No Turning Back

As shown by the human experiences and ecological changes described in this book, the Yellowstone fires of 1988 were both an event that occurred at a specific time in social and natural history, and part of an ongoing process. Areas that burned are sometimes referred to as having returned to a “biological starting point,” but it is not the same point from which they started after the last fire, any more than we can go back to looking at fire in Yellowstone as we did before 1988.

Although large fires have occurred in the area for millennia, Yellowstone's history is not simply one of repeated cycles. Instead of returning the park to some past primeval state, the 1988 fires used the materials at hand to shape the park's future. The ecological processes that have formed the Yellowstone landscape in the past will continue to do so, but in different proportions, on different scales, and at different rates than in the past. What patterns emerge will depend on the pre-fire patterns in the landscape, the patterns left in 1988 by variations in fire type and severity, and post-fire conditions such as climate. Wildland areas are not destined to achieve some particular ideal state if we could remove the human influences. We can look back, but never turn back. If the trend toward a warmer, drier climate in Yellowstone continues, the abundance and distribution of plant and animal species will shift, and large fires may occur more frequently.

Just as the human presence in and around wildlands is inescapable, so is human intervention necessary to preserve wildlands. But interventions that diminish wilderness values should be pursued only when human communities are clearly threatened. It is disturbing when nature shows its muscle with more zeal than we would like: it seems that we want nature, but don't want it to be completely natural; we want it to behave in a civilized manner. The question is whether Yellowstone, a public trust, should be a stage where nature is allowed to perform, making up the script as it goes along. But if this is not possible in Yellowstone, then where?
Chapter 1: The Role of Fire in Yellowstone

8. Balling et al., Climate change in Yellowstone.
15. Ibid.
16. Ibid.
18. Renkin and Despain, Fuel moisture.

Chapter 2: The Summer of 1988

5. Neckels et al., Greater Yellowstone Area fire situation.
8. Ibid.
12. Romme and Despain, Historical perspective.
14. Ibid.
15. Neckels et al., Greater Yellowstone Area fire situation.
17. Mills, Yellowstone postfire assessment.
19. Mills, Yellowstone postfire assessment.
23. Smith, Media coverage of fire ecology.

Chapter 3: The Human Aftermath
5. Ibid.
6. Ibid.
8. Ibid.


Chapter 4: Changes in the Landscape


5. Romme and Knight, Landscape diversity.


19. Ryan and Amman, Bark beetle activity.

20. Ibid.


22. Despain, Yellowstone vegetation.


26. Ellis et al., Some important factors affecting density of lodgepole pine seedlings.
29. Personal communication, Burger, John, University of New Hampshire.
30. Turner et al., Effects of fire size on landscape.
33. Ibid.
34. Ibid.
39. Despain, Yellowstone vegetation.
40. Renkin and Despain, Response of aspen to fire.
44. Renkin and Despain, Response of aspen to fire.
45. Ibid.
46. Ibid.
47. Romme et al., Aspen, elk, and fire.
48. Renkin and Despain, Response of aspen to fire.
49. Kay and Wagner, Response of shrub-aspen to Yellowstone's wildfires.
52. Ibid.
53. Renkin and Despain, Response of aspen to fire and herbivory.
54. Romme et al., Sexual reproduction in aspen.
56. Renkin and Despain, Response of aspen to herbivory.
57. Turner et al., Effects of fire size.
60. Meagher and Houston. The biology of time.


