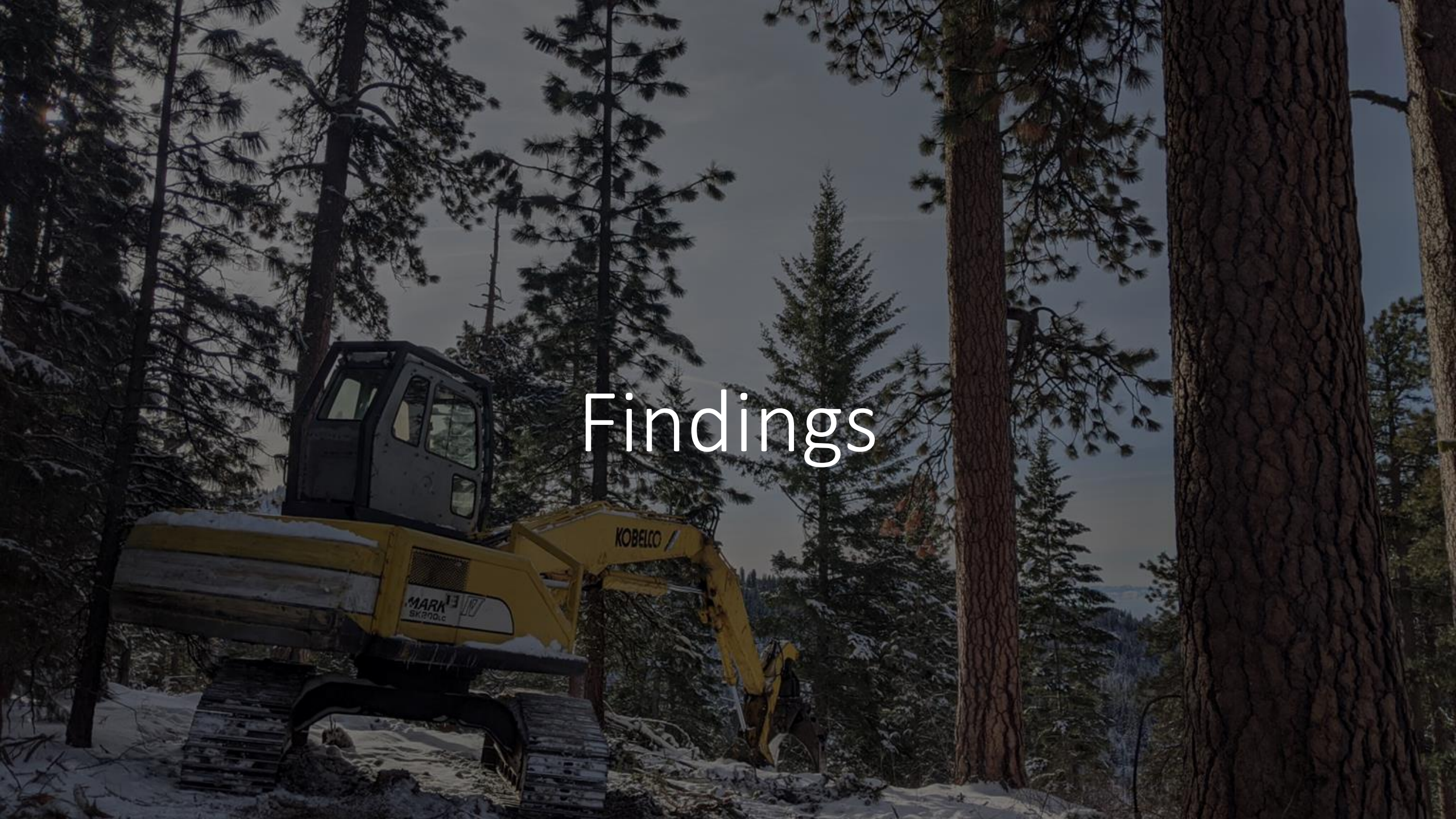
WE WANT YOUR FEEDBACK!

We are asking for your help to make Bogus Basin a better place for our community!

Please take this quick survey to help our team better understand your experience at Bogus Basin. We have collaborated with Oregon State University to study the perception of the landscape around the recreation area.

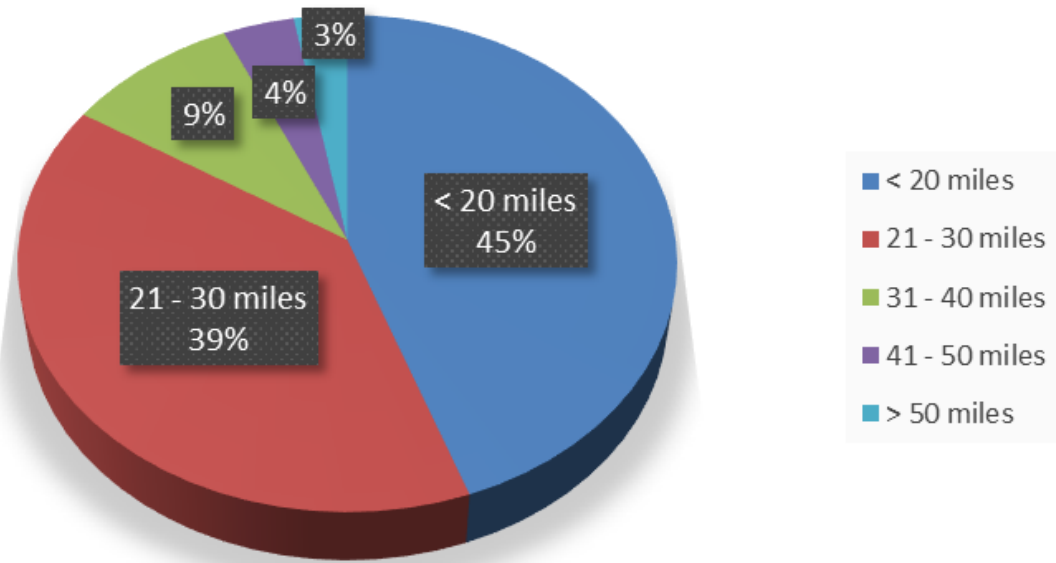
[Complete Survey](#)

Findings



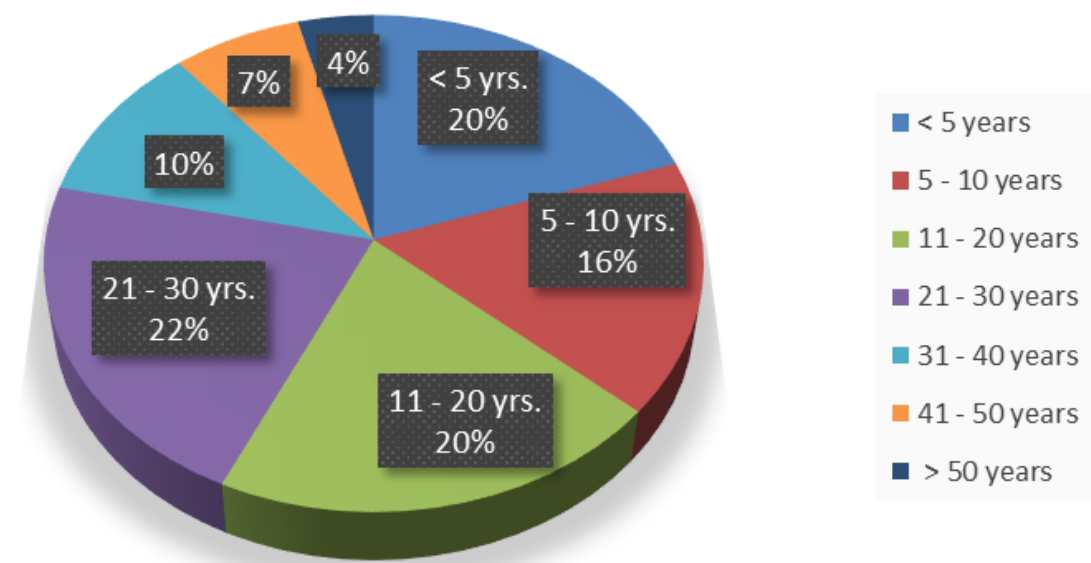
Respondent Information

Distance Traveled to Bogus Basin



n=418

Years Visiting Bogus Basin



n=418

Recreation Area	Distance (mi)	Drive Time
Bogus Basin	18	40 min.
Soldier Mountain	112	1 hr. 55 min.
Tamarack	102	2 hr. 15 min.
Brundage Mountain	116	2 hr. 30 min.
Sun Valley	154	2 hr. 40 min.

Travel distance from
downtown
Boise, Idaho

404 of 418 visited Bogus Basin in 2021 or 2022

Respondent Information

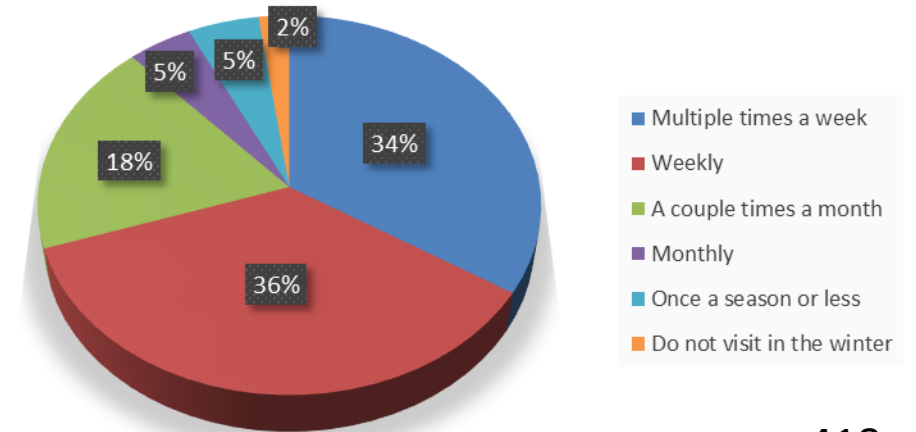
In the **winter**, over the past five years, what recreational activities have you participated in at Bogus Basin?

Please **select all that apply**.

n=409

Alpine ski	78.5%	321
Snowboard	27.9%	114
Nordic ski	23.2%	95
Tubing hill	19.1%	78
Snowshoe	17.8%	73
Mountain coaster	16.4%	67
Other	4.4%	18
Fat bike	2.4%	10
Not up recently (5 yrs.)	0.2%	1

Winter Visitation to Bogus Basin



n=418

Please select all the **winter areas** where you **recreate** on the mountain:

n=409

Superior	90.2%	369
Deer Point & Showcase	89.7%	367
Pine Creek	88.0%	360
Morning Star	85.8%	351
Shafer south face	63.8%	261
Bitterroot	63.6%	260
Frontier Point	31.5%	129
Tubing hill	14.4%	59
Mountain coaster	12.7%	52

Respondent Information

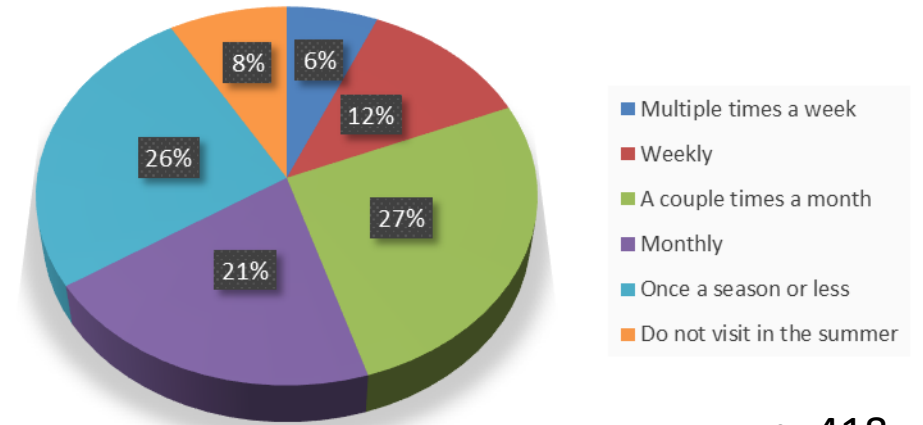
In the **summer**, over the past five years, what recreational activities have you participated in at Bogus Basin?

Please **select all that apply**.

n=383

Hiking	63.4%	243
Cross-country mountain bike	50.7%	194
Lift serve downhill mountain bike	40.2%	154
Mountain coaster	38.6%	148
Concert going	30.3%	116
Scenic chairlift ride	24.5%	94
Trail running	13.1%	50
Other	9.7%	37
Disc golf	7.6%	29
Not up recently (5yrs.)	2.9%	11

Summer Visitation to Bogus Basin



n=418

Please select all the **summer areas** where you **recreate** on the mountain:

n=383

Around the Mountain multi-use trail	69.7%	267
Deer Point Area multi-use trails	64.2%	246
Shafer Butte Area multi-use trails	56.7%	217
Simplot Base Area	56.4%	216
Morning Star downhill bike park	49.3%	189
Mountain Coaster	33.7%	129
Upper Eastside multi-use trail	31.3%	120
Bitterroot (Disc golf)	7.6%	29

Findings

Respondents' **sense of place** at Bogus Basin.
 Right: Average score, SD, and percent agreement. Below: Response rate as a percentage.
 n=418

Bogus Basin is a:	Average Score	Sample SD	Agree
Scenic place	1.62	0.88	97.1%
Place to hangout with friends	1.77	0.94	95.0%
Family place	1.78	1.00	92.8%
Community of recreationists	1.84	1.03	93.3%
Playground	1.92	1.08	92.1%
Place to connect to mountains	1.95	1.15	91.9%
Peaceful place	2.31	1.31	86.4%
Getaway in the woods	2.40	1.34	84.2%
Place to heal	2.63	1.37	74.2%
Escape from civilization	2.80	1.64	75.1%

Bogus Basin is a:	1	2	3	4	5	6	7
Scenic place	53.8%	36.1%	7.2%	1.2%	0.7%	0.5%	0.5%
Place to hangout with friends	45.9%	38.5%	10.5%	3.8%	0.5%	0.0%	0.7%
Family place	46.7%	38.3%	7.9%	6.0%	0.2%	0.0%	1.0%
Community of recreationists	44.0%	38.5%	10.8%	4.8%	0.5%	0.7%	0.7%
Playground	40.7%	40.0%	11.5%	4.8%	1.4%	1.0%	0.7%
Place to connect to mountains	42.3%	34.7%	14.8%	3.8%	2.4%	1.2%	0.7%
Peaceful place	30.1%	34.0%	22.2%	5.5%	4.5%	2.6%	1.0%
Getaway in the woods	27.8%	33.7%	22.7%	6.9%	4.5%	3.3%	1.0%
Place to heal	22.0%	31.6%	20.6%	17.5%	4.1%	3.1%	1.2%
Escape from civilization	23.7%	27.5%	23.9%	6.5%	9.3%	5.5%	3.6%

1=strongly agree, 2=agree, 3=somewhat agree, 4=indifferent, 5=somewhat disagree, 6=disagree, 7=strongly disagree

Findings

Bogus Basin Recreation Area:	Average Score	Sample SD	Agree
Provides fresh/clean air	1.69	0.80	96.7%
Has many native plants and trees	2.22	1.03	86.4%
Provides habitat for many species of wildlife and plants	2.42	1.13	83.5%
Has changed a lot over the years	2.42	1.20	80.6%
Is heavily forested between ski runs and trails	3.13	1.31	72.0%
Is in the wilderness	3.51	1.78	62.0%
Is overdeveloped	4.73	1.39	17.0%

Respondents' **impressions of the physical landscape** at Bogus Basin. Left: Average score, SD, and percent agreement. Below: Response rate as a percentage.
n=418

Bogus Basin Recreation Area:	1	2	3	4	5	6	7
Provides fresh/clean air	44.5%	46.7%	5.5%	2.2%	0.7%	0.5%	0.0%
Has many native plants and trees	23.2%	48.8%	14.4%	11.2%	1.7%	0.5%	0.2%
Provides habitat for many species of wildlife and plants	17.9%	45.7%	19.9%	11.2%	3.6%	1.2%	0.5%
Has changed a lot over the years	24.2%	36.1%	20.3%	14.4%	3.3%	1.4%	0.2%
Is heavily forested between ski runs and trails	7.2%	25.4%	39.5%	10.8%	11.0%	5.0%	1.2%
Is in the wilderness	10.3%	23.2%	28.5%	6.7%	13.6%	9.6%	8.1%
Is overdeveloped	2.9%	4.1%	10.0%	23.4%	25.6%	27.5%	6.5%

1=strongly agree, 2=agree, 3=somewhat agree, 4=indifferent, 5=somewhat disagree, 6=disagree, 7=strongly disagree

Findings

Respondents' **impressions of the forested landscape** at Bogus Basin. Right: Average score, SD, and percent agreement. Below: Response rate as a percentage.
n=418

Bogus Basin Recreation Area's forests are:	Average Score	Sample SD	Agree
Picturesque	2.21	1.08	90.9%
Picturesque in some areas, unpleasant in others	4.02	1.63	41.4%
Unpleasant	5.81	1.25	6.5%

Bogus Basin Recreation Area's forests are:	Picturesque	Picturesque and unpleasant	Unpleasant
Strongly Agree (1)	26.8%	4.8%	0.7%
Agree (2)	41.4%	14.6%	1.9%
Somewhat Agree (3)	22.7%	22.0%	3.8%
Indifferent (4)	4.1%	21.3%	7.4%
Somewhat Disagree (5)	3.8%	12.7%	14.6%
Disagree (6)	1.0%	18.7%	38.8%
Strongly Disagree (7)	0.2%	6.0%	32.8%

1=strongly agree, 2=agree, 3=somewhat agree, 4=indifferent, 5=somewhat disagree, 6=disagree, 7=strongly disagree

Findings

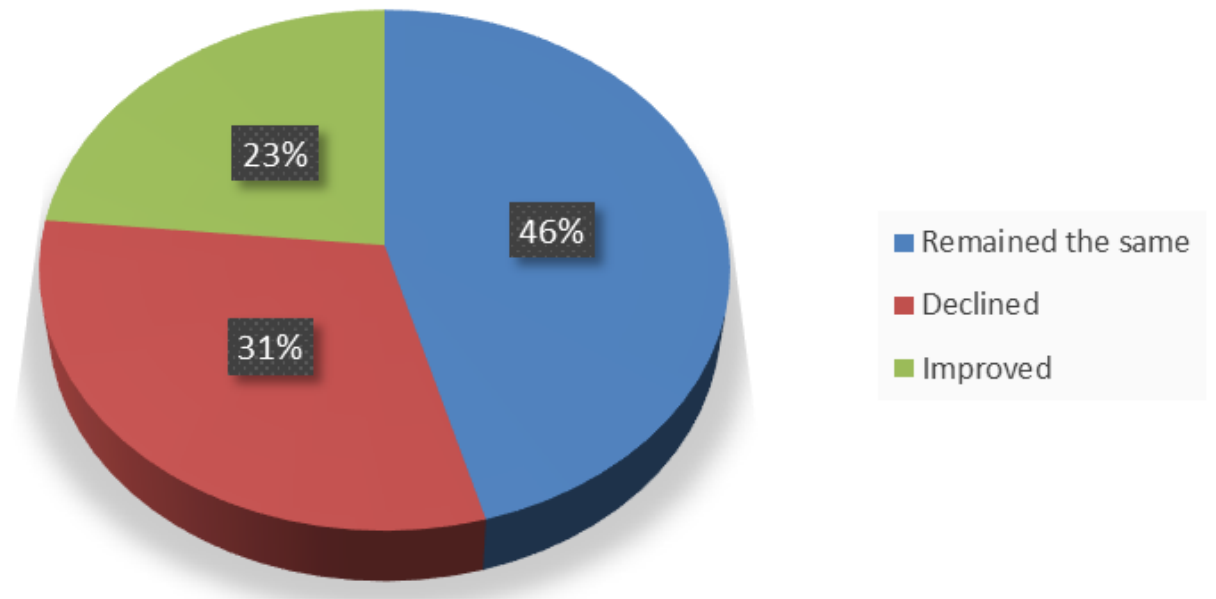
Respondents' **impressions of the forest appearance** at Bogus Basin.

n=418

Please select the statement that best matches your impression of the forests at Bogus Basin.

