



Wyoming Game and Fish Department

ANNUAL BLACK BEAR MORTALITY SUMMARY

Harvest Year - 2016



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INTRODUCTION

This document contains a summary of Wyoming's black bear mortalities for the 2014 through 2016 black bear hunting seasons. Mortalities are categorized by cause, including: legal and illegal harvest, damage removals, road-kills, and other miscellaneous causes of death (i.e., natural mortalities). Throughout this document the term "total mortalities" refers to a combination of all causes of death while the term "harvest", when not prefaced by "legal" or "illegal," refers to legal and illegal kills combined.

Since 1994, the Wyoming Game and Fish Department (WGFD) has used a female mortality limit system to regulate black bear harvest. Mortality limits and hunting seasons are assigned to either individual or grouped hunt areas (Appendix I). Bear Management Unit (BMU) or hunt area harvest levels are monitored and regulated by requiring all successful black bear hunters to present the skull and pelt of their harvested bear to WGFD personnel within 72 hours of taking the animal. Harvested female bears are counted against the female mortality limit for the hunt area(s) in which they were killed. Upon meeting its seasonal female mortality limit, a hunt area is closed to harvest for the remainder of that season. To more effectively distribute hunting pressure and allocate harvest opportunities among spring and fall seasons, female mortality limits are split into spring and fall components. Harvest in excess of a BMU/hunt area's spring mortality limit is subtracted from the fall mortality limit for the same BMU/hunt area. Conversely, the remainder of unfilled spring mortality limits is transferred to the associated fall mortality limit. An up-to-date, running tally of harvested female black bears and BMU/hunt area closures is maintained by WGFD and made available to hunters via a telephone hotline and Department website.

The Large Carnivore Section of the WGFD reviews Wyoming's black bear harvest and other causes of black bear mortality. Mortality statistics are compiled and compared to past trends and established management criteria. Hunting seasons and mortality limits are set for 3-year periods to better determine effects of the mortality limit on the black bear population in that area. At the end of the 3-year period, adjustments may be made to more effectively manage local bear populations. Throughout this process, changes have been made to WGFD's black bear management. BMU/hunt area boundaries have been revised and new hunt areas have been created. Additionally, changes have been made to hunting season opening and closing dates, female mortality limits, and total season length. These changes are made through analysis and interpretation of harvest data and the public input process in an adaptive management framework.

Mortality data for years prior to 2016 may vary from previous reports. These differences reflect mortalities reported too late to be included in the previous annual report. The figures in this document supersede those presented in previously published annual mortality reports.

BLACK BEAR MORTALITY ANALYSIS

2016 Statewide Mortality

Because 2016 is the last year of the 2014 – 2016 hunting season cycle, this report will evaluate the effects of harvest on the black bear populations for each BMU. Annual data are presented and compared to past data to provide perspective on longer-term mortality and harvest criteria trends. Slightly fewer than half of the female mortality limits were increased for this cycle. Another notable change was the creation of hunt area 12 from the eastern portion of hunt area 10 in the Uinta BMU (Figure 1).

Total statewide mortalities for the 2014-2016 cycle were similar to the previous three years, 2011-2013 (Figure 2). The 478 total mortalities in 2016 included 447 legally harvested bears (94%), 14 damage removals (3%), 8 miscellaneous mortality (e.g. natural, unknown; 2%), 5 road-kills (1%), and 4 illegal kills (1%). Mean total mortality for 2014-2016 increased 8% to 462.0 from the 2011-2013 average of 427.0. Spring 2016 mortalities were the highest recorded; while fall mortalities were much lower than spring (Figure 3) as has been the predominant pattern. There were fewer damage removal mortalities in 2016 (Figure 4), and 4 of the 14 (31%) damage mortalities were females.

Due to geographic separation of black bear populations, variations in habitat quality bear density, and an uneven distribution of hunting pressure, caution is warranted when interpreting statewide harvest statistics. Therefore, more specific harvest criteria are presented by BMU and by groups of hunt areas with shared female mortality limits in each of the following sections of this report. In BMUs or hunt areas with low harvest, interpreting harvest statistics based on subsets of sex, age class, or season can result in extremely variable results that are difficult to interpret due to small sample sizes.

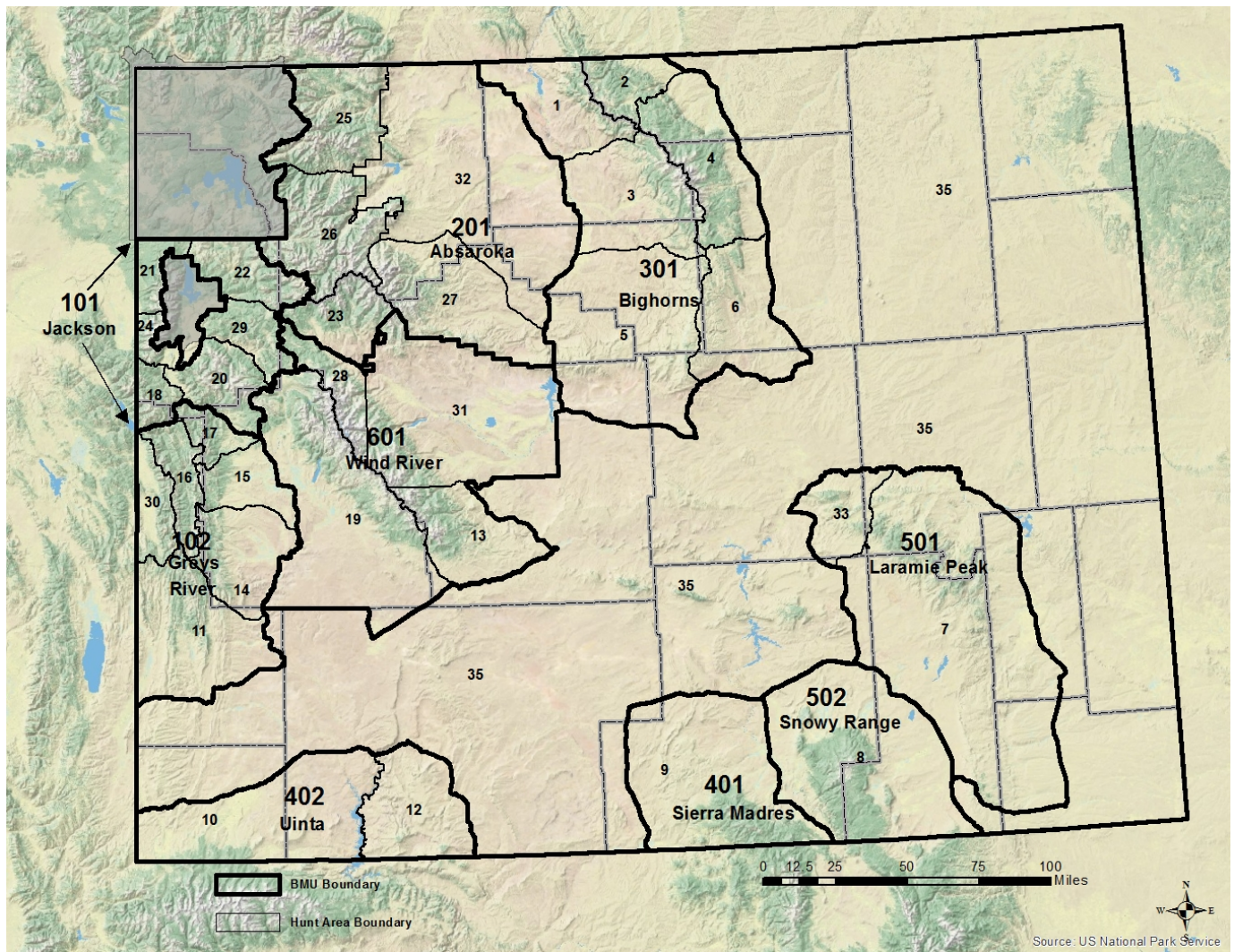
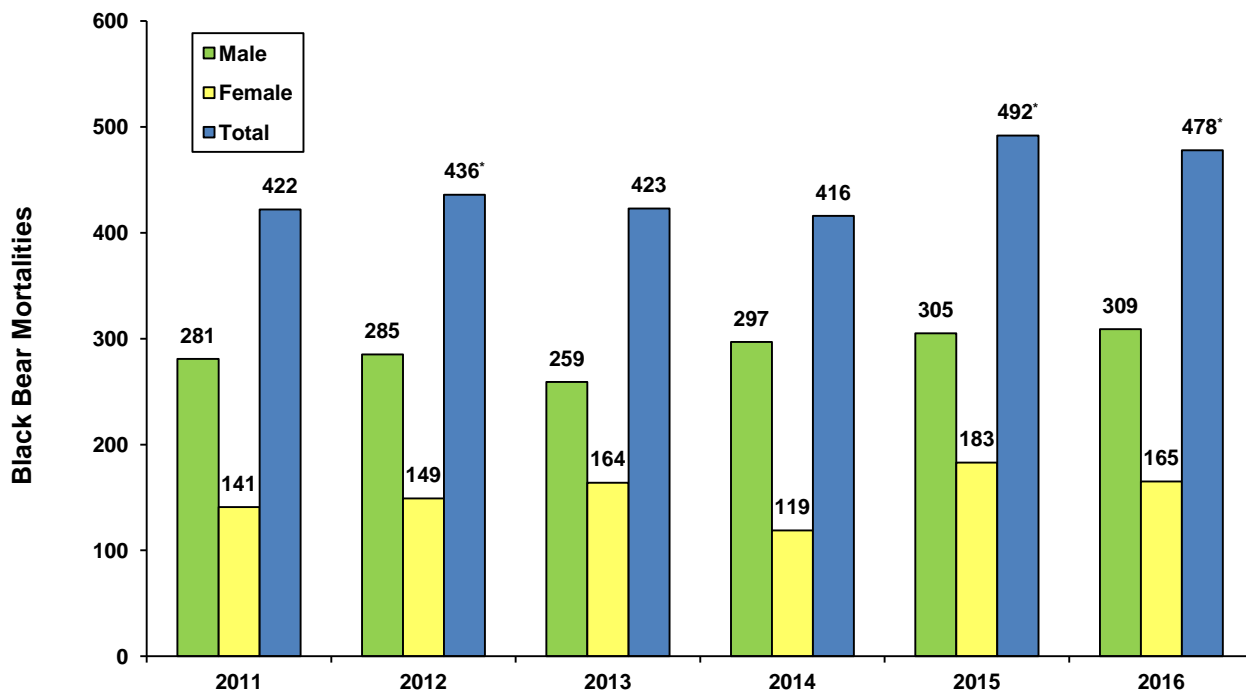


Figure 1. Wyoming black bear management units (BMUs) and hunt areas, 2016.



*There were 2 natural mortalities of unknown sex in 2012, 4 in 2015, and 4 in 2016.

Figure 2. Annual statewide black bear mortalities (all causes) by sex, 2011-2016.

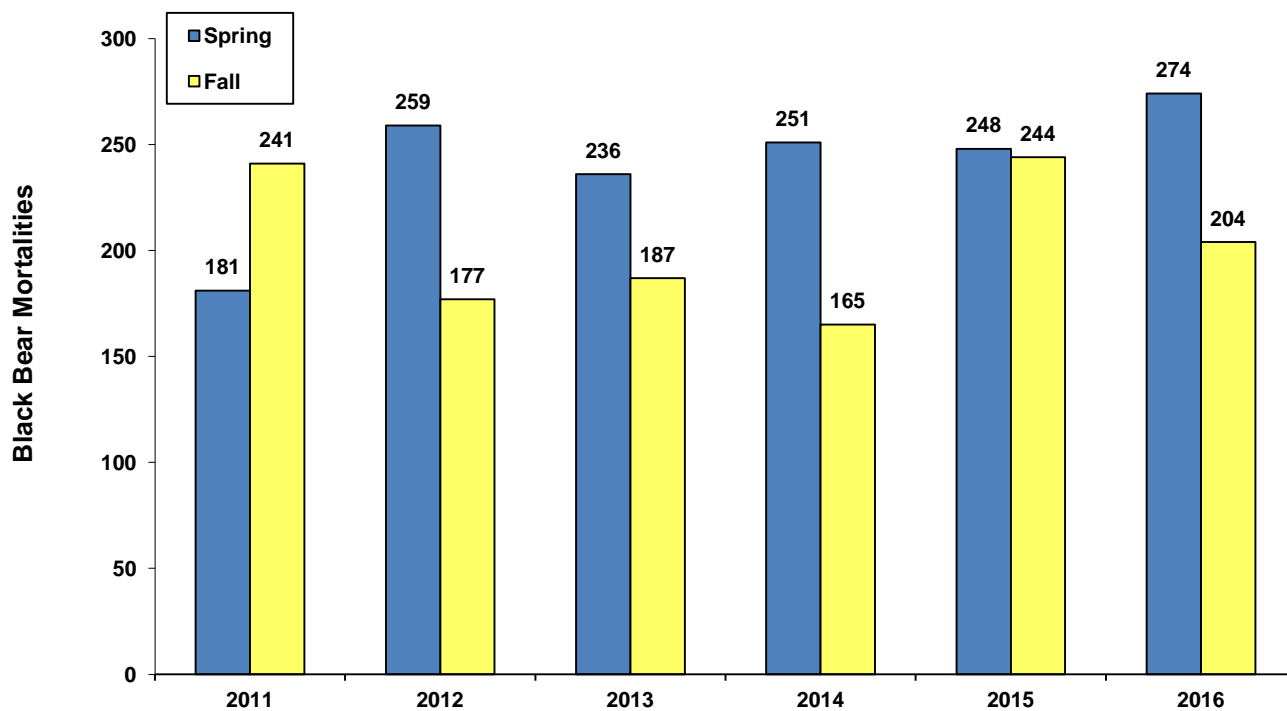


Figure 3. Annual statewide black bear mortalities (all causes) by season, 2011-2016.

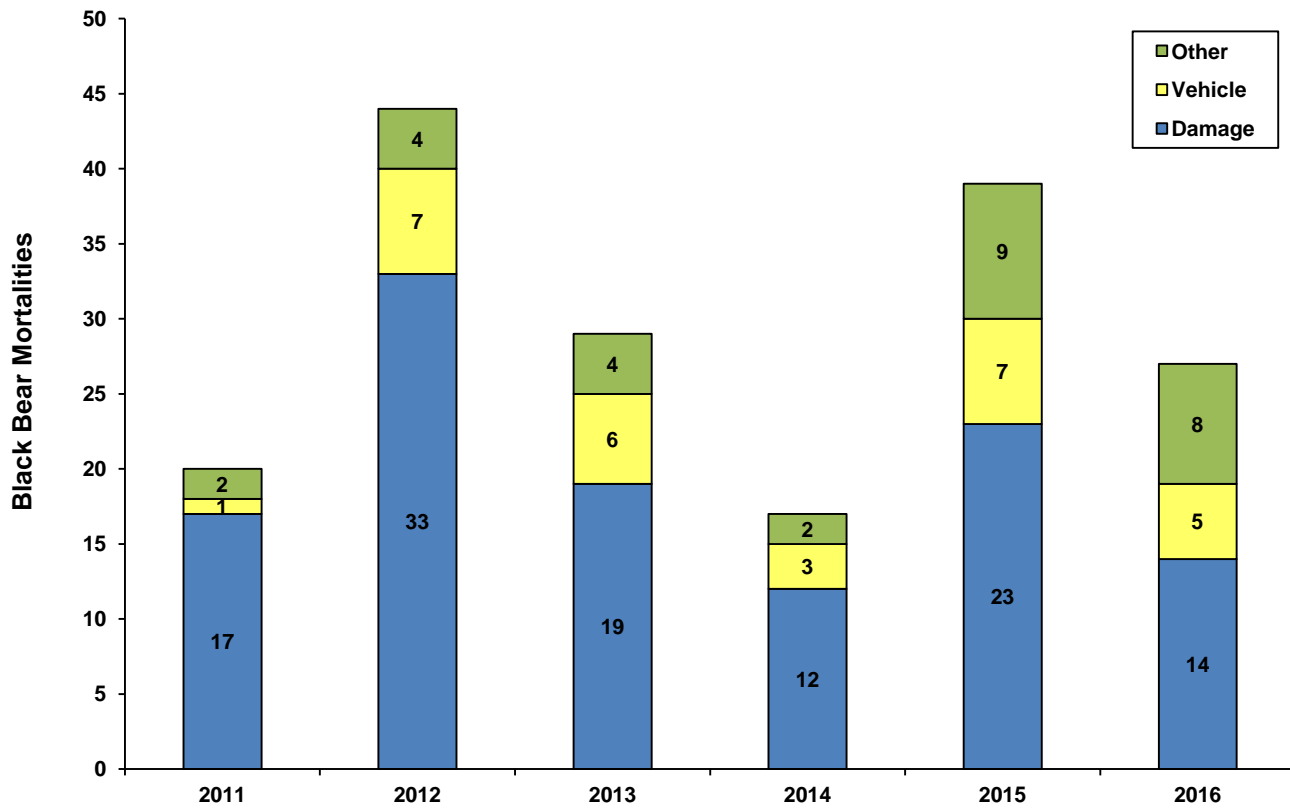


Figure 4. Annual statewide non-harvest black bear mortalities by year, 2011-2016.

License Sale and Harvest

Black bear harvest in Wyoming has increased steadily since the implementation of female mortality limits in the mid 1990s (Figure 5). However, during this period hunter success has changed little. When plotted against legal hunter harvest, increased license sales are strongly correlated with the increase in hunter harvest ($R^2=0.84$). During this period the percentage of licensed black bear hunters successfully harvesting a bear has varied little, ranging from 9% to 13%.

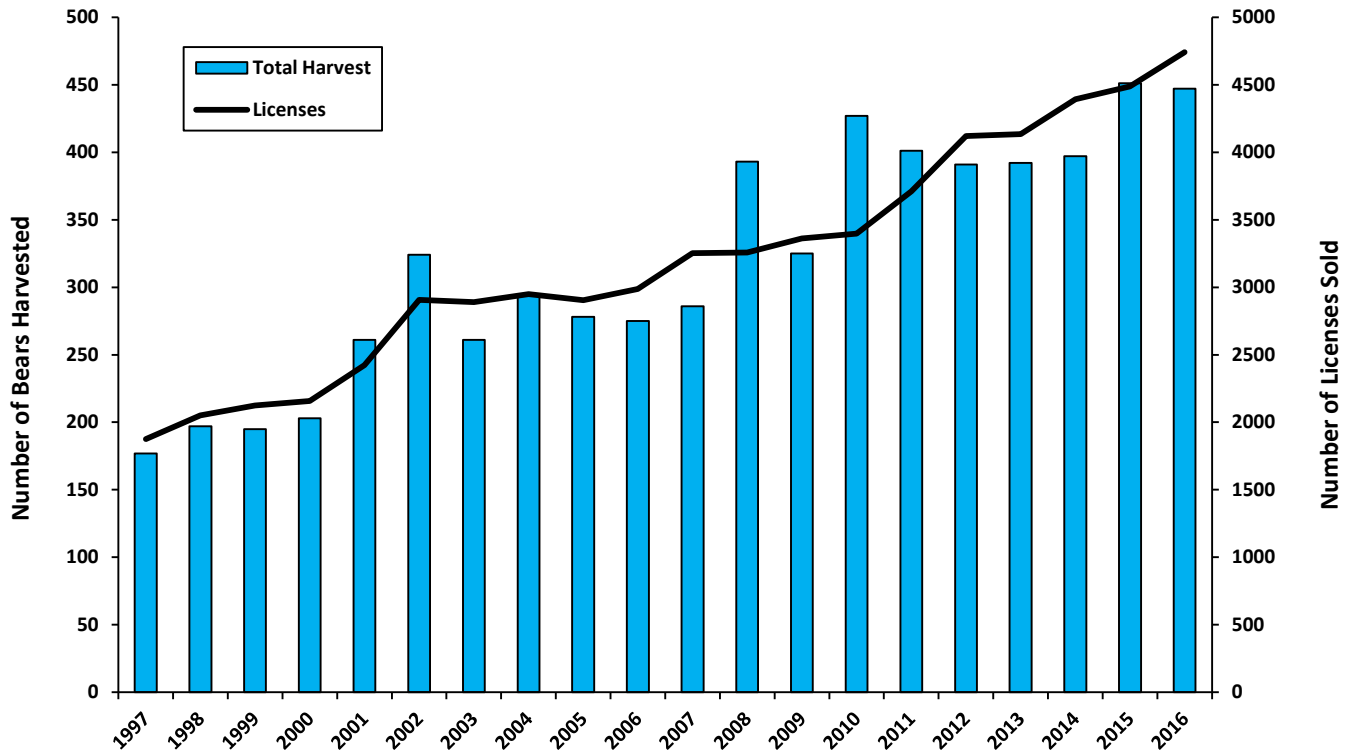


Figure 5. Total legal black bear harvest and license sales in Wyoming, 1997-2016. License sales numbers were not available for 2016.

