

Wyoming big sagebrush Associations of Eastern Oregon; Vegetation Attributes



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Summary; This report provides a synopsis of several vegetative characteristics for the Wyoming big sagebrush complex in eastern Oregon covering the High Desert , Snake River, and Owyhee Ecological Provinces in Harney, Lake, and Malheur Counties. The complex has been grouped into six associations defined by the dominant large perennial bunchgrasses in the understory; Thurber’s needlegrass, Bluebunch wheatgrass, Idaho fescue, Needle-and Thread, Bluebunch wheatgrass-Thurber’s needlegrass, and High Desert Mix (Idaho fescue-Thurber’s needlegrass-Bluebunch wheatgrass combo). A total of 48 sites were measured across a 10-year period (2003-2012) in May and June for plant foliar cover, density, species richness, and biomass. Values presented represent 10-yr means. Species numbers presented in the tables indicate what an observer might find growing on site in a year or across several years, since some forbs may only express themselves periodically or be easy to see. All sites are considered intact representatives for their respective associations, having a balanced complement of herbaceous and shrub vegetation. The results here are comparable to a larger evaluation of Wyoming big sagebrush associations completed by Davies et al. 2007.

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Wyoming big sagebrush/Thurber's needlegrass association; (n=12)

The Wyoming big sagebrush/Thurber's' needlegrass association is representative of the arid sagebrush type of this sagebrush complex. The following 2 pages provides a synopsis of several vegetative characteristics for this association (Table 1; Figure 1). This association is grouped in the warm-dry and shallow dry arid types for purposes of evaluating sage-grouse habitat characteristics. All twelve of these sites are considered intact representatives of this association, having a balanced complement of herbaceous and shrub vegetation. Results here are comparable to a larger evaluation of Wyoming big sagebrush associations completed by Davies et al. 2007.

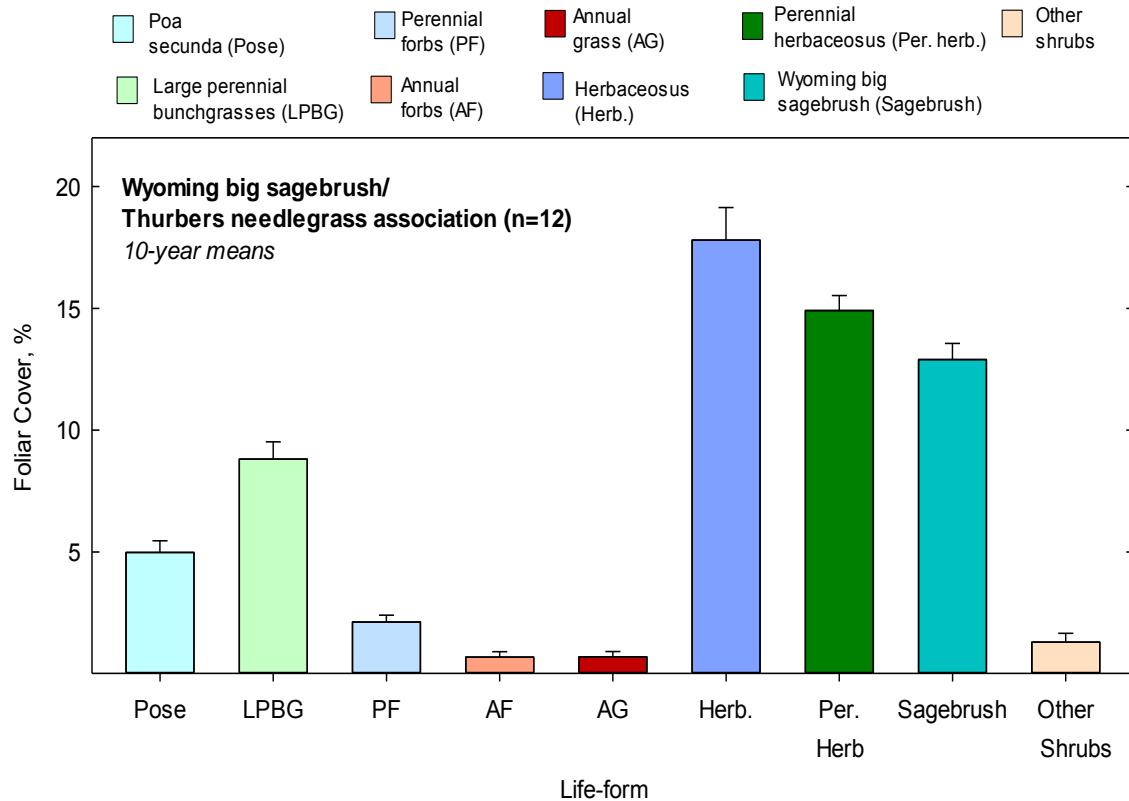


Figure 1. Foliar cover means of lifeforms for the Wyoming big sagebrush/Thurber's needlegrass association; (n=12). Means are for a 10 yr. average (2003-2012). Sites were located in Harney, Lake, and Malheur counties, Oregon in the High Desert, Snake River and Owyhee ecological provinces.