Over the past five years, forest appearance has:

Impression of Forest Appearance



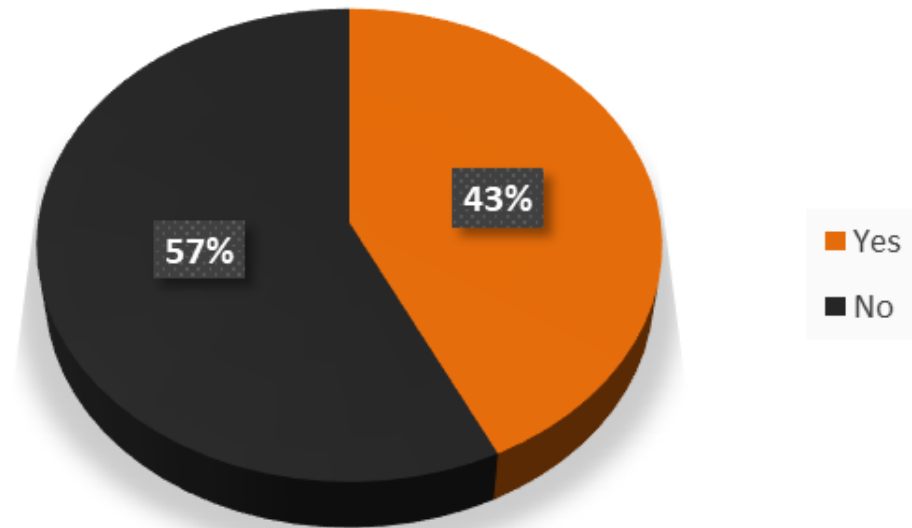
Findings

Respondents' **awareness of the Bogus Basin Forest Health Project.**

n=418

Are you aware of the multistakeholder effort to improve the conditions of the forests around Bogus Basin? (Bogus Basin Forest Health Project)

Awareness of Bogus Basin Forest Health Project



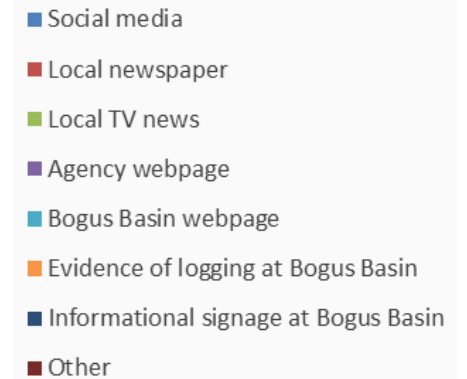
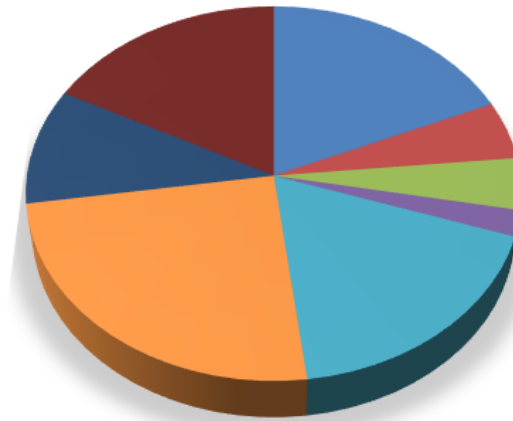
Findings

How respondents **first learned** of the Bogus Basin Forest Health Project.

n=179

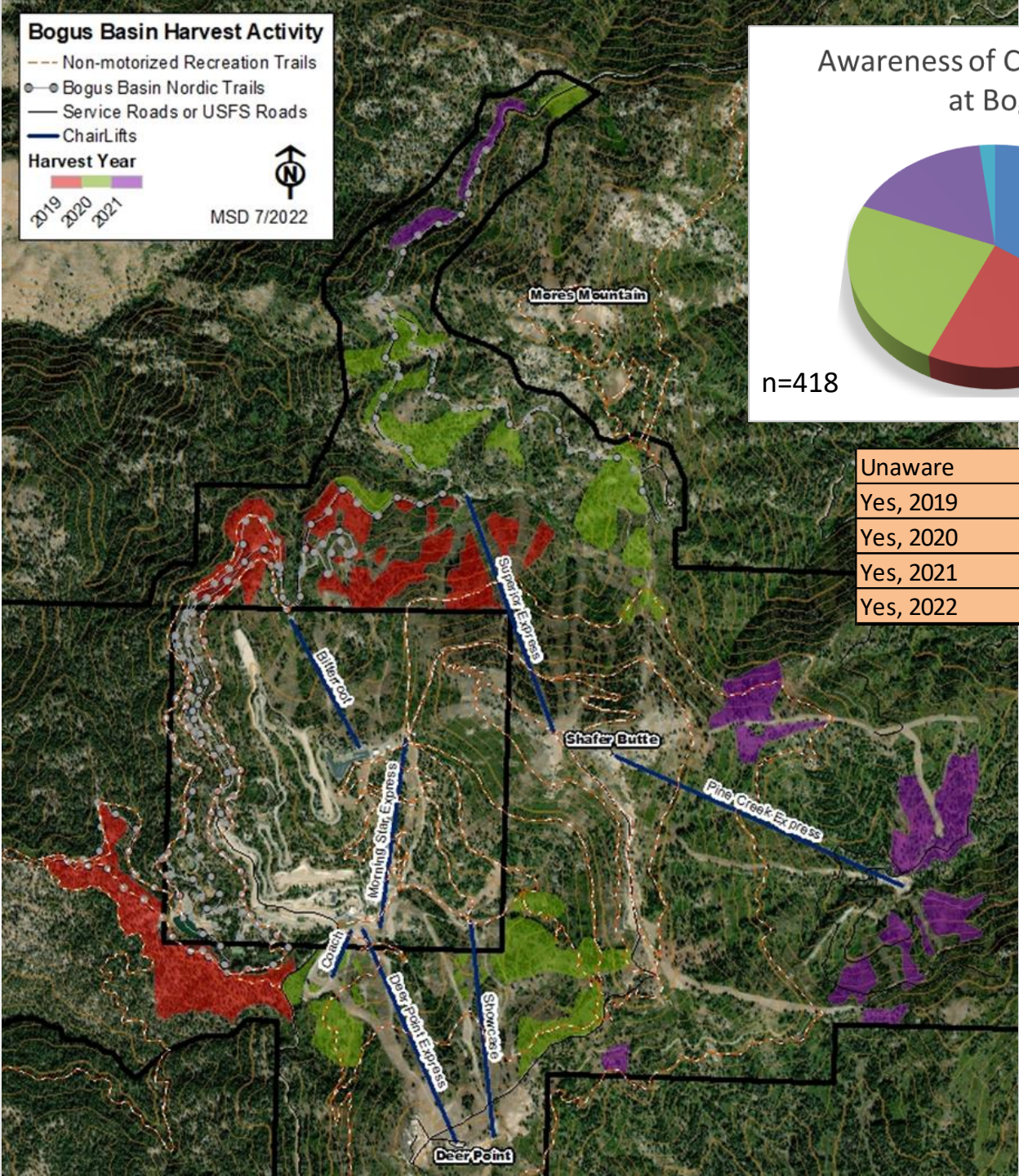
Evidence of logging at Bogus Basin	24.6%	44
Social media	18.4%	33
Bogus Basin webpage	17.9%	32
Other	17.3%	31
Informational signage at Bogus Basin	10.1%	18
Local newspaper	5.0%	9
Local TV news	4.5%	8
Agency webpage	2.2%	4

How did you learn about Bogus Basin Forest Health Project?

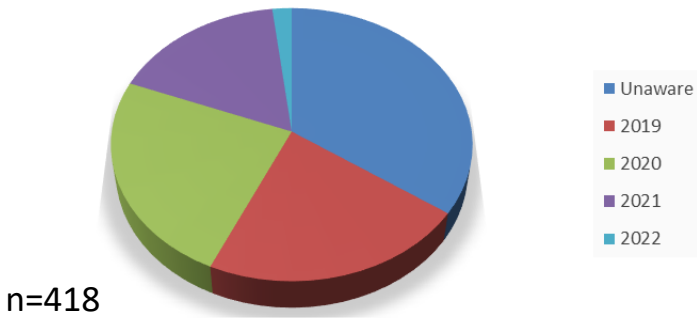


Findings

*The initial phase of the Bogus Basin Forest Health Project involved commercial logging which removed dead and dying trees and thinned dense areas (trees marked with a band of blue paint) to reduce threat from wildfire, insects, and disease. **Did you notice this work was being done?** If so, when?*



Awareness of Commercial Logging at Bogus Basin



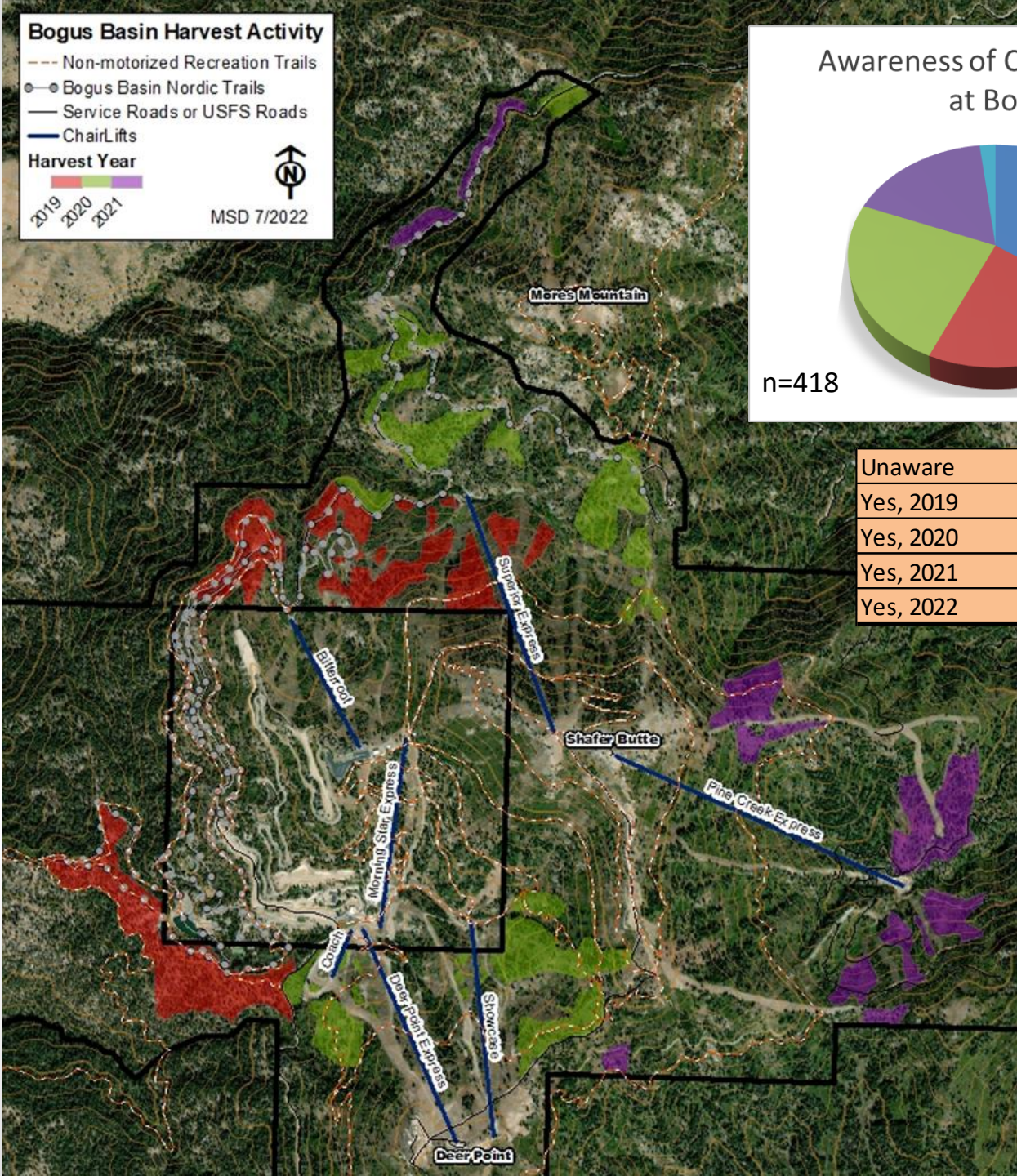
Unaware	34.2%	143
Yes, 2019	22.2%	93
Yes, 2020	24.4%	102
Yes, 2021	17.2%	72
Yes, 2022	1.9%	8

Findings

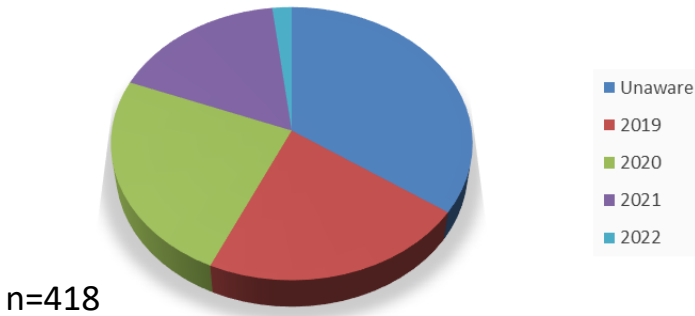
Future phases of the Bogus Basin Forest Health Project will include burning slash piles and replanting seedlings. Are you supportive of future forest restoration projects like the Bogus Basin Forest Health Project?

Strongly Oppose	1	0.2%	1
Oppose	2	0.0%	0
Somewhat Oppose	3	1.2%	5
Indifferent	4	6.7%	28
Somewhat Support	5	6.2%	26
Support	6	33.7%	141
Strongly Support	7	51.9%	217

Average score: 6.28
Sample SD: 0.97
n=418



Awareness of Commercial Logging at Bogus Basin



Unaware	34.2%	143
Yes, 2019	22.2%	93
Yes, 2020	24.4%	102
Yes, 2021	17.2%	72
Yes, 2022	1.9%	8

Discussion

A scenic view of a ski resort base. In the foreground, a gravel path curves through a green lawn. To the left, a cable car station with a blue and white cabin is visible. The background features a steep, grassy hillside dotted with evergreen trees. A cable car line runs up the hill, and a tall communication tower stands on the peak. The sky is a clear, deep blue.

Bogus Basin Place Meaning

- Multiple place meanings
 - 1st emerging theme (Stedman 2008)
 - Temporal element to meanings
 - Spatial element to meanings

Respondents' **sense of place** at Bogus Basin.
Right: Average score, SD, and percent agreement.
n=418

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Scenic place	1.62	0.88	97.1%
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Place to connect to mountains	1.95	1.15	91.9%
Peaceful place	2.31	1.31	86.4%
Getaway in the woods	2.40	1.34	84.2%
Place to heal	2.63	1.37	74.2%
Escape from civilization	2.80	1.64	75.1%

Bogus Basin Place Meaning

- Setting is shaped by physical environment, land management, and influential groups
 - 2nd emerging theme (Stedman 2008)
- Outdoor recreation industry
 - Influences outdoor settings
- Bogus Basin's physical environment is different from Boise Metro
 - Snow sports, evergreen forest
- Special use permit from USFS
 - Downhill skiing since 1942

Respondents' **impressions of the physical landscape** at Bogus Basin. Right: Average score, SD, and percent agreement.
n=418

Bogus Basin Recreation Area:	Average Score	Sample SD	Agree
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Is in the wilderness	3.51	1.78	62.0%
Is overdeveloped	4.73	1.39	17.0%

1=strongly agree, 2=agree, 3=somewhat agree, 4=indifferent, 5=somewhat disagree, 6=disagree, 7=strongly disagree

Bogus Basin Place Meaning

- Understanding place meanings helps Natural Resource managers understand land use conflict
 - 3rd emerging theme (Stedman 2008)
 - Bogus Basin is a community asset for outdoor recreation
 - Bogus Basin (2022)
- Consider similar recreation areas
 - Develop silvicultural prescription appropriate for place

Recreation Area	Distance (mi)	Drive Time
Bogus Basin	18	40 min.
Soldier Mountain	112	1 hr. 55 min.
Tamarack	102	2 hr. 15 min.
Brundage Mountain	116	2 hr. 30 min.
Sun Valley	154	2 hr. 40 min.

