

Table A3—Summary of postfire recovery studies

Table A3—Summary information from postfire recovery studies in Wyoming big sagebrush communities, organized by ecoregions in the United States and Canadian provinces.				
Location; elevation; average annual precipitation	Vegetation description and grazing information	Methods	Cover of Wyoming big sagebrush (data are means unless otherwise indicated)	Citation(s)
Blue Mountains				
John Day Fossil Beds National Monument, north-central OR; 610-1,370 m; 270 mm	Wyoming big sagebrush communities on aridic soils with <10 western juniper trees/ha Livestock excluded from the area since 1975, 24 years prior to the oldest fire.	Measured canopy cover 1- 15 years after fall prescribed fires in 16 plots that resulted in 99% top-kill on northern aspects and 100% top-kill on southern aspects; cover of Wyoming big sagebrush estimated from figure 3.	Northern aspects: Prefire: 18% Postfire year 1 •Burned: 0% •Unburned: 6.5% Postfire year 2 •Burned: 0.5% •Unburned: 7% Postfire year 5 •Burned: 1% •Unburned: 7.5% Postfire year 10 •Burned: 1% •Unburned: 6.0% Postfire year 15 •Burned: 2.5% •Unburned: not provided	[451]
			Southern aspects: Prefire: 9% Postfire year 1 •Burned: 0% •Unburned: 20% Postfire year 2 •Burned: 2% •Unburned: 19% Postfire year 5 •Burned: 1% •Unburned: 10% Postfire year 10 •Burned: 0% •Unburned: 17% Postfire year 15 •Burned: 0% •Unburned: 3%	
Central Basin and Range				
Holborn Burn Unit 2, BLM's Elko District, northeastern NV; not provided; not provided	Wyoming big sagebrush/Sandberg bluegrass- bluebunch wheatgrass community Information on livestock grazing not provided, but the site was managed for livestock grazing.	Measured canopy cover 1- 3 years after a September prescribed fire	Prefire: 11.9% Postfire year 1 •Burned: 0% Postfire year 2 •Burned: 0% Postfire year 3 •Burned: 0%	[129]
Near Tremonton, north- central UT; 1,500 m; 369 mm	Wyoming big sagebrush/bluebunch wheatgrass associations Cattle grazing occurred during alternate years in fall.	Measured canopy cover 1- 5 years after an August wildlife that that occurred on a 16-year-old burn	Postfire year 1 •Burned: 0% •Unburned: 7% Postfire year 2 •Burned: 0% •Unburned: 8% Postfire year 3 •Burned: 0%	[716]

			•Unburned: 8% Postfire year 4 •Burned: 0% •Unburned: 10% Postfire year 5 •Burned: 0% •Unburned: 8%	
	Wyoming big sagebrush/Sandberg bluegrass associations Cattle grazing occurred each spring.		Postfire year 1 •Burned: 0% •Unburned: 13% Postfire year 2 •Burned: 0% •Unburned: 13% Postfire year 3 •Burned: 0% •Unburned: 22% Postfire year 4 •Burned: 0% •Unburned: 28% Postfire year 5 •Burned: 0% •Unburned: 24%	
Northeastern slope of the Oak Creek Mountains, Juab County, west-central UT; 1,617-1,622 m; 301 mm	A "good condition" Wyoming big sagebrush-bluebunch wheatgrass community with widely scattered Utah juniper trees Grazing by cattle and sheep was "light" during the past 20 years; Livestock excluded after fire.	Measured canopy cover 1-2 years after a 11,000-ha July wildfire that consumed "nearly all" vegetation	Prefire: 6.5% Postfire year 1 •Burned: 0% •Unburned: 3.7% Postfire year 2 •Burned: 0% •Unburned: 5.7%	[807]; data also available in [313]
Middle Rockies				
East Fork, Salmon River, east-central ID; 1,744-2,438 m; 180 mm	Wyoming big sagebrush-bluebunch wheatgrass communities Sites were important winter ranges for mule deer and bighorn sheep. Information on livestock grazing not provided.	Measured canopy cover 1 and 3 years after small (0.05-0.45 ha) September prescribed fires at 7 sites that killed 100% of Wyoming big sagebrush	Prefire: 14.8% Postfire year 1 •Burned: 2.6% Postfire year 2 •Burned: 2.8%	[567]
Throughout Beaverhead County, southwestern MT; 1,830-1,890; 356-425 mm	Wyoming big sagebrush-bluebunch wheatgrass communities Livestock had been excluded from the Exclosure site since prefire year 1. Livestock grazed the Wisdom Flat and Wisdom Slope but details were not provided.	Measured canopy cover 9 and 32 years after prescribed fires on 3 sites	Postfire year 9 •Burned: 11.1-13.4% •Unburned: 11.6-13.9% Postfire year 32 •Burned: 9.1% •Unburned: 12.6%	
Throughout Beaverhead and Silver Bow counties, southwestern MT; 1,950-2,090 m; 356-425 mm	Mountain big sagebrush-Wyoming big sagebrush/Idaho fescue communities Cattle grazed the 4 Wise River sites 4-6 weeks each summer. Sawmill Gulch and Badger Pass site were grazed by livestock as part of a 4-pasture rotational grazing system. Livestock grazed the West Fork site but details were not provided.	Measured canopy cover 2-14 years after prescribed fires at 7 sites	Postfire year 2 •Burned: 0% •Unburned: 4.1% Postfire year 7 •Burned: 0% •Unburned: 0.9-3.8% Postfire year 8 •Burned: 0-0.5% •Unburned: 1.0-3.0% Postfire year 14 •Burned: 0% •Unburned: 1.6%	[760]; data also available in [757]