64. Tracy and McNaughton. Elk grazing and vegetation.

65. Meagher and Houston. The biology of time.

66. Tracy. Fire effects in Yellowstone's grasslands.


69. Meagher and Houston. The biology of time.


71. Ibid. See also: Meagher and Houston. The biology of time.


74. Norland et al. Effects of the Yellowstone fires on elk habitats.


76. Singer et al. Ungulate herbivory.


78. Turner et al. Effects of fire size on landscape.

Chapter 5: Wildlife


7. Ibid.


22. Tracy and McNaughton, Elk grazing and vegetation responses.

23. Singer and Harter, Comparative effects of elk herbivory.


41. Ibid.


Chapter 6: Watershed and Stream Dynamics


5. Meyer and Wells, Fire-related sedimentation events.


15. McIntyre and Minshall, Changes in transport.


17. Minshall et al., Wildfires and Yellowstone's streams.


21. Troendle and Bevenger, Effect of fire on streamflow.

22. Young and Bozek, Post-fire effects on woody debris.


25. Ibid.


29. Minshall et al., Wildfires and Yellowstone's streams.


33. Minshall et al., Stream ecosystem responses.

34. Robinson and Minshall, Responses of streams.


37. _____, S.W. Rushforth, and G.W. Minshall. 1996. Diatom assemblages in Cache Creek, Yellowstone Na-


41. Minshall et al., Stream ecosystem responses.


43. Minshall et al., Stream ecosystem responses.


49. Young and Bozek, Post-fire effects on woody debris.


51. Ibid.


References


_____, ed. 1994. Plants and their environments: proceed-


Tyers, D.B. Submitted Ph.D. diss. Winter ecology of moose on the northern Yellowstone range. Montana State University, Bozeman.