Travel distance and approximate drive time from downtown Boise, Idaho to similar recreation areas

Bogus Basin Place Satisfaction

- Place satisfaction of physical setting is high
 - Bogus is scenic place
 - 97% at least somewhat agree
 - Bogus is peaceful place
 - 86% at least somewhat agree
- Bogus has changed but is not overdeveloped
- High environmental quality
 - See table below

Respondents' **impressions of the physical landscape** at Bogus Basin. Right: Average score, SD, and percent agreement.
n=418

Bogus Basin Recreation Area:	Average Score	Sample SD	Agree
Provides fresh/clean air	1.69	0.80	96.7%
Has many native plants and trees	2.22	1.03	86.4%
Provides habitat for many species of wildlife and plants	2.42	1.13	83.5%
Has changed a lot over the years	2.42	1.20	80.6%
Is heavily forested between ski runs and trails	3.13	1.31	72.0%
Is in the wilderness	3.51	1.78	62.0%
Is overdeveloped	4.73	1.39	17.0%

1=strongly agree, 2=agree, 3=somewhat agree, 4=indifferent, 5=somewhat disagree, 6=disagree, 7=strongly disagree

Bogus Basin Forest Appearance

- Picturesque in some areas, unpleasant in others:
 - 41% agreed
 - 37% disagreed
- Picturesque 91% agreed
- Unpleasant 86% disagreed

Bogus Basin Recreation Area's forests are:	Picturesque	Picturesque and	Unpleasant
Strongly Agree (1)	26.8%	4.8%	0.7%
Agree (2)	41.4%	14.6%	1.9%
Somewhat Agree (3)	22.7%	22.0%	3.8%
Indifferent (4)	4.1%	21.3%	7.4%
Somewhat Disagree (5)	3.8%	12.7%	14.6%
Disagree (6)	1.0%	18.7%	38.8%
Strongly Disagree (7)	0.2%	6.0%	32.8%

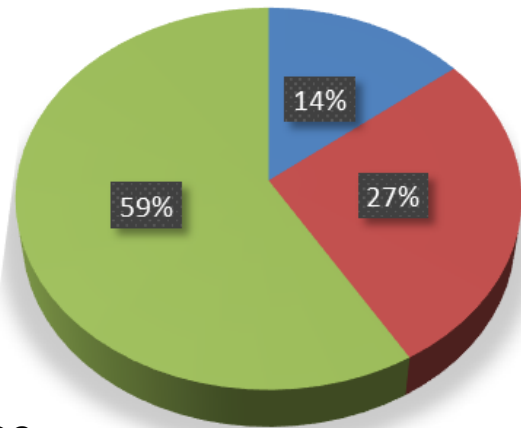
Respondents' **impressions of the forested landscape** at Bogus Basin. Right: Average score, SD, and percent agreement. Below: Response rate as a percentage.
n=418

Bogus Basin Recreation Area's forests are:	Average Score	Sample SD	Agree
Picturesque	2.21	1.08	90.9%
Picturesque in some areas, unpleasant in others	4.02	1.63	41.4%
Unpleasant	5.81	1.25	6.5%

1=strongly agree, 2=agree, 3=somewhat agree, 4=indifferent, 5=somewhat disagree, 6=disagree, 7=strongly disagree

Perception Based on Project Awareness

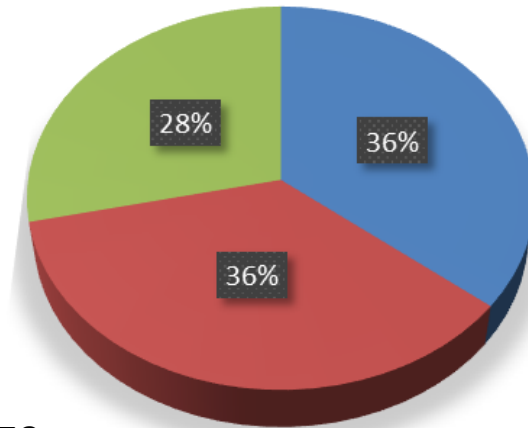
Respondents unaware of Bogus Basin Forest Health Project



n=239

- Over the past five years, forest appearance has improved.
- Over the past five years, forest appearance has declined.
- Over the past five years, forest appearance has remained the same.

Respondents aware of Bogus Basin Forest Health Project



n=179

- Over the past five years, forest appearance has improved.
- Over the past five years, forest appearance has declined.
- Over the past five years, forest appearance has remained the same.

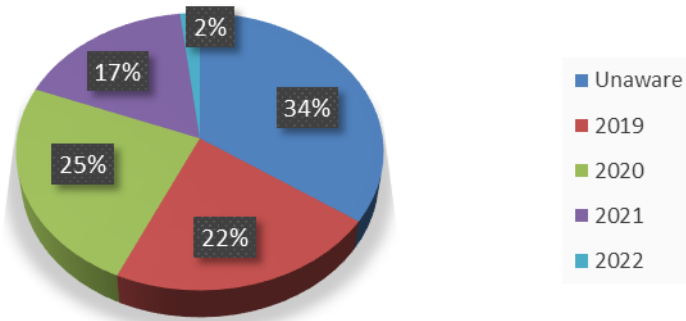
Perception Based on Project Awareness

- How respondents first learned of Bogus Basin Forest Health Project appears to impact how respondent perceives forest appearance trends.

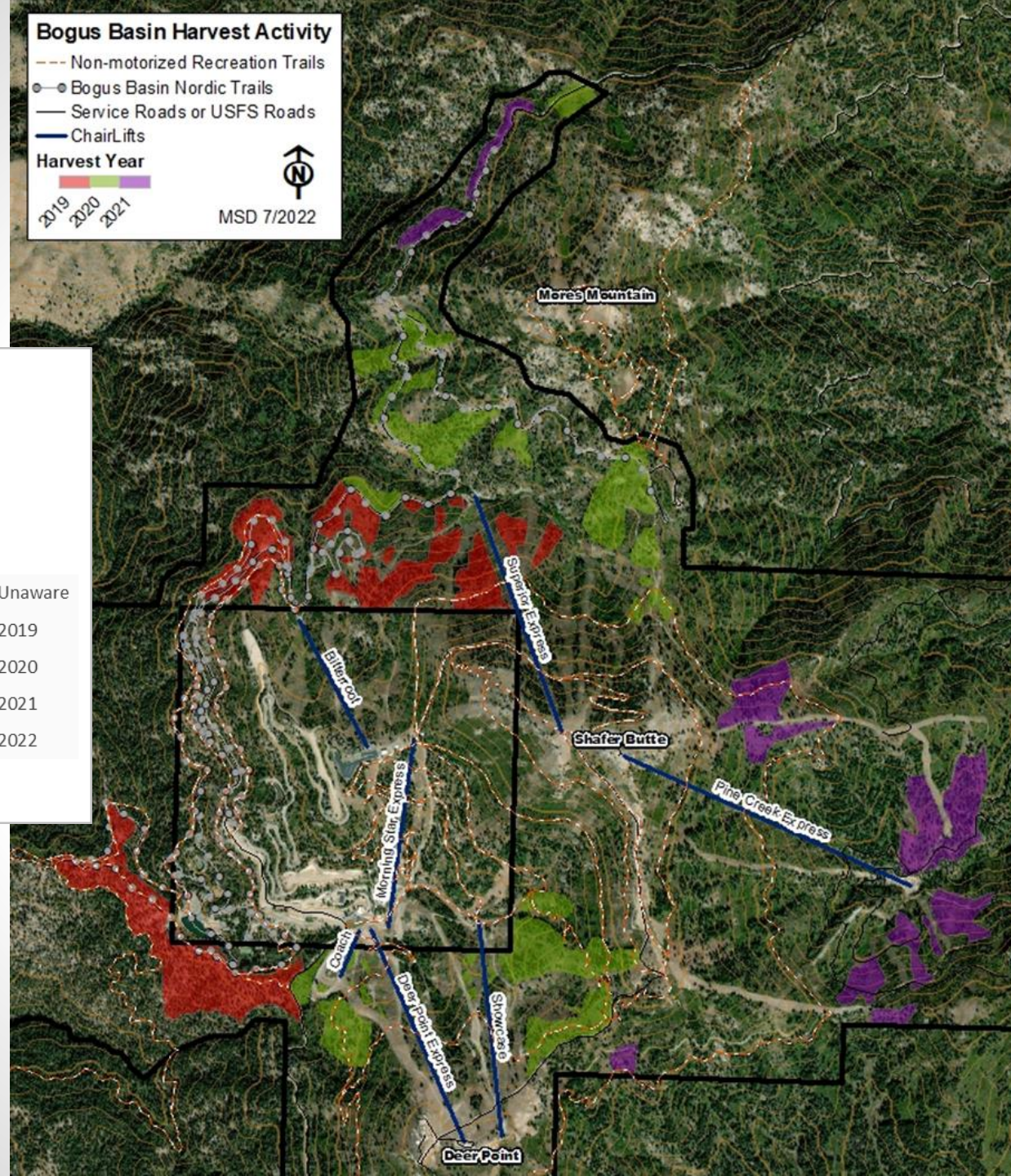
How did you first learn about the Bogus Basin Forest Health Project?				
	Tally	Improved	Declined	No Change
Local newspaper	9	56%	22%	22%
Local TV news	8	50%	25%	25%
Informational signage at Bogus Basin	18	44%	33%	23%
Other	31	42%	32%	26%
Bogus Basin webpage	32	41%	22%	37%
Evidence of logging at Bogus Basin	44	30%	45%	25%
Agency webpage	4	25%	50%	25%
Social media	33	21%	45%	33%
	179			

Perception of Commercial Logging

Respondent Awareness of Commercial Logging at Bogus Basin



n=418



Perception of Wilderness

Wilderness is neither simply an idea nor a place. It is a place where an idea is clearly expressed – the idea of wildness.

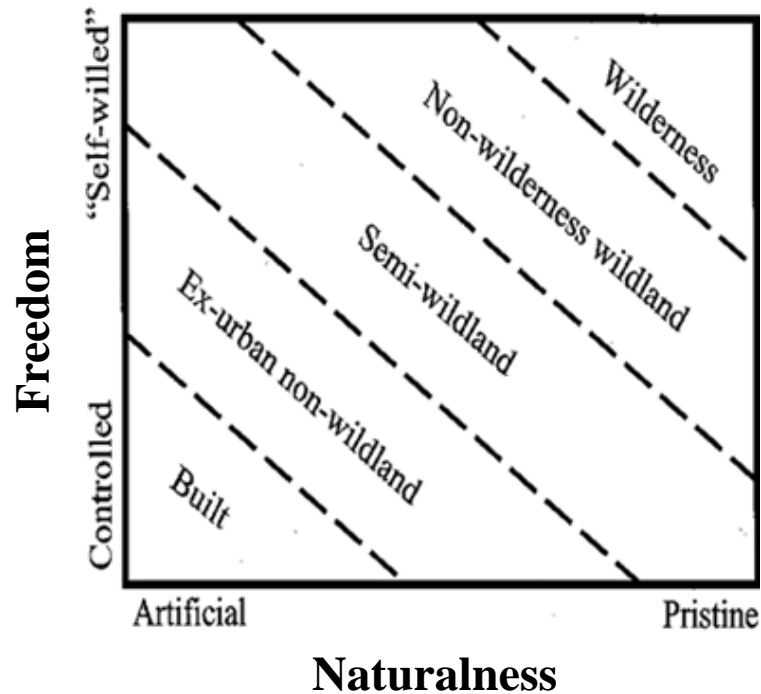
-Dr. Gregory Aplet, 1998



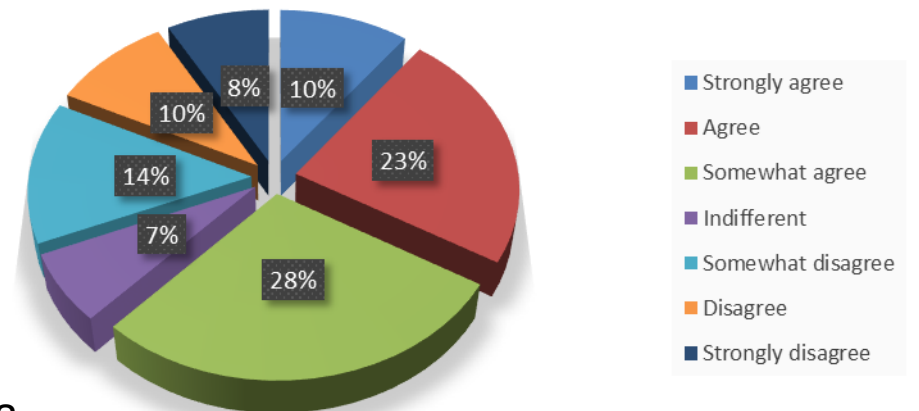
Wilderness in short, is so heavily freighted with meaning of a personal, symbolic, and changing kind as to resist easy definition.

-Dr. Roderick Nash, 1967

Continuum of Wildness (Aplet 1998)



Bogus Basin Recreation Area is in the wilderness



n=418



Conclusions

Conclusions

- The perception of the Bogus Basin Forest Health Project aligns with themes described in Stedman (2008)
 - **(1)** Bogus embodies multiple place meanings
 - **(2)** Experiences at Bogus are shaped by the physical landscape, land management, and power interests
 - **(3)** Understanding Bogus Basin place meaning assisted land managers in successful implementation of forest health project
- Place satisfaction remained high following restoration-focused commercial logging.
- 34% unaware of commercial logging '19 – '21
- 57% of respondents were unaware of Bogus Basin Forest Health Project prior to survey
- 46% of respondents felt forest remained the same over the past five years
 - Perception of forest appearance seemed to increase with knowledge of Forest Health Project



Stumps do not tell the whole story



Stumps do not tell the whole story

Conclusions

- Land managers have opportunities to teach place meaning through interpretive signage
 - Explain why and how silviculture can meet restoration goals
- Commercial logging can be a tool to achieve restoration-focused goals in areas frequently visited by the public
- Wildness and wilderness concepts are complex and have unique meanings to individuals
 - **Use** the word wilderness carefully
 - **Understand** the word wilderness carefully
 - Can be a synonym for wildlands

Thank You!

- Graduate Committee
 - Dr. Janean Creighton, Advisor
 - Dr. Ashely D'Antonio
 - Nicole Strong
- Bogus Basin Recreation Area
 - Brad Wilson, General Manager
 - Susan Saad, Director Community & Customer Relations
 - Luke Tokunaga, Marketing Manager
- Idaho Department of Lands
 - Southwest Supervisory Area
 - Good Neighbor Authority
- Boise National Forest
 - Idaho City Ranger Josh Newman
 - BNF Silviculturist John Riling
- University of Idaho CNR
 - Advisor Dr. Katy Kavanaugh

Questions?

Google Earth

Image © 2022 CNES / Airbus



300 ft

Experiencing Restoration-Focused Forestry

Michael Dwyer, 2022

Master of Natural Resources Capstone Project



A Study of Landscape Perception. Conducted in Cooperation with Bogus Basin Mountain Recreation Area.

Bogus Basin, Idaho



Oregon State
University



ABSTRACT

The practice of modern silviculture on U.S. public lands has been stymied by a legacy of litigation and policy changes since the late 20th century. Forestry in the 1980s was focused on physical science strategies and failed to consider the social complexities of multi-use forest management. Emblematic of the challenges social complexities pose on forest management is Bogus Basin Mountain Recreation Area in the Boise National Forest, less than 20 miles from Boise, Idaho. The Bogus Basin Forest Health Project will be examined where a coalition worked across agencies, municipalities, and non-profit organizations to address the forest health needs at Bogus Basin. Beginning in 2019, diseased, dead, and dying trees were removed and logged. Commercial logging operations removed hazard trees and mitigated a Douglas-fir dwarf mistletoe infestation, first documented in the 1980s, and reduced stand densities to improve wildfire resilience. A substantial amount of the logging phase was finished by autumn 2021. A history and literature review informed a survey taken by over 400 Bogus Basin recreationists in the spring of 2022. The survey sought to understand Bogus Basin place meaning, assessed landscape perception, perception of land management, and overall place satisfaction following restoration-focused logging. The survey found Bogus Basin is simultaneously a scenic place to connect with nature while spending time with family and friends all while escaping civilization within a community of recreationists. Place satisfaction remained high following commercial logging activities; 34 percent of respondents were unaware of the logging.

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INTRODUCTION

Foresters practice silviculture, the *art and science* of managing the establishment, composition, and growth of trees to meet diverse needs. The implementation of silviculture is grounded in science and the study of silvics: “the life history and characteristics of forest trees as they occur in stands and with particular reference to environmental influences” (Merriam-Webster 2022). The art of silviculture considers forest aesthetics and how forested landscapes appear making it analogous to landscape architecture.

The practice of modern silviculture (Crist et al. 2009, Tappeiner II et al. 2015, & Oester et al. 2018) on U.S public lands has been stymied by a legacy of litigation and policy changes since the late 20th century (Scott 2020). Forestry in the 1980s was focused on physical science strategies and failed to consider *complexity and wickedness* (Allen and Gould Jr. 1986) in the realm of social science. Wicked problems are social problems that are not clearly defined and have the potential to create vicious cycles (Rittel & Webber 1973). By the mid-1990s Ecologists C.S Holling and Gary Meffe describe the above as a natural resource management pathology caused by a top-down, command-and-control management style. This management style assumes implicitly, a problem is well bound, clearly defined, relatively simple, with linear cause and effect (Holling & Meffe 1996, 329). Contrary to assumptions made with command-and-control, natural resource problems tend to have good or bad solutions rather than true or false solutions as validity cannot be treated objectively (Allen and Gould Jr. 1986, 22).

Natural resource conflict tends to occur when a group or individual is dissatisfied with a place or the notion of a place changing while having a high level of attachment to said place (Stedman 2003b, 827).

Natural resource problems are exceedingly complex and difficult to capture through quantitative analysis (Stedman 2008, 64). More broadly, social scientists study concepts within sense of place literature to try and solve wicked problems.

Social scientists consider *sense of place* at a physical setting when studying natural resource conflict. Sense of place encompasses meanings, which can be shared or contested (Creighton et al. 2008), attachment, and satisfaction of a physical setting (Stedman 2003a). Key to understanding people and reactions to change at forest settings is understanding the symbolic meanings of a place (Stedman 2008). Symbolic meanings inform competing values regarding how to interact with the natural landscape (Stedman 2002). Deriving symbolic meaning is complex as there can be many symbolic meanings applied to a single place (Stedman 2008). Symbolic meaning is in part derived from the inherited Western worldview of nature many Americans draw from when considering place (Hargrove 1989).