Table 1. Foliar cover, plant density, and species counts for the Wyoming big sagebrush/Thurber's needlegrass association; (n=12). Means and standard errors (and ranges) are for a 10 yr. average (2003-2012). Sites were located in Harney, Lake, and Malheur counties, Oregon in the High Desert, Snake River and Owyhee ecological provinces.

Lifeform	Foliar Cover (%)	Density (Plants m ⁻²)	Species (per acre)
Sandberg's bluegrass range	5.0 ± 0.5 (1-10)	19.8 ± 2.5 (3-50)	1
Perennial bunchgrass	8.8 ± 0.7 (2-20)	8.3 ± 0.5 (3-11)	5 (3-6)
Perennial forb	2.1 ± 0.3 (1-8)	7.2 ± 1.2 (2-40)	26 (17-36)
Perennial herbaceous	15.9 ± 1.1 (8-36)	35.3 ± 2.5 (15-90)	32 (22-39)
Annual forb	0.8 ± 2.5 (3-50)	- -	19 (14-23)
Other native grass/sedge ¹	0.1 ± 0.1 (0-<1)	- -	1 (0-2)
Cheatgrass	0.7 ± 0.2 (0-9)	- -	1 (0-1)
Exotic annual forb	0.4 ± 0.3 (0-8)	- -	2 (0-5)
Herbaceous	17.9 ± 1.3 (8-43)	- -	55 (40-62)
Sagebrush	13.9 ± 0.7 (9 -18)	- -	- -
Other shrub	1.3 ± 0.7 (0-8)	- -	- -

¹ other native grass/sedge might include creeping wildrye, various rhizomatous sedges, and annual fescues (native annual grasses).

Wyoming big sagebrush/Bluebunch wheatgrass association; (n=16)

The Wyoming big sagebrush/bluebunch wheatgrass association is representative of arid and mesic types of this sagebrush complex. The following 2 pages provides a synopsis of several vegetative characteristics for this association (Table 2; Figure 2). This association is grouped in the warm-dry, warm-moist, and cool moist types for purposes of evaluating sage-grouse habitat characteristics. All sixteen of these sites are considered intact representatives of this association, having a balanced complement of herbaceous and shrub vegetation. Results here are comparable to a larger evaluation of Wyoming big sagebrush associations completed by Davies et al. 2007.