Throughout Beaverhead and Madison counties, southwestern MT; 1,615-2450 m; 380 mm	Wyoming big sagebrush/bluebunch wheatgrass communities Livestock grazed the sites before and after the fires; sites were located away from water developments and fence lines.	Measured canopy cover 8-23 years after wildfires at 5 sites	Postfire year 8 •Burned: 0% •Unburned: 6.9-14.7% Postfire year 14 •Burned: 0% •Unburned: 19.1% Postfire year 15 •Burned: 0.1% •Unburned: 16.5% Postfire year 23 •Burned: 0.2% •Unburned: 12%	[423]; summary data for many of these study sites in [424,425]
		Measured canopy cover 17 and 33 years after prescribed fires at 2 sites	Postfire year 17 •Burned: 0% •Unburned: 21.2% Postfire year 33 •Burned: 26.4% •Unburned: 28.5%	
Western flank of Badger Pass, 27 km west of Dillon, southwestern MT; 1,890 m; 310 mm	Wyoming big sagebrush-bluebunch wheatgrass community Livestock grazed the site since the mid-1800s, but they were excluded from the site 15 months before fire and thereafter.	Measured canopy cover 1-29 years after a prescribed fire; mean cover value at postfire year 29 was estimated using data from Table 3 in [775].	Prefire: 14.5-15.1% Postfire year 1 •Burned: 0% •Unburned: 16.1% Postfire year 3 •Burned: 0.1% •Unburned: 16.7% Postfire year 6 •Burned: 0% •Unburned: 13.3% Postfire year 12 •Burned: 0.5% •Unburned: 12.9% Postfire year 14 •Burned: 0.9% •Unburned: 10.6% Postfire year 14 •Burned: 0.9% •Unburned: 10.6% Postfire year 17 •Burned: 1.8% •Unburned: 11.1%	[770]
			Postfire year 29 •Burned: 0% •Unburned: 12.8%	[775]
West of Blanding Station, near Gardiner, southwestern MT; 1,735-2,135 m; 413 mm	Wyoming big sagebrush-bluebunch wheatgrass communities The area was important winter range for mule deer and elk. Livestock did not graze the burn.	Measured canopy cover 19 years after an 80-ha July wildfire that killed 100% of big sagebrush in the burn perimeter	Postfire year 19 •Burned: 0.03% •Unburned: 5.5%	[474]; data also available in [767]

Northern Basin and Range

Hart Mountain National Antelope Refuge, south-central OR; 1,550-1,615 m; ~290-300 mm	Wyoming big sagebrush/squirreltail-Sandburg bluegrass communities that had not been burned in >50 years Prefire cover of cheatgrass averaged 1.4%. Livestock grazing on the refuge ceased 6 years before the fire.	Measured canopy cover 1 and 17 years after 4 September prescribed fires that resulted in 49% of the area burned; the fire killed 100% of Wyoming big sagebrush in burned areas.	Prefire: 26% Postfire year 1 •Burned: 0% •Unburned: 27%	[842]; data also available in [843]
			Postfire year 17 •Burned: 2.3% •Unburned: 17.9%	[234]; data also available in [604]