Sense of place literature suggests land managers can teach meaning through environmental communication and interpretation (Stedman 2008). Landscape architect Thomas Panagopoulos advocates understanding the role of place is essential for sustainable development, as sustainable landscapes occur over time, and are “invisible to the eye” (Panagopoulos 2009, 2486). Holling and Meffe suggest engaging the public as partners in science and policy as crucially important, where a broad coalition stands to gain or lose together (Holling and Meffe 1996, 332). Broad coalitions are crucial, but public engagement is challenging with so much vying for peoples’ free time. Showcasing modern forest practices and providing explanations of activities in places people already spend their free time may be the key to public education of modern forestry.

Emblematic of the challenges social complexities pose on forest management is Bogus Basin Mountain Recreation Area in the Boise National Forest (BNF), Idaho, USA. BNF staff reported Douglas-fir dwarf mistletoe infections at the recreation area in 1982 (USFS 2015, 12). As the “Timber Wars” in the Pacific Northwest thundered on through the late 20th century (Scott 2020), the dwarf mistletoe infection continued to spread at Bogus Basin. By 2007, 80 percent of the Douglas-fir at Bogus Basin had severe dwarf mistletoe infections (USFS 2015, 12, Figure 4). In 2010, the Boise Forest Coalition (BFC) was

established to advise the BNF and navigate the social complexities of multiple-use forest management. With BFC support, the Bogus Basin Forest Health Project was approved in 2016 and Idaho Department of Lands (IDL) implemented project layout in 2018 and administration of commercial logging from 2019 – 2021 through the Good Neighbor Authority (GNA).

First, a brief history considering American perception of nature, wildfire, and how the preservationists and conservationists of the early 20th century shaped the American debate on public lands. Then, a sense of place literature review will consider key concepts in place meaning and place satisfaction relating to forestry and outdoor recreation. The history and literature review aided in the development of a survey (Appendix A) sent out to Bogus Basin Recreation Area recreationists. This study will explore the survey results and consider whether recently implemented restoration-focused forest vegetation treatments influenced recreationist' place meaning and place satisfaction at Bogus Basin Recreation Area. More specifically, were there negative, positive, or indifferent reactions to the forest vegetation treatments? The study will also consider opportunities to teach place meaning through environmental communication and interpretation (Appendix C) and whether conducting logging operations in highly visible places like Bogus Basin is key to public education of modern forestry.

HISTORICAL CONTEXT

Western Worldview Roots of the Sciences and Humanities

American visceral reaction to change in natural landscapes is baked into an inherited Western worldview (Hargrove 1989). The Western worldview, with its segregated and combative sciences and humanities, developed over thousands of years. It was formed by discoveries and rediscoveries of knowledge interpreted and applied to problems and questions the original thinkers may have never imagined. In *Foundations of Environmental Ethics*, late-20th century environmental philosopher Eugene Hargrove argues Ancient Greek philosophy is the primary source of Western ideas and many of those ideas inhibit environmental protection today by failing to provide a foundation for environmental thought throughout the course of Western civilization (Hargrove 1989, 14-47).

Ancient Greek philosophical works were rediscovered by intellectuals in Western European centuries before ancient Greek writings in literature, thus leading to a general misunderstanding of ancient Greek civilization. Cartesian dualism, for example, insists humans are separate from nature with the proof “I think, therefore I am” (Hargrove 1989, 35). An indifference to the beauty of nature was passed on to early modern philosophers and theologians who mistook it as the defining characteristic of ancient Greek civilization *and* culture and tried to emulate it throughout the Enlightenment (Hargrove 1989, 26-27).

Attempting to become more objective, science distanced itself from the humanities while practicing the scientific method. Fact triumphed over value. “...it was generally held that scientists dealt with facts and humanists with values” (Hargrove 1989, 40-41). In doing so, science was ill prepared to handle emotionally charged environmental inquiries of the 20th century. As the American Census Bureau declares the end of the American frontier in 1890, the humanities and sciences would independently attempt to solve the challenges of managing/preserving the remaining wildlands.

Preservation versus Conservation 1890 – 1913

J. Baird Callicott, a late-20th century American environmental philosopher, presents ethical imperatives underpinning modern natural resource management and conservation in America. The **romantic-transcendental preservation ethic**, championed by John Muir, values higher spiritual uses of nature (Callicott 1990, 16). The preservation ethic is rooted in the early 1800's. Landscape painters portrayed, and transcendentalists contemplated the sublime aesthetics of nature. By the late 1890's early 1900's, John Muir makes the romantic-transcendental preservation ethic a national topic. He evangelized the need to preserve wild nature as American industry cleared the land for monetary gain. Preservationists favored spiritual use of nature above material use. Like Muir, Gifford Pinchot (Division of Forestry Chief from 1898 – 1905, 1st Chief of the US Forest Service 1905 – 1910) felt the rapid consumption of natural resources needed to be checked. Pinchot advocated for the **progressive resource conservation ethic**. As the US Forest Service's first Chief, Pinchot, a utilitarian by nature, popularized a national motto, "the greatest good to the greatest number for the longest time." The resource conservation ethic preferred a democratically calculated use of nature, preferring quantified metrics, and tended to put material use above spiritual use (Callicott 1990, 16).

Preservationists place human spiritual uses of nature such as aesthetic contemplation above material uses. Conservationists place human material use of nature such as lumber extraction above spiritual uses. The difference between the two views came to an impasse over the Hetch Hetchy Valley in Yosemite National Park, California in the early 20th century. The preservationist Muir placed the spiritual value of nature (beauty of Hetch Hetchy) above the material value of nature (water storage capacity of Hetch Hetchy), Pinchot, the conservationist, was the opposite. Riding the wave of late 19th century – early 20th century progressivism, the resource conservation ethic became the modus operandi for American natural resource agencies. Depending on one's ethic, the Hetch Hetchy Valley was authorized to be *dammed* or *damned* December 7, 1913.

The Evolutionary – Ecological Land Ethic 1949

Aldo Leopold, an early 20th-century forester, and professor of wildlife management was schooled in the resource conservation ethic and practiced it as a forester and game manager in the American southwest for 15 years. Over time, he became a “person of perception” by applying “some art of management” to “the land” (Leopold 1982, 293). Throughout his career, he had a front row seat to the debate between the conservationists and preservationists. Leopold was concerned with well-grounded theory that integrated an optimal mix of plants and animals with human habitation and economic prosperity (Callicott 1990, 18-19). Ultimately, Callicott and others argue for a generalized version of Leopold’s land ethic (Soulé 1985, 730-731, Holling & Meffe 1996, 334) which is Callicott’s third ethical imperative: the **evolutionary – ecological land ethic** (Callicott 1990, 18-19).

The evolutionary – ecological land ethic is a synthesis of the progressive resource conservation ethic and the romantic – transcendental preservation ethic with a twist. The evolutionary – ecological land ethic incorporates humans into ecology. It allows for quantitative, qualitative, empirical, and humanist solutions to complex scientific systems. Additionally, it allows researchers, community organizations, and keepers of indigenous knowledge to bridge gaps in ethical perspective.

Leopold’s ideas were on paper for all to read going into the 1950s but the land ethic was radical for the time and Leopold wasn’t around to defend it. Many people were not ready for it. Setting aside the land for nonutilitarian use was far from the American mind. People of the time were recovering from the Great Depression and World War II. According to the environmental historian Roderick Nash:

Ecology after WWII became increasingly abstract, quantitative, and reductionist ...The kind of integrative natural history at which Aldo Leopold excelled seemed to many hopelessly old-fashioned... ecological perspective and environmental ethics took what shelter they could in the humanities, in religion, and in the so-called counterculture (Nash 1989, 73-74).

The War on Wildfire 1910 – Present

The summer of 1910 changed everything for the fledgling US Forest Service. *The Great Fire of 1910* was a firestorm that blew through parts of eastern Washington, northern Idaho, southeastern British Columbia, and western Montana.

Then came the fateful 20th of August [1910]. For two days the wind blew a gale from the southwest... One observer said the air felt electric, as though the whole world was ready to go up on spontaneous combustion... The tragic and disastrous culmination of that battle to save the forests shocked the nation into a realization of the necessity of a better system of fire control (Koch 1978, 1,3).

The firestorm destroyed several towns and burned over 3,000,000 acres, an area the size of Connecticut. Moving into the 20th century, it became popular opinion and policy to extinguish wildfire as quickly as possible, also known as the 10AM Policy. The preservationists and conservationists agreed, but for different reasons. Wildfire drastically altered forest aesthetics and severely degraded the economic value of forest products. Thus, wildfire became the common enemy of spiritual use *and* material use for the next 100 years.

Consequences of the 10AM Policy led to wildfire to be described as a socioecological pathology in the western United States (Fischer et al. 2016, 276). Aggressive fire suppression combined with the absence of forest management and increased population in the wildland urban interface has left western temperate dry forests susceptible to catastrophic wildfire. Fischer et al. 2016 found that more attention must be paid to the complex interactions between social and ecological conditions through coupled natural and human systems (CNHS). Fischer et al. 2016 put forward a framework to combat the pathology of wildfire risk including a component focused on educating social networks about the wildfire risk pathology.

LITERATURE REVIEW: Symbolic Meanings Applied to the Land

Sense of Place Theoretical Framework

Sense of place is a theoretical framework that describes an individual or community's cognitions of a particular place, (Farnum et al. 2005) one's level of attachment, and a place's symbolic meaning (Stedman 2002). Farnum et al. (2005) synthesize sense of place concepts and explain the applicability of these concepts to natural resource management and outdoor recreation. Sense of place is multifaceted and multidisciplinary. It involves personal and interpersonal experiences, direct and indirect contact with an area setting, intermixed with cultural values and meanings. This complexity interplays with different aspects of outdoor recreation and conflict over natural resource management of natural settings (Farnum et al. 2005, 33).

Sociologist Carla Trentelman notes "place literature has not evolved in response to a single issue, nor from a single perspective; no single thing gave rise to place research" (Trentelman 2009, 205). Sense of place is a broad term, used in a variety of disciplines such as architecture, geography, sociology, environmental psychology, and environmental philosophy (Farnum et al. 2005). Early sense of place thinker and sociologist Yi-Fu Tuan describes sense of place as "topophilia, the affective bond between people and place or setting. Diffuse as a concept, vivid and concrete as personal experience" (Tuan 1974, 4). *Experience*, as described by Tuan in *Space and Place*, is "a cover-all term for the various modes through which a person knows and constructs a reality" (Tuan 1977, 8). Tuan argues place is constructed by individual or group experience (Tuan 1977). Sociologist Richard Stedman suggests experiences produce *symbolic meanings*, also known as cognitions or beliefs. These emblematic meanings of place underpin place attachment and satisfaction of place (Stedman 2003a, 675). Social scientist Daniel Williams suggests natural resource managers need to change tact and think of outdoor recreation places not as interchangeable consumer transactions (resources), but as places with the potential to hold deep emotional and symbolic relationships with a user (Williams 2008, 7).

Physical Environment, Place Attachment, and Place Satisfaction

Stedman argues the role of physical environment has been neglected while studying sense of place (Stedman 2003b, 823). Wrapped up in the physical element is a social element dealing with how individuals or groups interact or feel about a place: “a three-component view that weaves together the physical environment, human behaviors, and social and/or psychological processes...Sense of place is therefore conceived of encompassing meanings, attachment, and satisfaction” (Stedman 2003a, 671-672).

Stedman translates place terminology into social psychology concepts with well-established measures and a strong tradition of hypothesis testing (Stedman 2002, 561). Social constructions are indeed important, but the physical setting literally sets the scene of a place (Stedman 2003a, 671). Physical environment is especially important in outdoor recreation activities such as camping, hiking, trail running, mountain biking, and skiing. Stedman finds the physical characteristics of the landscape are indeed important and are the basis for place attachment and satisfaction. However, he finds *place satisfaction is independent of place attachment* (Stedman 2003a, 680). *Place attachment*, also known as identity, being “the extent to which an individual values or identifies with a particular environmental setting” (Moore & Graefe, 1994, 17) and is simply how much one likes or dislikes a setting. One can imagine place satisfaction of a forest setting changing substantially if the forest burns down, is logged heavily, or dies of disease. Individuals do not have much direct control of natural events like wildfire or disease. However, litigation demonstrates a way to halt logging, which to some may be considered place protective.

Complicating place satisfaction is the wide latitude where physical environment can be ecologically degraded and not change the level of place attachment (Stedman 2003a, 682). For example, recreation ecologist Ashley D’Antonio (2013) found hikers at Rocky Mountain National Park could assess ecological degradation (herbaceous vegetation loss) caused by informal trail networks. However, around 50% of

the vegetation needed to be lost before conditions were deemed unacceptable (D'Antonio et al. 2013, 78). Further confounding place satisfaction between users is *baseline effect* which incorporates the level of experience one has with a setting and the symbolic place meaning. Over time, one's symbolic "escape place" might be or turn into another's symbolic "social place" (Stedman 2003a, 682-683). Stedman discusses the implications using an example from northern Wisconsin lake country:

People are more satisfied with deep lakes that have less shoreline development, clearer water, less public access, and lower chlorophyll levels. The effect on place attachment is more complex, and only revealed via modeling the indirect effects of symbolic meanings. More developed lakes are less likely to be "escape places," and more likely to be "social places." Because each of these meanings is positively associated with attachment, shoreline development changes the symbolic base of attachment with affecting overall attachment. (Stedman 2003a, 682)

One can imagine the implications mentioned above playing out at other places, such as a forested mountain recreation area. Restricting development of a place may not change level of attachment, but it can dramatically change place meaning. In *Sense of Place and Forest Science*, Stedman provides an example contrasting physical setting, place attachment, and satisfaction:

The physical setting is important [for] providing a range of experiences that lead to attachment. In contrast, place satisfaction is strongly related to attributes of the setting itself: perceptions that the landscape is being damaged (by overcutting, for example), may impact satisfaction but are less likely to harm place attachment. (Stedman 2003b, 827)

The physical setting in this example concerns trees, a raw material contributing to the setting. Being in a forested setting with enough trees is an important component of the experience to many visitors. Overcutting is abstract and varies by individual or group, but likely falls within a continuum. The appearance of any stumps may constitute overcutting to one visitor, while another may not notice the removal of trees or even applaud removal as a sign of good forest management. Stedman cautions "Attempts to manipulate the landscape in the service of attachment will fail if meanings are not considered" (Stedman 2003a, 683). Understanding place meaning or the symbolic meaning of the forest setting in question allows forest managers to anticipate a continuum of social acceptability and make better-informed management decisions.

Place Meaning Framework Applied to Forest Management

Social issues related to forest management and more broadly, watershed management, stem from place meaning. Stedman and others call for a narrowing of the expansive literature of 'sense of place' to 'place meaning' for social challenges related to forest management (Stedman 2003b, 2008, & Brehm et al 2013). Understanding stakeholder place meanings can assist forest managers and provide a path through the political gridlock of forest management and environmental concern. Additionally, by better understanding symbolic meanings attributed to landscapes, one may better understand themes in place meaning and how to accommodate these meanings on the landscape.

Stedman suggests land managers and recreation specialists:

Should pay attention to the myriad ways in which their actions create or influence meanings via **(a)** their land management activities that affect the material landscape, **(b)** their provision for certain experiences (while inhibiting others) that foster meanings, and **(c)** their teaching of meanings through environmental communication/interpretation. (Stedman 2008, 62)

Any management strategy based on place attachment needs to be informed by symbolic place meanings (Stedman 2002, 2003a, 2003b, 2008, Brehm et al. 2013).

Stedman (2008) defines three themes emerging from the place meaning: **1** *Settings can have multiple meanings* constructed by group or individual experiences with the setting. **2** *Settings are shaped by the physical environment, land management, and power interests*. Individuals have some latitude on determining place meaning but it is impacted by the above-mentioned influences. Meanings can be packaged, or marketed combinations of influences communicated by power interests. **3** *Place meaning is not necessarily tied to emotional attachment*. But understanding place meaning may help natural resource managers better understand land use conflict (Stedman 2008, 62).

To reiterate, Stedman's research indicates environmental degradation does not lead to proportional reduction of place attachment. As one's symbolic secluded hideaway becomes a busy social scene, one can imagine how place meanings may clash and lead to land use conflict and place politics (Stedman 2008, 74). Stedman's Vilas County, Wisconsin study found property owners identifying their Vilas County

parcels as a 'pristine wilderness', 'a place of high environmental quality', and 'place to escape from civilization,' shows a strong correlation with a willingness to organize against environmental change, and support more stringent environmental regulation. Contrasting the above meanings are those property owners associating their parcels as 'family place,' 'vacation place,' and 'community of neighbors' (Stedman 2008, 74-75).

Sociologists Joan Brehm, Brian Eisenhauer, and Stedman find similar results in a New England watershed: "Place meanings emerge as stronger predictors of environmental concern due to their inclusion of self and nature, rather than just an emotional response indicative of attachment" (Brehm et al. 2013, 12). Utilizing the Revised New Ecological Paradigm scale (Dunlap et al. 2000), Brehm et al. indicate watershed-level concerns over the environment were influenced by place-specific and generally place-transcendent environment valuation. Brehm et al. conclude place meaning had more influence than place attachment regarding environmental concern (Brehm et al. 2013, 12-13). The study stresses that by understanding place meanings, natural resource managers can have more effective and engaging communication by revealing connections between meanings, concerning issues, and mitigative actions (Brehm et al. 2013, 12-13).

Masterson and others have considered how sense of place contributes to social-ecological systems and the importance of understanding what people care about and motivations to engage in solving sustainability problems (Masterson et al. 2017). Sense of place, especially the understanding of place meaning, paints a more nuanced picture at the heart of pro-environmental actions. Meanings frame what individuals deem as worthy of environmental protection or enhancement and underpin collective response to change (Masterson et al. 2017).

