

Pheasant Brood Survey Report – 2011

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SOUTH DAKOTA PHEASANT BROOD SURVEYS 2011 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 2011, survey indices were derived from 107, 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 2010 and the average of the previous 10 years are compared with the 2011 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), 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/Hyde (south route only), and Sully.
- Mobridge: Campbell, Corson, Dewey, Potter (north and central routes), and Walworth.
- Aberdeen: Brown, Marshall, Day (south route), 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

Results from the 2011 pheasant brood survey indicate the statewide Pheasants Per Mile (PPM) index decreased by 46% (6.54 to 3.55) compared to the 2010 index. In comparison to the 10-year average, this year's index is 41% lower (2011 = 3.55, 10-year ave. = 6.04). Compared to 2010, department staff counted fewer roosters, hens and broods throughout the 107 survey routes, while the average brood size decreased by 8%. Statewide, 95 routes of the 107 surveyed indicated a decrease from 2010 and the 10-year average; with 12 routes showing an increase.

Adult Bird and Brood Data

The total number of roosters counted during the 2011 survey was down 18% from the 2010 survey (1,685 vs. 2,045; Figure 1). In addition, the number of hens counted was down 36% from last year (1,933 vs. 3,037; Figure 1). Total broods counted decreased by 48% (1,353 vs. 2,581; Figure 1), while the statewide average brood size decreased by 8% (5.80 vs. 6.25). Average brood sizes decreased in all GF&P administrative regions, except for Region 3 (southeastern South Dakota) where the average brood size increased 4% from 2010 (Figure 2). The statewide average brood size for 2011 (5.80) is lower (-12%) than the 10-year average (6.55).

Local Area

2011 vs. 2010

All local area PPM indices declined significantly compared to 2010, except Winner and Western SD which did not change significantly from last year (Table 1).

2011 vs. 10-Year Average

The Pierre and Western South Dakota local area PPM indices are higher than the respective 10-year average, although not significantly (Table 1). Although not statistically lower, the PPM indices for the Winner and Mobridge local areas are lower than the respective 10-year average. All other local areas had significantly lower PPM indices than the 10-year average.

INTERPRETATIONS & DISCUSSION

The extremely severe winter of 2010-2011 likely resulted in high pheasant mortality and subsequent declines in PPM throughout the state. By the first of December, all of SD had some snow pack, and in the north-central snow pack had already reached nearly ten inches. Several more snow events added to the snowfall total before the historic New Year's Day blizzard added another 20 inches of snow over most of SD's pheasant belt. A short February thaw did reduce snow cover in portions of central and western SD, but the warm weather was quickly reinforced with more snow in mid-February and March. By late March, all of SD still had a thin snow pack. A mid-April snow storm added insult to injury as SD struggled to transition from winter to spring. Much of SD's pheasant belt had snow cover for 120 consecutive days with cumulative snow fall ranging from 40 - 70 inches. Without a doubt, the winter of 2010-2011 was the harshest SD has experienced since 1996-1997.

Pheasants are well adapted to survive harsh winter weather conditions, especially when high quality winter cover such as shelterbelts, cattail sloughs, and food plots are present. However, 4 months of extreme snow pack likely tested the adaptability of pheasants, even those that had access to high quality winter habitat. Research has revealed most pheasant winter mortalities are attributed to predation and exposure to the elements. Pheasants are more visible and

vulnerable to predators when snow cover exists, plus pheasants must spend more time searching for food when snow blankets their food source of waste grain. Additional pheasants certainly died from exposure to the elements as SD was pelted with several relentless blizzards. Although pheasants rarely starve to death, conditions were extreme enough in the hardest hit areas of north-central and north-eastern SD that starvation could have been an issue late in the winter.

Rooster pheasants are less susceptible to starvation because of their slightly larger body size and higher fat reserve entering winter. The ratio of hens:rooster as counted during department winter sex ratio surveys declined throughout the winter indicating hens were being lost at a higher rate than roosters. By the end of the winter, the ratio had declined from 3:1 to nearly 1:1 which suggests heavy winter hen mortality, and likely heavy losses of all pheasants. An abnormally low ratio of 1.2 adult hens:rooster was also observed during this survey which further suggests winter loss was high for hen pheasants.