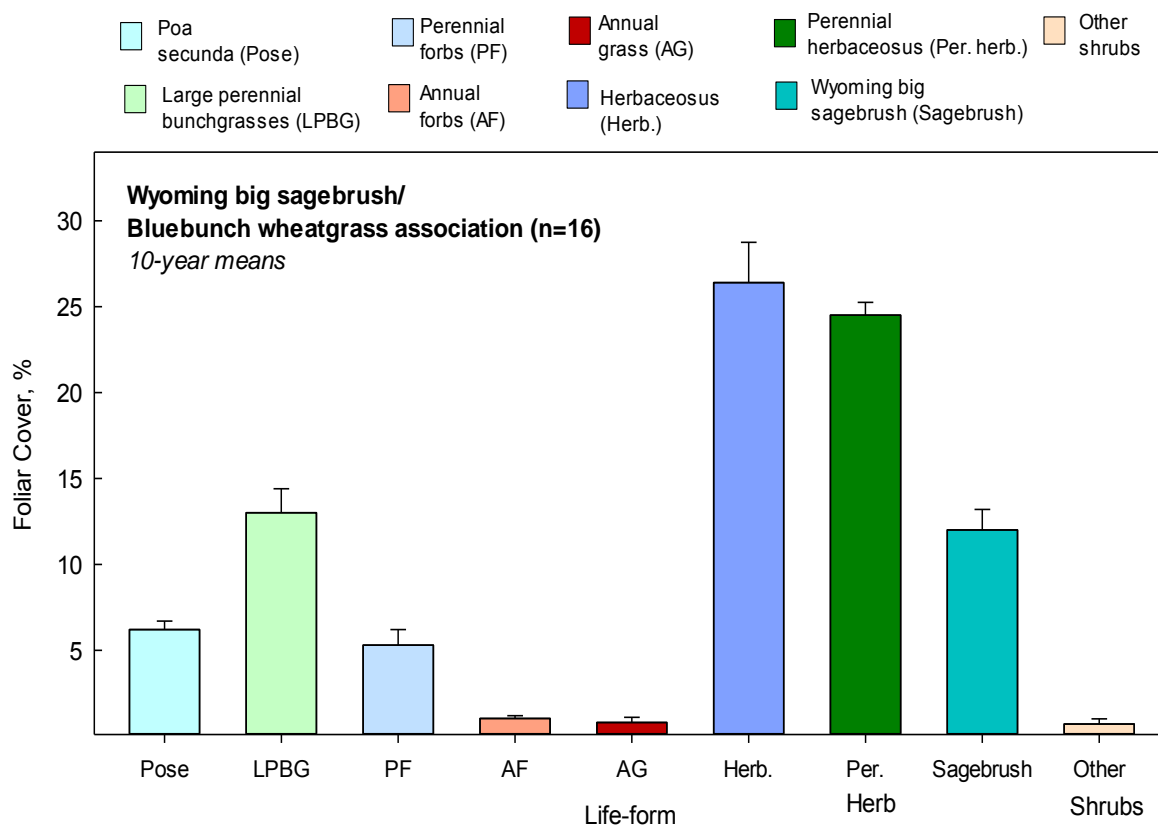


Figure 2. Foliar cover means of lifeforms for the Wyoming big sagebrush/bluebunch wheatgrass association; (n=16). Means are for a 10 yr. average (2003-2012). Sites were located in Harney, Lake, and Malheur counties, Oregon in the High Desert, Snake River and Owyhee ecological provinces.

Table 2. Foliar cover, plant density, and species counts for the Wyoming big sagebrush/bluebunch wheatgrass association; (n=16). Means are for a 10 yr. average (2003-2012). Sites were located in Harney, Lake, and Malheur counties, Oregon in the High Desert, Snake River and Owyhee ecological provinces.

Lifeform	Foliar Cover (%)	Density (Plants m ⁻²)	Species (per acre)
Sandberg's bluegrass	6.2 ± 0.5 (1-10)	27.7 ± 2.4 (9-55)	1
Perennial bunchgrass	13.0 ± 1.0 (5-31)	8.1 ± 0.3 (5-11)	4 (3-8)
Perennial forb	5.3 ± 0.9 (1-21)	14.9 ± 2.2 (2-41)	27 (17-36)
Perennial herbaceous	24.5 ± 2.4 (11-57)	50.6 ± 4.9 (19-90)	33 (21-44)
Annual forb	0.8 ± 0.2 (0-13)	- -	16 (8-23)
Other native grass/sedge	<0.1	- -	<1
Cheatgrass	0.8 ± 0.3 (0-13)	- -	1
Exotic annual forb	0.2 ± 0.2 (0-4)	- -	2 (1-4)
Herbaceous	26.4 ± 2.4 (11-61)	- -	51 (29-63)
Sagebrush	12.0 ± 0.9 (6-20)	- -	- -
Other shrub	0.7 ± 0.3 (0-4)	- -	- -

Wyoming big sagebrush/Idaho fescue association; (n=5)

The Wyoming big sagebrush/Idaho fescue association is representative of mesic types of this sagebrush complex. The following 2 pages provides a synopsis of several vegetative characteristics for this association (Table 3; Figure 3). This association is grouped in the cool moist type for purposes of evaluating sage-grouse habitat characteristics. All five of these sites are considered intact representatives of this association, having a balanced complement of herbaceous and shrub vegetation. Results here are comparable to a larger evaluation of Wyoming big sagebrush associations completed by Davies et al. 2007.