STUDY SITE: Bogus Basin Mountain Recreation Area

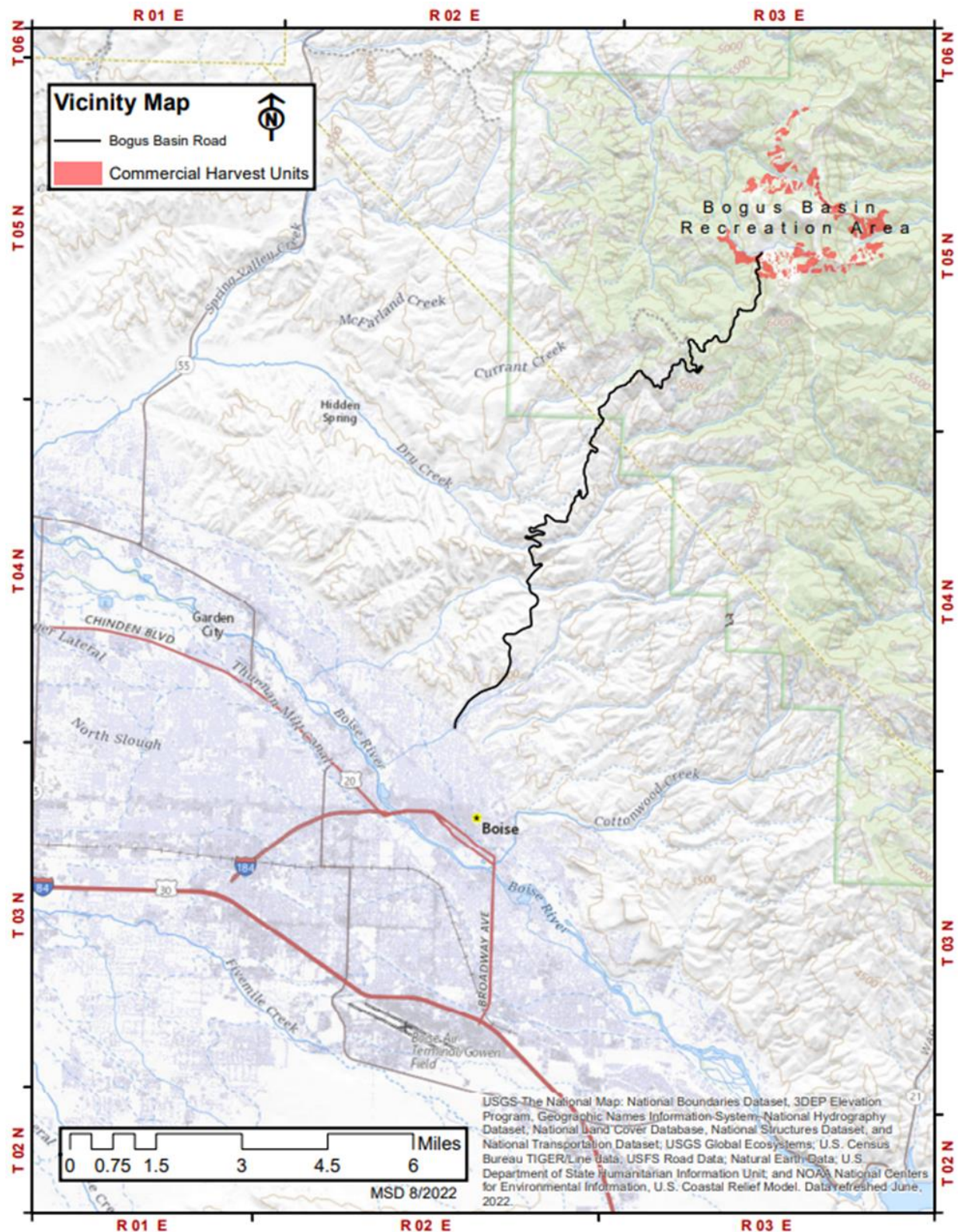


Figure 1. Bogus Basin is approximately 16 miles north of Boise, Idaho. The city is separated from the recreation area by rangeland and forestland.

Bogus Basin Mountain Recreation Area is on the Boise Front within the Boise National Forest in the northern Rocky Mountains, less than 20 miles from downtown Boise, Idaho (Figure 1). Separating the recreation area from the city is working rangeland followed by forestland mostly managed by the Boise National Forest. Traveling Bogus Basin Road from Boise, the area transitions from suburban to exurban by mile 1. From exurban to semi-wildland by mile 9. The base area is 5,800 feet above sea level, 3,100 feet above downtown Boise, the highest point Shafer Butte at 7,582 feet above sea level. Bogus Basin Road is the only paved access road that is maintained year-round. Other routes are seasonal dirt roads with limited road maintenance. It is the closest ski area to Boise (Figure 1, Table 1). There are 2,600 skiable acres during the day and 175 acres to ski at night. Chairs run until 10PM daily, 7 days a week, during peak season. The recreation area also has the Frontier Point Trail Network which includes cross country skiing, fat tire biking, and snowshoeing.

Recreation Area	Distance (mi)	Drive Time
Bogus Basin	18	40 min.
Soldier Mountain	112	1 hr. 55 min
Tamarack	102	2 hr. 15 min.
Brundage Mountain	116	2 hr. 30 min.
Sun Valley	154	2 hr. 40 min.

Table 1. Travel distance and time from Boise, Idaho to similar recreation areas.

The area is named after the small basin where con artists concocted and peddled fake gold in the 1860s. Inspired by the development of Sun Valley Ski Resort in 1936, the Boise Ski Club was incorporated in 1938. A partnership between the

Boise Ski Club, U.S. Forest Service, Civilian Conservation Corps, Boise City, and State of Idaho agreed to create the recreation area. Ground broke on Bogus Basin Road in November 1938. It was intended to be a year-round recreation area providing Boise area residents with skiing opportunities in the winter and a retreat from the summer heat. The area opened to skiing in 1942 and has been a nonprofit community organization since the beginning (Chandler 2009, 20 – 23).

The recreation area is forested with mixed ponderosa pine (*Pinus ponderosa* var. *ponderosa*) – Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) stands at lower elevations and pure stands of Douglas-fir at

higher elevation. Quaking aspen (*Populus tremuloides*) colonies exist in wetter areas and black cottonwood (*Populus trichocarpa*) can be found along riparian areas.

Forest Management History

Forest Health Decline and Public Planning 1982 – 2016

A forest inventory conducted in 1982 indicated infections from Douglas-fir dwarf mistletoe (*Arceuthobium douglasii*) a parasitic plant that spreads from host to host (USFS 2015, 12). A federal Environmental Assessment (EA) concluded a Finding of No Significant Impact (FONSI) in 1986. However, foresters were busy with timber salvage and insect – disease related issues on other parts of the Boise National Forest (BNF). The Eighth Street Fire in August 1996 once again diverted BNF personnel to concentrate on salvage and rehabilitation (Josh Newman, Email, April 11, 2022) efforts 5 miles to the south of Bogus Basin along the Boise Ridge (*Spokesman-Review* 1996).

In 1999, the BNF revisited the 1986 EA for Bogus Basin and decided too much time had passed since the original planning and commenced the Shafer Resource Management Project requiring a new EA. The Shafer Resource Management Project was then bogged down throughout the public scoping process with internal conflict between local government entities and neighborhood associations. A “not in my backyard” style argument invoked concerns about property values, noise, vibration caused by log trucks, and safety of school children along a haul route through Boise. A draft EA for Shafer Resource Management Project was prepared by 2003, but never signed (Josh Newman, Email, April 11, 2022). While planning and debate continued, the dwarf mistletoe continued to infect the stands of Douglas-fir around Bogus Basin. A 2007 Forest Service internal report indicated 80% of the Douglas-fir stands were infected severely (rating of 5 or 6 on a 0-6 scale) with dwarf mistletoe (Figure 4). Drought and Douglas-fir beetle (*Dendroctonus pseudotsugae*) attacks accelerated tree mortality (USFS 2015, 12).

By the 2010's, new federal legislation authorized streamlined analysis of areas designated high risk for declining forest health and wildfire hazard (USFS 2015, 8). The Bogus Basin Forest Health Project was

born of this new process including support from the Boise Forest Coalition (BFC), a coalition of “diverse interests to craft recommendations for a multi-faceted forest project in the Boise National Forest” (Boise Forest Coalition 2021). The BFC worked with the BNF and Bogus Basin Mountain Recreation Area to create a [5-minute video](#) about the forest health project including interviews from the lead silviculturist, Mountain Home District Ranger, a member of the Idaho Conservation League, and Bogus Basin General Manager. The video shows examples of the diseased trees and explained how the trees were sick and dying and the consequences of doing nothing. The video explained how logging the diseased trees would one phase of the forest health project and that heavily impacted areas would be reforested with seedlings. The Bogus Basin Forest Health Project was approved in 2016.

Forest Restoration 2016 – 2021

With the project planning complete, it was time to begin layout and implementation of the Bogus Basin Forest Health Project. However, as in the past, other parts of the Boise National Forest required immediate attention. Fire season hit the BNF with the Pioneer Fire in July 2016. In two months, the fire burned over 180,000 acres. BNF resources were stretched thin once again. Fortunately, a new



Figure 2. Residual Douglas-fir Redtail Extension Trail September 2019 (Dwyer).

management tool was available via the Good Neighbor Authority (GNA). The GNA allowed federal agencies to partner with state agency counterparts to help accelerate the pace and scale of forest restoration projects such as the Bogus Basin Forest Health Project. In

2017, foresters from the Idaho Department of Lands (IDL) officially took the lead on the Bogus Basin Forest Health Project.

Most of the project layout occurred over the summer of 2018 where IDL timber crews individually marked many of the dead, diseased, and dying trees with a band of blue paint (Appendix B). Areas of high tree density were also thinned to improve forest resilience to future insect attack, drought, and wildfires. Logging began in the summer of 2019 and continued seasonally until the fall of 2021 (Figures 2, 3, 5 -7) where a substantial amount of the project area was treated. Informational signage was placed near logging site in the summer of 2020 (Figures 8 & 9, Appendix C). Approximately 590 acres were treated, and 2,242,000 board feet of lumber recovered on nearly 500 truckloads delivered to regional mills and forest products outlets (Idaho Department of Lands, Sale receipts, 2022).

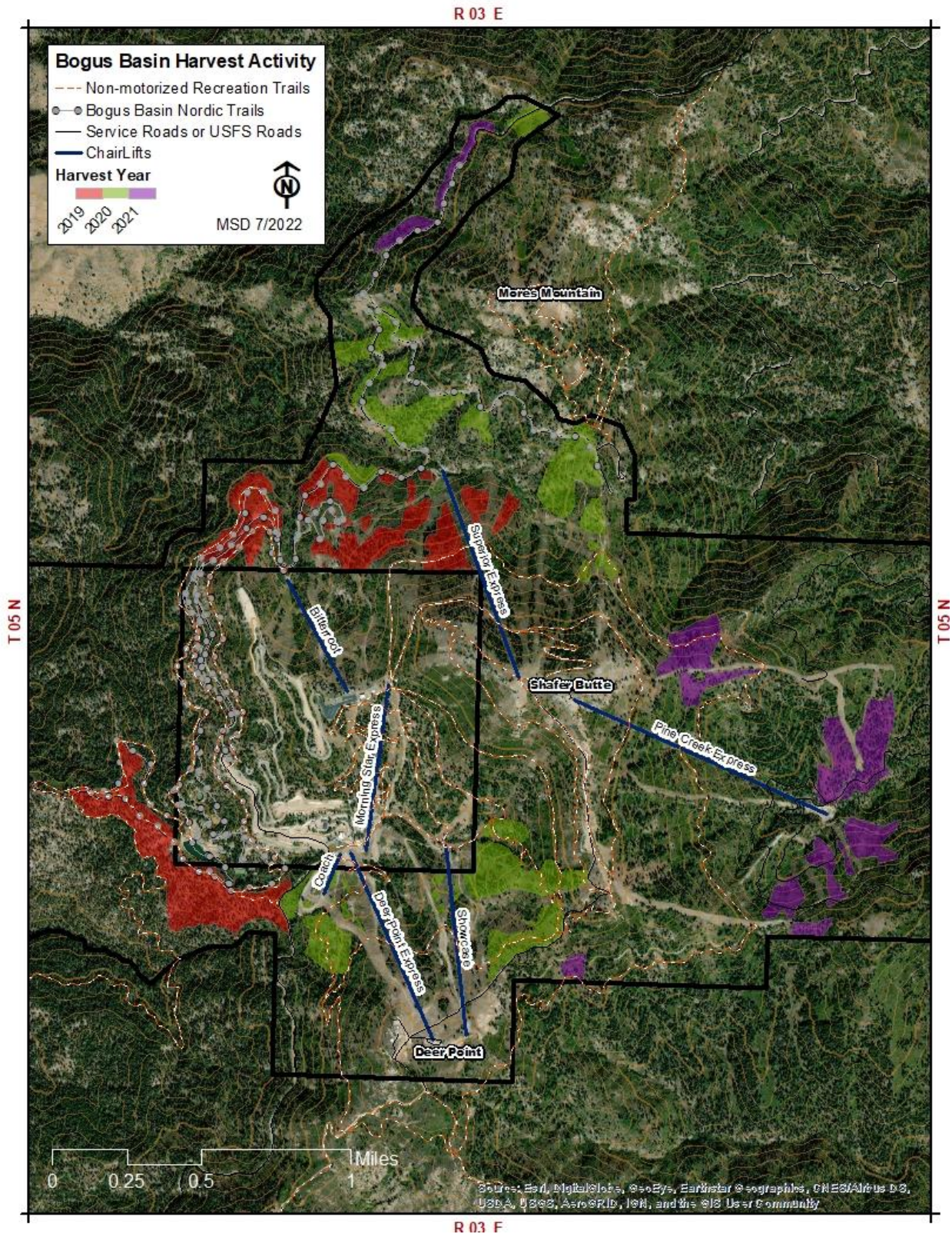


Figure 3. Commercial harvest areas at Bogus Basin, 2019 – 2021. 100' contour lines for topographic sense. Black lines indicate Bogus Basin Forest Health Project analysis area.



Figure 4. Douglas-fir heavily infected with dwarf mistletoe near Smuggler ski trail. Mores Mountain in the background. Early September 2019 (Dwyer).



Figure 5. Diseased Douglas-fir removed and logged near Smuggler ski trail. Mores Mountain in the background. Late September 2019 (Dwyer).



Figure 6. Old growth residual ponderosa pine next to log loader. Near Lower Loop cross-country ski trail and Eastside Trail, a summer multi-use trail December 2019 (Dwyer).



Figure 7. Residual stand near Lower Loop cross-country ski trail and Eastside Trail, a summer multi-use trail December 2019 (Dwyer).



Figure 8. Sign posted along the Around the Mountain multi-use trail near Pine Creek chairlift. The bottom left photo shows infected Douglas-fir near the Superior chairlift. The bottom right photo shows treated area near Bitterroot chairlift. August 2020 (Dwyer).

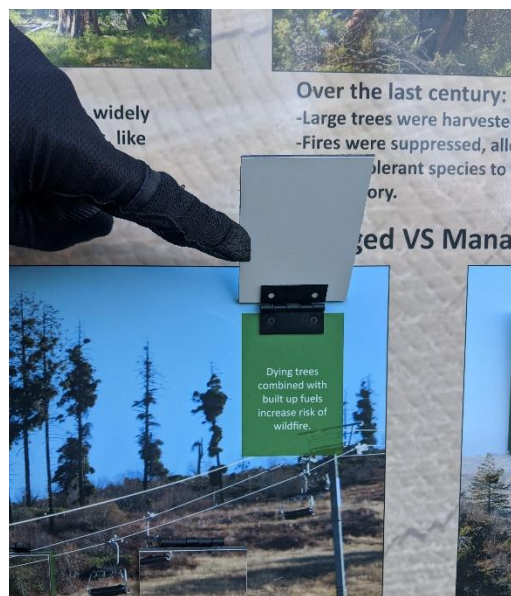


Figure 9. Example of flip-up information on the sign (Dwyer).

METHODS

A Qualtrics XM survey was designed and distributed utilizing Bogus Basin Mountain Recreation Area's email list reaching 100,000 email addresses (Appendix A, Figure 10). The survey was included in the May 2nd, 2022 Bogus Basin Newsletter. The survey was also shared once on Bogus Basin's official Facebook page with 47,000 followers and once on Bogus Basin's official Instagram account with 46,000 followers. The survey was designed to be completed in less than 7 minutes on computers or smartphones and

included links to Bogus Basin Recreation Maps for winter alpine trails, winter Nordic trails, and a summer trail map. The survey was left open for two weeks.

The questions were selected to follow Stedman's three themes of place meanings: **1 Settings can have multiple meanings**, **2 Settings are shaped by the physical environment, land management, and power interests**, and **3 Place meaning is not necessarily tied to emotional attachment *but* understanding place meaning may help natural resource managers understand land use conflict** (Stedman 2008). The first block of questions is related to place attachment, including participant experience in years with Bogus Basin and recent experience (past 5 years) with the recreation area in winter and summer, and the specific areas they spent time (Appendix A).

Using a 7-point Likert scale, participants were asked their opinion of the appearance of the forests around Bogus Basin whether they were "picturesque," "unpleasant," or a little bit of both.

Forest appearance was an analogue for place satisfaction. Then, respondents were asked whether forest appearance had improved, declined, or remained the same over the past five years. They were also asked if they had heard of

the Bogus Basin Forest Health Project? If so, how? And when? Respondents were provided information about the Bogus Basin Forest Health Project status and that future phases include burning slash and replanting seedlings around the recreation area. Finally, respondents were asked if they supported the Bogus Basin Forest Health Project.

