

Pheasant Brood Survey Report – 2017

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**SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND PARKS
PIERRE, SOUTH DAKOTA**

WILDLIFE SURVEY REPORT

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SOUTH DAKOTA PHEASANT BROOD SURVEY 2017 REPORT

SD Game, Fish and Parks conducts pheasant brood surveys each summer to evaluate the status of pheasant populations and predict pheasant population levels relative to previous years. This information, when combined with other factors such as status of the agricultural harvest and historical hunting pressure, can be used to predict hunter success and satisfaction for geographical areas of the state. Densities of pheasants alone do not infer high or low hunter success and satisfaction. Access to hunting opportunities is equally, if not more important to densities of pheasants in evaluating potential hunter success and ultimately, hunter satisfaction.

In 2017, survey indices were derived from 110, 30-mile pheasant brood routes that are distributed across South Dakota where pheasants are found in sufficient number for surveying. Routes are surveyed from 25 July through 15 August each year using standardized methods on mornings when weather conditions are optimal for observing pheasants. Also, pheasant brood members are opportunistically counted throughout the survey period to estimate an average number of young per brood. Pheasants per mile (PPM) estimates are calculated by summing the product of mean brood sizes and broods observed with numbers of cocks and hens observed on each route. PPM estimates for 2016 and the average of the previous 10 years are compared with the 2017 survey results. Results are compared within local areas with Wilcoxon signed-rank tests which take into account the direction (up or down) and magnitude of change for each route. Since PPM estimates are *relative* density estimates, comparisons are valid only between years within each local area.

County brood survey routes are allocated to local area analyses as follows:

- Chamberlain: Brule, Buffalo, Charles Mix (north route), Gregory (north route), Hyde, Lyman, Tripp (north route), and Aurora.
- Winner: Tripp, Gregory, Lyman (south route), Jones (south route), Mellette, and Todd.
- Pierre: Hughes, Jones, Lyman, Potter (south route), Stanley, Hand (south route only), Hyde, and Sully.
- Mobridge: Campbell, Corson, Dewey, Potter (north and central routes), and Walworth.
- Aberdeen: Brown, Marshall, Day, Edmunds, Faulk, Spink (north and central routes), and McPherson.
- Huron: Hand (north and central routes), Beadle, Jerauld, Kingsbury, Sanborn, Miner, Clark (south route only), and Spink (south and central routes).
- Mitchell: Davison, Hanson, Charles Mix (central route), Douglas, Aurora, Hutchinson (north and west routes), Jerauld, McCook, Miner, and Sanborn.
- Yankton: Yankton, Charles Mix (south route), Bon Homme, Clay, Turner/Hutchinson (west and south routes), and Union.
- Sioux Falls: Minnehaha, Turner/Hutchinson (north route), Lake, Lincoln, McCook, and Moody.
- Brookings: Brookings, Deuel (south route), and Hamlin (south and central routes), Kingsbury, Lake (north route), and Moody.
- Watertown: Codington, Clark, Deuel, Grant, and Hamlin.
- Sisseton: Grant, Day (north route), Marshall, and Roberts.
- Western SD: Bennett, Haakon, Perkins, Butte and Fall River.

SURVEY RESULTS

Overview

The statewide Pheasants Per Mile (PPM) index for the 2017 pheasant brood survey decreased 45% (3.05 to 1.68) compared to the 2016 statewide index (Table 1, Figure 1). This year's index is 65% lower than the 10-year average (2017 = 1.68, 10-year average = 4.82). Compared to 2016, fewer roosters, hens and broods were counted throughout the 110 survey routes. Statewide, 16 routes of the 110 surveyed showed an increase in PPM from 2016.

Adult Bird and Brood Data

The number of roosters was nearly unchanged from last year (903 vs. 907). The number of hens counted decreased 35% from last year (987 vs. 1,511). Total broods counted decreased by 44% (728 vs. 1,291), while the statewide average brood size decreased by 16% (4.99 vs. 5.91). Average brood sizes declined in all parts of the state (Figure 2). The statewide average brood size for 2017 (4.99) is 18% below the 10-year average (6.10) and the lowest ever recorded.