JACKSON BEAR MANAGEMENT UNIT (101)

2016 Black Bear Mortality

Female mortality limits for the Jackson BMU remained unchanged for the 2014 – 2016 season cycle from the previous three years (Table 1). During 2014-2016, total and harvest mortalities for BMU 101 changed little from 2012 and 2013 after decreasing annually in 2010 and 2011 (Figures 6 and 7). Spring and fall annual harvest mortalities were exactly equal for both sexes in 2016 (Table 1). The percent of adult males continues to trend upward (Figure 8) and the percent of females in the harvest continues to remain in the stable range in 2016 (Figure 9), both indicating harvest is having a relatively small influence on the black bear population in the BMU. While a high percent of adults in the female harvest (Figure 10) would normally indicate a harvest has reduced other sex and age classes of the population, the significant amount of refuge habitat surrounding this BMU provides a large source population and the prohibition of baiting in a majority of the BMU means that bears are harvested more in proportion to their availability in the population. This criterion likely reflects an abundance of older-age females in the population and not a deficit of males and subadult females. The adult male and female harvest criteria provide evidence for this. The overall pattern of mortalities and harvest criteria (Table 2) in the Jackson BMU continue to indicate that the black bear population in BMU 101 experienced light to moderate harvest.

Table 1. Jackson BMU female mortality limits, harvest (legal/illegal harvest) by sex and season, and season closure dates for the 2014-2016 black bear hunting seasons. All seasons for this BMU closed on the final date of the season as listed in regulation (Appendix I).

			Female Mortality Limit		Harvest				Season Closure Dates	
					Spring		Fall			
YEAR	MGMT UNIT	HUNT AREA	Spring	Fall	M	F	M	F	Spring	Fall
2014	JACKSON	18, 20, 21, 22, 24 & 29	13	20	22	5	16	7	6/15/14	10/31/14
2015	JACKSON	18, 20, 21, 22, 24 & 29	13	20	16	7	20	15	6/15/15	10/31/15
2016	JACKSON	18, 20, 21, 22, 24 & 29	13	20	18	11	18	11	6/15/16	10/31/16

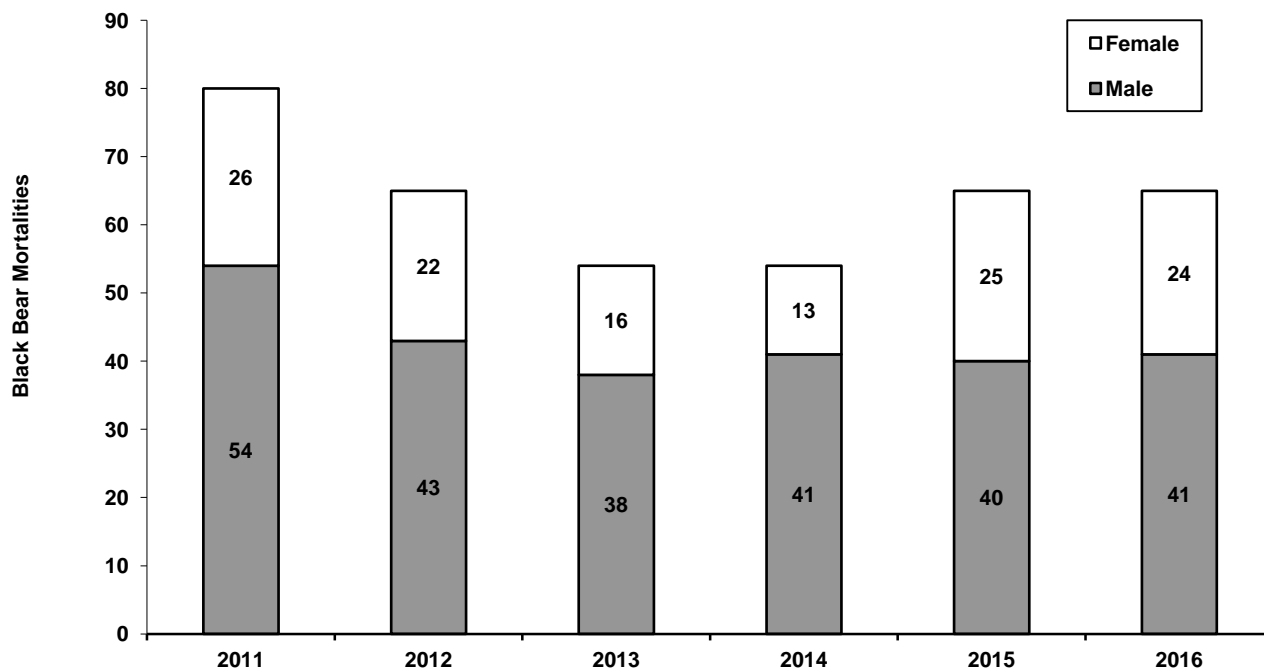


Figure 6. Number of black bear mortalities of all causes in Jackson BMU by sex, 2011-2016.

Table 2. Harvest criteria for Jackson BMU legal black bear harvest, 2014-2016. Criteria are presented by objective as 3-year averages of percent adult males in the total harvest, percent females in the total harvest, and percent adult females in the female harvest.

Year	Objective	Harvest Criteria		
		% Adult ^a Males in Total Harvest	% Females in Total Harvest	% Adult ^a Females in Female Harvest
	Population Reduction	< 25%	> 40%	> 55%
	Stable Population	25 – 35%	30 – 40%	45 – 55%
	Population Increase	> 35%	< 30%	< 45%
2014-2016		38.2	33.5	68.7

^a Adults classified as males and females ≥ 5 years of age based on tooth cementum annuli.

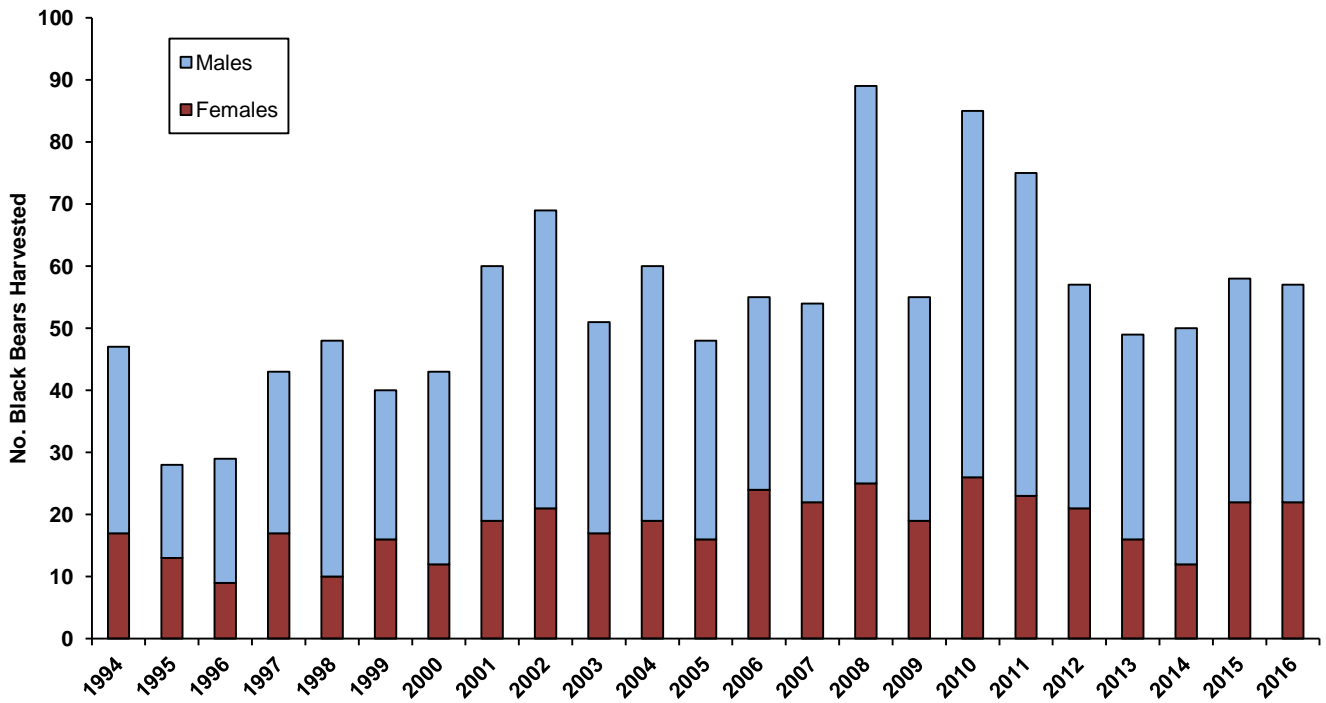


Figure 7. Legal harvest of black bears in Jackson BMU, 1994-2016.

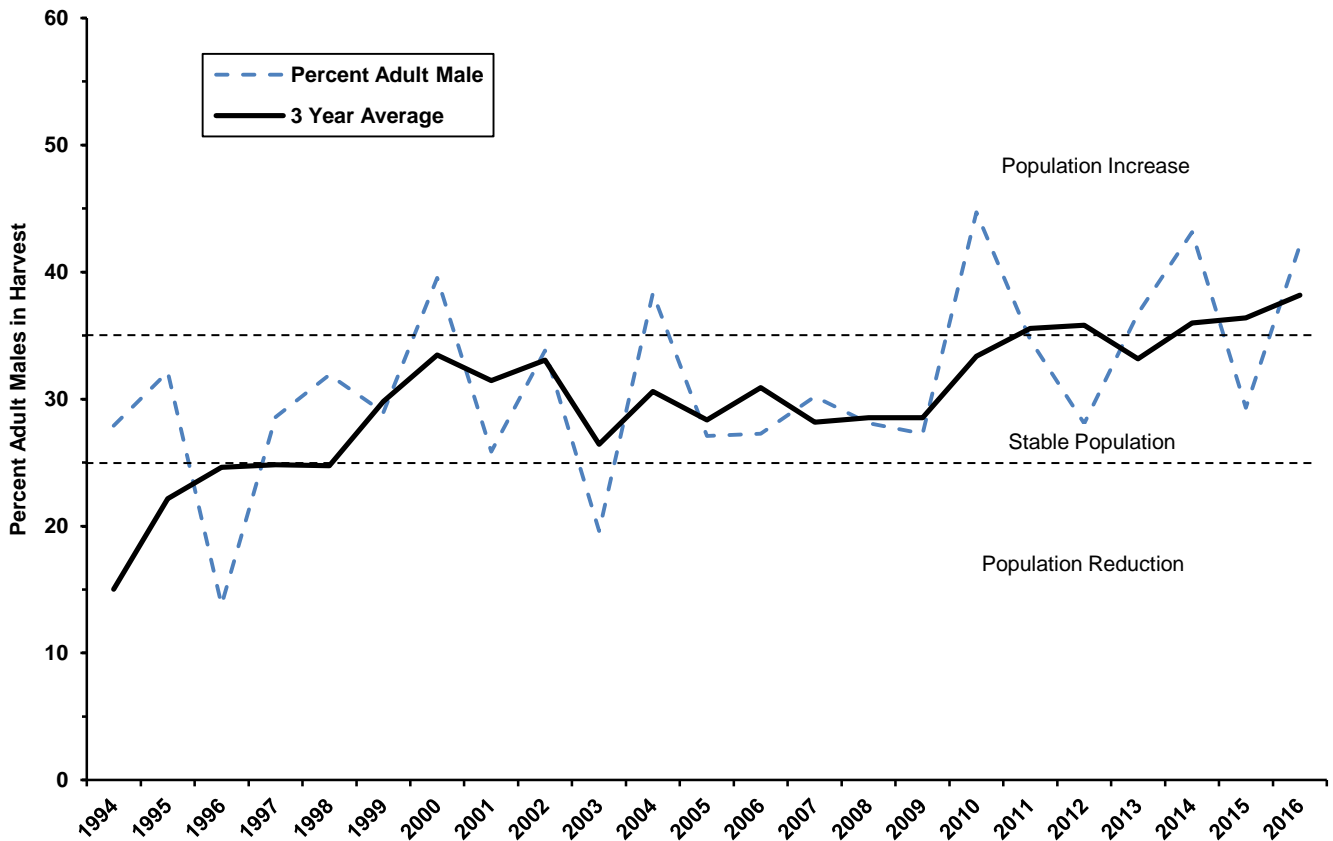


Figure 8. Percent adult males in the total legal black bear harvest in Jackson BMU, 1994-2016.

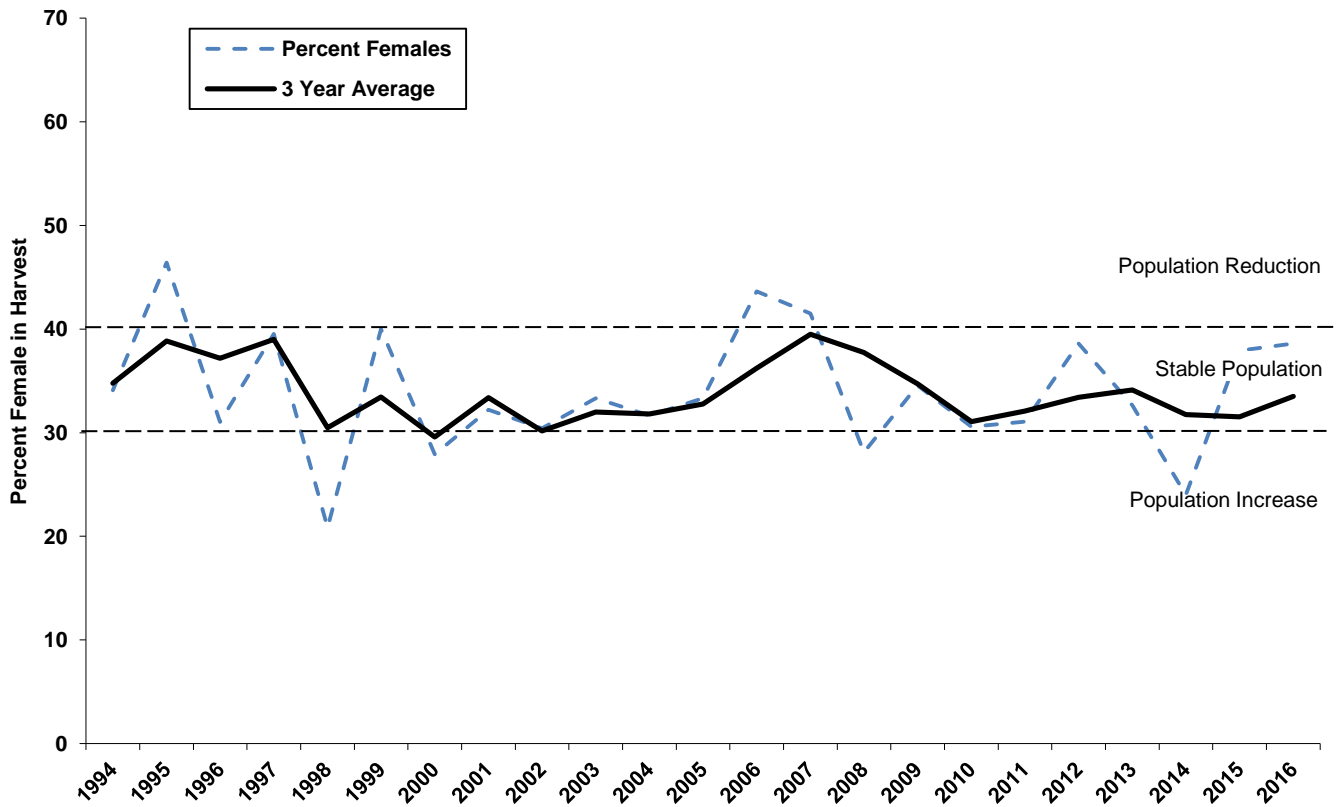


Figure 9. Percent females of the total legal black bear harvest in Jackson BMU, 1994-2016.

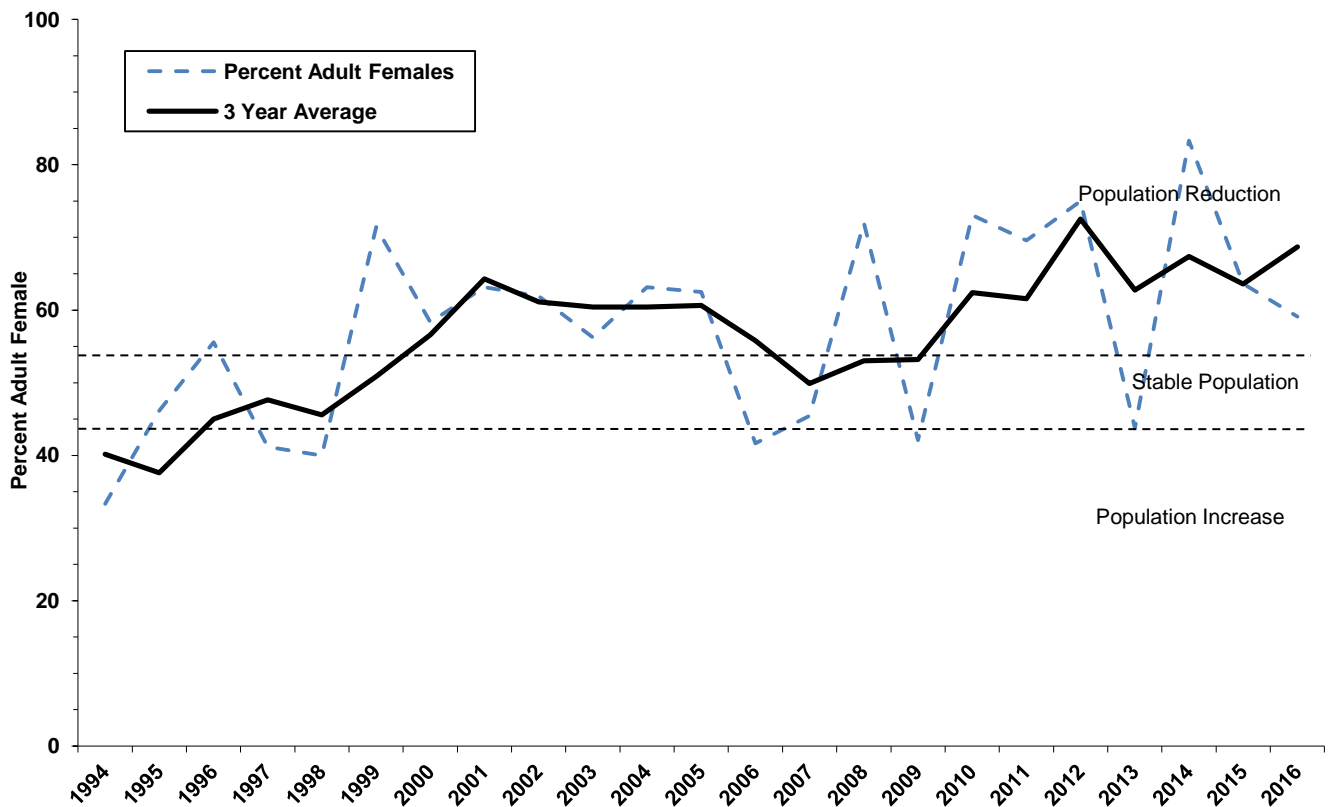


Figure 10. Percent adult females of the total female legal harvest in Jackson BMU, 1994-2016.

GREYS RIVER BEAR MANAGEMENT UNIT (102)

2016 Black Bear Mortality

Female mortality limits were increased by 8 females in the spring and 4 females in the fall for hunt areas 14-17 and 30 for the 2014 – 2016 season cycle in response to public concerns over black bear predation on mule deer. Mortality limits for hunt area 11 remained unchanged from 2011 – 2013 (Table 3). Total black bear mortalities in BMU 102 increased annually from 2014 through 2016 (Figure 11), due mostly to increased legal harvest (Figures 12 and 16). At the BMU level, harvest criteria continue to indicate impacts to the male and female cohorts of the black bear population (Figures 13 and 14). The 3-year average of percent females in the harvest decreased in 2016, but remains in the reduction range for the fifth consecutive year (Table 4, Figure 14). The percent of adults in the female harvest remains relatively low (Figure 15).

Separate analyses of the harvest criteria for hunt areas 14-17 and 30 were done to assess the effects of the increased mortality limit for that group of hunt areas. These analyses show an annual increase from 2014 to 2016, with each year the highest harvest recorded for these areas (Figure 16). The trend of adult males in the harvest ranges from 10-15% (Figure 17). The percent of females in the harvest remains in the reduction range, with a slight downward trend in recent years (Figure 18). The proportion of adults in the female harvest has fluctuated around 30-50% in recent years (Figure 19). However, because the total number of females in the harvest shows an increasing trend since the early 2000s, an increasing number of adults in the female harvest would show up as a flat trend, which is indeed what is seen in the Greys River hunt areas (Figure 20). Dispersing subadult males may continue to buffer some of the effects of harvest on female back bears in the BMU. Work to assess the population status using DNA hair snares took place in the summers of 2015 and 2016, with results expected in early to mid 2017. These results will provide data to evaluate the population status and the effects of harvest.

Table 3. Greys River BMU female mortality limits, harvest (legal/illegal harvest) by sex and season, and season closure dates for the 2014- 2016 black bear hunting seasons. Yellow cells indicate season closure prior to the closing date listed in regulation (Appendix I) after reaching the female mortality limit.