Index

Absaroka-Beartooth Wilderness, 23, 77
aerospace, 19, 20, 23-26
air quality, 25
algae, 94-96
alluvial fans, 8-9, 87
American Indians, 38-39
amphibians, 85
Amphitheater Creek, 94
andesitic soil, 50
archeological sites, 38-39
aspen, 5, 48-50, 58-62, 84
bald eagles, 3, 70, 71, 82
bark beetles, 53-54
Baronett Cabin, 39
backfires, 23, 25, 74
bears, 3, 5, 69, 71, 78-79, 99
beaver, 58, 67
beetles, 53-54, 83
biodiversity, 51, 52
birds, 2, 50, 51, 57, 70, 81-83
bison, 69-71
Black Saturday, 19, 29
Blacktail Deer Creek, 93, 98
Blacktail Plateau, 73
blister rust, 57
Boise Interagency Fire Center, 24, 44
Bridger-Teton National Forest, 27
bulldozers, 4, 23, 35, 36
Cache Creek, 87, 94, 96, 98
Canyon Village, 24, 40
carrying capacity, 71
Clark's nutcracker, 57, 82, 83
climate, 9, 14, 17, 47-48, 54, 57, 62, 67
Clover Mist fire, 27, 89
Cooke City, 25
coyotes, 71, 80
Crow Creek, 88-89, 92
Custer National Forest, 27, 74
cutthroat trout, 78, 98-99
decomposition, 7
deer, 70, 71
diatoms, 93, 94-95
Douglas-fir, 8, 14, 47-49, 53-54
economic impacts, 3, 26, 40-41, 43
Engelmann spruce, 13, 14, 47-49, 57
erosion, 47, 86-93
exotic plants, 3, 5, 68
explosives, 23
Falls fire, 22
Fan Creek, 93
Fan fire, 27
fire behavior, 14-16, 17-21, 23-26, 43
fire frequency, 5, 7-14, 17, 21, 46
fire management policy, 4, 8-11, 15-16, 20-21, 29-30, 43-45
fire perimeter, 18, 19, 27
fire retardants, 23, 26, 37, 93
fire suppression impacts, 35-37, 48, 58, 66, 68, 80, 93
fire suppression policy, 10-11, 15, 20-21, 43, 45
firefighting, 2, 4, 10-11, 20-26
Firehole River, 61, 93, 97, 98
fireline, 23-24, 35-37
fish, 5, 93, 98-99
flooding, 5, 86, 88
forage quality, 70-77
forbs, 72-73, 75, 90
fuel loads, 14, 20-21, 23, 44
fuel moisture, 8, 13-14, 18, 23
gateway communities, 3, 24-26, 41, 43
Gallatin National Forest, 22, 27, 46, 57, 76, 88
Gardiner, 25
Gardner River, 98
Gibbon River, 24, 86, 87, 94, 97, 98
Glacier National Park, 31
Grand Teton National Park, 32, 57, 95
Grant Village, 22, 25, 40
grasslands, 8, 10, 15, 20, 47, 48, 50, 64-65, 73-75, 84
Greater Yellowstone Coordinating Committee, 32
Heart Lake, 8, 95
helicopters, 20, 23, 24, 26, 37
Hellroaring Creek, 98
Hellroaring fire, 21, 27
herbaceous plants, 47, 63-66, 68, 74, 84
Huck fire, 27
hunting outside the park, 71, 76, 77
insects, 53-54, 81-84, 92, 996-97
invertebrates, 84, 93
Iron Springs Creek, 93
Jackson Hole, 58, 76
Jackson Lake, 95
Jones Creek, 88-89, 92, 98
lakes, 95
Lamar River, 50, 75, 89, 91, 97, 98
Lamar Valley, 48
Lewis Lake, 22, 95
lightning, 1, 4, 7, 11, 15, 17, 22, 44
lodgepole pine, 2, 5, 8, 11-14, 16, 47-49, 52-56, 63, 74, 81
logging, 26, 52, 80, 81, 89
macroinvertebrates, 92, 96-97, 99
Madison Junction, 24
Madison River, 31, 37, 61, 88, 92, 94
Mammoth Hot Springs, 25, 31, 40
marten, 80-81
meadows, 48, 64-65
media coverage, 28-31
Medicine Bow National Forest, 90
military assistance, 24, 26
Mink fire, 27
moose, 2, 5, 66, 70
mortalities, human, 2, 25
mortality, wildlife, 69-71, 73, 78
Mount Washburn, 51, 57, 78
National Park Service, 10-11, 19, 20, 22, 28-30, 32-33, 35, 42-44
nitrates, 94
Norris Geyser Basin, 24
North Fork fire, 21-24, 26, 31, 36, 74
northern range, 6, 8, 10, 14-15, 20, 48, 58-62, 73-74, 80
nutrients, 7, 47, 72-74, 86, 92, 93
Obsidian Cliff, 38-39
Old Faithful, 1, 24, 25, 31, 34, 40
osprey, 2, 82, 83
Pitchstone Plateau, 44
plant succession, 8, 13
prescribed burns, 4, 5, 15-16, 44-45, 74
pronghorn, 75
public attitudes toward fire, 2-5, 10, 24, 28-31, 40-43
rehabilitation, 34-37, 39
rhyolitic soil, 50, 94
riparian vegetation, 89-90, 92, 93
Rockefeller Memorial Parkway, 27, 53, 89
Rocky Mountain National Park, 67
Rose Creek, 94
runoff, 86-93
sagebrush, 47, 48, 50, 64-65, 66, 72-73
sedges, 65, 74
sediment deposits, 86-87, 90-92, 95
seed source, 35, 46, 50-52, 55, 57, 63
serotinous cones, 55-56
Shoshone Lake, 95
Shoshone National Forest, 25, 27, 46, 51, 89, 98
Shoshone River, 98
Silver Gate, 25
Slough Creek, 97
Smokey Bear, 1, 28
snails, 84
snowpack, 86-91
Snake River, 92
Snake River fire, 27, 37
Soda Butte Creek, 89, 93
soils, 35-37, 38, 47, 49-51, 63
Sportsman Lake cabin, 34
squirrels, 77-78, 80
Storm Creek fire, 22, 27
subalpine fir, 13, 14, 47-49, 57, 76-77
Targhee National Forest, 22, 27, 36, 46, 53
tree mortality, 52-54
tourism, 3, 28, 40-42
tree rings, 8-9, 47
U.S. Fish and Wildlife Service, 89
U.S. Forest Service, 11, 19, 20, 26, 27, 28, 32, 35
Virginia Cascades, 51
visitiation, 3, 5
voles, 80
water quality, 93-94
weather, 8, 14, 18, 25, 44
West Thumb, 22, 99
West Yellowstone, 24, 25
whitebark pine, 57, 77-78
wildfire, 15, 43
willows, 3, 5, 48, 66-67, 76-77
woody debris, 86, 90-93
wolves, 58, 59, 77, 80, 85
woodpeckers, 81-83
Yellowstone Lake, 6, 88, 95, 98-99
Yellowstone River, 23, 39, 48, 50, 75, 91-93, 98