Results of the 2011 pheasant brood survey indicate mixed results in regards to reproductive success. On the positive side, abundant winter snow fall and spring precipitation during the past several years has resulted in more than adequate residual vegetation and strong early season grass growth which provides excellent concealment cover for nesting. Nearly 70% of hens observed during the survey had a brood which indicates good nest success. However, mean brood size was smaller than last year and the 10-year average. Widespread heavy rain during the third week of June may have caused some chick mortalities and reduced the statewide brood size. Heavy rainfalls may have also contributed to the loss of nests, resulting in re-nest attempts which typically have smaller clutch sizes.

SD's pheasant population is strongly influenced by the amount of available nesting habitat, especially managed grasslands such as land enrolled in the Conservation Reserve Program (CRP). Although CRP acreage increased slightly from 1.06 to 1.17 million acres during 2010 – 2011, acreage is still well below levels seen in 2007 and prior when greater than 1.55 million acres were present (Figure 5). Furthermore, recently enrolled CRP fields take several years to establish so acreage of established CRP habitat is less than 1.17 million acres. Declines in pheasant abundance since 2007 are certainly due in part to loss of important CRP habitat. Pheasant response to CRP loss has been most obvious along the eastern fringe of SD where CRP represents a high proportion of available nesting habitat in an agricultural dominated landscape (Figure 6). Although declines in pheasant abundance would have likely occurred without the recent loss of CRP due to unfavorable weather conditions, the loss of critical nesting habitat has certainly contributed to the severe decline and can not be ignored. Concurrently, persistent loss of grazing lands by the conversion to agriculture production continues to decrease SD's pheasant population potential and other grassland-dependent species.

On the heels of arguably the best decade of pheasant hunting SD has ever seen, habitat loss, a series of brutal winters and cold wet springs have tested the adaptability of SD ring-necks. Even with extremely unfavorable weather conditions and loss of important habitat such as CRP lands, SD's pheasant abundance is still comparable to levels of the 1990s-early 2000s when pheasant harvest averaged a respectable 1.2 million birds annually. Sportsmen should still expect good pheasant hunting in 2011, especially in the central part of the state. The Winner, Pierre, and Mobridge local areas are still near or above the 10-year average while the Chamberlain area is only 25% lower than the 10-year average. The past 10-years, particularly the mid-2000s, have provided world class pheasant hunting as pheasant populations held steady at historic levels.

With 700,000 acres of prime public hunting land within the heart of South Dakota's pheasant range, opportunities again exist for quality pheasant hunting. As enrollment is now open for the new James River Conservation Reserve Enhancement Program, hunters will find additional CRP lands available for public hunting this fall in east-central South Dakota. 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>.

Hunters are reminded to review local area trends of their interest and to visit with those in their traditional hunting areas on local population levels and habitat conditions. 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.

Table 1. Pheasants Per Mile (PPM) index values comparing 2011 to 2010 and 10-year averages.

Local Area	Routes	Pheasants per mile (PPM)			Difference of 2011 PPM with	
		2011	2010	10-yr ave	2010	10-year ave
Chamberlain	10	11.51	17.00	15.70	-32%*	-27%*
Winner	8	7.16	8.42	7.41	-15% ^{ns}	-3% ^{ns}
Pierre	12	9.15	13.95	8.50	-34%*	8% ^{ns}
Mobridge	8	5.73	10.85	6.35	-47%*	-10% ^{ns}
Aberdeen	14	2.56	6.48	6.65	-61%*	-62%*
Huron	16	3.00	6.88	7.87	-56%*	-62%*
Mitchell	15	2.83	5.84	6.27	-52%*	-55%*
Yankton	10	0.63	1.45	1.51	-57%*	-58%*
Sioux Falls	13	0.79	1.45	2.38	-46%*	-67%*
Brookings	11	1.13	2.25	4.47	-50%*	-75%*
Watertown	12	1.68	2.99	4.86	-44%*	-65%*
Sisseton	4	0.58	2.33	1.97	-75%*	-70%*
Western SD	5	3.28	4.27	2.67	-17% ^{ns}	32% ^{ns}
STATEWIDE	107	3.55	6.54	6.04	-46%*	-41%*

^{ns} Results of Wilcoxon signed-rank test not significant ($P > 0.10$)

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

NOTE: Comparisons are valid only between years within each local area.