			Female Mortality Limit		Harvest				Season Closure Dates	
					Spring		Fall		Spring	Fall
YEAR	MGMT UNIT	HUNT AREA	Spring	Fall	M	F	M	F	Spring	Fall
2014	GREYS RIVER	11	5	5	8	5	5	0	6/14/14	10/31/14
		14, 15, 16, 17 & 30	30	18	36	30	16	10	6/14/14	10/31/14
2015	GREYS RIVER	11	5	5	0	6	6	4	5/30/15	10/23/15
		14, 15, 16, 17 & 30	30	18	34	27	20	18	6/15/15	10/31/15
2016	GREYS RIVER	11	5	5	9	2	7	2	6/15/16	10/31/16
		14, 15, 16, 17 & 30	30	18	34	29	35	15	6/15/16	10/31/16

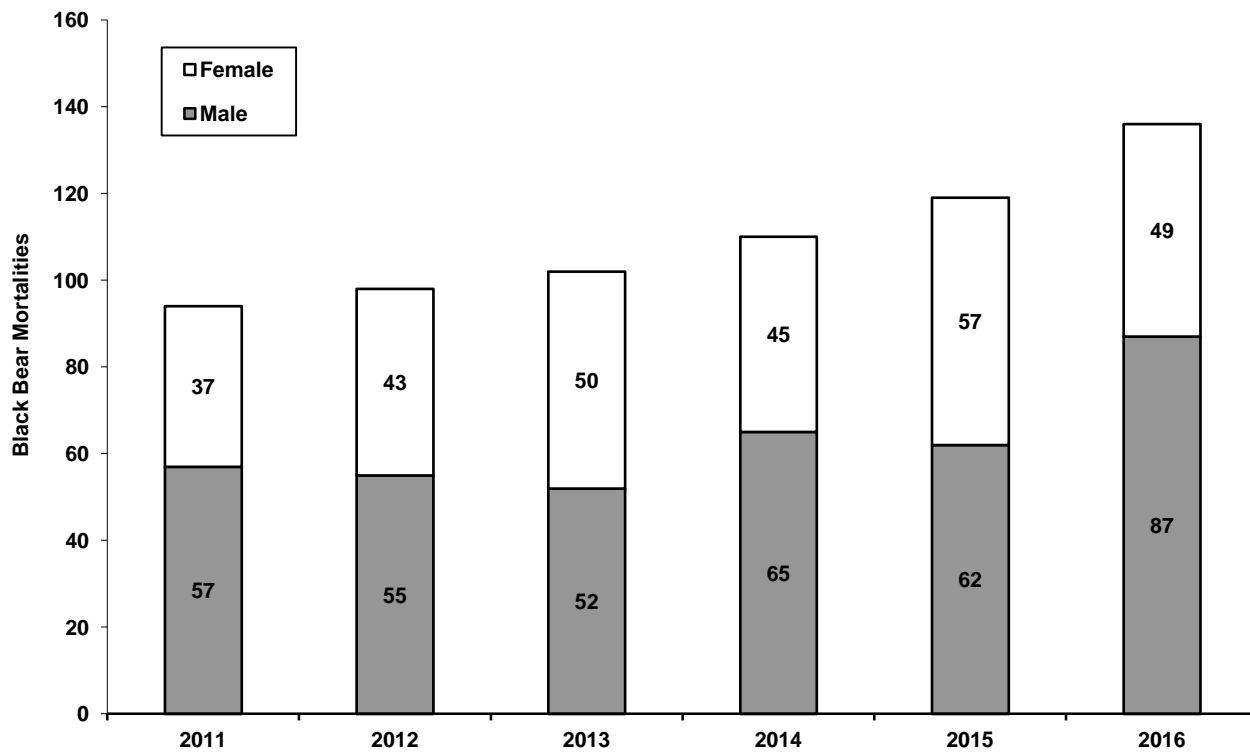


Figure 11. Number of black bear mortalities of all causes in Greys River BMU by sex, 2011-2016.

Table 4. Harvest criteria for Greys River BMU legal black bear harvest, 2014-2016. Criteria are presented by objective as 3-year averages of percent adult males in the total harvest, percent females in the total harvest, and percent adult females in the female harvest.

Year	Objective	Harvest Criteria		
		% Adult ^a Males in Total Harvest	% Females in Total Harvest	% Adult ^a Females in Female Harvest
	Population Reduction	< 25%	> 40%	> 55%
	Stable Population	25 – 35%	30 – 40%	45 – 55%
	Population Increase	> 35%	< 30%	< 45%
2014-2016		16.9	41.5	42.1

^a Adults classified as males and females ≥ 5 years of age based on tooth cementum annuli.

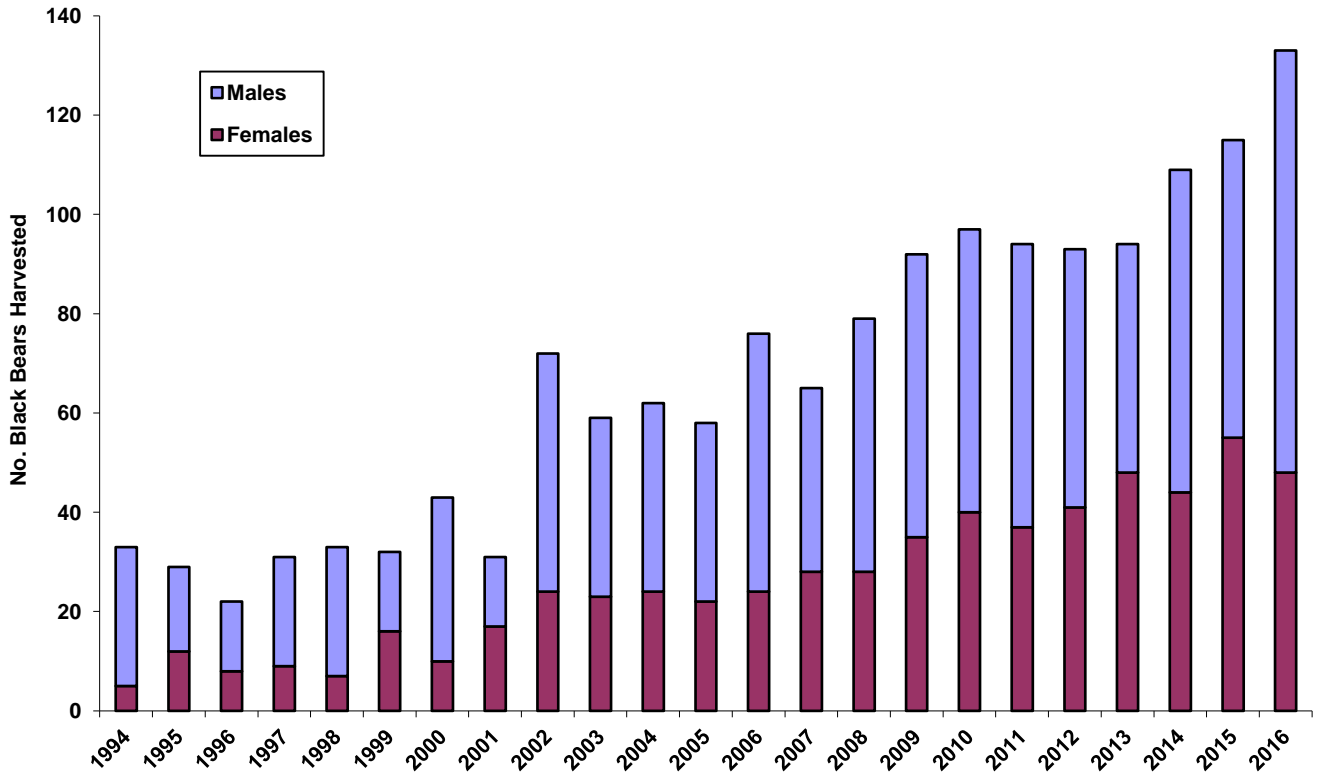


Figure 12. Legal harvest of black bears in Greys River BMU, 1994-2016.

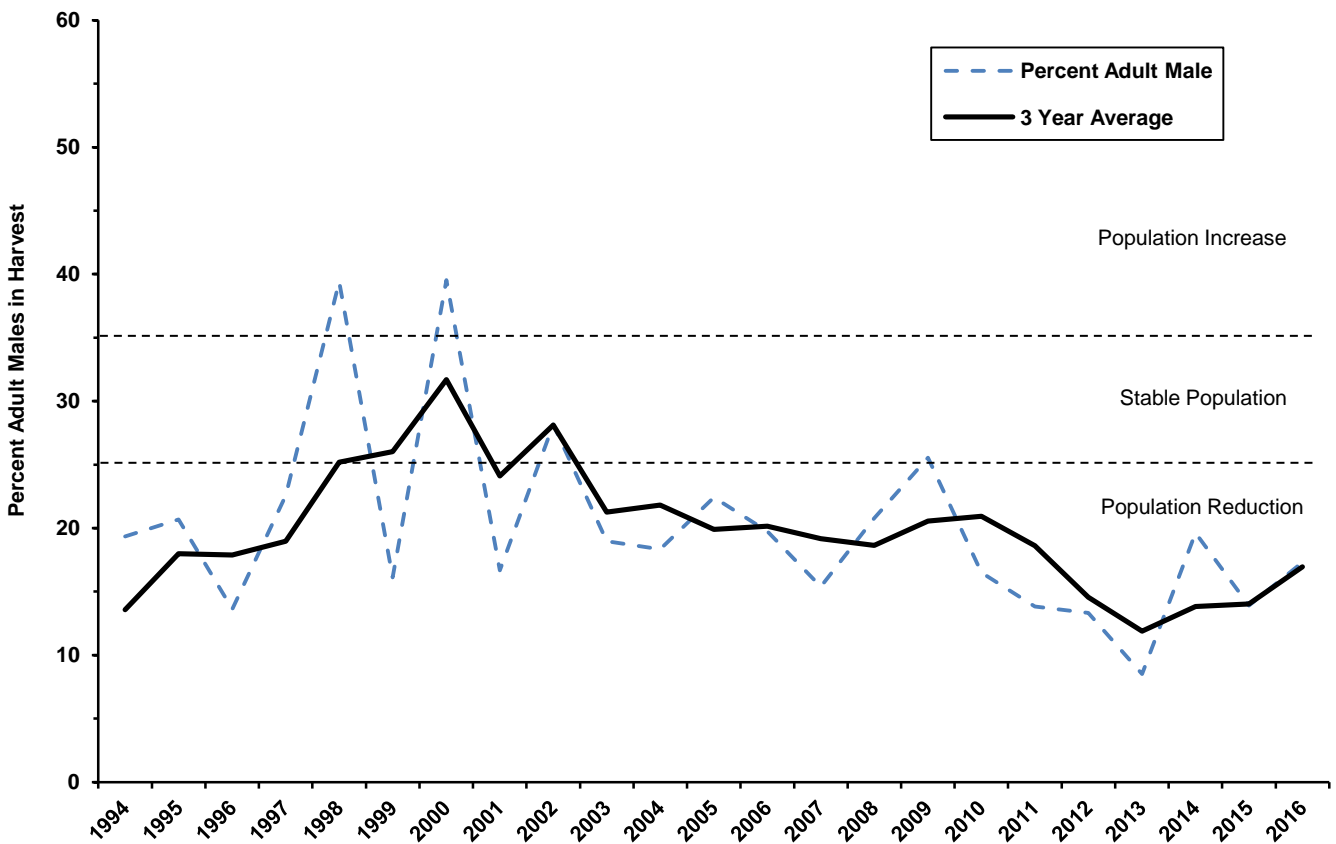


Figure 13. Percent adult males in the total legal black bear harvest in Greys River BMU, 1994-2016.

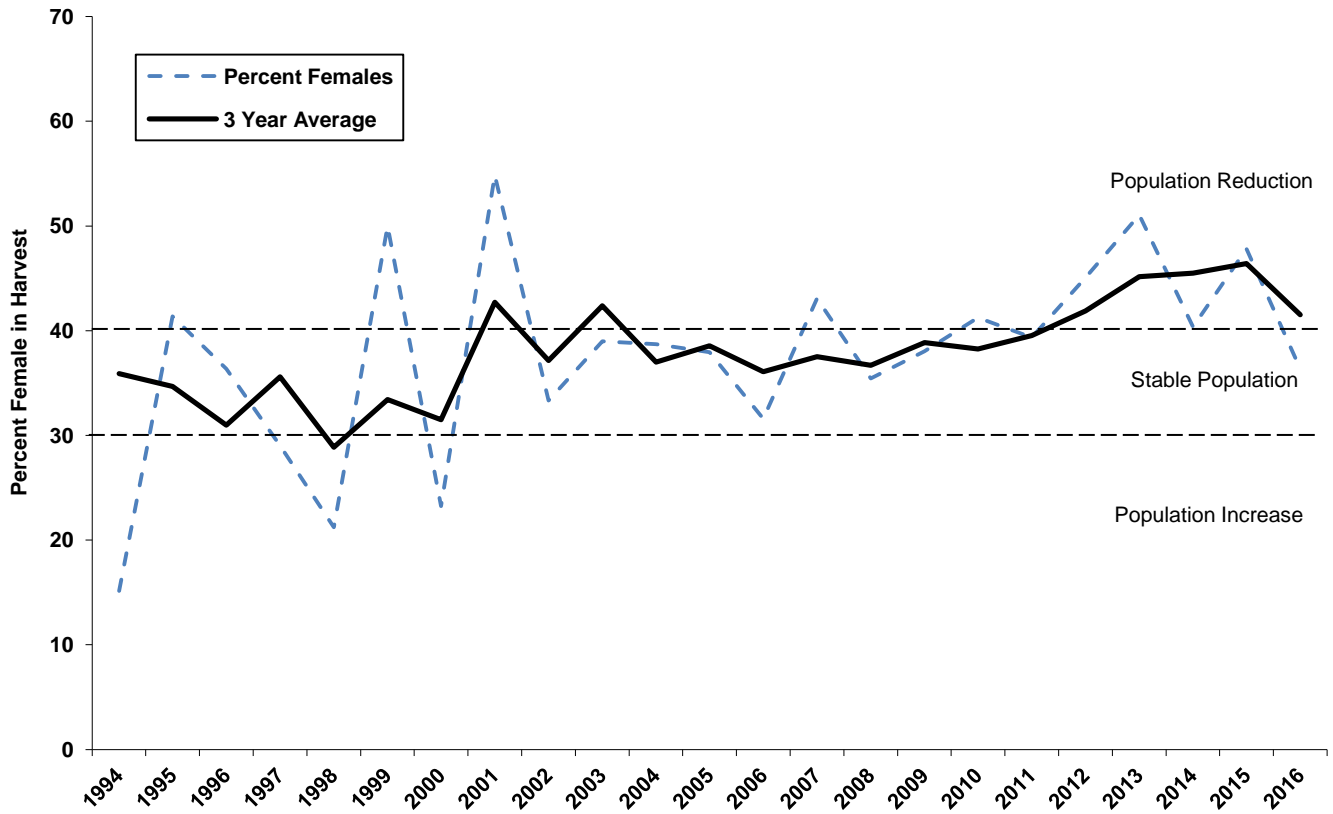


Figure 14. Percent females of the total legal black bear harvest in Greys River BMU, 1994-2016.

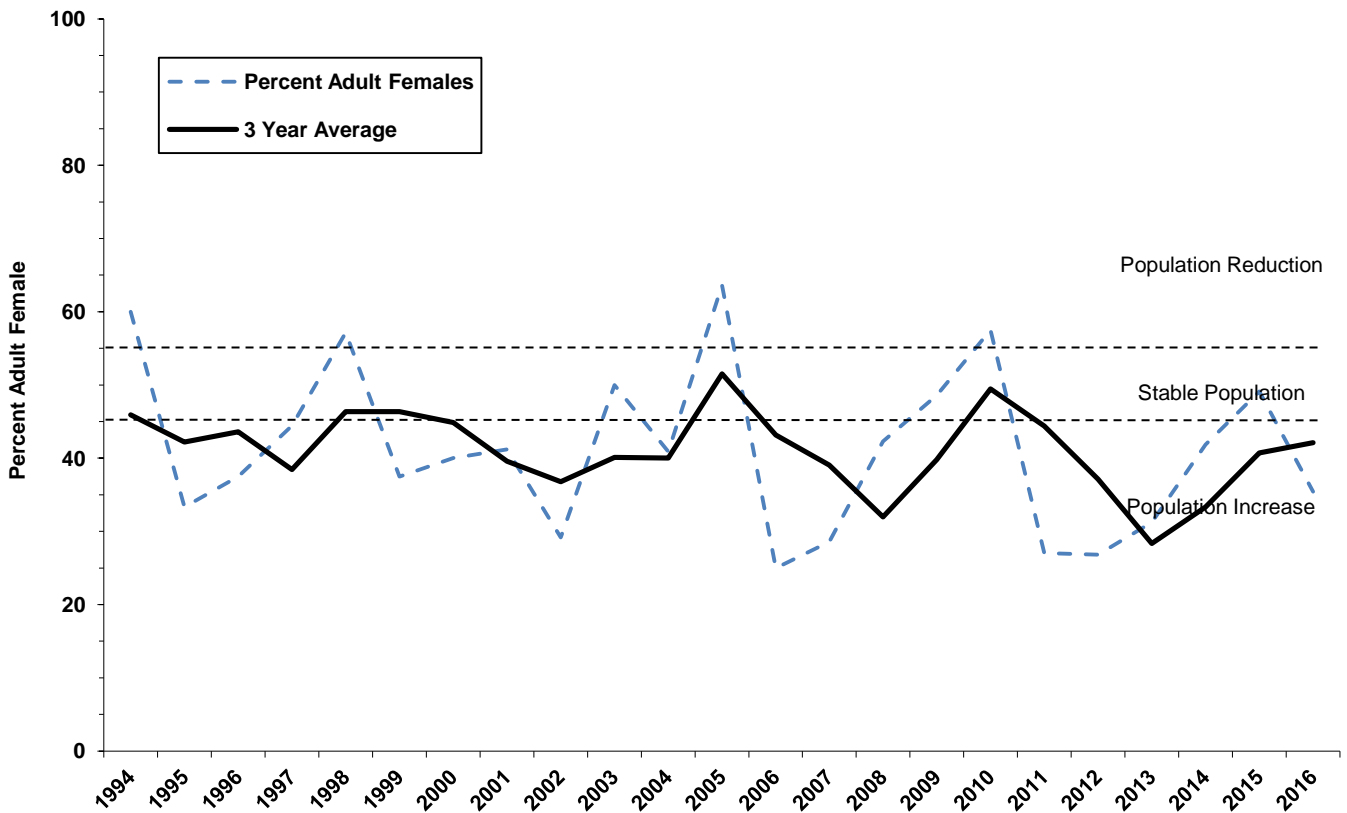


Figure 15. Percent adult females of the total female legal harvest in Greys River BMU, 1994-2016.

Harvest Criteria by Mortality limit – Hunt Areas 14, 15, 16, 17, and 30

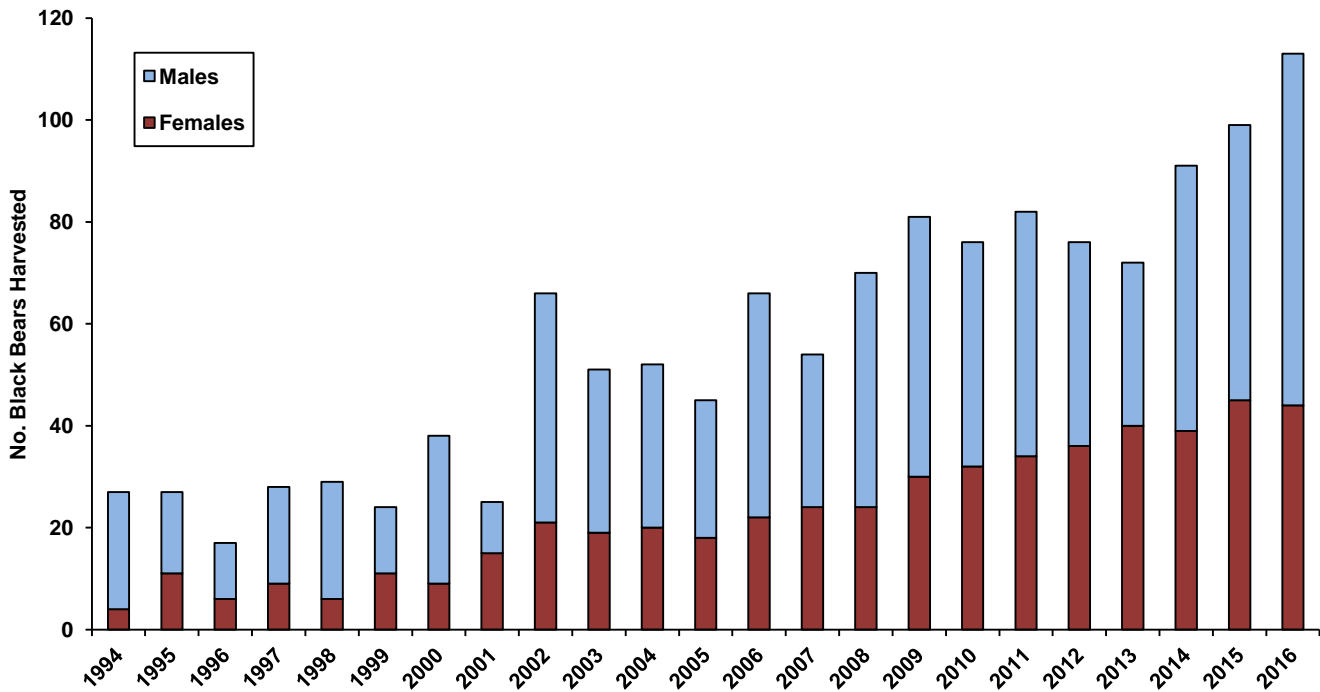


Figure 16. Legal harvest of black bears in hunt areas 14, 15, 16, 17, and 30 of Greys River BMU, 1994-2016.