	Wyoming big sagebrush/squirreltail-Sandburg bluegrass community	Measured canopy cover 13 years after a prescribed fire	Postfire year 13 •Burned: 0% •Unburned: 27%	[842]
	Livestock grazing ceased on the refuge 6 years after the fire.			
Northern Great Basin Experimental Range, southeastern OR; 1,400 m; ~300 mm	Wyoming big sagebrush/Thurber needlegrass and Wyoming big sagebrush/bluebunch wheatgrass communities	Measured canopy cover 1-2 years after an October prescribed fire that killed 100% of Wyoming big sagebrush	Postfire year 1 •Burned: 0% •Unburned: 10% Postfire year 2 •Burned: 0% •Unburned: 13%	[196]
	Information on livestock grazing not provided.			
	Wyoming big sagebrush/Thurber needlegrass-Idaho fescue association		Prefire: 10% Postfire year 1 •Burned: 0.3% •Unburned: 10.6%	[38]
	"Moderate" livestock grazing occurred until prefire year 4, when livestock were excluded.		Mean cover in burned sites was from surviving plants; no recruitment occurred during postfire year 1.	
	Wyoming big sagebrush steppe with an understory dominated by Idaho fescue, Thurber needlegrass, and bluebunch wheatgrass	Measured canopy cover 1-9 years after late September to early October prescribed fires that killed ~90% of Wyoming big sagebrush; data estimated from figure 7 in [43] and Figure 6 in [39].	Prefire: 11.7% Postfire year 2 •Burned: 0.2% •Unburned: 10.5% Postfire year 4 •Burned: 0.9% •Unburned: 11.0%	[43]
	"Moderate" livestock grazing occurred until prefire year 4, when livestock were excluded.		Postfire year 5 •Burned: 1.0% •Unburned: 9.8% Postfire year 9 •Burned: 1.2% •Unburned: 9.5%	[39]
Northridge Burn Unit, BLM's Vale District, eastern OR; not provided; not provided	Wyoming big sagebrush-bluebunch wheatgrass communities	Measured canopy cover 1-3 years after a September prescribed fire	Prefire: 7.5-16.9% Postfire year 1 •Burned: 0% •Unburned: 7.9% Postfire year 2 •Burned: 0% •Unburned: 10.3% Postfire year 3 •Burned: 0% •Unburned: 10.6%	[129]
	Livestock grazing information not provided.			
Sheepshead Mountains, southeastern OR; 1,280-1,480 m; ~280 mm	Mid- to late-successional Wyoming big sagebrush/bluebunch wheatgrass and Wyoming big sagebrush-Thurber needlegrass associations	Measured canopy cover 2 years after a 16,000-ha August wildfire that resulted in 100% kill of Wyoming big sagebrush; unburned patches were located in the fire perimeter.	Prefire: 12.4-17.3% Postfire year 2 •Burned: 0% •Unburned: not provided	[38]; data also in [35]
	Livestock grazing information not provided.			
Northwestern Great Plains				
Northeastern corner of Petroleum County, north-central MT;	Wyoming big sagebrush communities	Observed that "not a single Wyoming big sagebrush seedling was found in any of the areas that had	Postfire year 4 •Burned: 0% •Unburned: not provided	[165]