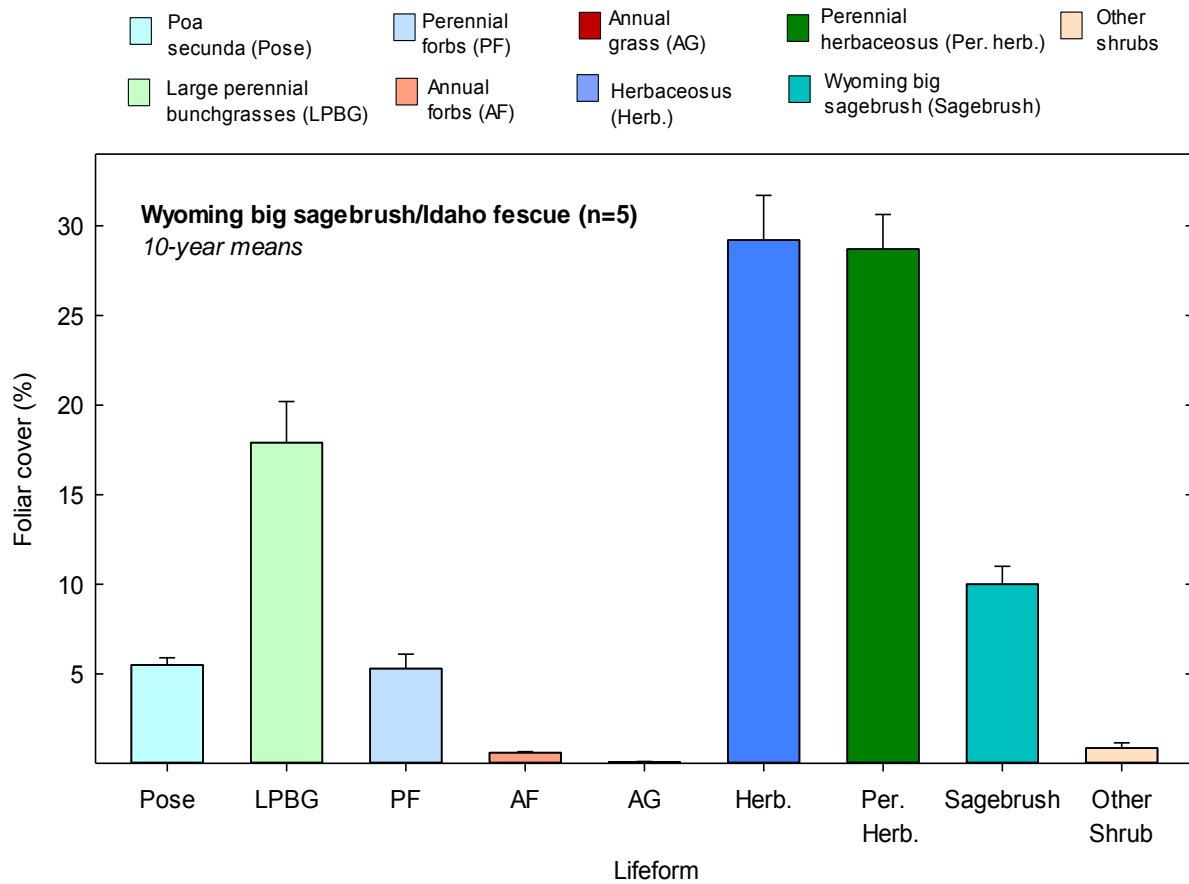


Figure 3. Foliar cover means of lifeforms for the Wyoming big sagebrush/Idaho fescue association; (n=5). Means are for a 10 yr. average (2003-2012). Sites were located in Harney and Malheur counties, Oregon in the High Desert and Owyhee ecological provinces.

Table 3. Foliar cover, plant density, and species counts for the Wyoming big sagebrush/Idaho fescue association; (n=5). Means are for a 10 yr. average (2003-2012). Sites were located in Harney and Malheur counties, Oregon in the High Desert and Owyhee ecological provinces.

Lifeform	Foliar Cover (%)	Density (Plants m ⁻²)	Species (per acre)
Sandberg's bluegrass	5.5 ± 0.6 (3-10)	27.8 ± 1.9 (15-54)	1
Perennial bunchgrass	17.7 ± 2.2 (8-29)	17.4 ± 2.2 (10-32)	5 (5-9)
Perennial forb	5.3 ± 0.8 (2-13)	16.2 ± 1.9 (8-32)	29 (27-34)
Perennial herbaceous	28.6 ± 2.6 (15-47)	61.5 ± 4.0 (41-102)	35 (5-9)
Annual forb	0.6 ± 0.1 (0.1-3)	- -	14 (12-18)
Other native grass/sedge ¹	<0.1	- -	<1
Cheatgrass	<0.1	- -	1
Exotic annual forb	0.1 ± 0.1 (0-0.2)	- -	2 (1-3)
Herbaceous	29.3 ± 2.6 (17-48)	- -	54 (51-60)
Sagebrush	9.0 ± 0.9 (3-11)	- -	- -
Other shrub	0.9 ± 0.4 (0-2.5)	- -	- -

Wyoming big sagebrush/Needle and Thread; (n=5)

The Wyoming big sagebrush/needle-and-thread association is representative of arid type of this sagebrush complex. The following 2 pages provides a synopsis of several vegetative characteristics for this association (Table 4; Figure 4). This association is grouped in the warm dry sagebrush type for purposes of evaluating sage-grouse habitat characteristics. All five of these sites are considered intact representatives of this association, having a balanced complement of herbaceous and shrub vegetation. Results here are comparable to a larger evaluation of Wyoming big sagebrush associations completed by Davies et al. 2007.