Figure 1. Number of roosters, hens, and broods counted during annual pheasant brood surveys, 2002-2011. The dashed line illustrates the trend over the past 10 years.

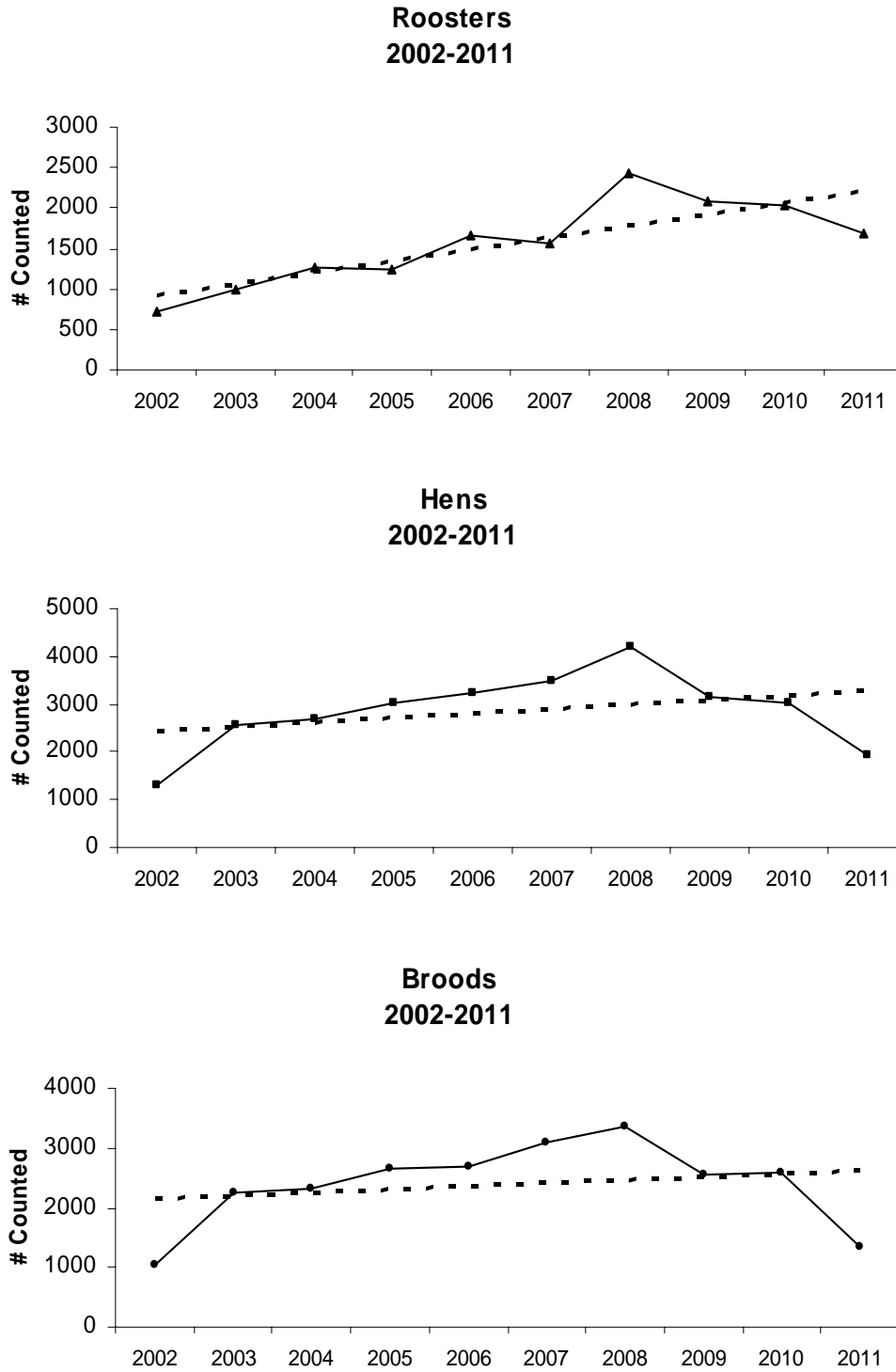


Figure 2. State map with GF&P administrative regions and brood size comparisons for 2010 and 2011.