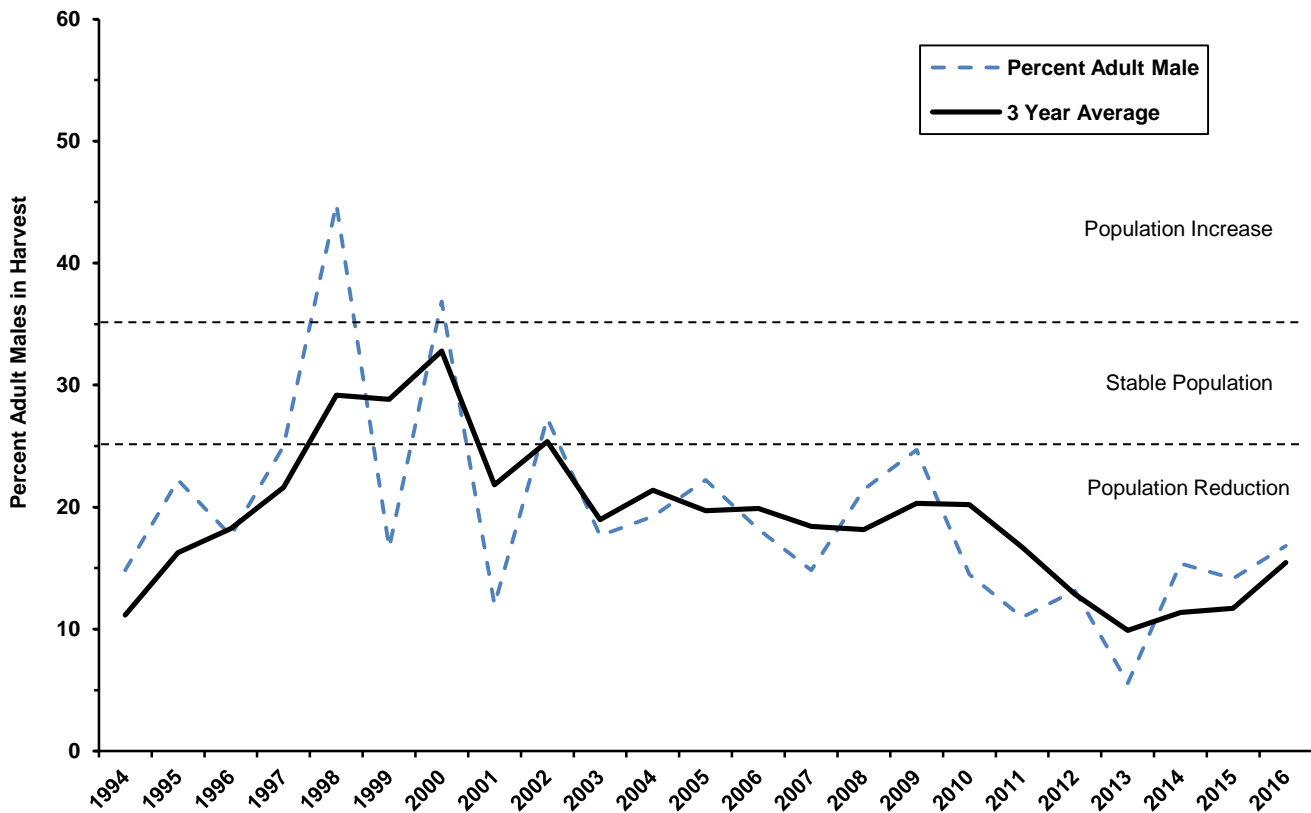


Figure 17. Percent adult males in the total legal black bear harvest in hunt areas 14, 15, 16, 17, and 30 of Greys River BMU, 1994-2016.

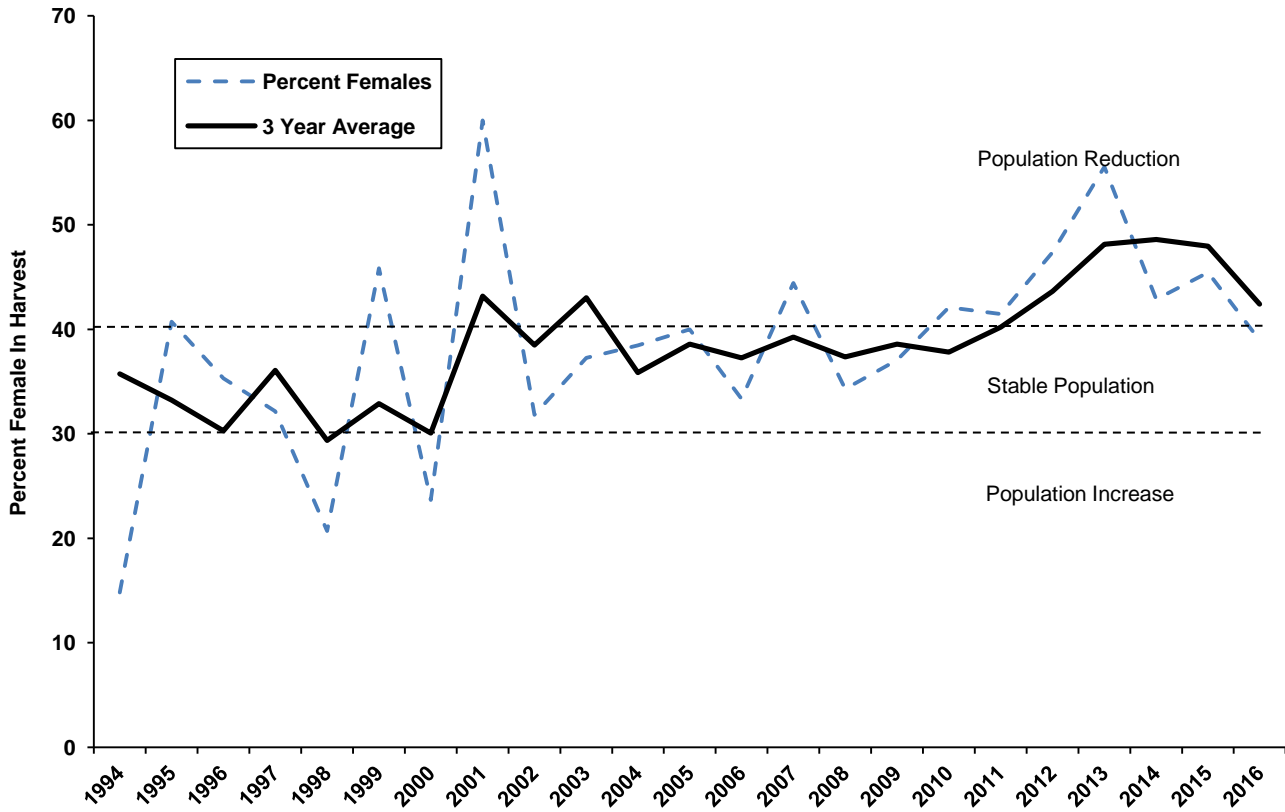


Figure 18. Percent females of the total legal black bear harvest in hunt areas 14, 15, 16, 17, and 30 of Greys River BMU, 1994-2016.

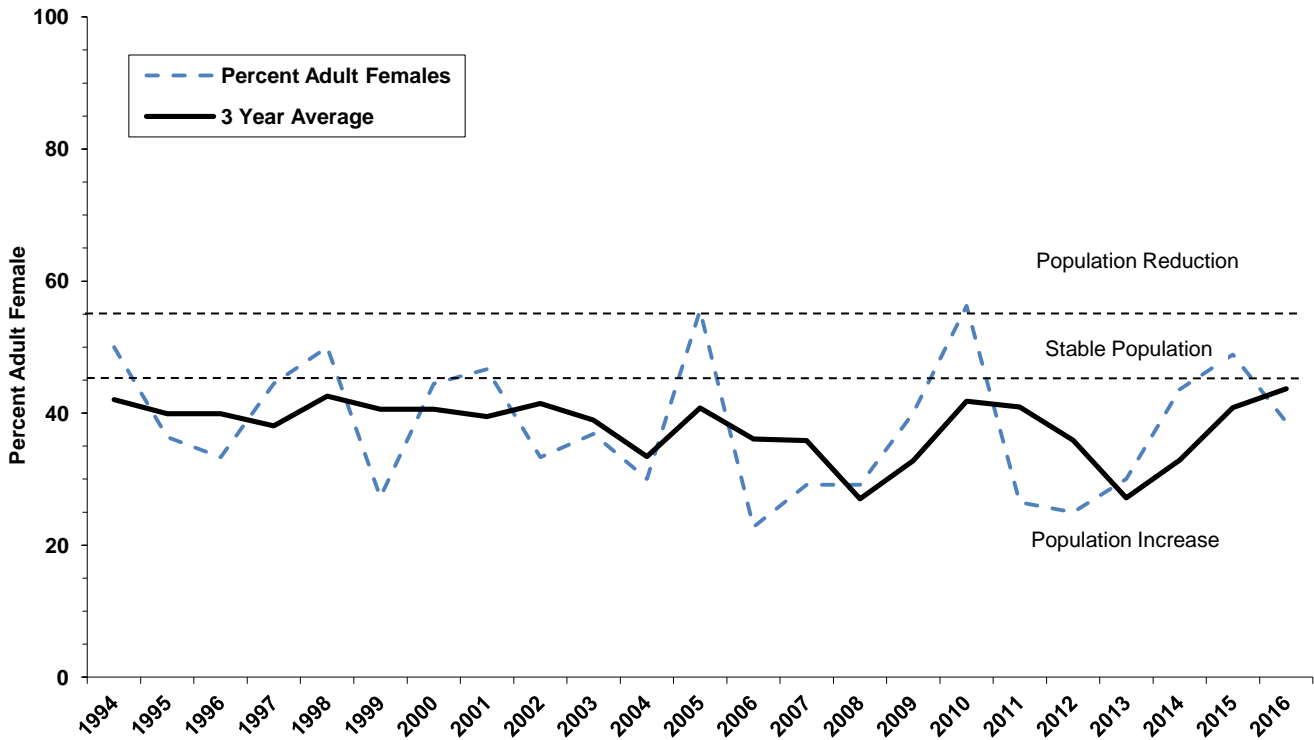


Figure 19. Percent adult females of the total female legal harvest in hunt areas 14, 15, 16, 17, and 30 of Greys River BMU, 1994-2016.

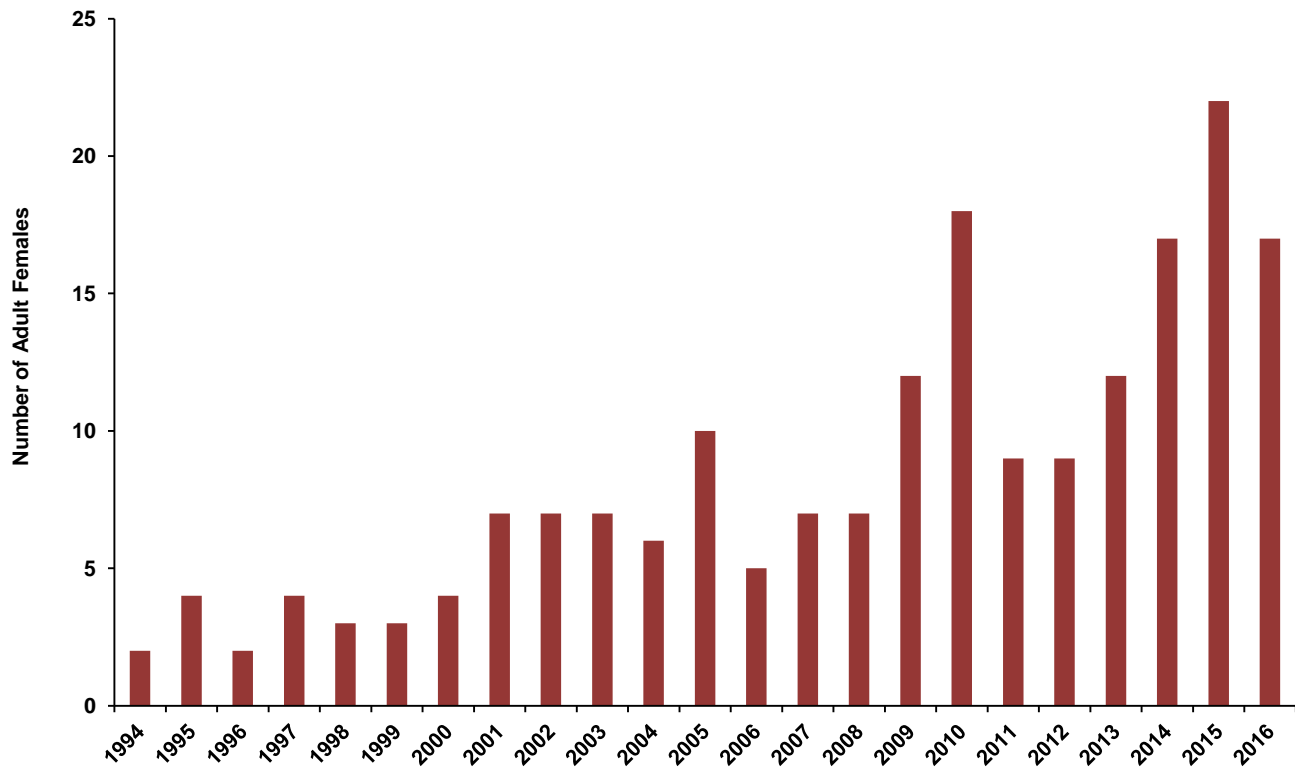


Figure 20. The number of adult females in the legal black bear harvest in hunt areas 14, 15, 16, 17, and 30 of Greys River BMU, 1994-2016.

ABSAROKA BEAR MANAGEMENT UNIT (201)

2016 Black Bear Mortality

Female mortality limits for the Absaroka BMU remained unchanged for the spring and increased by 2 for the fall seasons of the 2014 – 2016 season cycle (Table 5). Overall, 2016 mortalities and harvest were similar to the previous three years, with wide fluctuations likely due to changes in annual availability of natural foods (Figures 21 and 22). The percent of adult males in the harvest remains high, although it has trended downward in recent years. The percent of females in the harvest is continually below 40%. The percent of adults in the female harvest decreased into the population increase range in 2014, but the 3-year trend remains high and in the reduction range (Table 6 and Figures 22-25). However, similar to the Jackson BMU, the significant amount of refuge habitat surrounding this BMU provides a source population. The prohibition of baiting in a majority of the unit reduces hunter selectivity, resulting in harvest more in proportion to availability in the population, not by their vulnerability to harvest. This criterion likely reflects an abundance of older-age females in the standing population of the BMU and not a deficit of males and subadult females. Analyzed separately, hunt areas 23, 25, 26, and 27 make up the vast majority of harvest for this BMU and show the same trends (Figures 26-29).

Overall, a continued high percent of adult males in the harvest and the relatively low percent of females in the harvest indicate a healthy and stable black bear population experiencing moderate to low harvest pressure.

Table 5. Absaroka BMU female mortality limits, harvest (legal/illegal harvest) by sex and season, and season closure dates for the 2014-2016 black bear hunting seasons. All seasons for this BMU closed on the final date of the season as listed in regulation (Appendix I).

YEAR	MGMT UNIT	HUNT AREA	Female Mortality Limit		Harvest				Season Closure Dates	
			Spring	Fall	Spring		Fall		Spring	Fall
					M	F	M	F		
2014	ABSAROKA	23, 25, 26 & 27	8	12	12	1	4	2	6/15/14	10/31/14
		32	NA	NA	1	1	4	1	6/15/14	11/15/14
2015	ABSAROKA	23, 25, 26 & 27	8	12	15	7	16	8	6/15/15	10/31/15
		32	NA	NA	0	0	1	2	6/15/15	11/15/15
2016	ABSAROKA	23, 25, 26 & 27	8	12	17	2	12	10	6/15/16	10/31/16
		32	NA	NA	0	0	0	0	6/15/16	11/15/16

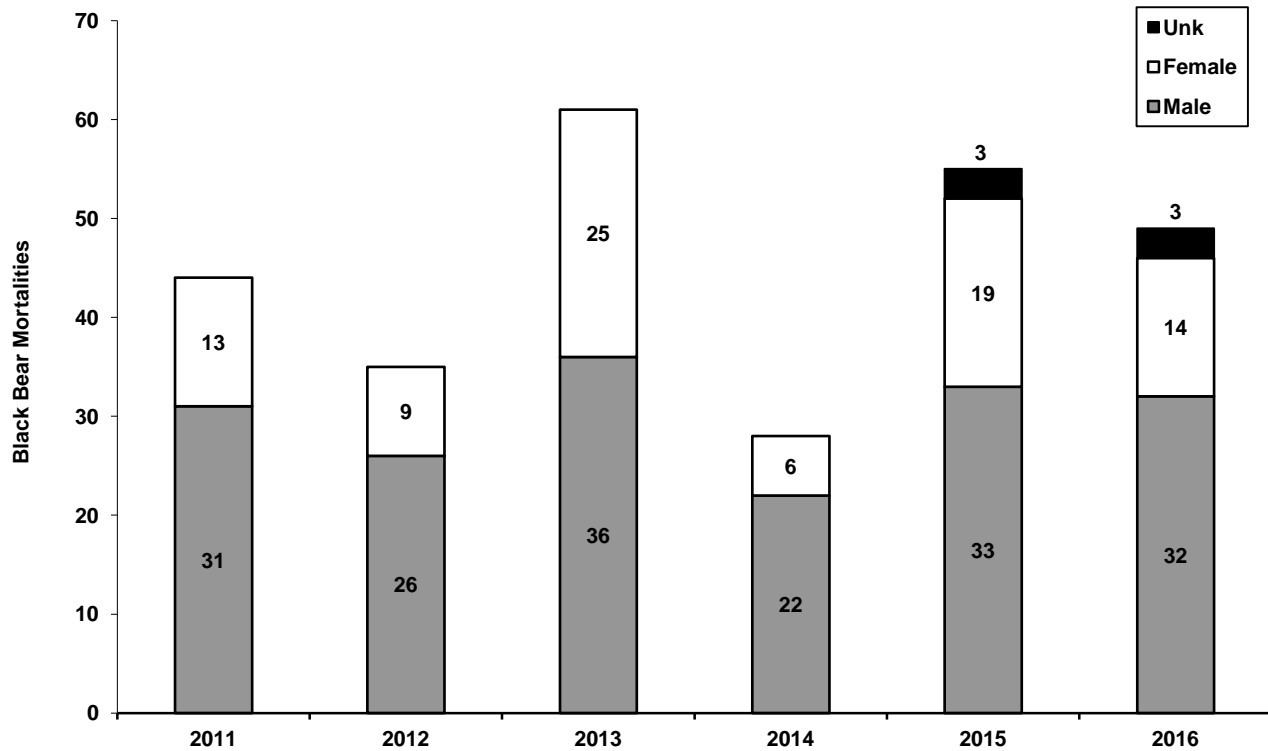


Figure 21. Number of black bear mortalities of all causes in Absaroka BMU by sex, 2011-2016.

Table 6. Harvest criteria for Absaroka BMU legal black bear harvest, 2014-2016. Criteria are presented by objective as 3-year averages of percent adult males in the total harvest, percent females in the total harvest, and percent adult females in the female harvest.

Year	Objective	Harvest Criteria		
		% Adult ^a Males in Total Harvest	% Females in Total Harvest	% Adult ^a Females in Female Harvest
	Population Reduction	< 25%	> 40%	> 55%
	Stable Population	25 – 35%	30 – 40%	45 – 55%
	Population Increase	> 35%	< 30%	< 45%
2014-2016		35.7	27.7	48.5

^a Adults classified as males and females ≥ 5 years of age based on tooth cementum annuli.