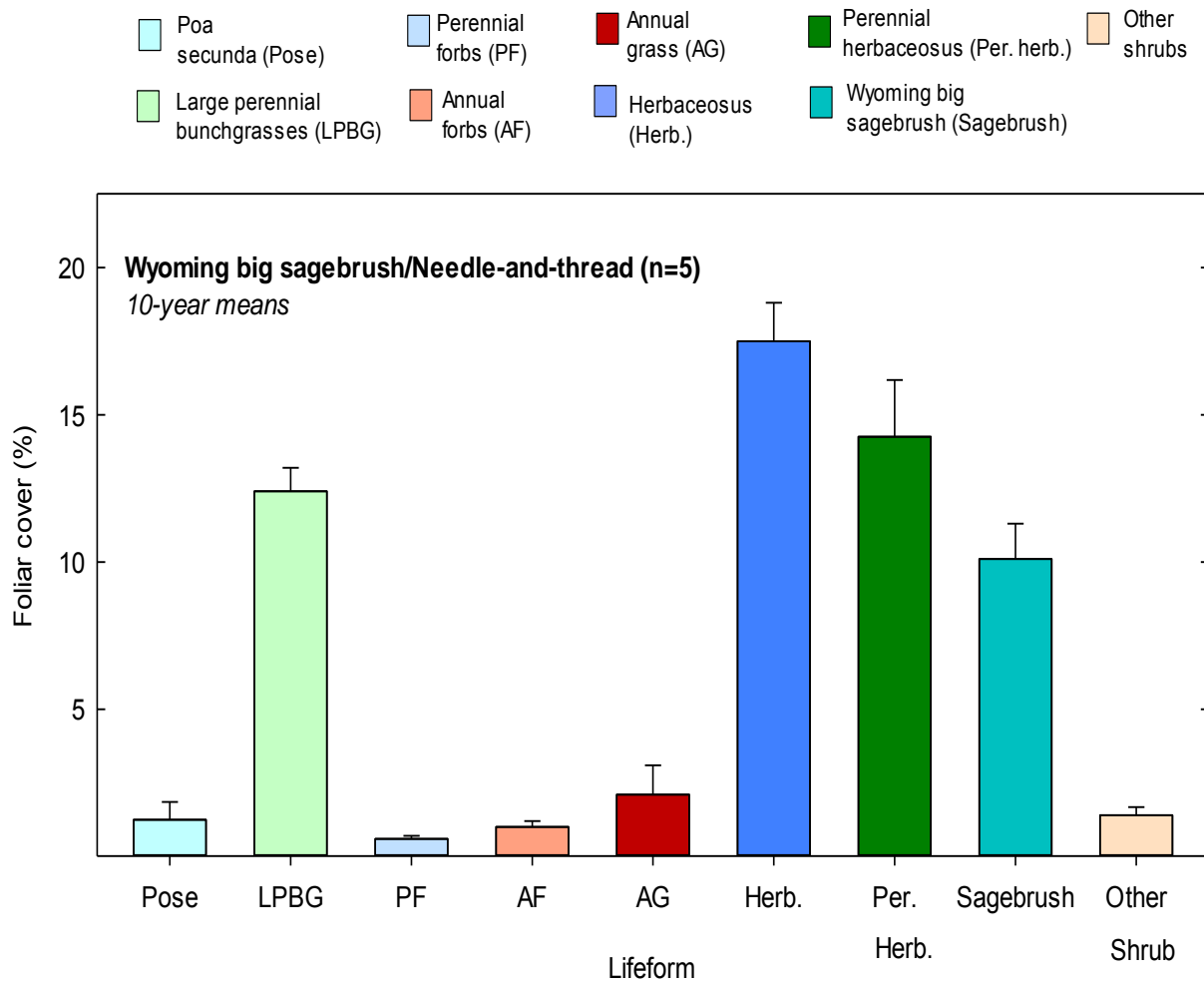


Figure 4. Foliar cover means of lifeforms for the Wyoming big sagebrush/needle-and-thread association; (n=5). Means are for a 10 yr. average (2003-2012). Sites were located in Harney and Lake counties, Oregon in the High Desert ecological province.