Local Area

2017 vs. 2016 and 10-Year Average PPM

All local area PPM indices decreased significantly from 2016 (Table 1, Figures 3 and 4). All local areas are significantly below the 10-year average (Table 1, Figures 3 and 4).

Survey Weather Conditions

This survey relies on very specific weather conditions to maximize pheasant observability. Pheasants are most visible during mornings with clear skies, heavy dew, and light winds. Under these "prime" survey conditions, pheasants congregate in open areas such as roadways to dry their feathers in the warm morning sun. It is the goal to conduct all surveys under prime conditions so results are comparable from year to year. This year, 96 of the 110 survey routes were conducted at least one time during prime conditions. Many routes were surveyed more than once in an attempt to get at least one survey completed under primary conditions. Final results show 80 of the highest counts for the 110 routes coincided with prime conditions. Cold morning temperatures may also lower pheasant observability during otherwise prime conditions. Morning temperatures were less than or equal to 55° F for 55 high-count surveys. Last year, 66 survey routes were conducted at least one time under primary conditions.

INTERPRETATIONS & DISCUSSION

Above normal snowfall and severe ice conditions occurred in north-central portions of the state which could have reduced winter survival of pheasants. Following a difficult winter, widespread intense drought during the nesting and brood-rearing season occurred. It is believed the main contributor to the significant statewide decline in pheasant abundance is a direct result of the extreme dry conditions during the primary nesting and brood-rearing season.

There are several mechanisms in which drought can negatively influence pheasant reproductive success. Drought was severe enough in central and north-central South Dakota to impede growth of cool season grasses which normally provide ideal nesting cover by mid-May. Without adequate spring growth, pheasant nests may have been more vulnerable to predation. Many small grain fields failed due to lack of moisture and were either treated with herbicide and/or bailed for forage. Small grain fields represent an important pheasant nesting habitat which was less available in many areas this year. During very severe drought, pheasants are known to be

less likely to renest if an initial nest is unsuccessful which would further amplify the negative impact.

Nearly all of the primary pheasant range was experiencing some level of drought by the peak brood-rearing period of mid-July (Figure 5). Pheasant chicks rely on protein-rich insects for most of their diet during the first 8 weeks of life. Hot and dry weather can reduce insect abundance and reduce chick survival. Poor concealment cover caused by the drought could also increase chick predation. Chicks less than 10 days of age are unable to fully regulate their body temperature. Air temperatures greater than 95° F were common across the region which can cause heat stress and reduced survival in young chicks. It appears chick survival was particularly poor this year as the average brood size was the lowest ever recorded for this survey dating back to 1949. The significant decline in PPM and small average brood sizes for the far southeast and northeast region was a bit surprising as drought was not as severe.

The steady decade-long decline in PPM is likely related to upland habitat loss. Lands enrolled in the Conservation Reserve Program (CRP) represent the premium nesting habitat in the state and have declined by 37% or 580,000 acres since 2007 (Figure 6). The combined availability of hayland, small grains, and CRP has declined by 45% or 4.9 million acres since 1990 (Figure 7). This represents an average daily loss of 500 acres for the past 27 years. During the 15-year period of 1982 - 1997, 1.82 million acres of grassland were converted to cropland (U.S. GAO 2007). A more recent study found 1.84 million acres of grassland were lost, primarily to conversion to cropland, from 2006 - 2012 (Reitsma et al. 2014). Environmental conditions will always contribute heavily to year to year changes in pheasant abundance, but the long term erosion of required habitat will undoubtedly result in lower lows and lower highs.

Pheasant abundance as measured by this survey is slightly higher than 2013 when hunters harvested a respectable 980,000 roosters. Opportunities will still exist for quality pheasant hunting. Hunters should be aware that emergency haying and grazing has been authorized for most CRP in the state which will include some lands enrolled in the Walk-In Area program. Additionally, many lands enrolled in the Conservation Reserve Enhancement Program were either hayed or grazed as part of regularly scheduled required management.