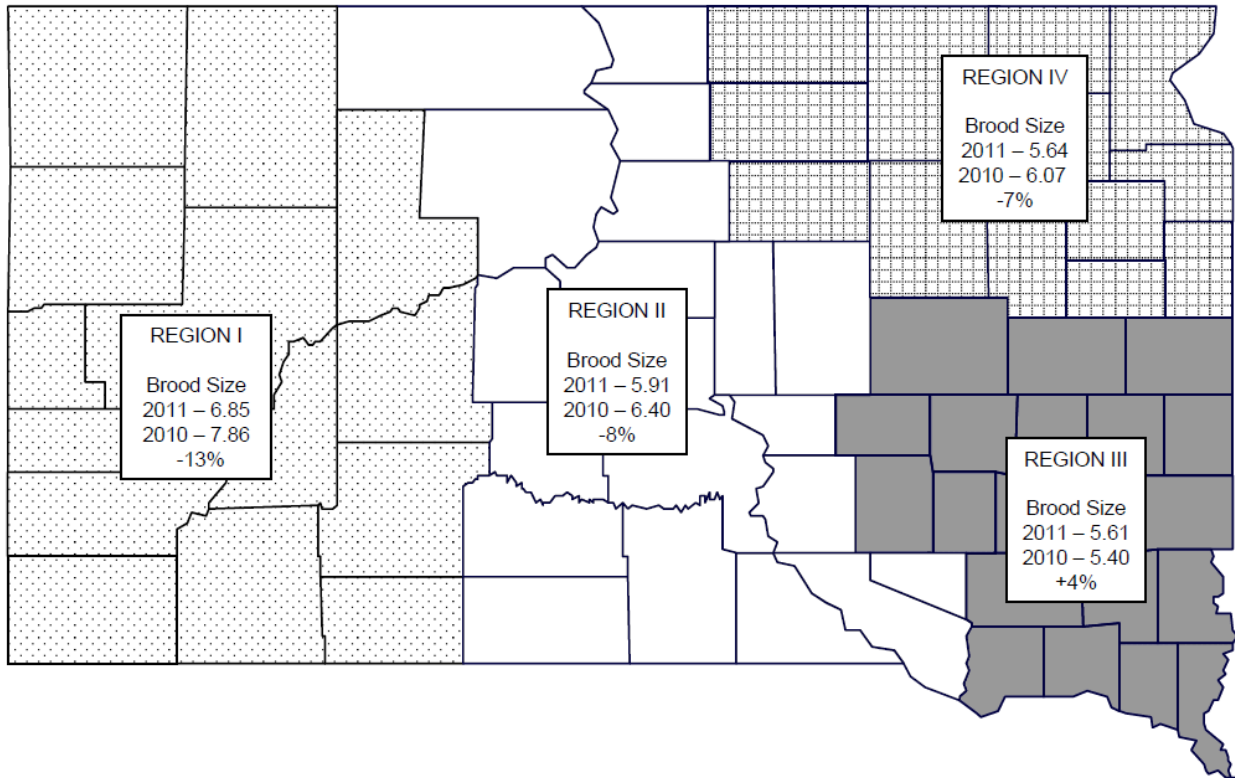


Figure 3. City area pheasant per mile (PPM) indices over the past 10 years.