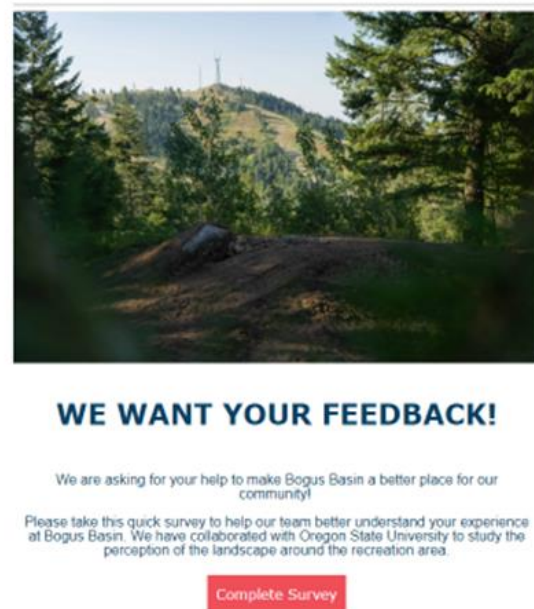


Figure 10. Survey link from Bogus Basin Newsletter

Statistical analysis was used to address the question of whether the length of time respondents spent visiting Bogus Basin influences level of perception. These data were analyzed using a simple linear regression following the method of least squares with time years spent visiting Bogus as the independent variable and percentage of surveyed population perceiving change (either positive or negative) as the dependent variable. The R^2 value of the linear regression was analyzed to determine the proportion of the variance in perception that was explained by time spent recreating at Bogus. The direction and value of the coefficient slope were used to assess trend in level of perception, with a positive slope indicating increased perception with time spent recreating.

RESULTS

Respondent Use of Bogus Basin

Miles traveled to Bogus Basin (one way)				
< 20 miles	21 - 30 miles	31 - 40 miles	41 - 50 miles	> 50 miles
44%	39%	10%	4%	3%
186	165	39	16	12

Table 2. Number of miles traveled (one way) to reach Bogus Basin Recreation Area. n=418

< 5 years	19.9%	83
5 - 10 years	16.5%	69
11 - 20 years	20.6%	86
21 - 30 years	21.5%	90
31 - 40 years	10.5%	44
41 - 50 years	6.9%	29
> 50 years	4.1%	17

Table 3. Visitation frequency in years at Bogus Basin Recreation Area. n=418

Winter Use

Multiple times a week	34.0%	142
Weekly	35.9%	150
A couple times a month	18.4%	77
Monthly	4.5%	19
Once a season or less	5.0%	21
Do not visit in the winter	2.2%	9

Table 4. Winter season visitation frequency. n=418

Table 5. Winter activities respondent participated in over the past 5 years. Respondents selected **all activities participated**. Percentage indicates percentage of sample. n=409

Alpine ski	78.5%	321
Snowboard	27.9%	114
Nordic ski	23.2%	95
Tubing hill	19.1%	78
Snowshoe	17.8%	73
Mountain coaster	16.4%	67
Other	4.4%	18
Fat bike	2.4%	10
Not up recently (5 yrs.)	0.2%	1

Superior	90.2%	369
Deer Point & Showcase	89.7%	367
Pine Creek	88.0%	360
Morning Star	85.8%	351
Shafer south face	63.8%	261
Bitterroot	63.6%	260
Frontier Point	31.5%	129
Tubing hill	14.4%	59
Mountain coaster	12.7%	52

Table 6. Winter recreation area frequency by respondent. Respondents selected **all areas recreated in**. Percentage indicates percentage of sample. n=409

Summer Use

Multiple times a week	6%	27
Weekly	12%	51
A couple times a month	27%	111
Monthly	21%	86
Once a season or less	26%	108
Do not visit in the summer	8%	35

Table 7. Summer season visitation frequency. n=418

Table 8. Summer activities respondent participated in over the past 5 years. Respondents selected **all activities participated**. Percentage indicates percentage of sample. n=383

Hiking	63.4%	243
Cross-country mountain bike	50.7%	194
Lift serve downhill mountain bike	40.2%	154
Mountain coaster	38.6%	148
Concert going	30.3%	116
Scenic chairlift ride	24.5%	94
Trail running	13.1%	50
Other	9.7%	37
Disc golf	7.6%	29
Not up recently (5yrs.)	2.9%	11

Around the Mountain multi-use trail	69.7%	267
Deer Point Area multi-use trails	64.2%	246
Shafer Butte Area multi-use trails	56.7%	217
Simplot Base Area	56.4%	216
Morning Star downhill bike park	49.3%	189
Mountain Coaster	33.7%	129
Upper Eastside multi-use trail	31.3%	120
Bitterroot (Disc golf)	7.6%	29

Table 9. Summer recreation area frequency by respondent. Respondents selected all areas recreated in. Percentage indicates percentage of sample. n=383

Respondent Impressions of Bogus Basin Mountain Recreation Area

Bogus Basin is a:	Average Score	Sample SD	Agree
Scenic place	1.62	0.88	97.1%
Place to hangout with friends	1.77	0.94	95.0%
Family place	1.78	1.00	92.8%
Community of recreationists	1.84	1.03	93.3%
Playground	1.92	1.08	92.1%
Place to connect to mountains	1.95	1.15	91.9%
Peaceful place	2.31	1.31	86.4%
Getaway in the woods	2.40	1.34	84.2%
Place to heal	2.63	1.37	74.2%
Escape from civilization	2.80	1.64	75.1%

Bogus Basin is a:	1	2	3	4	5	6	7
Scenic place	53.8%	36.1%	7.2%	1.2%	0.7%	0.5%	0.5%
Place to hangout with friends	45.9%	38.5%	10.5%	3.8%	0.5%	0.0%	0.7%
Family place	46.7%	38.3%	7.9%	6.0%	0.2%	0.0%	1.0%
Community of recreationists	44.0%	38.5%	10.8%	4.8%	0.5%	0.7%	0.7%
Playground	40.7%	40.0%	11.5%	4.8%	1.4%	1.0%	0.7%
Place to connect to mountains	42.3%	34.7%	14.8%	3.8%	2.4%	1.2%	0.7%
Peaceful place	30.1%	34.0%	22.2%	5.5%	4.5%	2.6%	1.0%
Getaway in the woods	27.8%	33.7%	22.7%	6.9%	4.5%	3.3%	1.0%
Place to heal	22.0%	31.6%	20.6%	17.5%	4.1%	3.1%	1.2%
Escape from civilization	23.7%	27.5%	23.9%	6.5%	9.3%	5.5%	3.6%

1 = Strongly Agree, 2 = Agree, 3 = Somewhat Agree, 4 = Indifferent, 5 = Somewhat disagree, 6 = Disagree, 7 = Strongly disagree

Table 10. Respondents' sense of place at Bogus Basin. Above: Average score with sample standard deviation and percent agreement. Below: Response rate as a percentage. n=418

Bogus Basin Recreation Area:	Average Score	Sample SD	Agree
Provides fresh/clean air	1.69	0.80	96.7%
Has many native plants and trees	2.22	1.03	86.4%
Provides habitat for many species of wildlife and plants	2.42	1.13	83.5%
Has changed a lot over the years	2.42	1.20	80.6%
Is heavily forested between ski runs and trails	3.13	1.31	72.0%
Is in the wilderness	3.51	1.78	62.0%
Is overdeveloped	4.73	1.39	17.0%

Bogus Basin Recreation Area:	1	2	3	4	5	6	7
Provides fresh/clean air	44.5%	46.7%	5.5%	2.2%	0.7%	0.5%	0.0%
Has many native plants and trees	23.2%	48.8%	14.4%	11.2%	1.7%	0.5%	0.2%
Provides habitat for many species of wildlife and plants	17.9%	45.7%	19.9%	11.2%	3.6%	1.2%	0.5%
Has changed a lot over the years	24.2%	36.1%	20.3%	14.4%	3.3%	1.4%	0.2%
Is heavily forested between ski runs and trails	7.2%	25.4%	39.5%	10.8%	11.0%	5.0%	1.2%
Is in the wilderness	10.3%	23.2%	28.5%	6.7%	13.6%	9.6%	8.1%
Is overdeveloped	2.9%	4.1%	10.0%	23.4%	25.6%	27.5%	6.5%

1 = Strongly Agree, 2 = Agree, 3 = Somewhat Agree, 4 = Indifferent, 5 = Somewhat disagree, 6 = Disagree, 7 = Strongly disagree

Table 11. Respondents' impressions of the physical landscape. Above: Average score with sample standard deviation and percent agreement. Below: Response rate as a percentage. n=418

Bogus Basin Recreation Area's forests are:	Average Score	Sample SD	Agree
Picturesque	2.21	1.08	90.9%
Picturesque in some areas, unpleasant in others	4.02	1.63	41.4%
Unpleasant	5.81	1.25	6.5%

Bogus Basin Recreation Area's forests are:	Picturesque	Picturesque in some areas and unpleasant in others	Unpleasant
Strongly Agree (1)	26.8%	4.8%	0.7%
Agree (2)	41.4%	14.6%	1.9%
Somewhat Agree (3)	22.7%	22.0%	3.8%
Indifferent (4)	4.1%	21.3%	7.4%
Somewhat Disagree (5)	3.8%	12.7%	14.6%
Disagree (6)	1.0%	18.7%	38.8%
Strongly Disagree (7)	0.2%	6.0%	32.8%

Table 12. Respondents' impression of the forested areas around Bogus Basin. Above: Average score with sample standard deviation and percent agreement. Below: Response rate as a percentage. n=418

Over the past 5 years, forest appearance has:	Total	
Remained the same	45.7%	191
Declined	30.9%	129
Improved	23.4%	98

Table 13. Respondents' impressions of forest appearance over the past 5 years. n=418

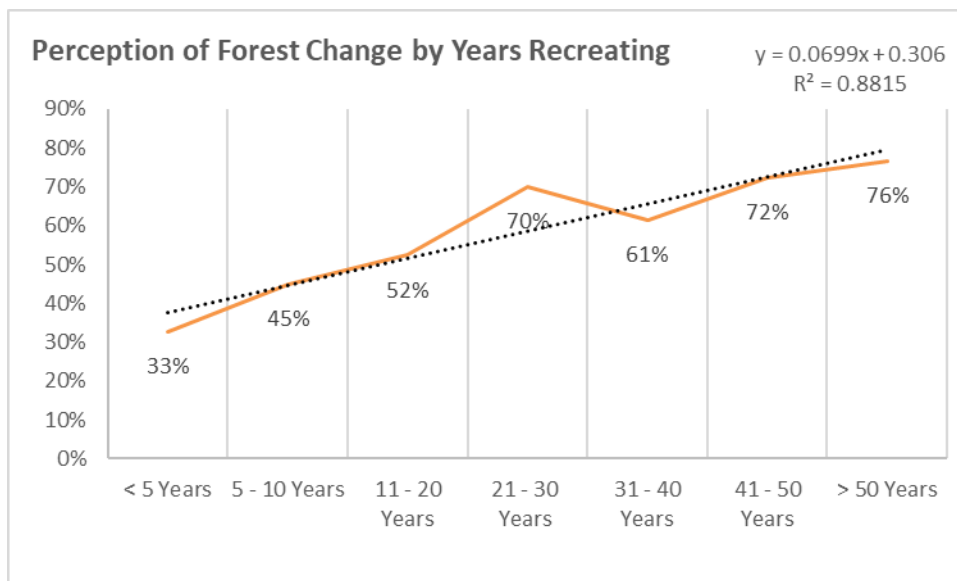


Figure 11. Respondents' perception of forest change analyzed using a simple linear regression following the method of least squares with time years spent visiting Bogus Basin as the independent variable and percentage of surveyed population perceiving change (either positive or negative) as the dependent variable. $n=418$

Respondent Awareness of Bogus Basin Forest Health Project

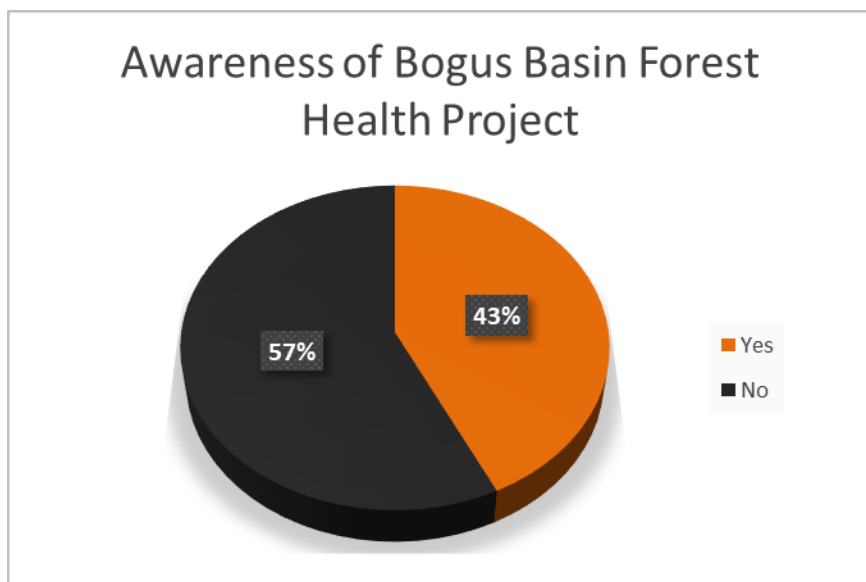


Figure 12. Percent of Respondents aware of Bogus Basin Forest Health Project. $n=418$

Evidence of logging at Bogus Basin	24.6%	44
Social media	18.4%	33
Bogus Basin webpage	17.9%	32
Other	17.3%	31
Informational signage at Bogus Basin	10.1%	18
Local newspaper	5.0%	9
Local TV news	4.5%	8
Agency webpage	2.2%	4

Table 14. How the 43% of respondents aware of Bogus Basin Forest Health Project first learned of project. n=179

Table 15. Question 16: The initial phase of the Bogus Basin Forest Health Project involved commercial logging which removed dead and dying trees and thinned dense areas (trees marked with a band of blue paint) to reduce threat from wildfire, insects, and disease. Did you notice this work was being done? If so, when? n=418

Unaware	34.2%	143
Yes, 2019	22.3%	93
Yes, 2020	24.4%	102
Yes, 2021	17.2%	72
Yes, 2022	1.9%	8

Table 16. Question 17: Future phases of the Bogus Basin Forest Health Project will include burning slash piles and replanting seedlings. Are you supportive of future forest restoration projects like the Bogus Basin Forest Health Project? n=418

Strongly Oppose	1	0.2%	1
Oppose	2	0.0%	0
Somewhat Oppose	3	1.2%	5
Indifferent	4	6.7%	28
Somewhat Support	5	6.2%	26
Support	6	33.7%	141
Strongly Support	7	51.9%	217

DISCUSSION

Sample Summary

There was a varied mix of user experience with the recreation area. Most (97%) visited Bogus in 2021 or '22. The user experience roughly breaks up into 5^{ths}: less than 5 years (20%), 5 – 10 years (16%), 11 – 20 years (20%), 21 – 30 years (22%), *and* more than 31 years (21%) (Table 3). The majority of (84%) of respondents travel less than 30 miles one way to reach Bogus Basin (Table 2). The majority participated in alpine (downhill) skiing followed by snowboarding, and Nordic (cross country) skiing (Table 5). Approximately 70 percent of respondents visited weekly, and 34 percent visited multiple times a week (Table 4) during the winter season. Over 60 percent of respondents recreated all over the chairlift-served parts of the mountain (Table 6). Around 30 percent utilized the Frontier Point area where cross country skiing, snowshoeing, and fat tire biking occur (Table 6). During the summer season, at least 50 percent participated in hiking and cross-country mountain biking (Table 8). The majority visited monthly, compared to weekly in the winter (Tables 5 & 7). Most users also recreated all over the recreation area with the “Around the Mountain” multi-use trail being the most popular (Table 9).

Data Limitations

The sample is self-selected from the population for which the survey request was sent (e-mail, social media posts). The sample of respondents appears to represent a relatively highly skilled subset of the recreationists who travel to Bogus Basin, suggested by their use of the entire mountain's terrain (Tables 6 & 9), which would require a higher level of skill than a beginning skier, snowboarder, hiker, runner, or cyclist would likely possess. The sample population visits Bogus Basin more frequently (weekly versus monthly) in the winter compared to summer. Additionally, the respondents are necessarily those who read through Bogus' e-mails and/or engage with their content on social media, even in the 'off-season' which likely reflects a more highly engaged subset of users than might be considered representative of the broad population served by the non-profit (survey conducted 5/2/22 – 5/16/22). This may have

created bias towards engagement from users who were more likely to have noticed changes in the forest conditions or were already aware of the ongoing forest management projects.

More broadly, 100,000 people on Bogus Basin's e-mail list are largely either season pass-holders or previous season pass-holders. The 45,000+ people following Bogus Basin on social media likely represents a broader range of backgrounds, not being limited to those who purchase the season passes that range from \$139-\$629 (2022 prices). As the summer trails at Bogus are accessible without paying for a season pass, there are likely groups of recreationists that this outreach systematically missed, particularly those either without the socioeconomic or technological means to engage with the resort in this way.

Bogus Basin Place Meaning

Over 70 percent of respondents at least somewhat agreed that Bogus Basin is simultaneously a scenic place to connect with nature while spending time with family and friends all while escaping civilization within a community of recreationists (Table 10). Bogus Basin has multiple place meanings as stated in Steadman's first theme: *settings can have multiple meanings constructed by an individual or group with wide-ranging experience with setting* (Steadman 2008, 62). One could imagine a temporal element to the recreation area, serving as an escape or place of seclusion on a weekday and being more of a social place on weekends or holidays. One also could consider a spatial element to the recreation area as recreating in a remote part of Bogus Basin is a different experience compared to congregating at one of its lodges.

Stedman's second theme considers how a setting is shaped: *settings are shaped by the physical environment, land management, and influential interest groups. Meanings can be packaged or marketed by influential interest groups* (Steadman 2008, 62). Bogus Basin as a setting is shaped by the physical environment and meanings appear to be packaged around the various reasons why people recreate outdoors. Bogus Basin has a different climate and topography compared to the Boise Metro which

seems to be an attraction with snow sports in winter and evergreen forest recreation and leisure in the summer. Over 70 percent of respondents at least somewhat agreed that Bogus Basin is a scenic place, a place to connect to the mountains, a getaway in the woods, has many native plants and trees, provides habitat for many species of wildlife and plants, and is heavily forested between ski runs and trails (Tables 10 & 11). Over 90 percent of respondents at least somewhat agreed that the forests around Bogus Basin are picturesque (Table 12). Land management is focused on outdoor recreation and has been managed as such since 1938 (Chandler 2009, 20 – 23).