With 1.1 million acres of public hunting land within the heart of SD's pheasant range, opportunities remain for quality pheasant hunting. The annual hunting atlas and a web-based interactive map of public lands and private lands leased for public hunting can be found at <http://gfp.sd.gov/hunting/areas>. In addition to printed and interactive maps, hunters can utilize GPS downloads and smartphone applications to locate public hunting lands throughout the state. Hunters are again asked to hunt safely and ethically, respect private landowners and those public hunting areas scattered across the state, and enjoy the South Dakota tradition of hunting pheasants with family and friends this fall.

Literature Cited

- Reitsma, K. D., D. E. Clay, C. G. Carlson, B. H. Dunn, A. J. Smart, D. L. Wright, and S. A. Clay. 2014. Estimated South Dakota Land Use Change from 2006 to 2012. iGrow Publication 03-2001-2014, A service of SDSU extension. South Dakota State University Department of Plant Science, Brookings.
- U.S. Governmental Accountability Office [U.S. GAO]. 2007. Farm program payments are an important consideration in landowners' decisions to convert grassland to cropland. GAO report number 07-1054. Washington D. C. Available from <http://www.gao.gov/products/A76147>

Table 1. Pheasants Per Mile (PPM) index values comparing 2017 to 2016 and 10-year averages. Note: Comparisons are valid only between years within each local area.

Local Area	Routes	Pheasants Per Mile (PPM)			Difference of 2016 PPM with	
		2017	2016	10-yr ave	2016	10-year ave
Chamberlain	11	4.05	7.01	11.68	-42%*	-65%*
Winner	8	2.52	4.88	6.94	-48%*	-64%*
Pierre	13	3.13	6.48	8.90	-52%*	-65%*
Mobridge	8	2.10	5.01	6.75	-58%*	-69%*
Aberdeen	14	1.02	1.89	4.63	-46%*	-78%*
Huron	17	1.85	3.10	5.51	-40%*	-66%*
Mitchell	16	2.52	3.78	4.92	-32%*	-48%*
Yankton	10	0.83	1.39	1.44	-40%*	-42%*
Sioux Falls	13	0.80	1.51	1.74	-47%*	-54%*
Brookings	11	0.80	1.63	2.50	-51%*	-68%*
Watertown	12	0.81	1.78	3.11	-54%*	-74%*
Sisseton	5	0.40	1.22	1.55	-67%*	-74%*
Western SD	5	1.37	2.43	2.56	-44%*	-47%*
STATEWIDE	110	1.68	3.05	4.82	-45%*	-65%*

* Results of Wilcoxon signed-rank test significant ($P < 0.10$)

Figure 1. Statewide Pheasants Per Mile (PPM) index for South Dakota, 2003 – 2017.