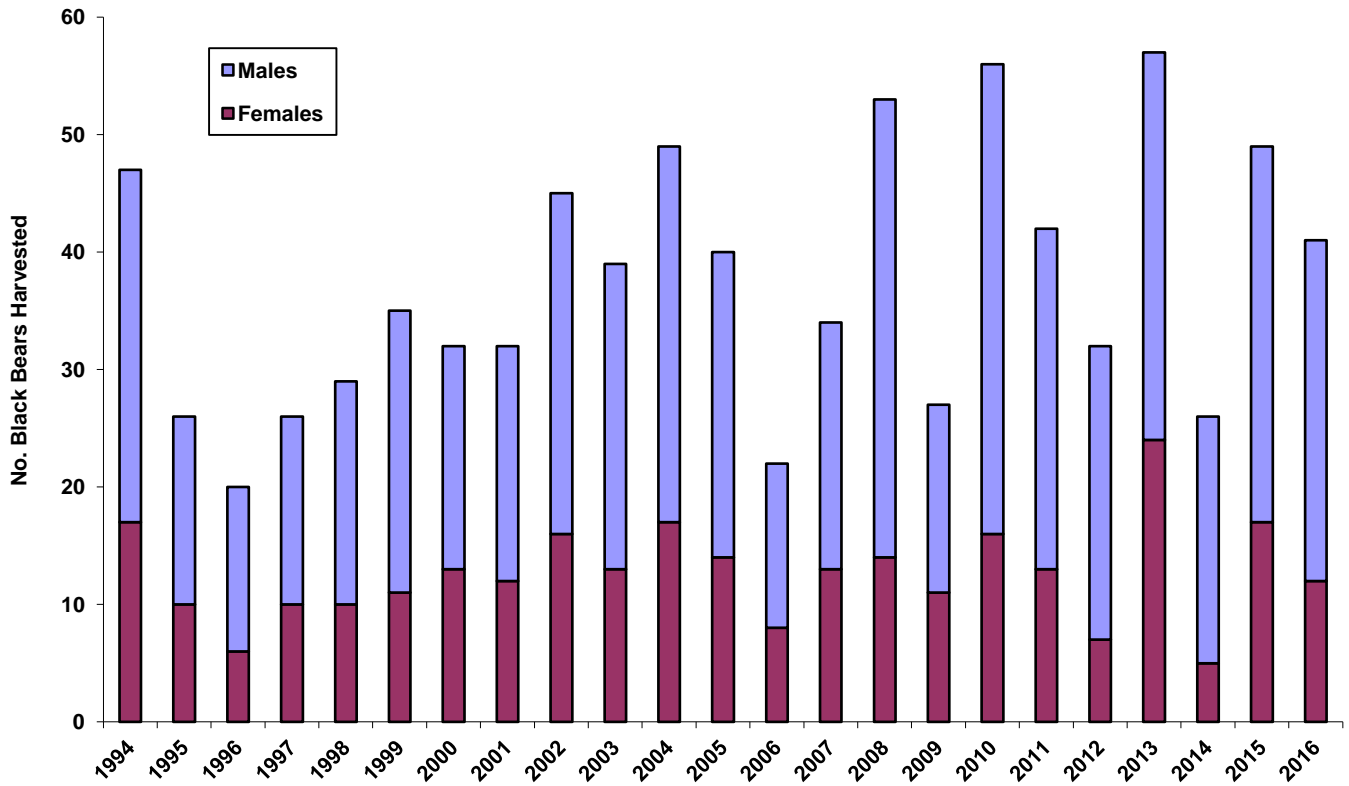


Figure 22. Legal harvest of black bears in Absaroka BMU, 1994-2016.

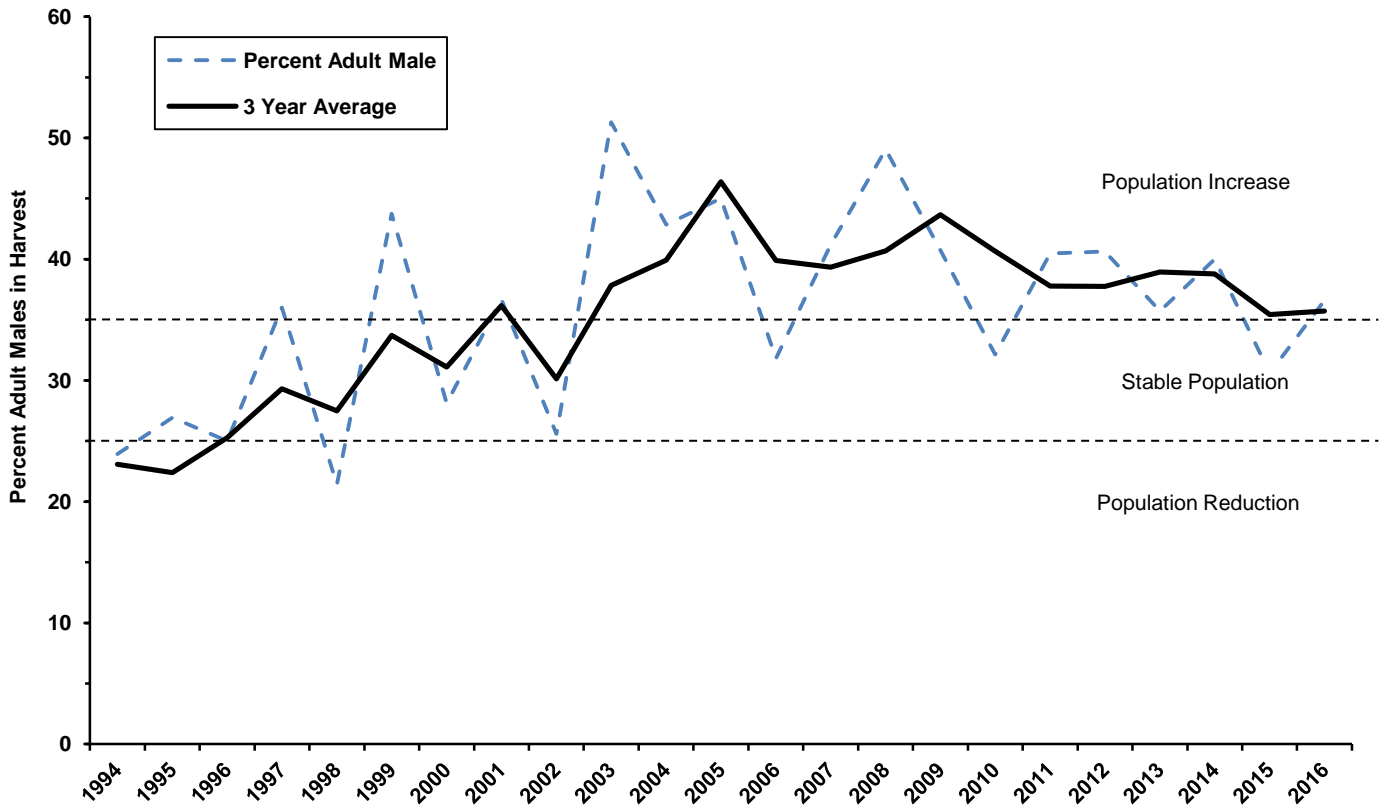


Figure 23. Percent adult males in the total legal black bear harvest in Absaroka BMU, 1994-2016.

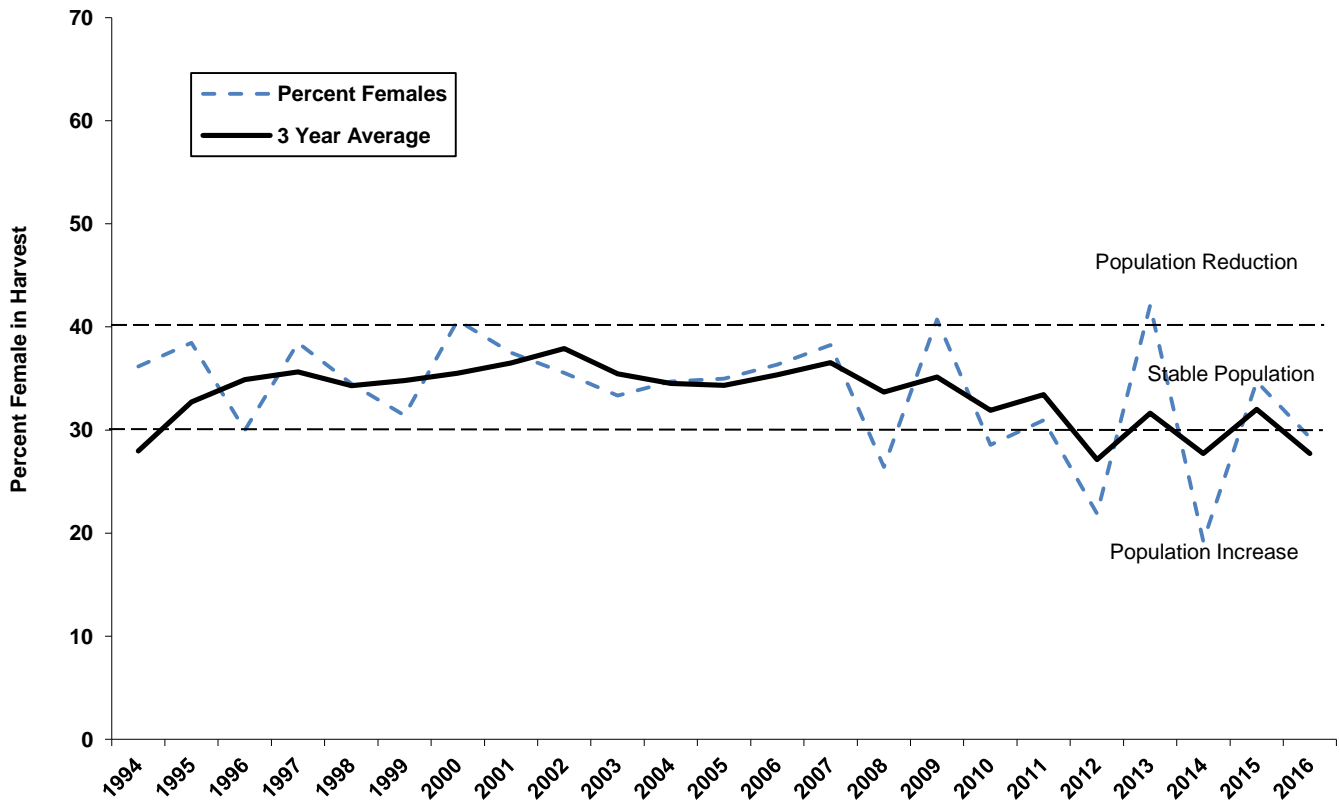


Figure 24. Percent females of the total legal black bear harvest in Absaroka BMU, 1994-2016.

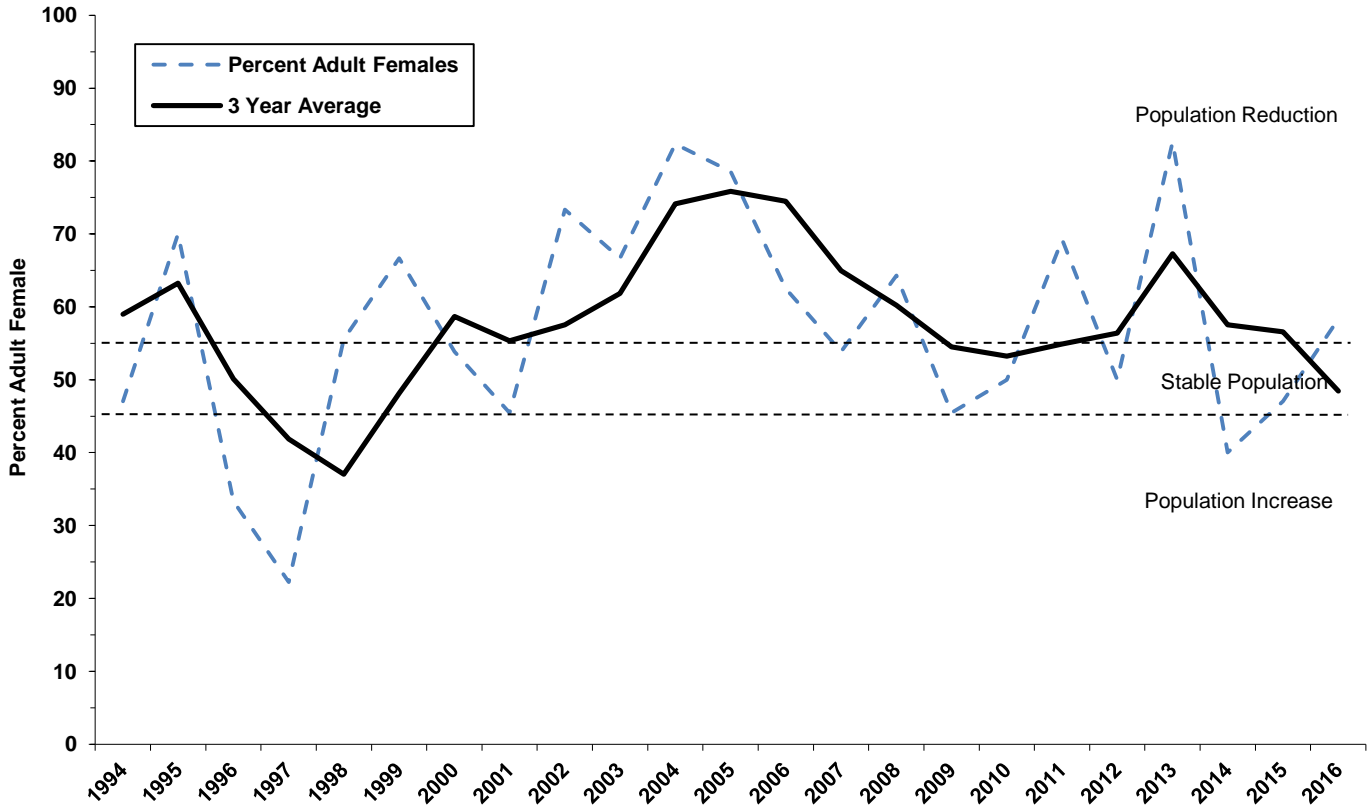


Figure 25. Percent adult females of the total female legal harvest in Absaroka BMU, 1994-2016.

Harvest Criteria by Harvest Limit – Hunt Areas 23, 25, 26, and 27

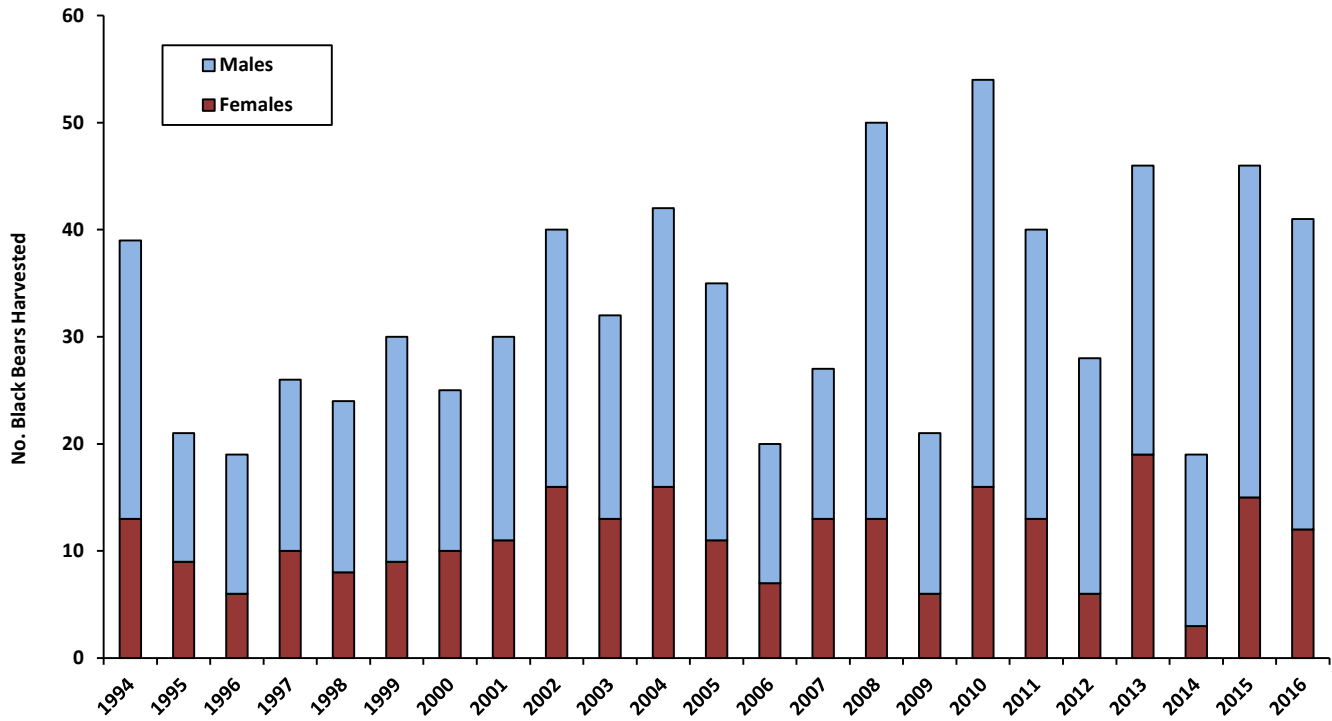


Figure 26. Legal harvest of black bears in hunt areas 23, 25, 26, and 27 of Absaroka BMU, 1994-2016.

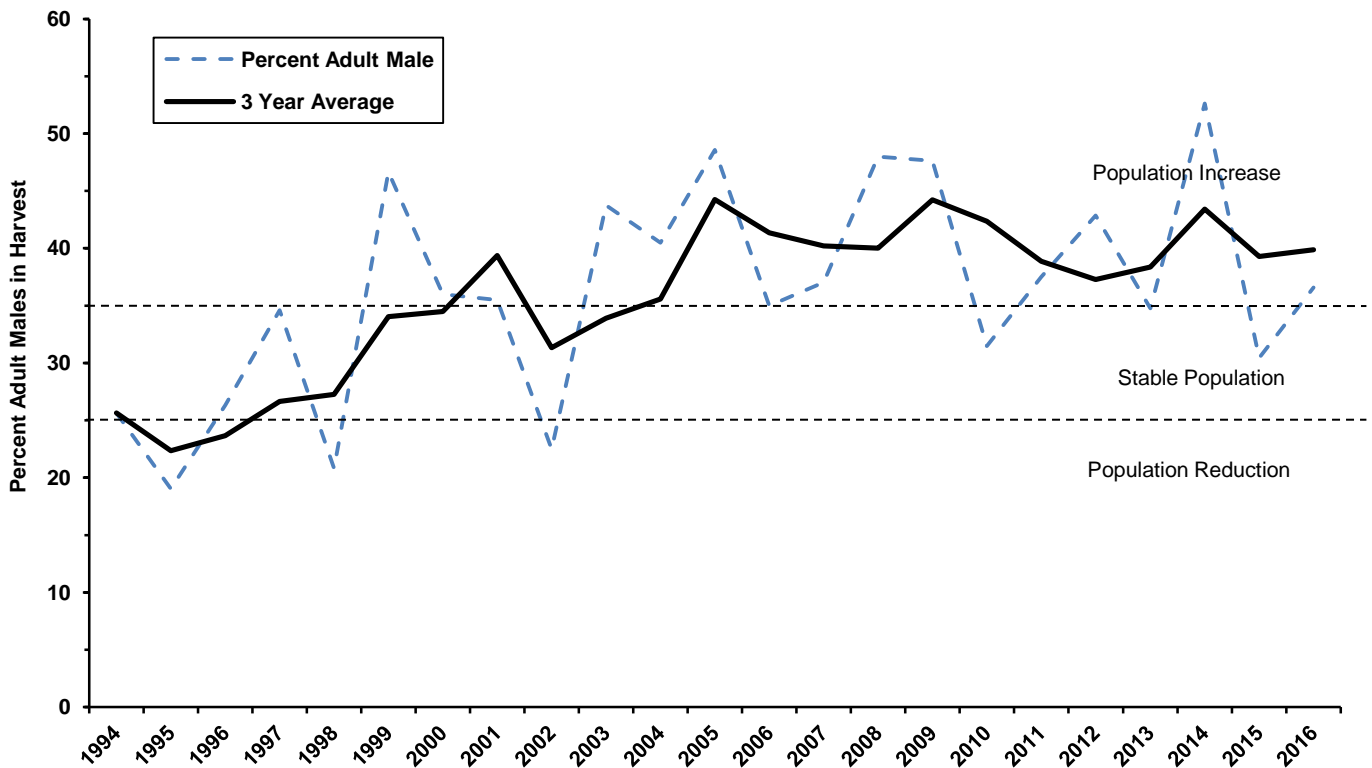


Figure 27. Percent adult males in the total legal black bear harvest in hunt areas 23, 25, 26, and 27 of Absaroka BMU, 1994-2016.