Table 4. Foliar cover, plant density, and species counts for the Wyoming big sagebrush/ needle-and-thread association; (n=5). Means are for a 10 yr. average (2003-2012). Sites were located in Harney and Lake Counties, Oregon in the High Desert ecological province.

Lifeform	Foliar Cover (%)	Density (Plants m ⁻²)	Species (per acre)
Sandberg's bluegrass	1.3 ± 0.6 (0-4)	3.0 ± 1.5 (0-14)	1
Perennial bunchgrass	12.4 ± 0.8 (7-18)	11.0 ± 1.4 (5-15)	6 (5-9)
Perennial forb	0.6 ± 0.1 (0-4)	1.0 ± 0.1 (0.1-2)	16 (8-23)
Perennial herbaceous	14.3 ± 1.3 (7-20)	14.1 ± 2.4 (6-27)	23 (17-34)
Annual forb	1.0 ± 0.2 (0-4)	- -	18 (17-18)
Other native grass/sedge ¹	0.2 ± 0.1 (0-1)	- -	2 (1-3)
Cheatgrass	2.1 ± 1.0 (0-14)	- -	1
Exotic annual forb	<0.1	- -	2 (1-3)
Herbaceous	17.6 ± 1.3 (7-30)	- -	47 (40-57)
Sagebrush	7.0 ± 1.3 (2-11)	- -	- -
Other shrub	1.4 ± 0.4 (0-2)	- -	- -

Wyoming big sagebrush/High Desert Mix; (n=5)

The Wyoming big sagebrush/High Desert Mix association is representative of mesic type of this sagebrush complex. These sites are roughly co-dominated by Thurber’s needlegrass, bluebunch wheatgrass, and Idaho fescue. Prairie junegrass and needle-and-thread are often common. The next 2 pages provide a synopsis of several vegetative characteristics for this association (Table 5; Figure 5). This association is grouped in the cool-moist sagebrush type for purposes of evaluating sage-grouse habitat characteristics. All these sites are considered intact representatives of this association, having a balanced complement of herbaceous and shrub vegetation. Results here are comparable to a regional evaluation of Wyoming big sagebrush associations completed by Davies et al. 2007.