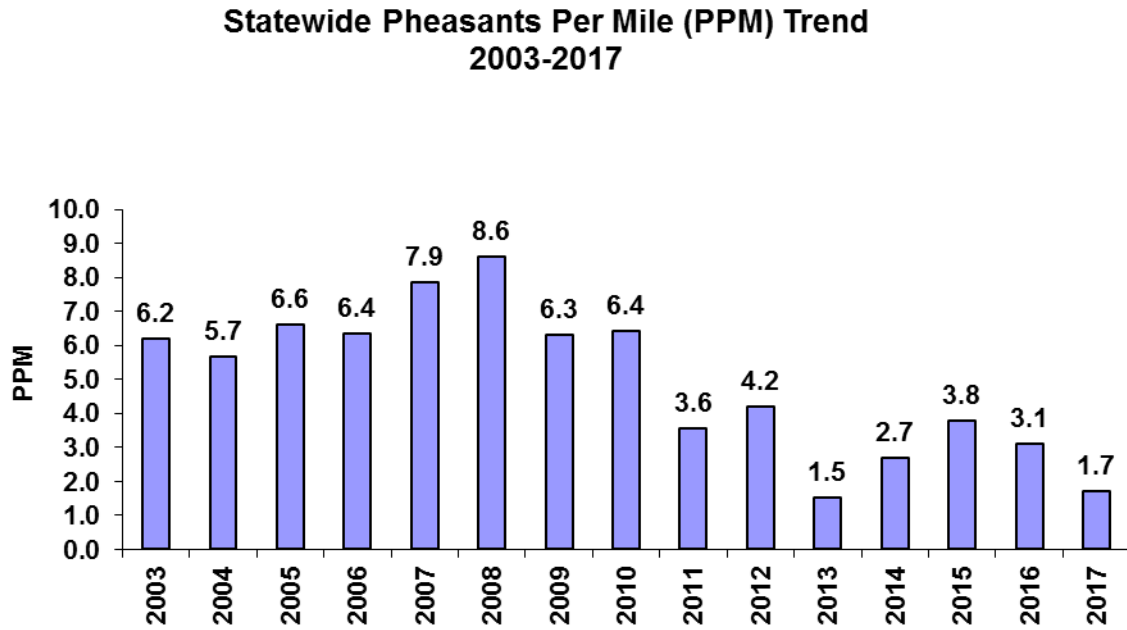


Figure 2. State map with brood size comparisons for 2016 and 2017.

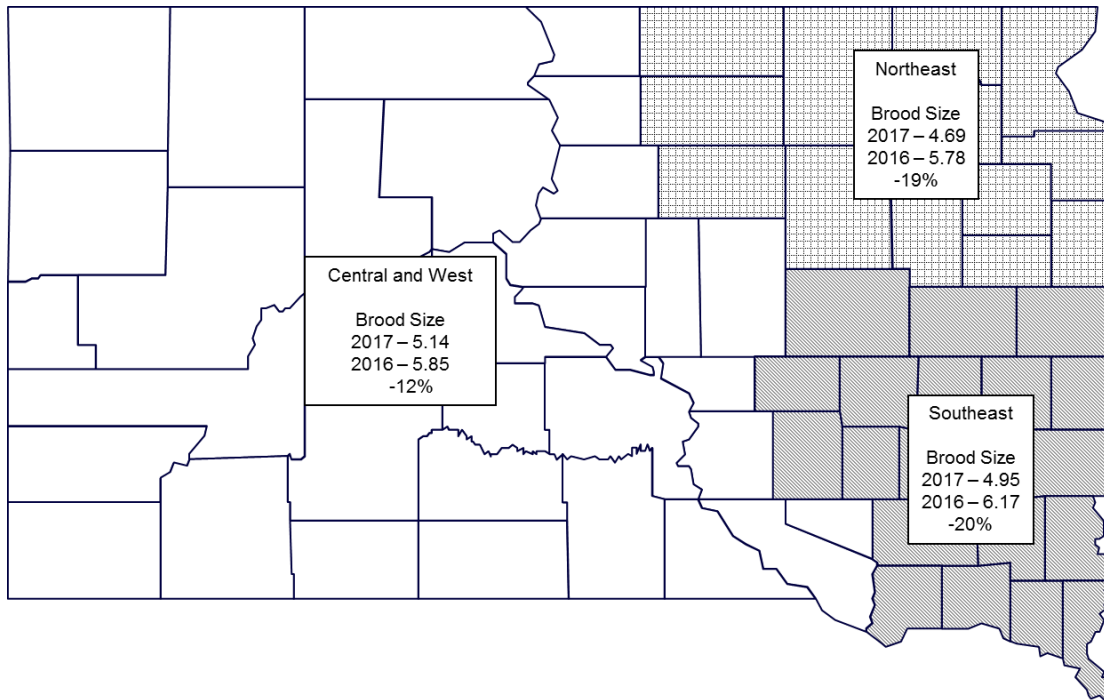


Figure 3. City area Pheasant Per Mile (PPM) indices over the past 10 years.