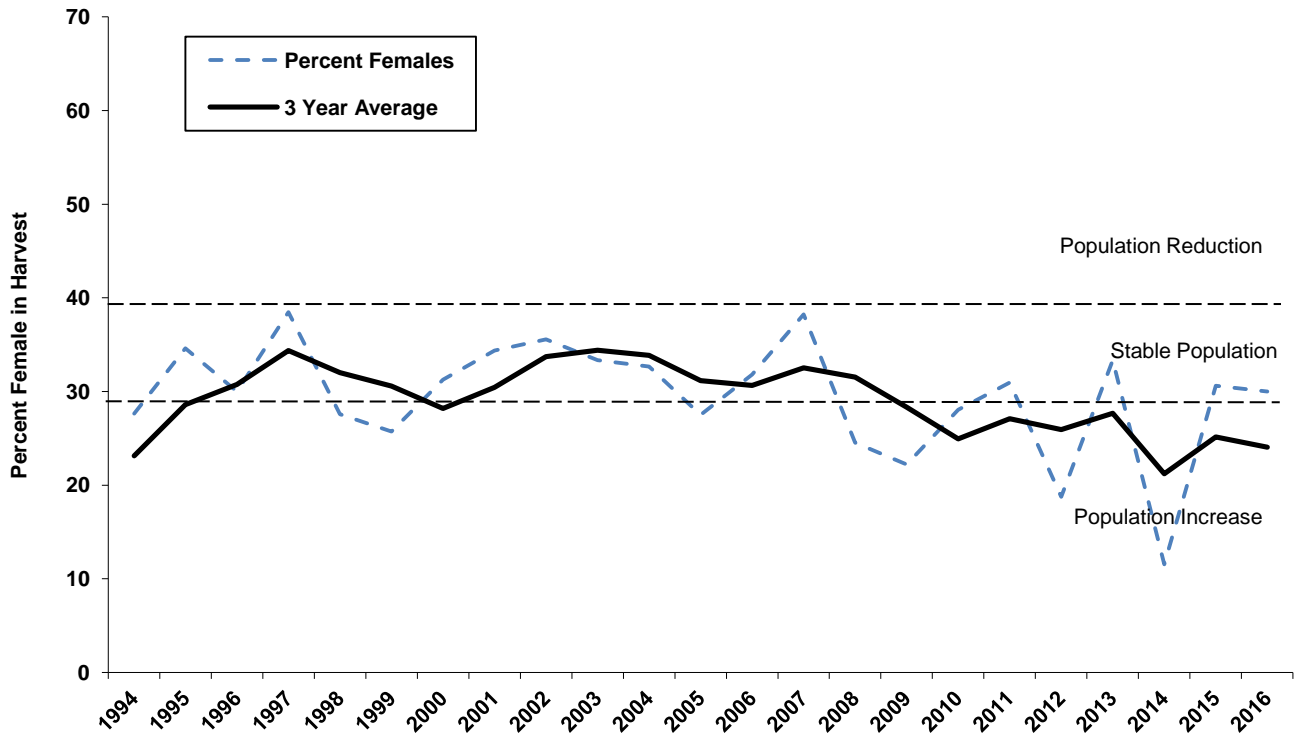


Figure 28. Percent females of the total legal black bear harvest in hunt areas 23, 25, 26, and 27 of Absaroka BMU, 1994-2016.

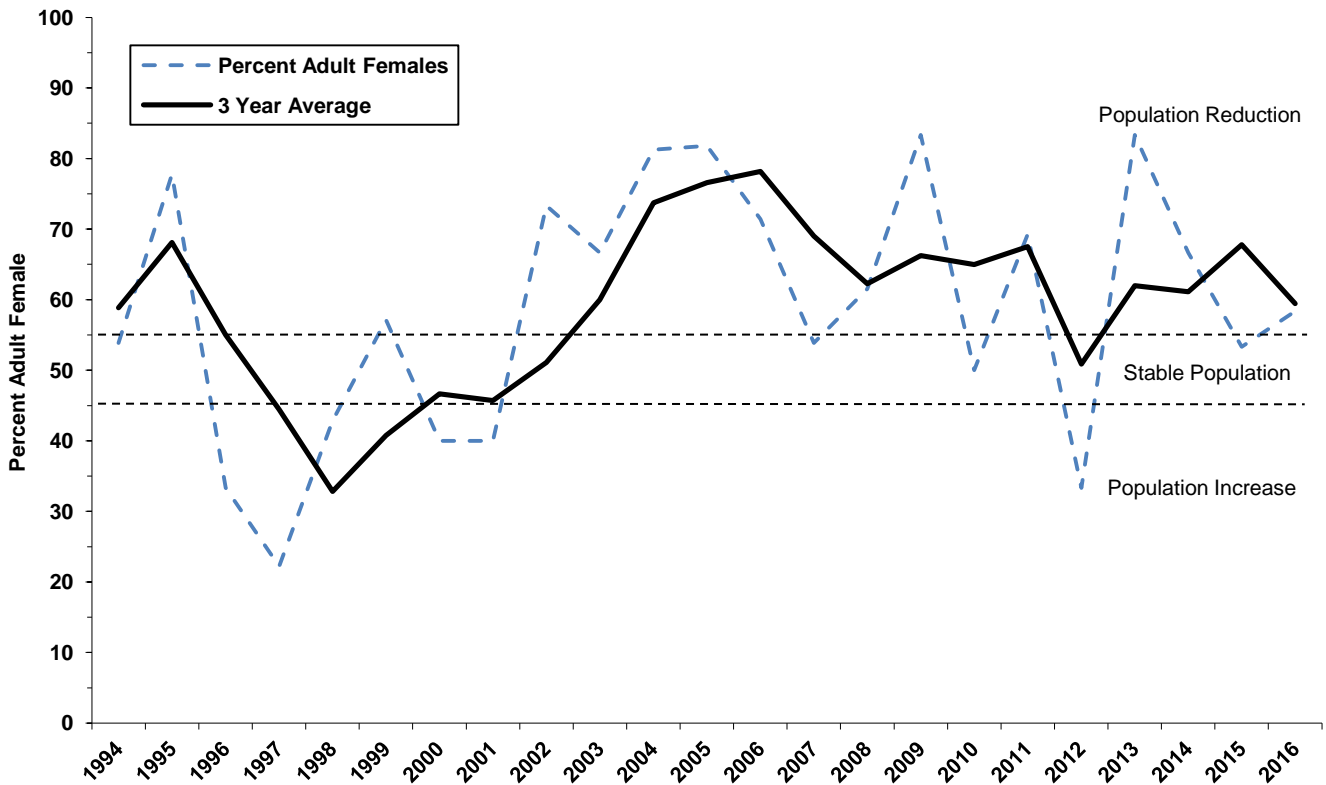


Figure 29. Percent adult females of the total female legal harvest in hunt areas 23, 25, 26, and 27 of Absaroka BMU, 1994-2016.

BIGHORNS BEAR MANAGEMENT UNIT (301)

2016 Black Bear Mortality

The fall female mortality limit for hunt areas 1 and 2 was increased to 6 for the 2014 – 2016 season cycle, while all other mortality limits for the Bighorns BMU remained unchanged for this period (Table 7). Legal black bear harvest and total mortalities in BMU 301 were very similar to the previous season cycle (Figures 30 and 31). The proportion of males in the harvest remains low, as it has since the mid-1990's (Figure 32). The percent of females in the harvest has decreased to in the past two season cycles and is now in the lower stable range (Table 8, Figure 33), while the proportion of adults in the female harvest continues to fluctuate around the lower stable range (Figure 34). Analyzed as groups of areas with a shared female mortality limit, hunt areas 1 and 2 (Figures 35-38) and hunt areas 3 and 4 (Figures 39-42) show similar percent of adult males in the harvest (Figures 36 and 40), but increasing percent of females (Figures 37 and 41), indicative of elevated effects of harvest. This effect is not seen in the overall BMU statistics due to the higher proportion of male harvest in areas 5 and 6 (Table 7). The percent of adults in the female harvest in hunt areas 1 and 2 remains in stable range (Figure 38), while in areas 3 and 4 this percent is still relatively low (Figure 42). Harvest in areas 5 and 6 is too low to provide meaningful data for analysis, however the majority of the harvest consists of males (Table 7), likely peripheral to the main population in hunt areas 1-4.

Harvest criteria suggest slightly increasing effects of hunter harvest that is impacting males by reducing the proportion of adult males. However, while an upward trend in the percent of females in the harvest is beginning to show effects on females in hunt areas 1,2 and 3,4, the levels are still within the stable range.

Table 7. Bighorns BMU female mortality limits, harvest (legal/illegal harvest) by sex and season, and season closure dates for the 2014-2016 black bear hunting seasons. Yellow cells indicate season closure prior to the closing date listed in regulation (Appendix I) after reaching the female mortality limit.

			Female Mortality Limit		Harvest				Season Closure Dates	
					Spring		Fall			
YEAR	MGMT UNIT	HUNT AREA	Spring	Fall	M	F	M	F	Spring	Fall
2014	BIGHORNS	1, 2	8	6	17	4	14	6	6/15/14	10/31/14
		3, 4	6	4	9	3	4	1	6/15/14	10/31/14
		5, 6	2	2	1	0	5	0	6/15/14	11/15/14
2015	BIGHORNS	1, 2	8	6	13	8	6	6	5/30/15	9/8/15
		3, 4	6	4	10	5	4	5	6/15/15	9/10/15
		5, 6	2	2	1	0	5	0	6/15/15	11/15/15
2016	BIGHORNS	1, 2	8	6	25	7	4	8	6/15/16	9/4/16
		3, 4	6	4	12	5	3	5	6/15/16	9/12/16
		5, 6	2	2	1	1	4	0	6/15/16	11/15/16

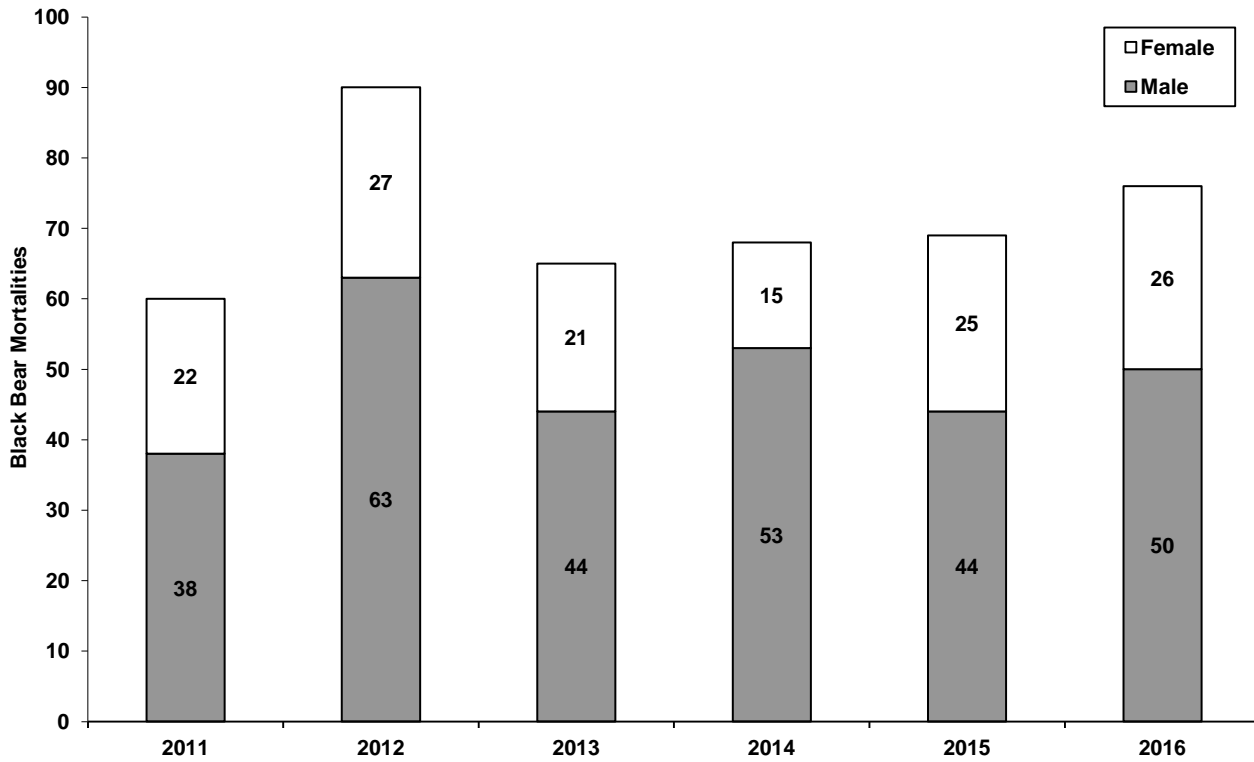


Figure 30. Number of black bear mortalities of all causes in Bighorns BMU by sex, 2011-2016.

Table 8. Harvest criteria for Bighorns BMU legal black bear harvest, 2014-2016. Criteria are presented by objective as 3-year averages of percent adult males in the total harvest, percent females in the total harvest, and percent adult females in the female harvest.

Year	Objective	Harvest Criteria		
		% Adult ^a Males in Total Harvest	% Females in Total Harvest	% Adult ^a Females in Female Harvest
	Population Reduction	< 25%	> 40%	> 55%
	Stable Population	25 – 35%	30 – 40%	45 – 55%
	Population Increase	> 35%	< 30%	< 45%
2014-2016		17.6	31.3	48.9

^a Adults classified as males and females ≥ 5 years of age based on tooth cementum annuli.

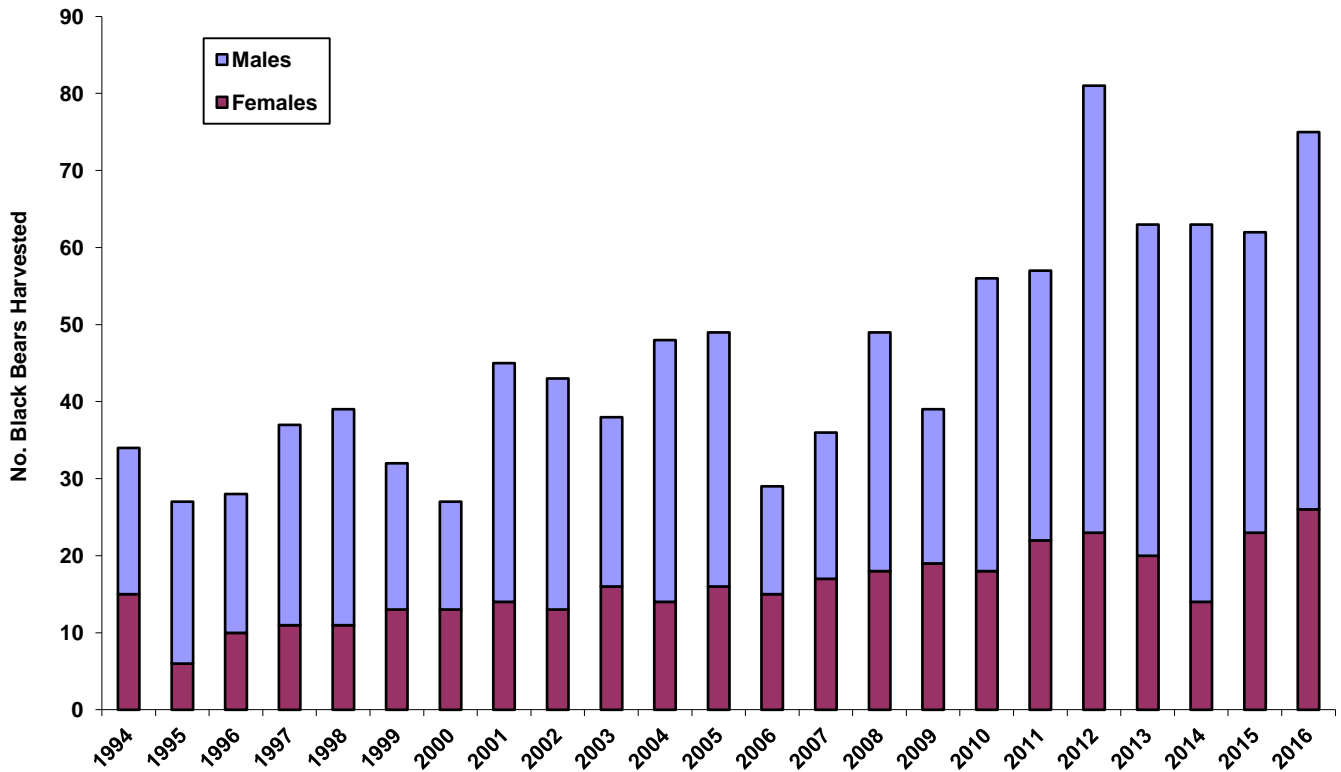


Figure 31. Legal harvest of black bears in Bighorns BMU, 1994-2016.

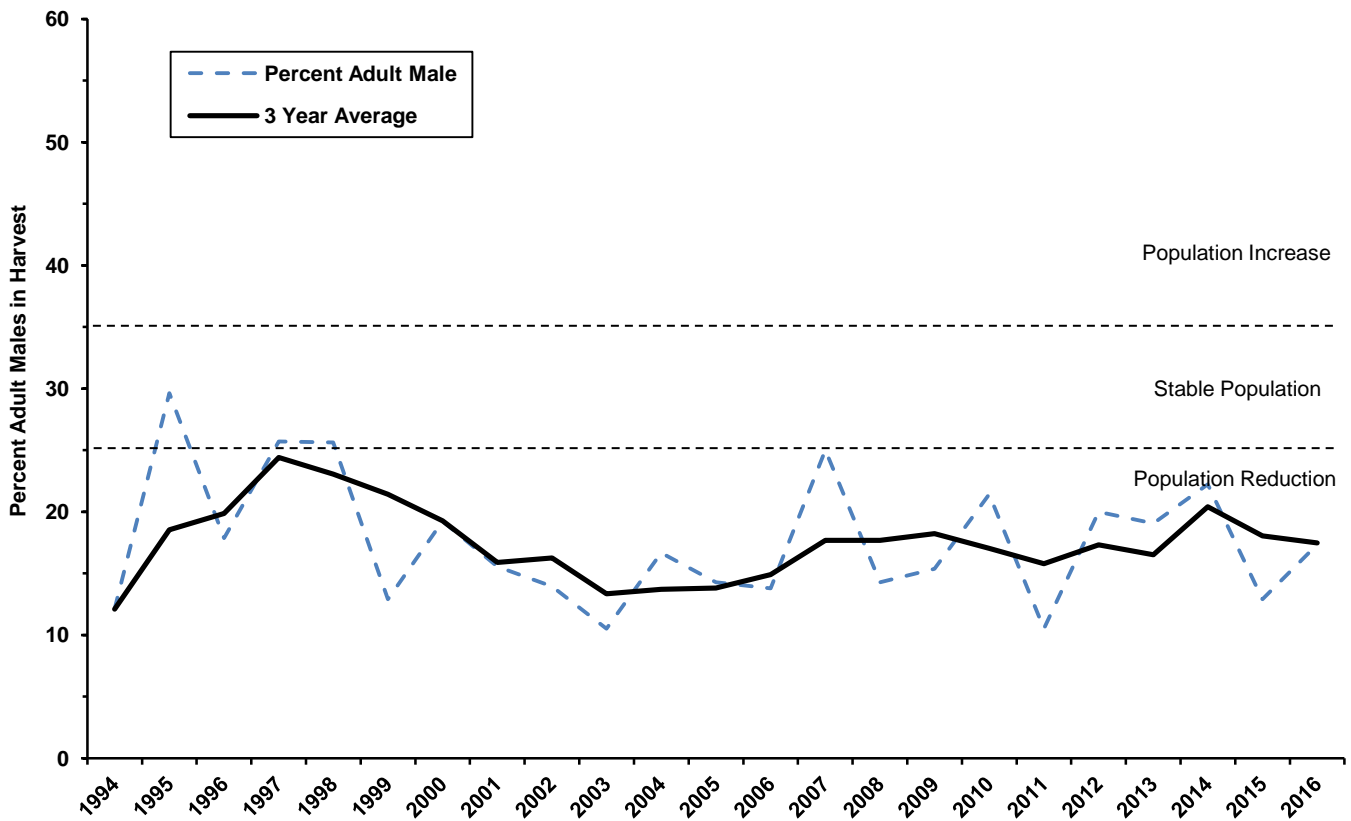


Figure 32. Percent adult males in the total legal black bear harvest in Bighorns BMU, 1994-2016.