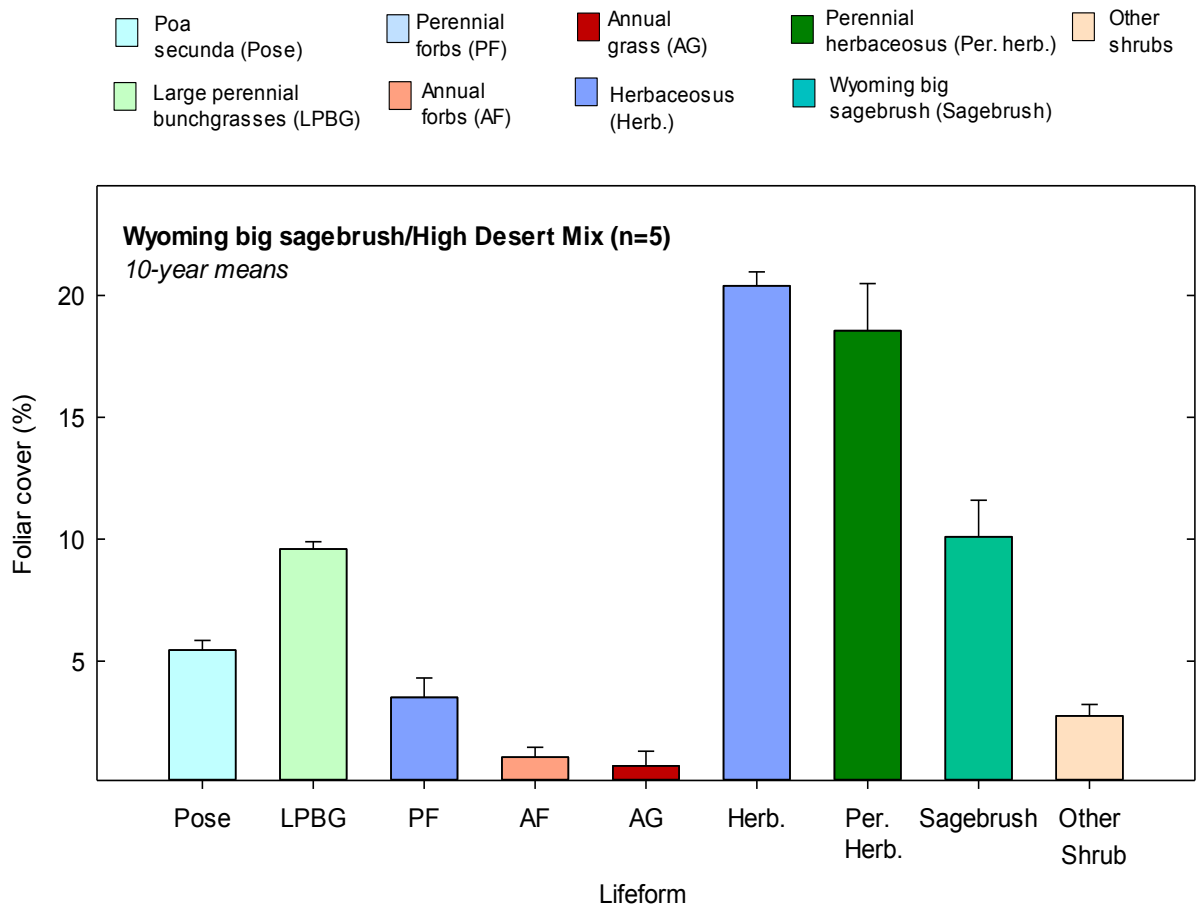


Figure 5. Foliar cover means of lifeforms for the Wyoming big sagebrush/High Desert Mix association; (n=5). Means are for a 10 yr. average (2003-2012). Sites were located in Harney and Lake Counties, Oregon in the High Desert ecological province.

Table 5. Foliar cover, plant density, and species counts for the Wyoming big sagebrush/High Desert Mix association; (n=5). Means are for a 10 yr. average (2003-2012). Sites were located in Harney and Lake Counties, Oregon in the High Desert ecological province.

Lifeform	Foliar Cover (%)	Density (Plants m ⁻²)	Species (per acre)
Sandberg's bluegrass	5.5 ± 0.7 (2-11)	24.4 ± 0.3 (9-66)	1
Perennial bunchgrass	9.6 ± 0.3 (4-19)	8.6 ± 0.6 (5-11)	7 (6-9)
Perennial forb	3.5 ± 0.3 (1-6)	8.5 ± 2.1 (2-16)	25 (18-32)
Perennial herbaceous	18.6 ± 0.8 (11-29)	41.5 ± 2.6 (27-88)	34 (25-41)
Annual forb	0.6 ± 0.4 (0.1-5)	- -	13 (9-19)
Other native grass/sedge ¹	< 0.1	- -	1
Cheatgrass	0.7 ± 0.6 (0-1)	- -	1
Exotic annual forb	0.5 ± 0.4 (0-3)	- -	1.6 (0-2)
Herbaceous	20.4 ± 0.6 (12-30)	- -	50 (34-61)
Sagebrush	9.7 ± 1.0 (7-12)	- -	- -
Other shrub	2.8 ± 0.6 (1-4)	- -	- -

Wyoming big sagebrush/Bluebunch wheatgrass –Thurber’s needlegrass; (n=5)

The Wyoming big sagebrush/Bluebunch wheatgrass –Thurber’s needlegrass association is representative of arid type of this sagebrush complex. The next 2 pages provide a synopsis of several vegetative characteristics for this association (Table 6; Figure 6). This association is grouped in the warm-dry and shallow-dry sagebrush types for purposes of evaluating sage-grouse habitat characteristics. All these sites are considered intact representatives of this association, having a balanced complement of herbaceous and shrub vegetation. Results here are comparable to a regional evaluation of Wyoming big sagebrush associations completed by Davies et al. 2007.