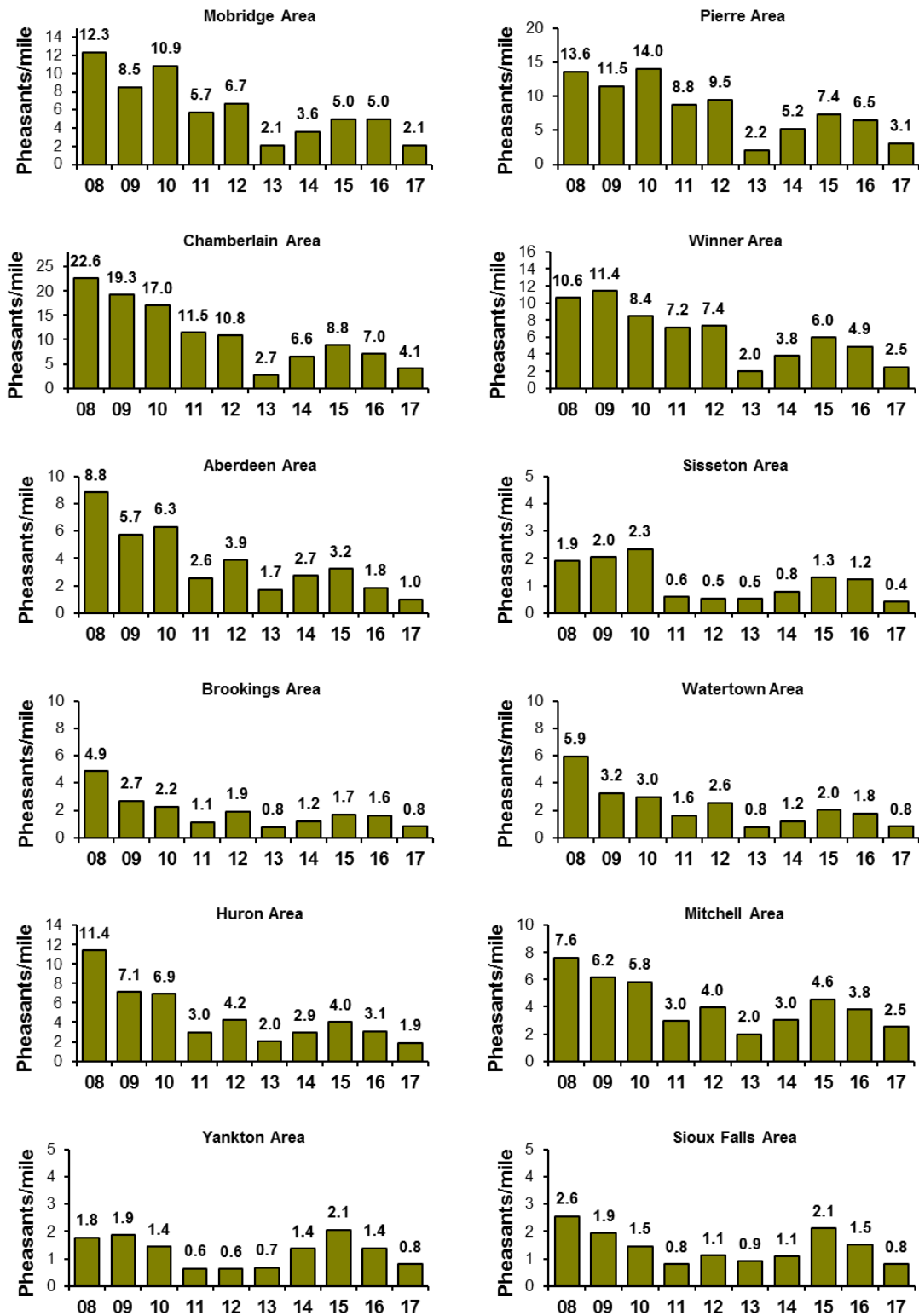


Figure 4. Pheasants Per Mile comparison among local areas for 2017, 2016, and the ten-year average.