Steadman's third theme notes that *place meaning is not necessarily tied to emotional attachment but understanding place meaning may help natural resource managers better understand land use conflict* (Steadman 2008, 62). Proximity likely plays a role in visitation frequency. As depicted in *Table 2*; 83 percent of respondents live within 30 miles of Bogus Basin. *Table 1* shows comparable recreation areas and proximity to Boise, Idaho. Soldier Mountain, the next closest comparable recreation area, is nearly 2 hours and 112 miles away from Boise where Bogus Basin is 18 miles and a 40-minute drive. Also of note, Bogus Basin is the only ski area in the region with night skiing allowing respondents to recreate until 10PM when other locations close before sunset. Thus, respondents likely choose to spend time at Bogus Basin in part due to Bogus Basin's proximity to their home and hours of operation.

Also, like other regional recreation areas, Bogus Basin operates under a Special Use Permit issued by the National Forest System (Bogus Basin 2022). Bogus Basin Mountain Recreation Area is viewed as a community asset for outdoor recreation (Bogus Basin 2022). Natural resource extraction is deemphasized. This narrower focus allowed land managers to prescribe a silvicultural prescription that would not compromise the outdoor recreation attributes of the area. After decades of planning and public reviews, forest managers appear to have understood Bogus Basin place meaning and avoided land use conflict with the Bogus Basin Forest Health Project.

Bogus Basin Place Satisfaction

Place satisfaction relating to the physical setting appears to be high according to respondents. *Table 10* notes 97.1 percent of respondents at least somewhat agree that Bogus Basin is a scenic place and 86.4 percent of respondents at least somewhat agree Bogus Basin is a peaceful place. *Table 11* ranks responses related to environmental quality by strength of agreeance. Respondents agree Bogus Basin provides fresh air, has many native plants and trees, and provides habitat for many species of wildlife and plants. Respondents also agreed that Bogus Basin has changed a lot over the years (80.6%). Interestingly, 17 percent of the respondents agreed that Bogus Basin was overdeveloped, perhaps suggesting that the recreation area has changed over the years but not towards overdevelopment (Table 11).

Forest Appearance

Most (72%) at least somewhat agreed the recreation area is heavily forested between ski runs and trails (Table 12). *Table 12* shows 90.9 percent of respondents at least somewhat agree that Bogus Basin Recreation Area's forests to be picturesque while 6.5 percent find the forests unpleasant. When asked whether the forests were picturesque in some areas and unpleasant in other areas 41.4 percent agreed while 37.3 percent disagreed indicating that respondents perceived differences in appearance of forest around the recreation area. However, the overall impression of the forest appears to be picturesque compared to unpleasant as 86.1 percent of respondents at least somewhat disagreed with the statement that the forests are unpleasant.

Active forest management may influence place satisfaction and meaning in subtle ways over time. Forest disease was a concern and documented by foresters as early as 1982 (USFS 2015, 12). The visual impacts and increased tree mortality led to concern of wildfire and total forest loss (*Idaho Statesman* 2016). Over 30 years later, insects and disease were obvious enough to show concerned parties. One

could imagine litigation and protests from groups if forest management included heavier handed treatments such as clearcutting.

Over the past 5 years, forest appearance has:	Time visiting Bogus Basin Total	< 5 Years	5 - 10 Years	11 - 20 Years	21 - 30 Years	31 - 40 Years	41 - 50 Years	> 50 Years
Remained the same	46%	67%	55%	48%	30%	39%	28%	24%
Declined	31%	13%	29%	40%	32%	43%	38%	29%
Improved	23%	19%	16%	13%	38%	18%	34%	47%

Table 17. Change in forest appearance based on number of years visited. n=418

Considering forest appearance trajectory, nearly half of the respondents (46%) felt the forest appearance remained the same over the past five years while 31 percent of respondents felt forest appearance declined and 23 percent indicated appearance improved (Tables 13 & 17). There is strong correlation (linear $R^2 = 0.815$, Figure 11) between the number of years visiting the recreation area and forest appearance perception where the longer one has visited, the more likely the respondent noticed either declined or improved appearance over the past five years.

Over the past 5 years, forest appearance has:	Fat bike	Nordic ski	Snowshoe	Mountain coaster	Alpine ski	Tubing hill	Snowboard
Remained the same	20.0%	33.7%	37.0%	37.3%	43.0%	55.1%	57.9%
Declined	50.0%	45.3%	38.4%	34.3%	32.7%	23.1%	20.2%
Improved	30.0%	21.1%	24.7%	28.4%	24.3%	21.8%	21.9%

Table 18. Perception of forest appearance based on winter activities. n=409

Table 18 breaks down the differences in perception based on the winter activities chosen by respondents. Note that respondents selected all activities they participated in over the past five years and respondent activities were considered to assess where on the recreation area respondents spent time. Those that participated in fat tire biking, Nordic skiing, and snowshoeing were most likely to perceive forest appearance change. This corresponds to the progression of commercial logging activities which began in 2019 near the trails most frequently used by these users (Figure 3). Also of note is the delay in disposal of logging slash due to a burn ban following the outbreak of COVID-19. Many slash piles were near the Nordic trails until the 2021-2022 season (Figure 2). Many of the Nordic trails serve as forest roads in the summer months (Figures 2 & 3). The tubing hill area is not near any of the commercial logging activities. Those respondents that selected Alpine skiing and snowboarding were

less perceptive compared to Nordic trail users. However, most logging slash piles were not near the downhill ski and snowboard runs and most of the stumps would be covered by winter snowpack. The mountain coaster, like the tubing hill, is in an area not impacted by the commercial logging activities.

Table 19 breaks down the differences in perception based on the summer activities chosen by respondents. Like the winter activity breakdown, respondents selected all activities they participated in over the past five years and respondent activities were considered to assess where on the recreation area respondents spent time. Those that spent time trail running were the most perceptive with 30 percent indicating no change in forest appearance. The disc golf user group indicated the least amount of change at 53 percent which makes sense given the disc golf course is not near the commercial logging activity. All other activities had similar perception varying from 42 – 45 percent. As mentioned before, the mountain coaster is not near the commercial logging activity.

Over the past 5 years, forest appearance has:	Trail running	Lift serve downhill mountain bike	Cross-country mountain bike	Mountain coaster	Scenic chairlift ride	Hiking	Concert going	Disc golf
Remained the same	30.0%	42.2%	42.3%	44.0%	44.2%	44.7%	44.8%	53.3%
Declined	46.0%	29.9%	32.0%	35.3%	26.3%	33.6%	29.3%	30.0%
Improved	24.0%	27.9%	25.8%	20.7%	29.5%	21.7%	25.9%	16.7%

Table 19. Change in forest appearance based on summer activities. *n*=383

Respondent Perception of Bogus Basin Forest Health Project

More than half of respondents (57%) were unaware of the Bogus Basin Forest Health Project compared to respondents that were aware (43%) of the Forest Health Project (Figure 12). Of those aware of the Forest Health Project, *Table 14* depicts how respondents first learned of it. The informational sign (Figures 8 & 9, Appendix C) was placed in several locations near active operations for summer 2020. One sign is permanently placed near Frontier Point Lodge.

Respondents were asked in question 14 about their awareness of the Bogus Basin Forest Health Project. After a follow-up question, (Table 15) respondents were asked about commercial logging. *Table 15 & Figure 13* depict the respondents' awareness of the commercial logging phase of the Bogus Basin Forest

Health Project. Over one third (34%) of respondents were unaware of the commercial logging that had occurred at Bogus Basin the past several years. **Figure 3** is color-coded to correspond with **Figure 13**.

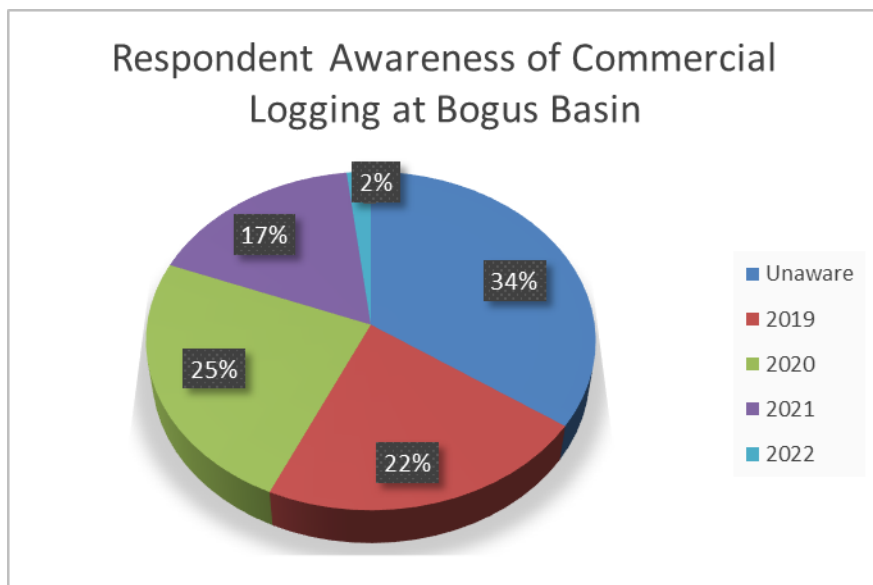


Figure 13. Year indicates when respondents noticed commercial logging at Bogus Basin. Figure 3 depicts harvest areas. n=418

There was near unanimous support for burning slash piles and reforestation around Bogus Basin following harvest activities and for future forest health projects similar to the Bogus Basin Forest Health Project. The average Likert scale score of 6.28 where 7 equaled “strongly support” and 1 equaled “strongly oppose” (Table 16). The survey concluded with a link to the introductory video of the Bogus Basin Forest Health Plan from 2016. It appears 11.7 percent of respondents watched the video.

Respondents aware of the Bogus Basin Forest Health Project were more likely to perceive a change in forest appearance over the past five years. *Figure 14* depicts the difference between those respondents. The percentage of respondents not perceiving a change in forest appearance dropped 31 percent. Those indicating forest appearance improved climbed 22 percent while those indicating forest appearance declined climbed 9 percent.

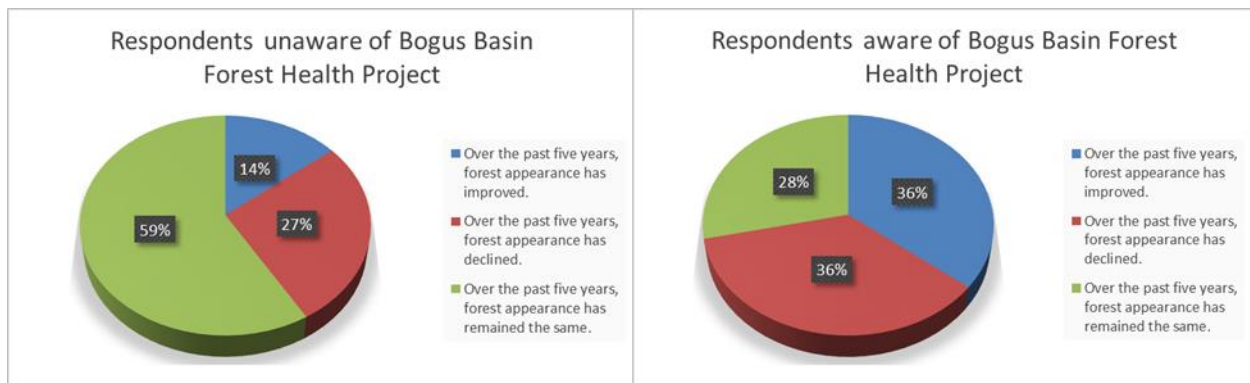


Figure 14. Differences in impressions of forest appearance between respondents unaware. Left: (57%) of USFS forest health project (n=239). Right: respondents aware (43%) of USFS forest project (n=179).

Though not a primary focus of the study, it is worth noting how one first learned of the project may impact how they perceive forest appearance trajectories. *Table 20* ranks by information source and percent improved. Those that first learned about the project from local news outlets (more than 50% improved), or the informational sign (44% improved), appear to perceive improvement of forest appearance. Those that first learned of the project from evidence of logging only (30% improved) or an agency webpage (25% improved), or social media at 21% improved appear to perceive forest decline. In retrospect, a ‘word of mouth’ category may help explain the substantial tally of those that selected “other.”

	Tally	Improved	Declined	No Change
Local newspaper	9	56%	22%	22%
Local TV news	8	50%	25%	25%
Informational signage at Bogus Basin	18	44%	33%	23%
Other	31	42%	32%	26%
Bogus Basin webpage	32	41%	22%	37%
Evidence of logging at Bogus Basin	44	30%	45%	25%
Agency webpage	4	25%	50%	25%
Social media	33	21%	45%	33%
	179			

Table 20. How respondents first learned of Bogus Basin Forest Health Project may impact how respondent perceives forest appearance trends. n=179

Respondent Perception of Commercial Logging

As depicted in *Table 15*, 34 percent of respondents were unaware of the commercial logging that occurred 2019 - 2021. This can also be viewed as a success on the part of the forestry professionals that implemented the project. The vast USFS planning process and prior versions of the project allowed the

land managers to fully consider the project within the scope of a recreation area like Bogus Basin. The silvicultural prescriptions were designed considering the visual impacts and protect snowpack from being blown off the mountain. This matches with Stedman's recommendations to consider how land management activities affect the material landscape (Stedman 2008, 62). In a silvicultural vacuum, the best prescription would have reduced the heavily diseased areas down to BNF forest management plan minimums.

The acknowledgement that this forest was primarily a recreation zone was carried down from the planning process across government agencies to IDL during project layout and implementation of the commercial logging phase (Appendix B). It was decided early in project layout to conduct a "cut tree" timber mark rather than a "leave tree" mark to reduce the visual impact following commercial logging even though it increased layout time and difficulty. Timber markers were encouraged to exercise prudence when selecting cut trees that were on the edge of prescription specifications. IDL logging contracts empowered the forester to make minor changes to the timber mark to adapt to changing conditions (e.g., Douglas-fir beetle killed trees since timber mark) and swap for healthier or live trees.

Close coordination with Bogus Basin Management and Operations were able to find win-win situations where some of the commercially logged areas became featured off-trail "glade skiing" areas enhancing alpine skiing and snowboarding opportunities. Bogus Basin Operations also moved slash piles to avoid conflict with lift lines and parking areas.

Respondent Perception of Wilderness

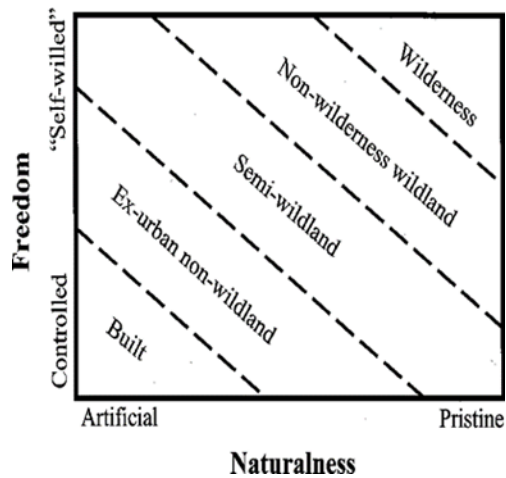


Figure 15. Wilderness Continuum (Aplet 1998, 360).

It appears many respondents felt that wilderness is a synonym for wildland. Shown in Table 11, 62 percent of respondents at least somewhat agreed Bogus Basin is in the wilderness while 31.3 percent at least somewhat disagreed that Bogus Basin is in the wilderness, 8.1 percent strongly disagreed, 9.6 disagreed, and 13.6 percent somewhat disagreed. This brings up an important point for natural resource managers who might be inclined to think about

wilderness as a federally designated place where human development is near non-existent and motorized equipment use is prohibited.

Nash covers the topic in depth in *Wilderness and the American Mind*. According to Nash: “Wilderness in short, is so heavily freighted with meaning of a personal, symbolic, and changing kind as to resist easy definition” (Nash 2014, 6).

Nash describes civilization and wilderness as antipodal influences that interact at various extents on the land and provide its character (Nash 2014, 6). Forest ecologist Gregory Aplet builds off Nash’s antipodal influences and depicts the continuum of wildness (Aplet et al. 1998, 360). Shown in Figure 15, wildness increases as a function of both its naturalness and its freedom from human control. Aplet argues: “Wilderness is neither simply an idea nor a place. It is a place where an idea is clearly expressed – the idea of wildness” (Aplet 1998, 349). Depending on the individual and one’s location at Bogus Basin Recreation Area, one may consider the area’s wildlands vary from semi-wildland to non-wilderness wildland. Wildness relates to the level of will or control a thing has over its self-determination.

Ultimately, natural resources managers need to be very clear when discussing wilderness and effectively differentiate federally designated wilderness and wildlands when communicating with the public.

CONCLUSIONS

Over 90 percent of respondents at least somewhat agreed that Bogus Basin forests are picturesque (Table 12). Regarding “Picturesque in some areas, unpleasant in others,” respondents were mixed with a normal distribution centered around indifferent (Table 12). Regarding forest appearance over the past five years, 45.7 percent of respondents felt appearance remained the same, while 30.9 percent felt it declined, and 23.4 percent felt it improved.

As noted in *Figure 14*, differences in forest appearance changed from respondents aware of the Bogus Basin Forest Health Project compared to those unaware. Forest appearance improved responses increased 22 percent to 36 percent suggesting that those aware of the Forest Health Project were able to key in on the removal of dead and diseased trees. However, respondents indicating that forest appearance declined over the past five years increased 9 percent to 36 percent too suggesting some respondents may have keyed in on the more open forests and evidence of logging such as stumps or logging slash following treatments. Forest appearance perception appears to increase with number of years recreating at Bogus Basin (Figure 11).

Collaboration with Bogus Basin Mountain Recreation Area helped showcase modern forest practices and provided explanations of management activities using interpretive signage and emailed newsletters to Bogus Basin recreationists as 65.8 percent of respondents were aware of recent commercial logging on site (Table 15). Win-win situations such as increased glade skiing opportunities in thinned stands may have increased place satisfaction. Place satisfaction remained high following commercial logging activities; 34.2 percent of respondents were unaware of the logging. Of those aware of commercial logging, 22.3 percent first noticed logging in 2019, 24.4 percent in 2020, 17.2 percent in 2021, and 1.9

percent in 2022 (Table 15 and Figure 13). Logging began in 2019 and considering most respondents recreated all over the recreation area (Tables 6 and 9) it may have taken time for respondents to notice.