177 m; 305-356 mm	Livestock grazing information not provided.	burned" 4 years after a stand-replacing wildfire	"Site potential" of at least 10% cover	
North of the Missouri River and west of UL Bend in the Missouri River Breaks on the Charles M. Russell National Wildlife Refuge, northeastern MT; not provided; 220-320 mm	Upland Wyoming big sagebrush/mixed-grass prairie community Livestock and wildlife were excluded from sites for 26-43 years.	Measured canopy cover 2 years after an August prescribed fire	Postfire year 2 •Burned: 0.7% •Unburned: 9.0%	[72]
	Upland Wyoming big sagebrush/mixed-grass prairie community Livestock were excluded from sites for 26-43 years.		Postfire year 2 •Burned: 2.8% •Unburned: 7.0%	
	Upland Wyoming big sagebrush/mixed-grass prairie community The site was open to grazing by livestock and wildlife.		Postfire year 2 •Burned: 4.2% •Unburned: 10.4%	
Missouri River Breaks: Fergus and Petroleum counties, central MT; 700-1,100 m; 320 mm	Wyoming big sagebrush/western wheatgrass association on a ridgetop Livestock grazed the area from May to November, but sites were located in areas of "little or no grazing pressure".	Measured canopy cover 14 years after a wildfire that killed 100% of the Wyoming big sagebrush plants	Postfire year 14 •Burned: 0% •Unburned: not provided	[229]
Throughout central and southeastern MT; 270-1,220 m; 274-415 mm	Wyoming big sagebrush/bluebunch wheatgrass and Wyoming big sagebrush/Idaho fescue-western wheatgrass associations Livestock grazing was "not excessive" at all but one site that had no livestock grazing prior to and after fire.	Measured canopy cover 3-66 years after wild and prescribed fires at 24 sites; Wyoming big sagebrush kill was "virtually complete" on burns.	Postfire year 3 •Burned: 0% •Unburned: 17.5% Postfire year 7-9 •Burned: 0-1.0% •Unburned: 6.0-26.1% Postfire year 10-14 •Burned: 0% •Unburned: 9.7-15.4% Postfire year 15-19 •Burned: 0% •Unburned: 9.3-24.1% Postfire year 22-24 •Burned: 0% •Unburned: 10.3-18.5% Postfire year 26 •Burned: 0.4% •Unburned: 19.8% Postfire year 36 •Burned: 0-5.4% •Unburned: 10.1-29.4% Postfire year 40 •Burned: 2.0% •Unburned: 14.4% Postfire year 51 •Burned: 1.3-2.0% •Unburned: 17.3-49.1% Postfire year 66 •Burned: 1% •Unburned: 16.8%	[168]; summary data published in [166,167]
Snake River Plain				
Big Desert in Blaine and Butte counties, south-central ID; 1,536-1,640 m; 245 mm	Wyoming big sagebrush-bluebunch wheatgrass community	Measured canopy cover 14 years after a late August prescribed fire that removed 57% of the sagebrush in the burn perimeter	Postfire year 14 •Burned: 0.8% •Unburned: 9.7%	[46]

	Cattle grazed the entire study area, but were excluded from grazing the study area for 1 year prior to and 2 years following the fire.			
Timmerman Hills, Blaine County, south-central ID; 1,524 m; 280 mm	Wyoming big sagebrush/bluebunch wheatgrass and Wyoming big sagebrush/Thurber needlegrass communities Sheep grazed the area in spring and fall before and soon after fire.	Measured canopy cover 1-2 years after a patchy, late September to early October prescribed fire that burned 10% to 15% of the study area	Postfire year 1 •Burned: 0.8% •Unburned: 17.4% Postfire year 2 •Burned: 1.1% •Unburned: 19.4%	[149]
Wyoming Basin				
Bighorn Basin, Big Horn, Hot Springs, Park, and Washakie counties, north-central WY; 1,524 m; 127-381 mm	Aridic Wyoming big sagebrush communities; understory included various perennial grasses. Sites had "minimal to no evidence" of herbivory.	Measured canopy cover 8-19 years after 17 spring and fall prescribed fires that burned during 2 different years.	Postfire year 8 •Burned: 0% •Unburned: 17.4% Postfire year 9 •Burned: 0.4% •Unburned: 14.9% Postfire year 18 •Burned: 1.6% •Unburned: 14.7% Postfire year 19 •Burned: 2.0% •Unburned: 13.4%	[317]; summary data published in [318]
	Ustic Wyoming big sagebrush communities; understory included various perennial grasses. Sites had "minimal to no evidence" of herbivory.		Postfire year 8 •Burned: 0.1% •Unburned: 21.5% Postfire year 9 •Burned: 1.3% •Unburned: 13.3% Postfire year 18 •Burned: 0.9% •Unburned: 20.6% Postfire year 19 •Burned: 2.3% •Unburned: 20.4%	
British Columbia				
Tranquille Ecological Reserve, near Kamloops, south-central BC; ~610 m; 221-277 mm	Wyoming big sagebrush-bluebunch wheatgrass community Area fenced in prefire year 6 to exclude livestock grazing.	Measured canopy cover 3 years after an April prescribed fire	Prefire: 1.1-8.1% Postfire year 3 •Burned: 0% •Unburned: 1.2%	[221]