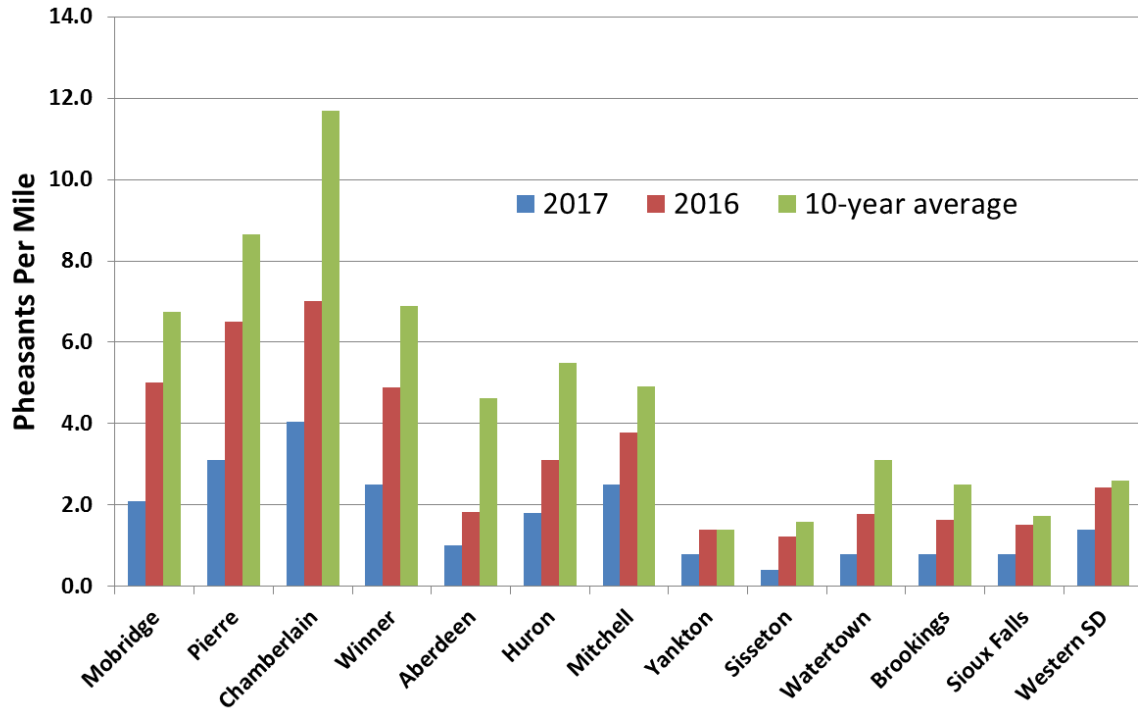
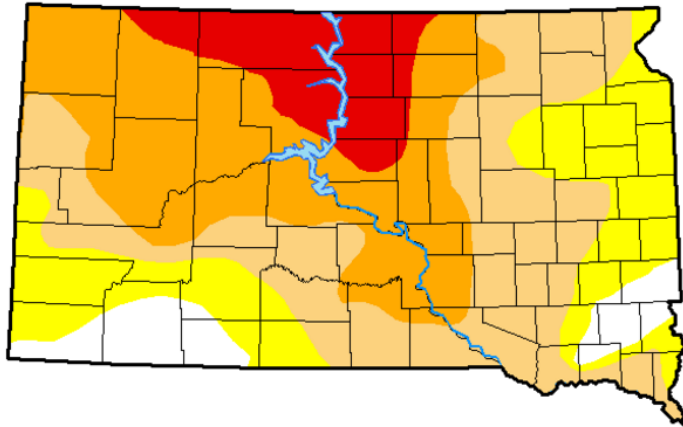


Figure 5. South Dakota drought status as of July 11, 2017.