The Bogus Basin survey responses align with the three themes described in Stedman 2008: **1** Bogus Basin embodies multiple place meanings. Bogus Basin is simultaneously a scenic place to connect with nature while spending time with family and friends all while escaping civilization within a community of recreationists (Table 10). Respondents' individual meanings are likely shaped by spatial and temporal elements as the area is vast and has different areas and hours of operation for different experiences. **2** respondents' experiences are shaped by the physical landscape of Bogus Basin with 92 percent of respondents at least somewhat agreeing with the statement *Bogus Basin is a place to connect with the mountains* and 84.4 percent of respondents at least somewhat agreeing that *Bogus Basin is a getaway in the woods* (Table 10). Bogus Basin has a different climate and topography compared to the Boise Metro which seems to be an attraction with snow sports in winter and evergreen forest recreation and leisure in the summer. **3** Looking at *Table 1*, one can conclude that Bogus Basin is significantly closer to Boise, Idaho than comparable recreation areas and 84 percent of respondents live less than 30 miles one-way from Bogus Basin (Table 2) many respondents likely recreate at Bogus Basin due to its proximity. However, understanding place meanings of Bogus Basin and other comparable recreation areas noted in *Table 1*, likely helped land managers establish silvicultural boundaries for Bogus Basin to minimize land use conflict. Multiple planning and impact analyses over the past few decades and the increased tree mortality induced from insects and disease likely helped build the case for silvicultural action at Bogus Basin.

Management Recommendations

Modern silviculture, including commercial logging, can be practiced at outdoor recreation places with high visitation rates while maintaining sense of place and place satisfaction. However, *place meaning must be understood* from project planning through implementation. Interpretive signage and media can

educate and explain why and how management actions were taken. Signage should remain in high traffic areas years after implementation to help explain forest management as sustainable forestry is imperceptible year to year or as described by landscape architect Panagopoulos (2009) “invisible to the eye.” Place meaning was understood by IDL throughout the layout and implementation of the commercial logging operation and sense of place was maintained at Bogus Basin.

Emphasized by Stedman (2003b & 2008), land managers have an opportunity to teach meanings through interpretative signage and media. In the closing paragraphs of *Conservation Aesthetic*, forester and wildlife manager, Aldo Leopold advocates for educating the masses about the perception of natural processes (Leopold 1982, 290). As depicted in *Figure 11*, there is a strong correlation between years recreating at Bogus Basin and increased perception in forest appearance. It also appears that prior knowledge of Bogus Basin Forest Health Project increased perception in forest appearance (*Figure 14*).

Active forest management at Bogus Basin may influence place meanings in subtle ways over time but most (57%) of respondents were unaware of the Bogus Basin Forest Health Project and (34.2%) of respondents were unaware that commercial logging had occurred. As said by Tuan, sense of place is “Diffuse as a concept, vivid and concrete as personal experience” (Tuan 1974, 4). On site interpretive signage can play a role in explaining forest ecology and silviculture to recreationists at Bogus Basin, especially to those unaware of active forest management. *Table 14* shows most respondents *aware of* the forest health project (24.6%) first learned of the project from evidence of logging on site. While 10.1 percent of respondents *aware of* the Bogus Basin Forest Health Project first learned of it from the interpretive signs (*Figures 8 & 9, Appendix C*) placed at several locations around the recreation area in 2020. This is compared to 5 percent from the local newspaper, 4.5 percent from local television news, and 2.2 percent from agency webpages.

There was near unanimous support for slash disposal, replanting seedlings at Bogus Basin, and for similar future forest health projects (Table 16). Designing and installing additional signage at reforested sites can provide public education of forest processes while explaining why certain areas are closed to allow seedling establishment. As shown in *Figures 4 - 7*, stumps do not tell the whole story of forest management. One could imagine an interpretive sign with excerpts from Leopold's "Pines Above the Snow" essay explaining pine tree growth near reforestation sites such as the one photographed in *Figures 4 & 5*. Considering *Table 20*, adapting interpretive signage for social media may expand the reach of interpretation.

The messenger of a forest health project appears to be important. How one first learned of the Bogus Basin Forest Health Project may have influenced how respondents perceived forest appearance over the past five years (Table 20). Over 50 percent of respondents *that first learned of the project* from local newspapers or television felt forest appearance improved over the past five years. Whereas only 21 percent of respondents *that first learned of the project* from social media felt forest appearance improved over the past five years. Natural Resource managers should consider increasing project presence on social media and adapt interpretive signage for this platform.

As noted by Nash and Aplet, the concepts of wildness and wilderness are complex. Many of the respondents (62%) at least somewhat agreed Bogus Basin is in the wilderness, while 31.3 percent at least somewhat disagreed that Bogus Basin is in the wilderness (Table 11). Natural resource managers need to be aware that for many, wilderness could be a synonym for wildlands. *Figure 15* depicts the continuum of wildness. Wildness to the natural resource manager could be thought of as the evolutionary-ecological land ethic described by Leopold. Ecologic function can be maintained on a continuum outside of federally designated wilderness areas.

The modern practice of silviculture on public lands embodies the essence of the evolutionary-ecological land ethic. Based on this survey of the Bogus Basin Forest Health project, it appears respondents support this method of active forest management. The planning process for Bogus Basin Forest Health Project included the Boise Forest Coalition, a broad coalition as described by Holling and Meffe (1996). This coalition worked across agencies, municipalities, and non-profit organizations to address the forest health needs at Bogus Basin. Moving forward, this coalition can build off this success and tell the story of forest management at Bogus Basin through on-site interpretive signage, social media, and field tours; explaining why and how the art and science of silviculture was practiced.

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APPENDIX A: Bogus Basin Landscape Perception Survey

Preamble

We are inviting you to take part in a research study.

Purpose: This study is about the perception of the landscape around the Bogus Basin Mountain Recreation Area.

Voluntary: You do not have to be in the study if you do not want to. You can also decide to be in the study now and change your mind later. Your participation in the study will conclude at the end of the online questionnaire.

Activities: The study activities include a series of multiple-choice questions about your winter and summer experiences at Bogus Basin. The choices about your preferred activities are randomized. We are not trying to influence one activity over another. Agree/disagree questions are also randomized for each participant.

Useful links: [Winter Alpine Map](#), [Winter Nordic Map](#), [Summer Trail Map](#)

Time: Your participation in this study will last about **5 – 7 minutes**.

Confidentiality: All responses will be kept confidential to the best of our ability and no IP addresses will be captured, however there is always a risk when sending information electronically. Responses will be viewed only by members of the study team and will not contain any identifiable information. All data will be stored on a password protected computer affiliated with OSU, with current antivirus software and current virus definitions. Responses will be aggregated and reported only at the national level.

Study contacts: We would like you to ask us questions if there is anything about the study that you do not understand. You can reach us at dwyer@oregonstate.edu

By selecting Continue to Survey you indicate that you understand the above study details and are consenting to participate (participant chooses “yes” or exits).

Survey Questions (Presented in Qualtrics XM):

Q1: How many miles do you travel (one way) to reach Bogus Basin?

1. Less than 20 miles
2. 21 – 30 miles
3. 31 – 40 miles
4. 41 – 50 miles
5. 51 – 60 miles
6. 61 – 70 miles
7. More than 70 miles

Q2: How long have you been visiting Bogus Basin for recreation?

1. Less than 5 years
2. 5 – 10 years
3. 11 – 20 years
4. 21 – 30 years
5. 31 – 40 years
6. 41 – 50 years
7. More than 50 years

Q3: Did you visit Bogus Basin in 2021 or 2022?

Yes/No

Q4: In the winter, on average, how often do you visit Bogus Basin?

- Multiple times a week
- Weekly
- A couple times a month
- Monthly
- Once a season or less
- Do not visit in the winter (participant skips to Q7)

Q5: In the winter, over the past five years, what recreational activities have you participated in at Bogus Basin? Please select all that apply (activities randomized)

- Nordic ski (cross-country)
- Alpine ski (downhill)
- Alpine snowboard (downhill)
- Fat bike (winter biking on cross-country trails)
- Snowshoe
- Tubing hill
- Mountain coaster
- Other
- Have not been up in past 5 years

Q6: Please select all the winter areas where you recreate on the mountain:

Deer Point & Showcase (chairlifts 1 & 4)
Morning Star (chairlift 2)
Superior (chairlift 3)
Bitterroot (chairlift 5)
Pine Creek (chairlift 6)
Shafer South Face (the face)
Frontier Point (Nordic Center, cross-country ski, snowshoe, fat bike)
Tubing Hill
Mountain Coaster

Q7: In the summer, on average, how often do you visit Bogus Basin?

Multiple times a week
Weekly
A couple times a month
Monthly
Once a season or less
Do not visit in the visit in the summer (participant skips to Q10)

Q8: In the summer, over the past five years, what recreational activities have you participated in at Bogus Basin? Please select all that apply (activities randomized)

Lift serve downhill mountain bike
Cross-country mountain bike
Scenic chairlift ride
Mountain coaster
Trail running
Hiking
Disc golf
Concert going
Other
Have not been up in past 5 years

Q9: Please select all the summer areas where you recreate on the mountain:

Deer Point Area multi-use trails (chairlift 1)
Morning Star downhill bike park (chairlift 2)
Shafer Butte Area multi-use trails
Around the mountain multi-use trail
Mountain coaster
Simplot Base Area (concerts, hang out)
Bitterroot (Disc golf)
Upper Eastside multi-use trail (Lower Loop Nordic trail)

Q10: Consider your time on the mountain (agree/disagree statements randomized)

Bogus Basin Recreation Area:

Is a scenic place.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is a peaceful place.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is a playground.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is a place to connect to the mountains.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is a place to heal.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is an escape from civilization.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is a getaway in the woods.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is a community of recreationists.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is a family place.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is a place to hang out with friends.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Q11: Thinking about the landscape around Bogus Basin (agree/disagree statements randomized)

Bogus Basin Recreation Area:

Provides habitat for many species of wildlife and plants.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Provides fresh/clean air (excluding wildfire smokey days).

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Has changed a lot over the years.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is heavily forested between the ski runs and trails.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is overdeveloped.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Is in the wilderness.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Has many native plants and trees.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Q12: In your opinion, the appearance of the forests in Bogus Basin Recreation Area are:

Picturesque.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Unpleasant.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Picturesque in some areas and unpleasant in others.

strongly agree, agree, somewhat agree, indifferent, somewhat disagree, disagree, strongly disagree

Q13: Please select the statement that best matches your impression of the forests at Bogus Basin:

1. Over the past five years, forest **appearance has improved.**
2. Over the past five years, forest **appearance has declined.**
3. Over the past five years, forest appearance has **remained the same.**

Q14: Are you aware of the multistakeholder effort to improve the conditions of the forests around Bogus Basin? (Bogus Basin Forest Health Project)

Yes/No (If no, participant skips to Q16)

Q15: How did you first learn about the Bogus Basin Forest Health Project?

Social media
Newspaper
local news
Agency Webpage
Bogus Basin Webpage
Evidence of Logging at Bogus Basin
Informational signage
Other

Q16: The initial phase of the Bogus Basin Forest Health Project involved commercial logging which removed dead and dying trees and thinned dense areas (trees marked with a band of blue paint) to reduce threat from wildfire, insects, and disease. Did you notice this work was being done? If so, when?

No. Yes; 2019. Yes; 2020, Yes; 2021, Yes; 2022

Q17: Future phases of the Bogus Basin Forest Health Project will include burning slash piles and replanting seedlings. Are you supportive of future forest restoration projects like the Bogus Basin Forest Health Project?

strongly oppose, oppose, somewhat oppose, indifferent, somewhat support, support, strongly support

END OF SURVEY

We thank you for your time spent taking this survey.

Please watch this [2016 introductory video](#) about the Bogus Basin Forest Health Project to better understand the project and its phases. Most of the commercial logging was completed 2019 – 2021.

Your response has been recorded.

APPENDIX B: Bogus Basin Marking Guidelines

TECHNICAL SPECIFICATIONS:

1. Timber Marking (Cut-tree mark with blue paint):
 - a. Situation: In 2007, USFS personnel reported Douglas-fir dwarf mistletoe infection in almost 80% of all stands around the Bogus Basin Mountain Resort Permit Area, and the majority of those stands are infected at the highest Hawksworth rating class of 6. USFS personnel observed extensive mortality of old, large Douglas-fir due to dwarf mistletoe infection, Douglas-fir beetle (*Dendroctonus pseudotsugae*), and drought. Since 2007, understory slashing and hand piling of suppressed trees under 8" has been complete throughout the project area with the majority of the piles burned. There are some areas of moderate and heavy brush throughout the project area. Approximately 90 mature trees per acre with a QMD of 19".
 - b. Objectives:
 - i. Remove all Douglas-fir (DF) and ponderosa pine (PP) $\geq 8.0"$ and $< 20.0"$ DBH with any evidence of dwarf mistletoe.
 - ii. Remove all Douglas-fir $\geq 20.0"$ DBH with dwarf mistletoe rating (DMR) of 3 or greater. (See attached figure).
 - iii. Remove all merchantable standing dead hazard trees that are a hazard to ski or foot trails, open roads, facilities, developed recreation sites.
 - iv. Density management: Thin from below maintaining 60 – 80 square feet of basal area. Species preference: PP, DF. No ponderosa pine $\geq 20.0"$ DBH.
 - v. Future road center lines have been established and painted in red throughout project area. Avoid marking timber within 25 feet of either side of centerline.

2. Silvicultural Prescription:

- a. The silvicultural systems are commercial thinning and limited sanitation salvage. The number of trees marked to leave will be based on the current stocking condition of the stand and the health of residual trees to leave. Approximately $\frac{1}{3}$ (60 trees/acre) of the merchantable trees should be removed, leaving 60 – 80 ft.² basal area throughout the project area. Promote groups (or clumps) of PP interspersed with canopy gaps thus increasing horizontal diversity. Favor hard against DF by removing DF competing within 30 feet of viable PP. Create canopy gaps where DF mistletoe pockets exist. Gaps are expected to be $\frac{1}{4}$ to 1 $\frac{1}{2}$ acres; not to exceed 25% of stand.

- i. Commercial Thinning:

1. Thin from below leaving 60 – 80 ft.² basal area favoring healthy, vigorous PP over DF.

- ii. Limited Sanitation Salvage:

1. All Douglas-fir $\leq 20''$ DBH with any dwarf mistletoe shall be remove. DF $\geq 20''$ DBH with DMR of 3 or greater will also be removed. The point system used to establish this rating is attached.

Dwarf Mistletoe Control Specifications

Dwarf mistletoe infected tress will be rated by the following point system. Leave trees will be rated 3 or less, and cut trees will be those with a rating of 4 or more, unless otherwise specified by the forester-in-charge.

The Six-Class Dwarf Mistletoe Rating System

INSTRUCTIONS:

Step 1 - Divide the live crown into thirds.

Step 2 - Rate each third separately.

Each third should be given a rating of 0, 1, or 2 as described below:

0. No visible infections.
1. Light infections ($\frac{1}{2}$ or less of total number of branches in the third infected).
2. Heavy infection (more than $\frac{1}{2}$ total of branches in the third infected).

Step 3 - Add rating of the thirds to obtain
A rating for the total tree.

Step 4 - Stand values may be obtained by
averaging individual tree ratings.

The tree in this example will receive a



EXAMPLE:

If this third has no visible infections, its rating is 0.

If this third is lightly infected, its rating is 1.

If this third is heavily infected, its rating is 2.

rating of: $0+1+2=3$.

APPENDIX C: Bogus Basin Forest Health Project Sign Detail


Working Together to Restore a Healthy Landscape

GNA
GOOD NEIGHBOR AUTHORITY


Through the Good Neighbor Authority, the Boise National Forest, Idaho Department of Lands, and Bogus Basin Mountain Recreation Area have partnered on this Forest Health Project.

For more information visit these links:
[Bogus Basin](#) [GNA](#) [Forest Health Project](#)


At Bogus Basin we are using land management tools to restore health to the forest. The removal of dying trees, prescribed burning, and planting Ponderosa Pine will help repair the landscape, for future generations to enjoy!



100 years ago:
 -Forests featured large, widely spaced, sun-loving trees, like Ponderosa Pine.
 -Frequent, light fires cleared competing vegetation.




Over the last century:
 -Large trees were harvested.
 -Fires were suppressed, allowing shade-tolerant species to fill the understory.



As a result:
 -Forests feature smaller, densely grown, shade-tolerant trees, like Douglas-fir.
 -Dense understories create fuel build-up.

Damaged VS Managed



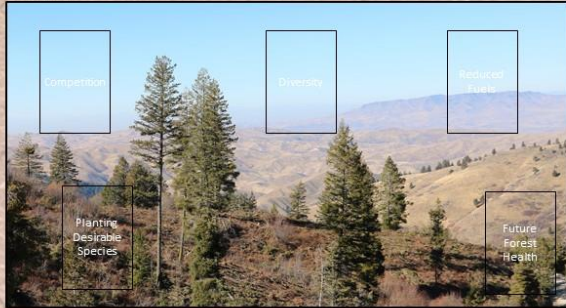
Competition & Limited Diversity

Fuel Build Up

Douglas-fir Dwarf Mistletoe

Safety

Bark Beetles



Competition

Diversity

Reduced Fuels

Planting Desirable Species

Future Forest Health

Bogus Basin Forest Health Project sign with information boxes describing forest health issues. Created by Shannon Flynn, Venetia Gempler (USFS), and Jon Songster (IDL, GNA).

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Damaged VS Managed



Dense stands + limited diversity = Competition, leading to weakened trees targeted by pests and disease

Dying trees contribute to fuel build-up, increasing risk of wildfire

Mistletoe makes the trees look like Dr. Seuss illustrations. Tree branch droopings, or "hangers", are created by nutrients being pulled to the infected sites.

"Snowmelt" may become heavy with snowfall and pose a risk to forest visitors

Bark beetles prefer feeding on weakened trees. They are part of a healthy ecosystem, however beetles are killing trees at an aggressive rate.



Thinning out dying stands gives healthy trees room to access available water and nutrients

Tree diversity keeps pests and diseases from spreading at an aggressive rate

Prescribed burning will reduce the fuels in the forest, minimizing the potential for future high severity wildfires

With more open available, managers are able to plant desirable species native to the area, like Ponderosa Pine

Restoring healthy trees will pass on resilient traits through seed reproduction

Bogus Basin Forest Health Project sign with information box reveals containing additional information. Created by Shannon Flynn, Venetia Gempler (USFS) and Jon Songster (IDL, GNA).