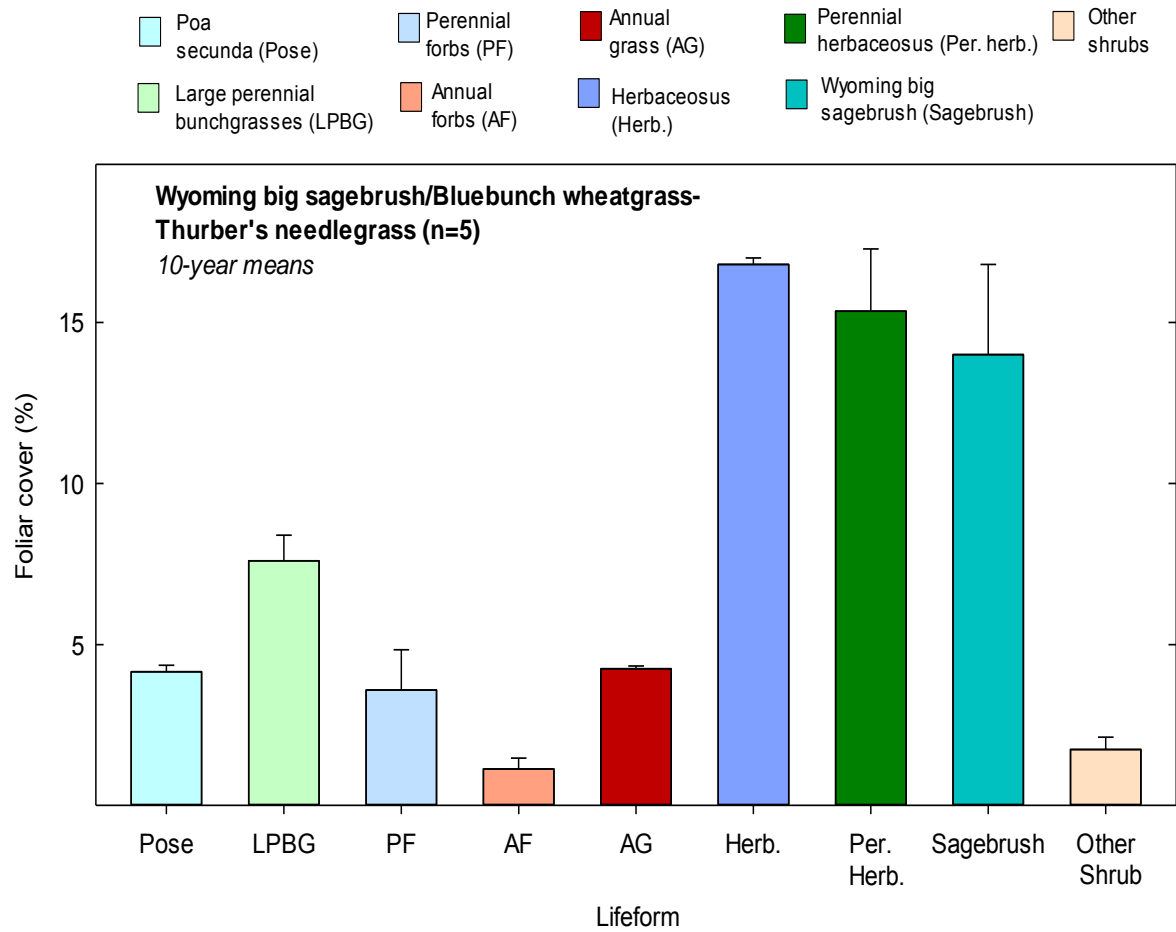


Figure 6. Foliar cover means of lifeforms for the Wyoming big sagebrush/bluebunch wheatgrass-Thurber’s needlegrass association; (n=5). Means are for a 10 yr. average (2003-2012). Sites were located in Harney and Malheur Counties, Oregon in the High Desert and Owyhee ecological provinces.

Table 6. Foliar cover, plant density, and species counts for the Wyoming big sagebrush/ Bluebunch wheatgrass – Thurber’s needlegrass association; (n=5). Means are for a 10 yr. average (2003-2012). Sites were located in Harney and Malheur Counties, Oregon in the High Desert and Owyhee ecological provinces.

Lifeform	Foliar Cover (%)	Density (Plants m ⁻²)	Species (per acre)
Sandberg’s bluegrass	4.1 ± 0.2 (2-8)	25.0 ± 0.7 (2-11)	1
Perennial bunchgrass	7.6 ± 0.8 (4-14)	6.5 ± 0.7 (2-11)	5 (4-5)
Perennial forb	3.6 ± 1.3 (0.5-8)	10.0 ± 0.7 (2-11)	21 (19-24)
Perennial herbaceous	15.3 ± 0.3 (8-20)	41.5 ± 0.7 (2-11)	28 (27-29)
Annual forb	1.1 ± 0.3 (0-2)	- -	17 (13-19)
Other native grass/sedge ¹	< 0.1	- -	< 1
Cheatgrass	0.3 ± 0.1 (0-2)	- -	1
Exotic annual forb	< 0.05	- -	1 (0-3)
Herbaceous	16.8 ± 0.2 (12-28)	- -	47 (41-50)
Sagebrush	13.0 ± 2.7 (8-18)	- -	- -
Other shrub	1.8 ± 1.2 (0-5)	- -	- -

References

Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. *Wildlife Society Bulletin* 28:967–985.

Davies, K.W., J.D. Bates, and R.F. Miller. 2006. Vegetation characteristics across part of the Wyoming big sagebrush alliance. *Rangeland Ecology and Management* 59:567-575.

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