U.S. Drought Monitor South Dakota

July 11, 2017
(Released Thursday, Jul. 13, 2017)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	6.84	93.16	72.41	41.58	10.74	0.00
Last Week <i>07-04-2017</i>	9.32	90.68	57.73	34.14	4.30	0.00
3 Months Ago <i>04-11-2017</i>	82.81	17.19	0.27	0.00	0.00	0.00
Start of Calendar Year <i>01-03-2017</i>	61.22	38.78	26.01	6.00	0.00	0.00
Start of Water Year <i>09-27-2016</i>	47.50	52.50	20.95	4.93	1.09	0.00
One Year Ago <i>07-12-2016</i>	48.12	51.88	32.02	5.73	0.81	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

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<http://droughtmonitor.unl.edu/>

Figure 6. Change in Conservation Reserve Program lands from 2007 – 2016.

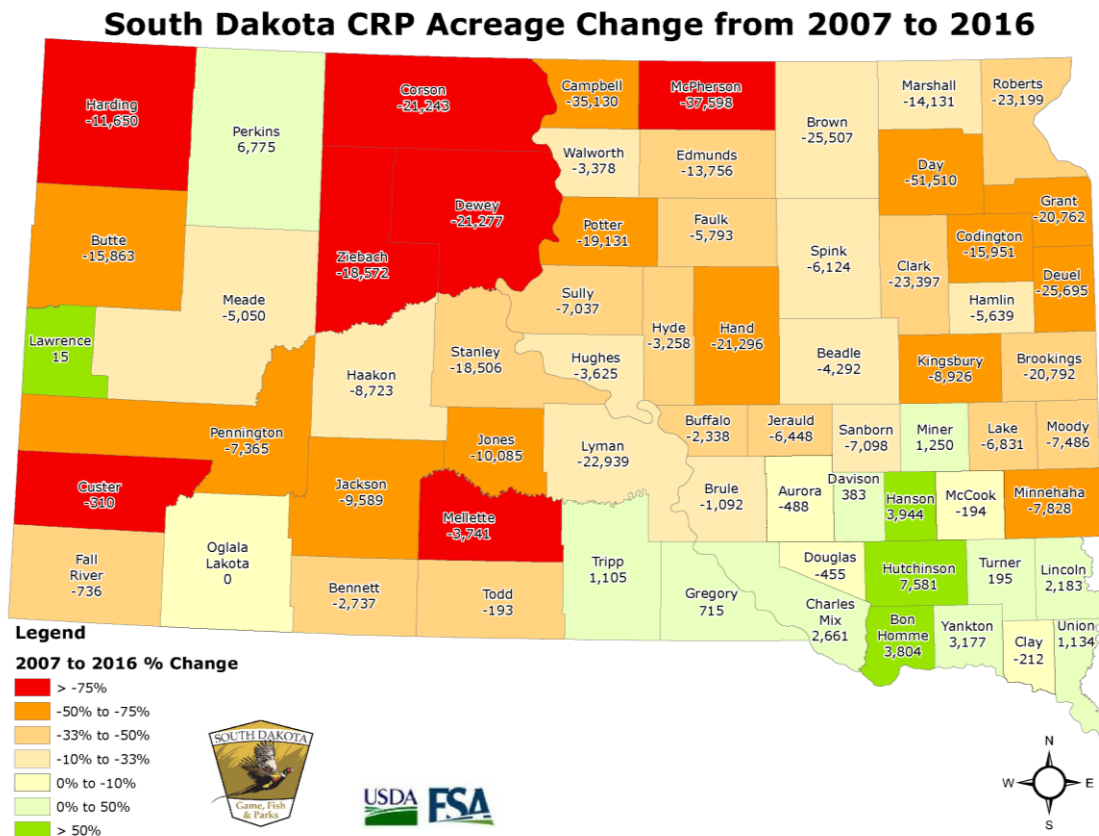


Figure 7. Pheasant per mile index in relation to selected statewide nesting habitat acreage 1960 - 2017. (<https://www.nass.usda.gov/>)