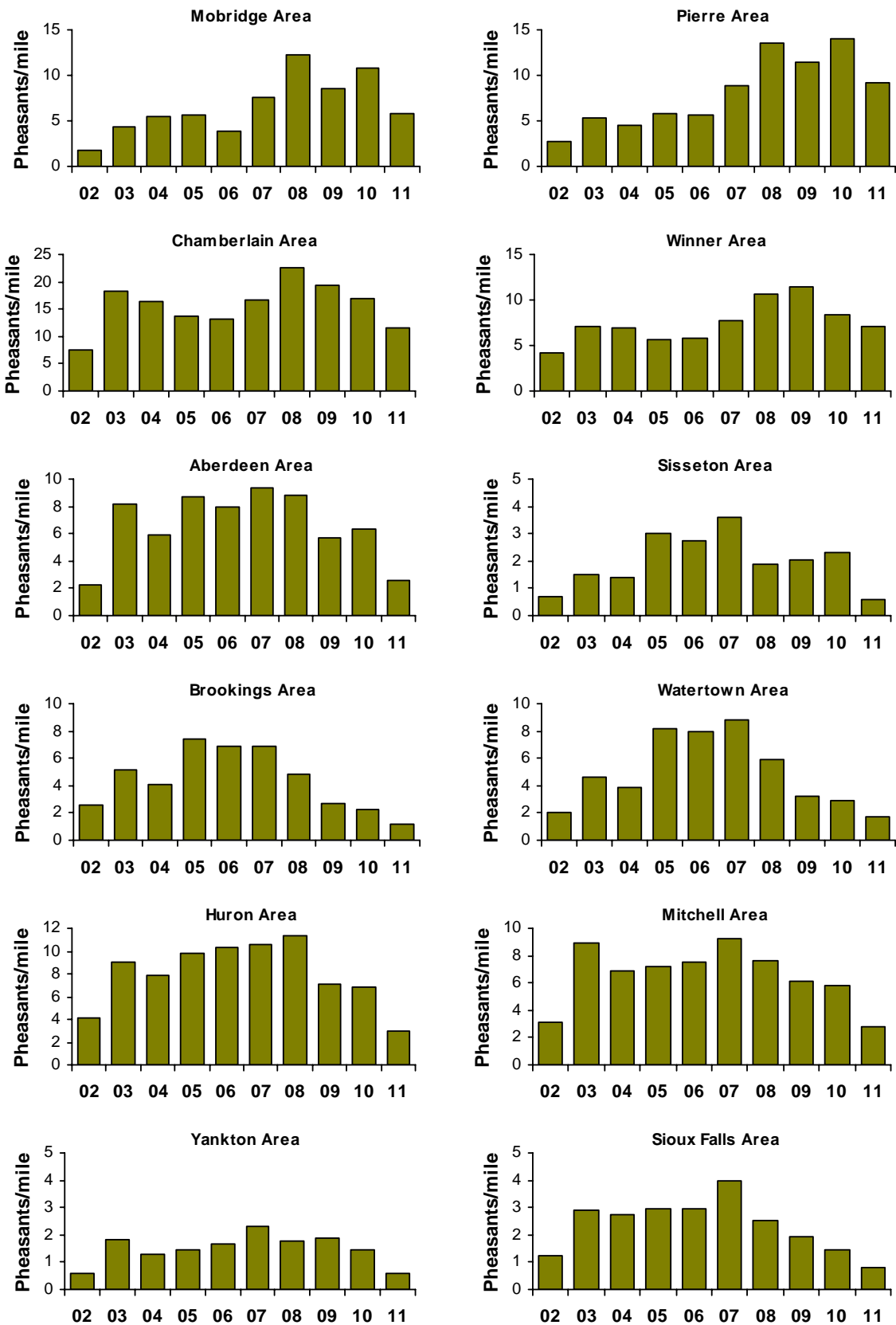


Figure 4. Statewide Pheasants Per Mile (PPM) index for South Dakota, 2002-2011. Dashed line illustrates the trend over the past 10 years.