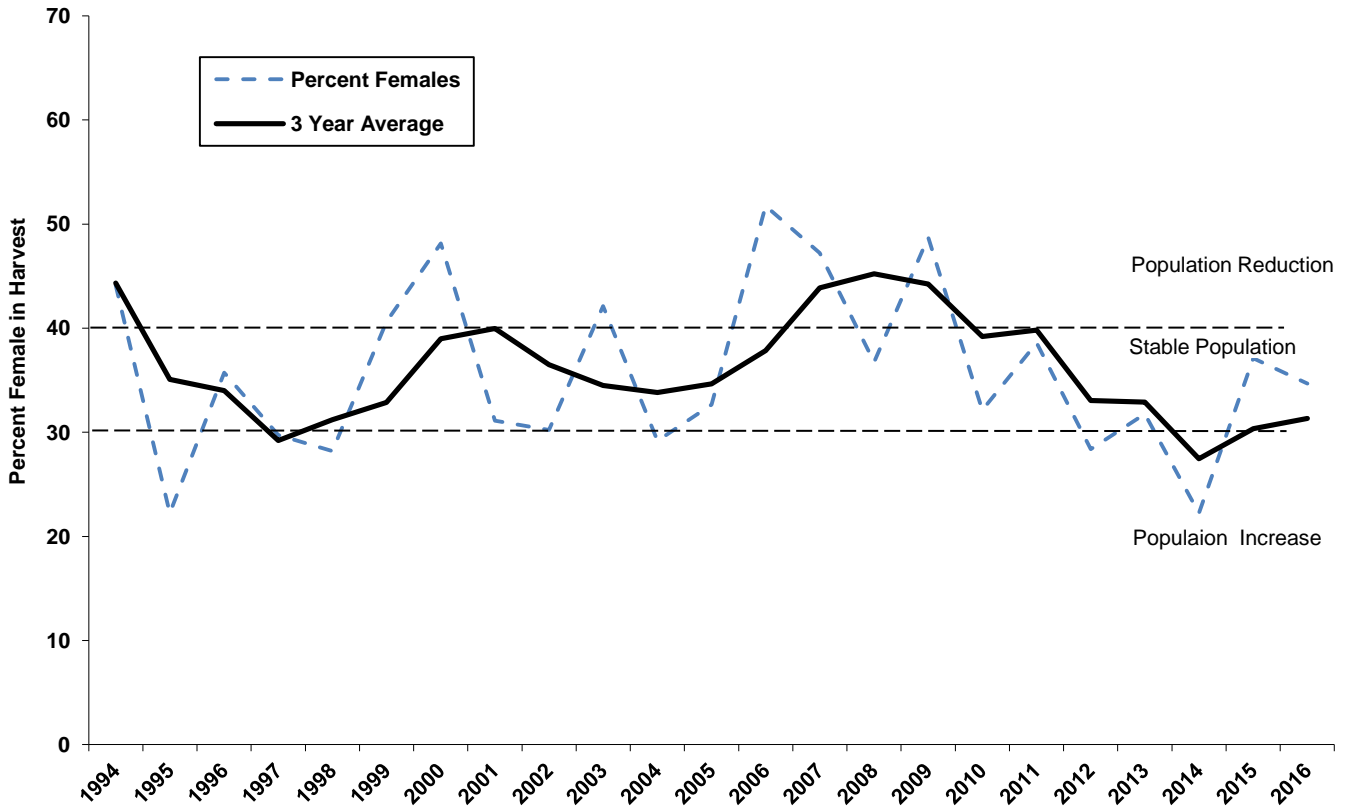


Figure 33. Percent females of the total legal black bear harvest in Bighorns BMU, 1994-2016.

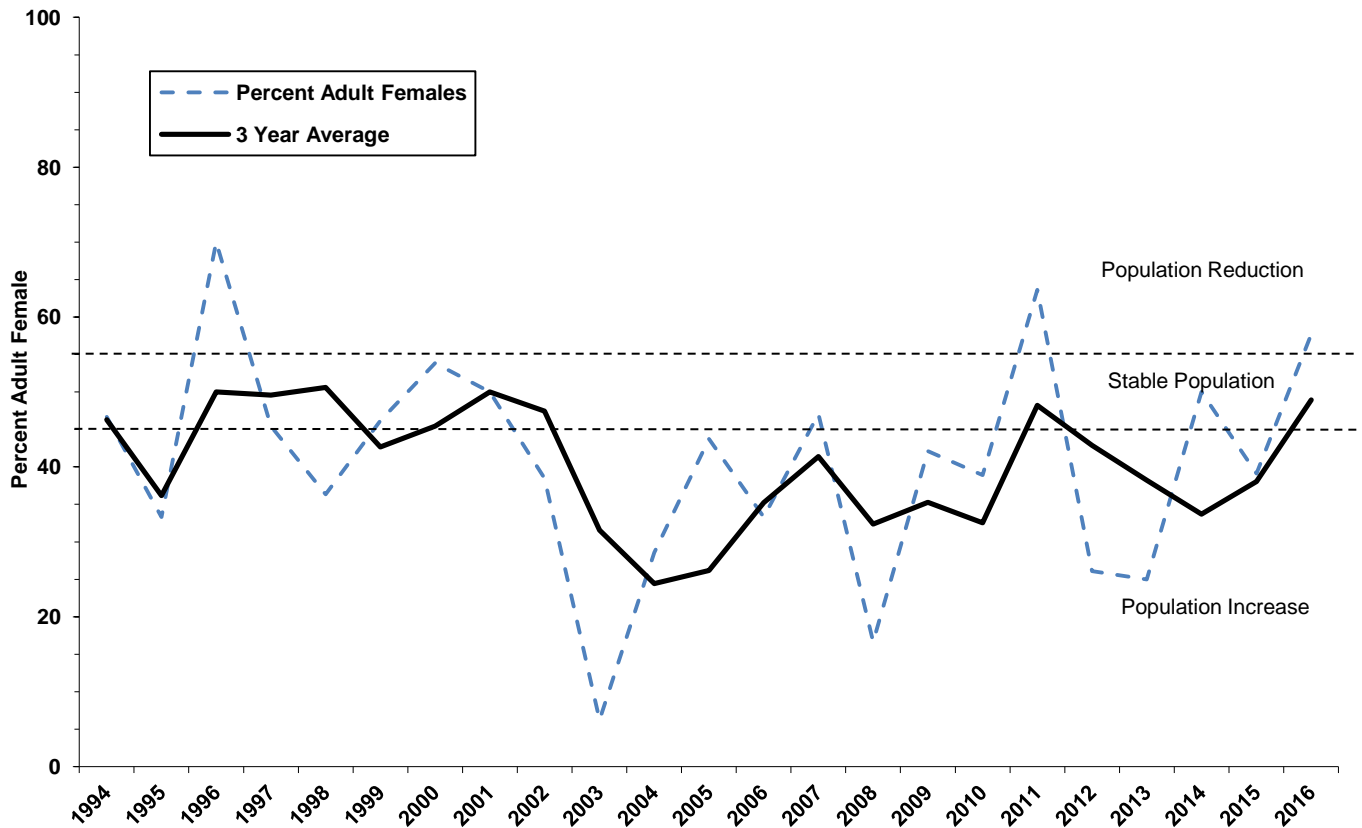


Figure 34. Percent adult females of the total female legal harvest in Bighorns BMU, 1994-2016.

Harvest Criteria by Harvest Limit – Hunt Areas 1 and 2

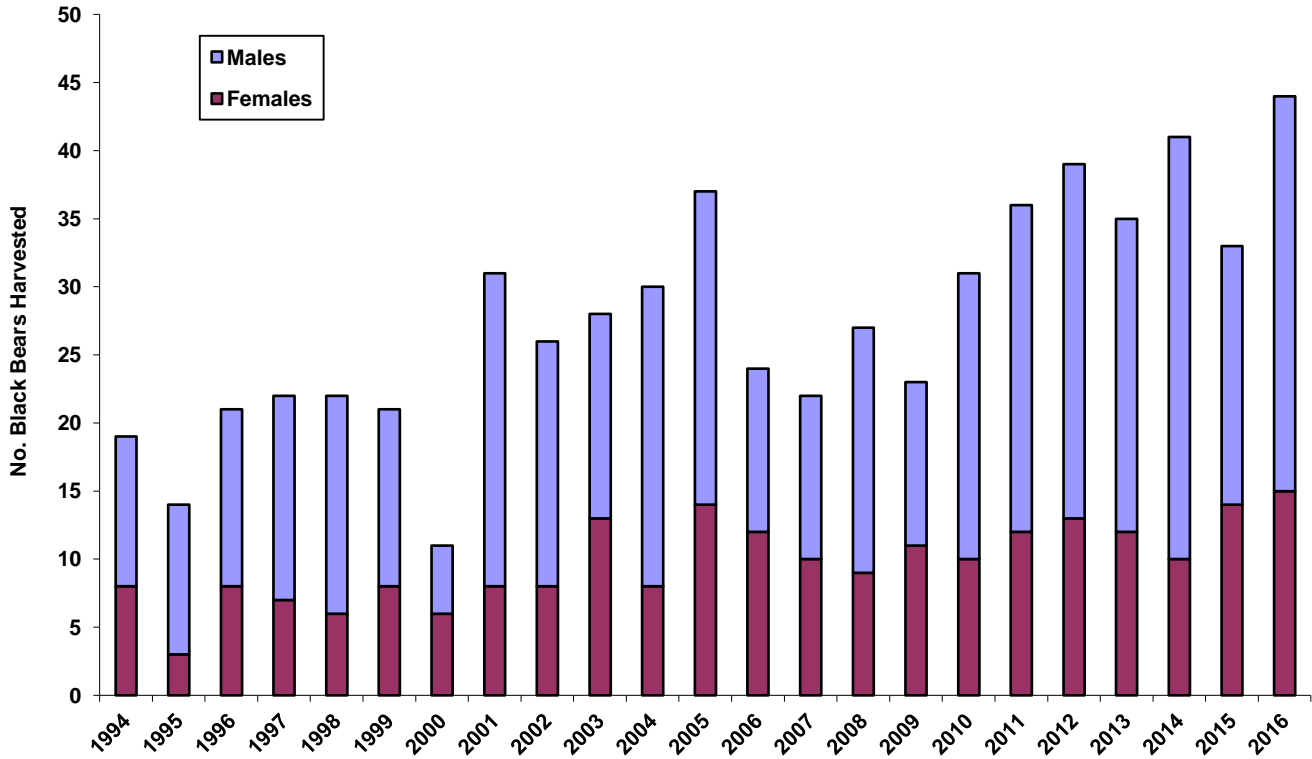


Figure 35. Legal harvest of black bears in hunt areas 1 and 2 of Bighorns BMU, 1994-2016.

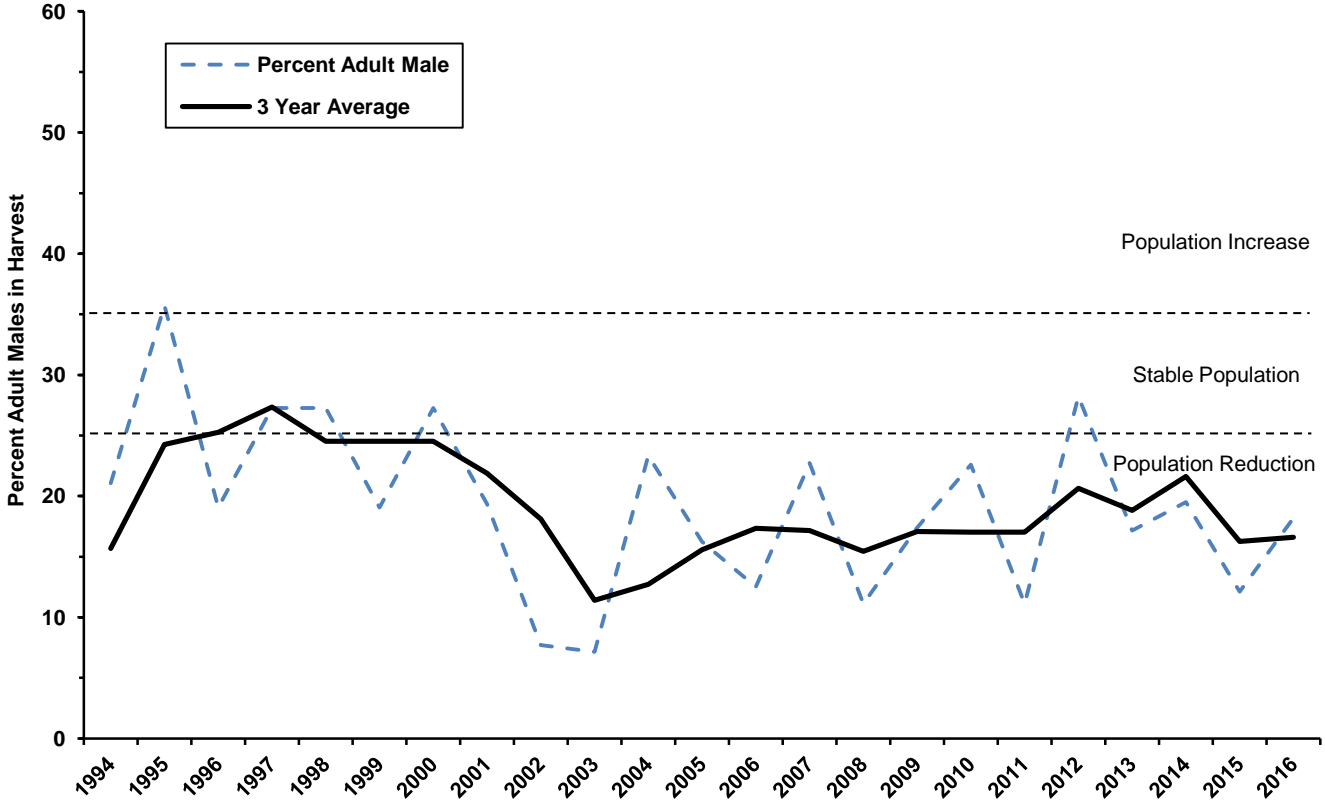


Figure 36. Percent adult males in the total legal black bear harvest in hunt areas 1 and 2 of Bighorns BMU, 1994-2016.

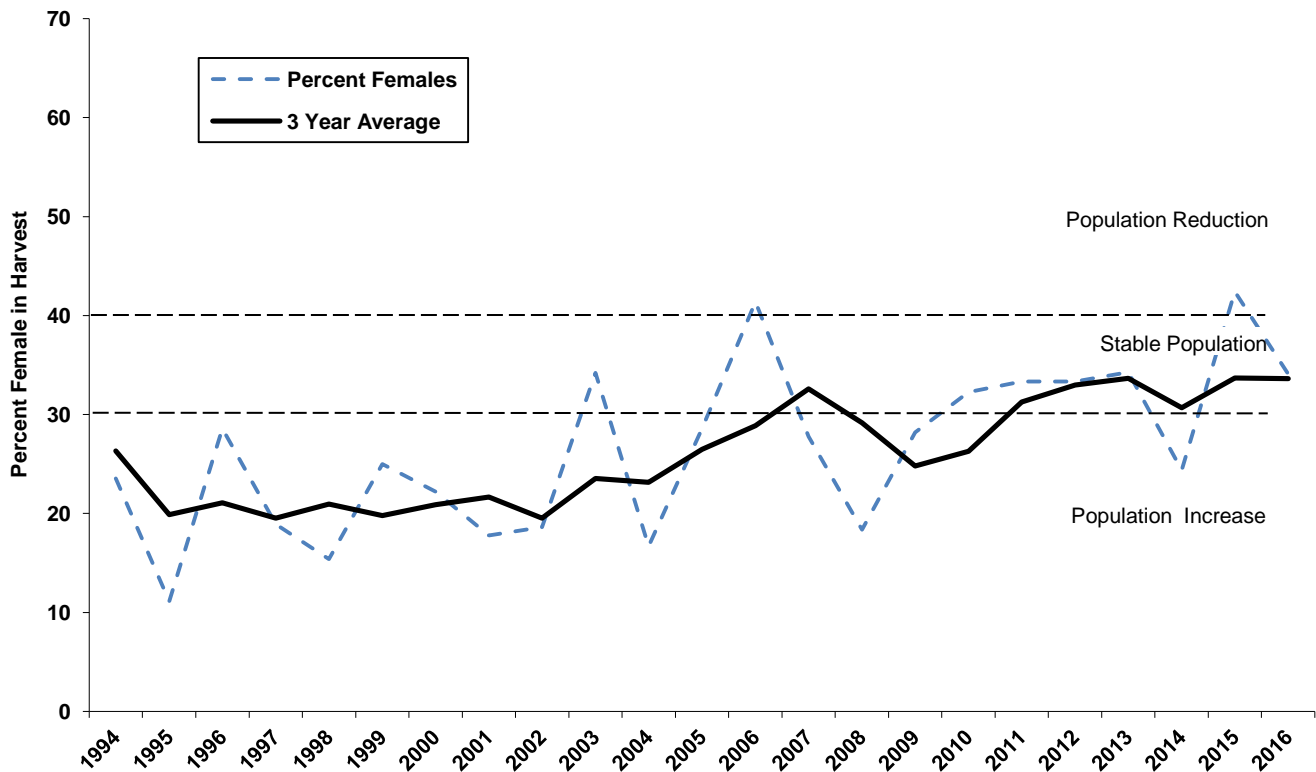


Figure 37. Percent females of the total legal black bear harvest in hunt areas 1 and 2 of Bighorns BMU, 1994-2016.

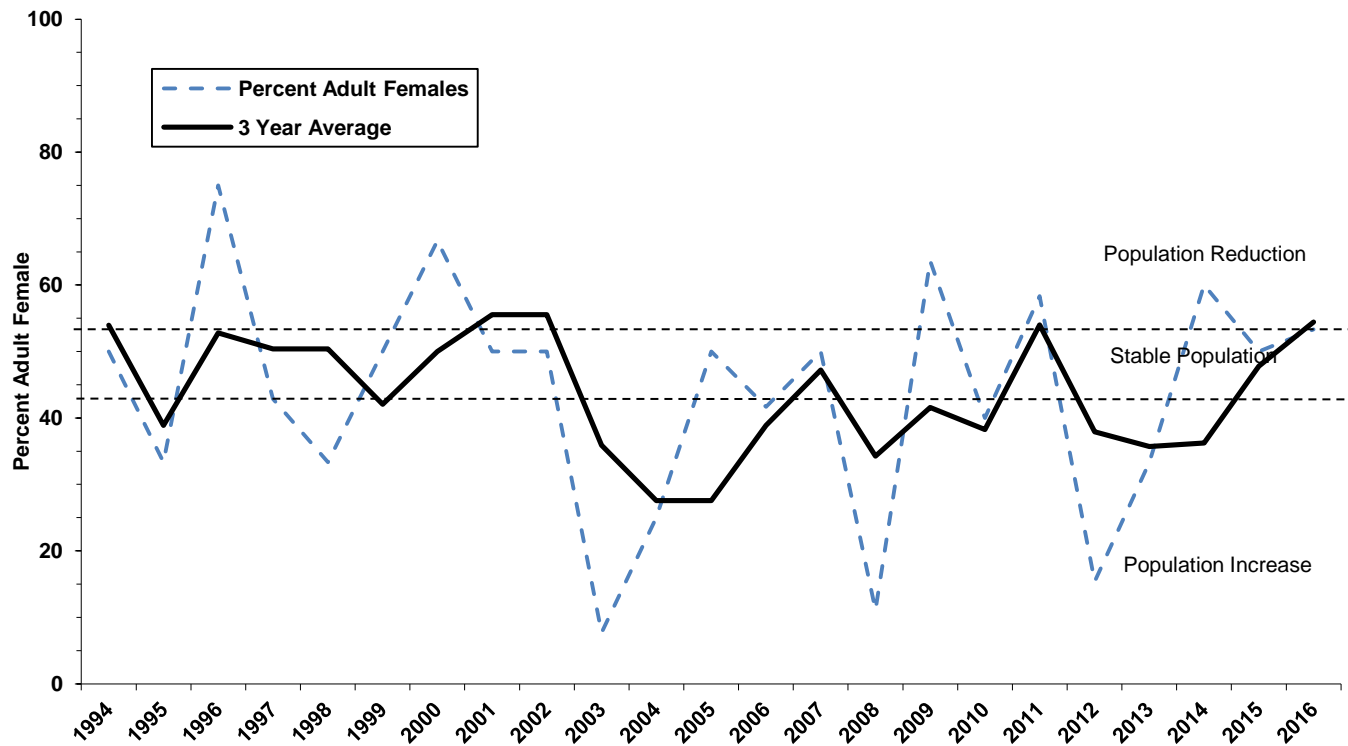


Figure 38. Percent adult females of the total female legal harvest in hunt areas 1 and 2 of Bighorns BMU, 1994-2016.