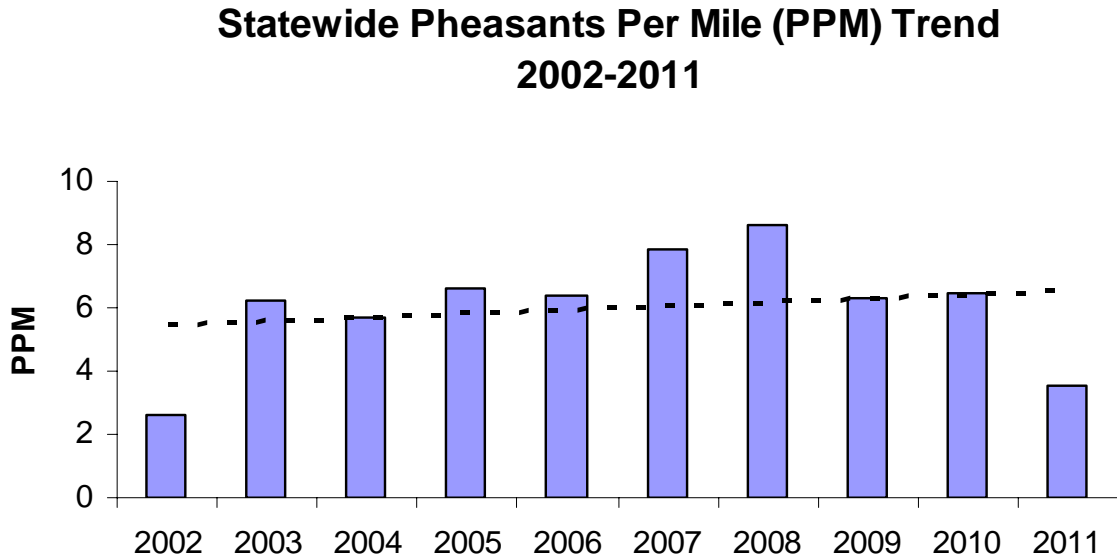


Figure 5. GF&P administrative regions and CRP acreage comparisons between July 2007 and July 2011.

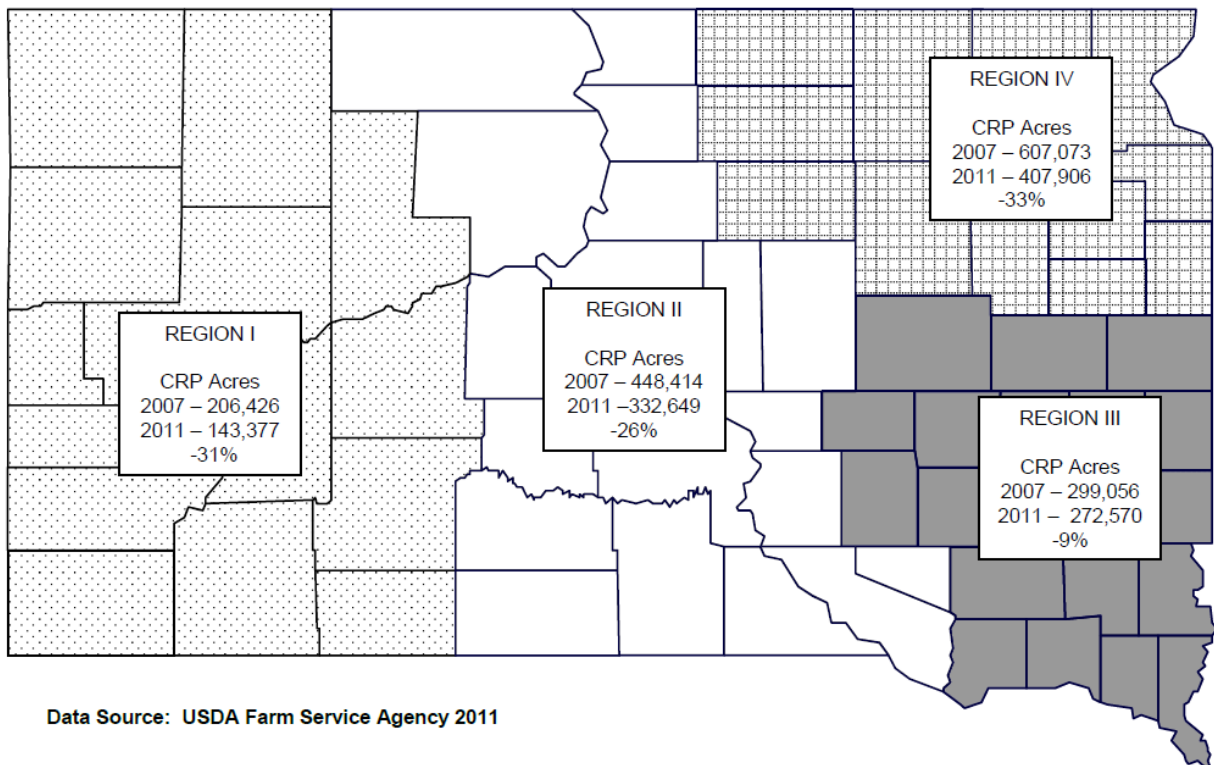


Figure 6. Number of CRP acres and PPM during 2005 - 2011 in selected counties (red) of eastern SD.