Harvest Criteria by Harvest Limit – Hunt Areas 3 and 4

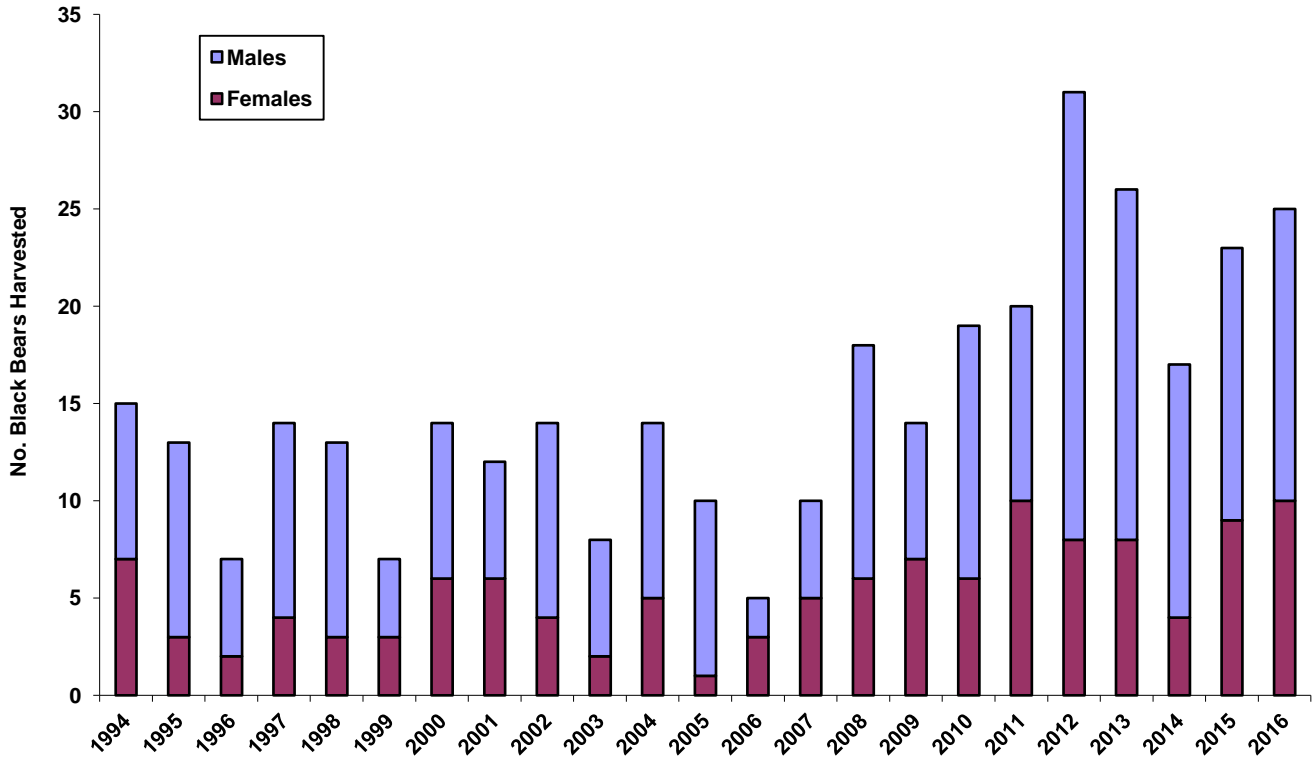


Figure 39. Legal harvest of black bears in hunt areas 3 and 4 of Bighorns BMU, 1994-2016.

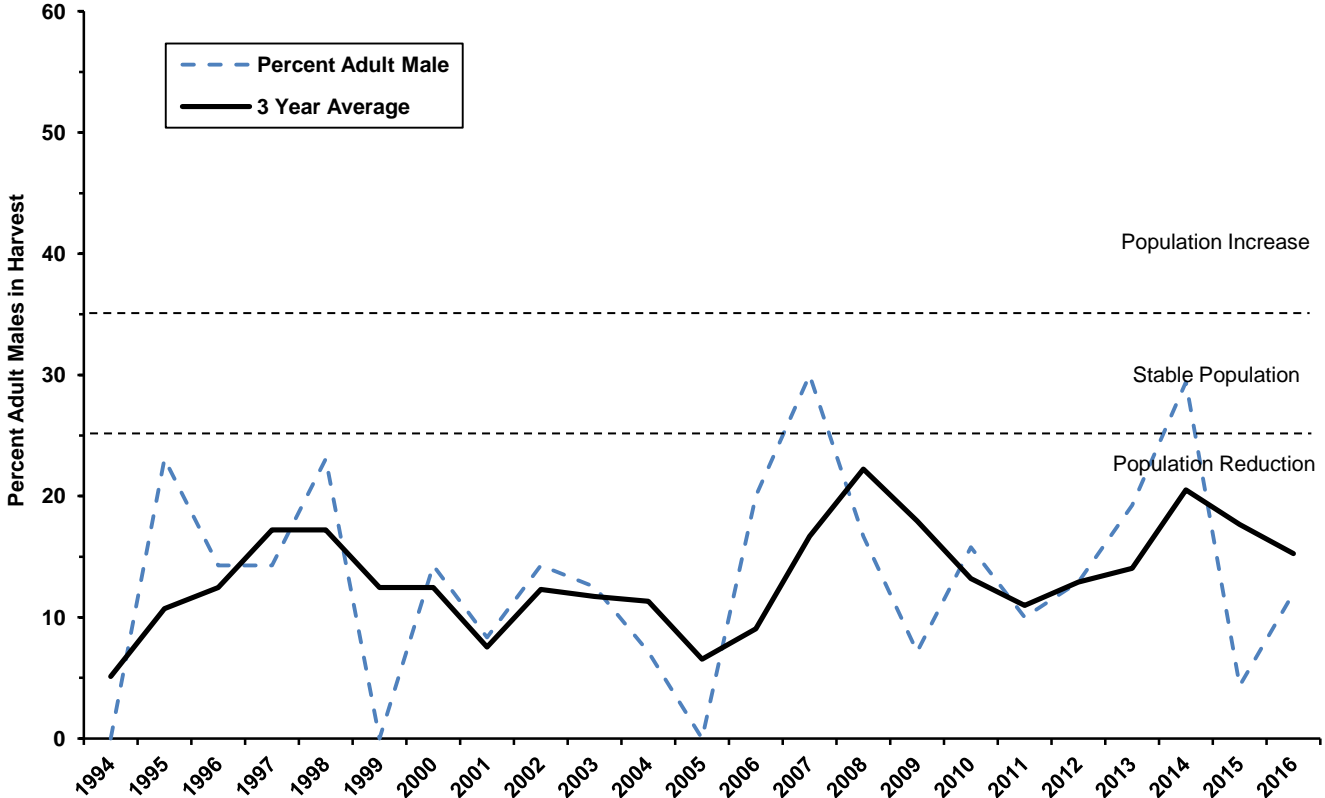


Figure 40. Percent adult males in the total legal black bear harvest in hunt areas 3 and 4 of Bighorns BMU, 1994-2016.

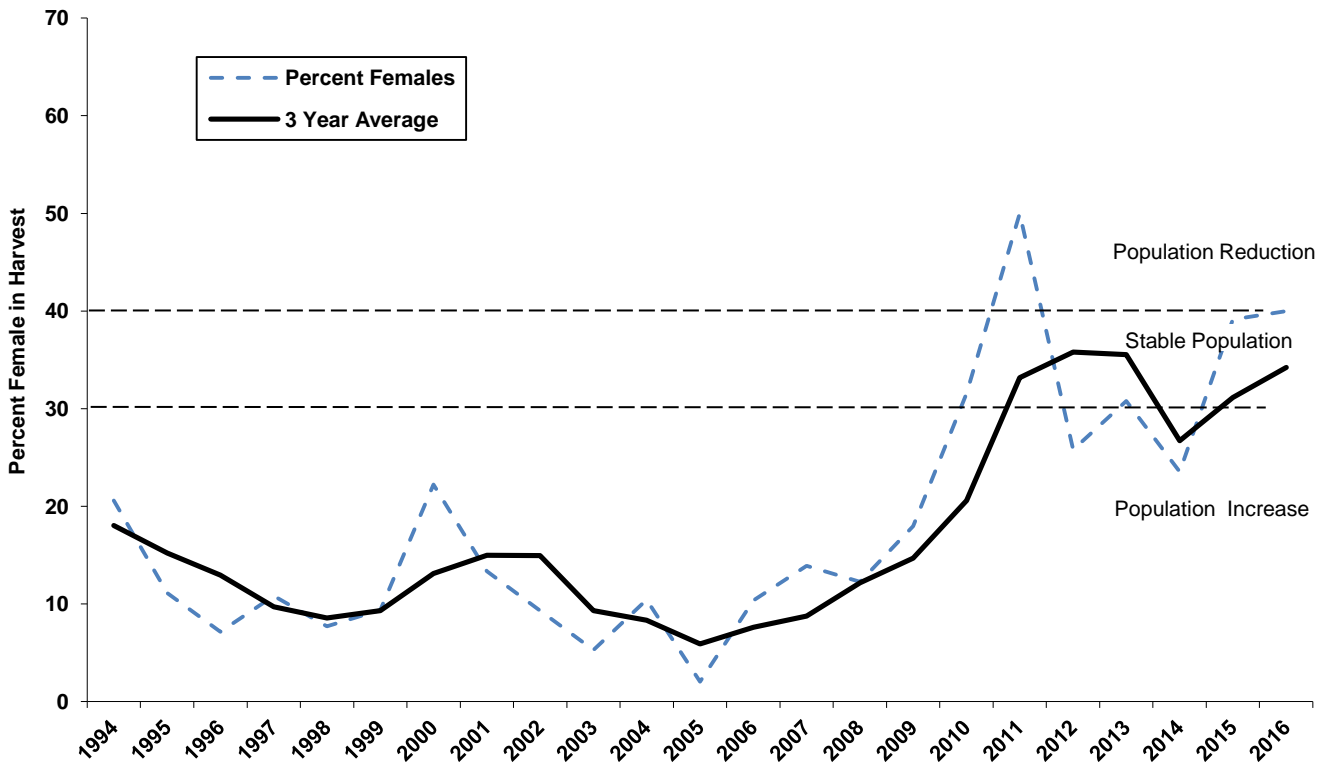


Figure 41. Percent females of the total legal black bear harvest in hunt areas 3 and 4 of Bighorns BMU, 1994-2016.

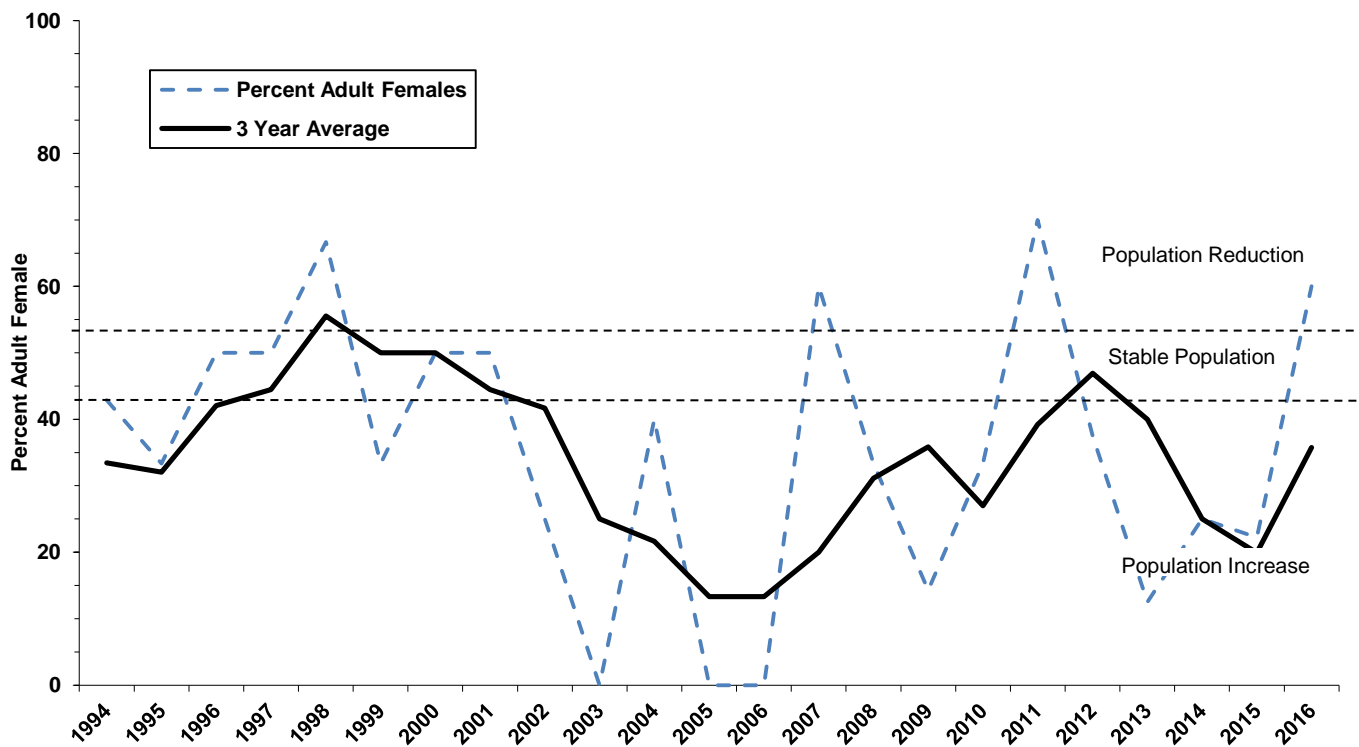


Figure 42. Percent adult females of the total female legal harvest in hunt areas 3 and 4 of Bighorns BMU, 1994-2016.

SIERRA MADRES BEAR MANAGEMENT UNIT (401)

2016 Black Bear Mortality

The female mortality limit for the Sierra Madres BMU remained unchanged for the 2014-2016 harvest cycle (Table 9). The overall mortalities and legal harvest for 2014-2016 were similar to those of 2011-2013 (Figures 43 and 44). The proportion of adult males in the harvest continued a downward trend (Figure 45), a pattern that has been evident in the 3-year average since 2009. However, the percent of females in the harvest has remained within the stable range (Figure 46). The percent of adults in the female harvest increased sharply during the 2014-2016 cycle, but may be due to small sample size (Figure 47).

Increases in black bear mortality since female mortality limits were increased in 2011 suggest steady harvest pressure that is impacting males, but less pressure on the female cohort. Immigration from the adjacent black bear population in Colorado is likely providing an influx of dispersing subadult males which may have a mitigating effect on female harvest.

Table 9. Sierra Madres BMU female mortality limits, harvest (legal/illegal harvest) by sex and season, and season closure dates for the 2014-2016 black bear hunting seasons. Yellow cells indicate season closure prior to the closing date listed in regulation (Appendix I) after reaching the female mortality limit.

			Female Mortality Limit		Harvest				Season Closure Dates	
					Spring		Fall		Spring	Fall
YEAR	MGMT UNIT	HUNT AREA	Spring	Fall	M	F	M	F		
2014	SIERRA MADRES	9	8	6	26	8	14	5	6/9/14	10/31/14
2015	SIERRA MADRES	9	8	6	14	9	5	6	6/7/15	9/25/15
2016	SIERRA MADRES	9	8	6	24	5	5	10	6/15/16	10/5/16

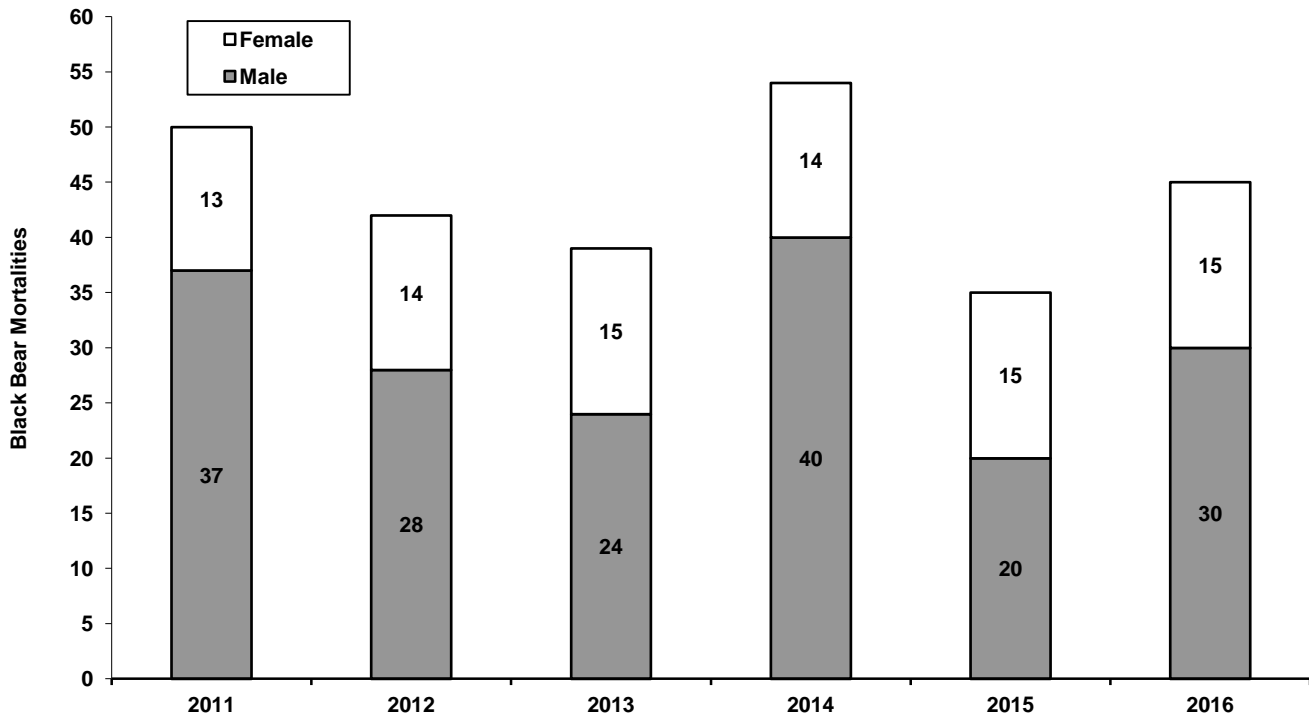


Figure 43. Number of black bear mortalities of all causes in Sierra Madres BMU by sex, 2011-2016

Table 10. Harvest criteria for Sierra Madres BMU legal black bear harvest, 2014-2016. Criteria are presented by objective as 3-year averages of percent adult males in the total harvest, percent females in the total harvest, and percent adult females in the female harvest.

Year	Objective	Harvest Criteria		
		% Adult ^a Males in Total Harvest	% Females in Total Harvest	% Adult ^a Females in Female Harvest
	Population Reduction	< 25%	> 40%	> 55%
	Stable Population	25 – 35%	30 – 40%	45 – 55%
	Population Increase	> 35%	< 30%	< 45%
2014-2016		13.7	33.2	47.0

^a Adults classified as males and females ≥ 5 years of age based on tooth cementum annuli.

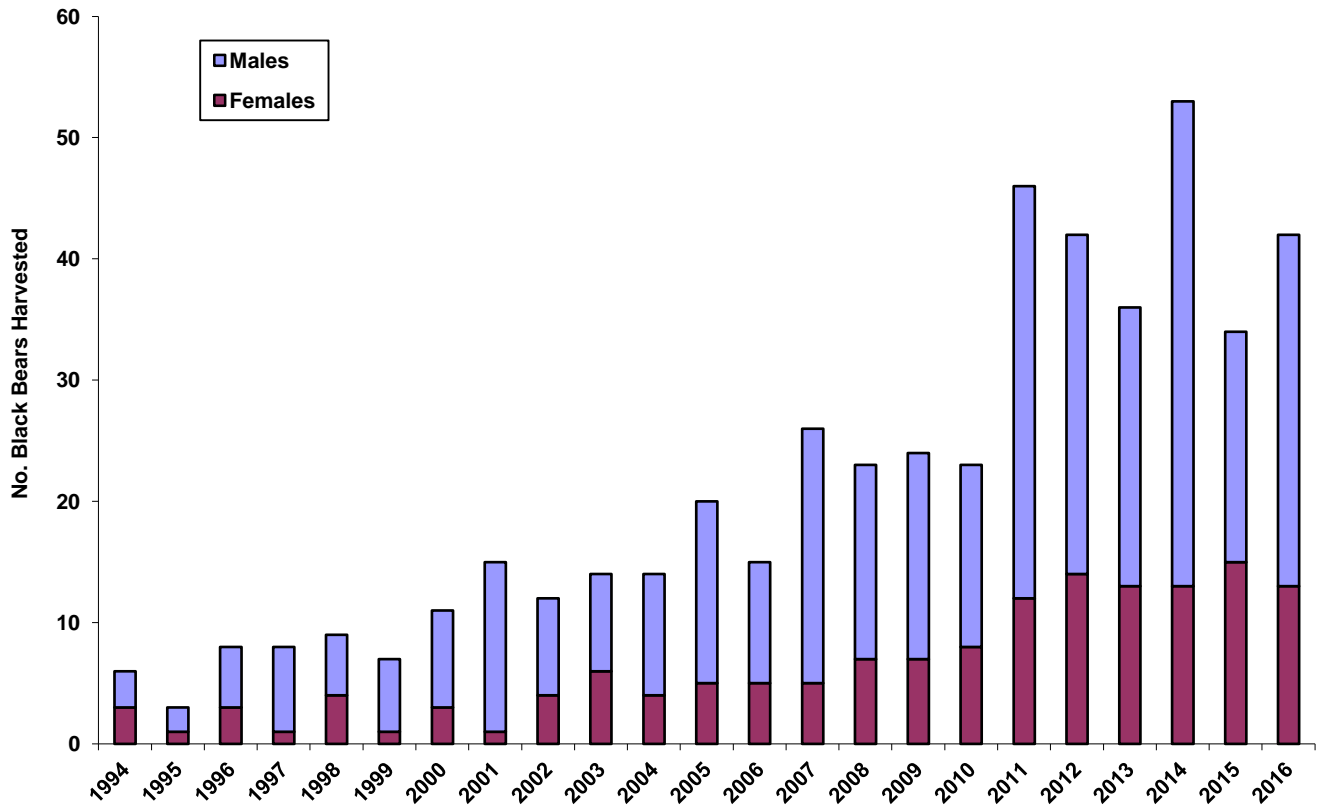


Figure 44. Legal harvest of black bears in Sierra Madres BMU, 1994-2016.

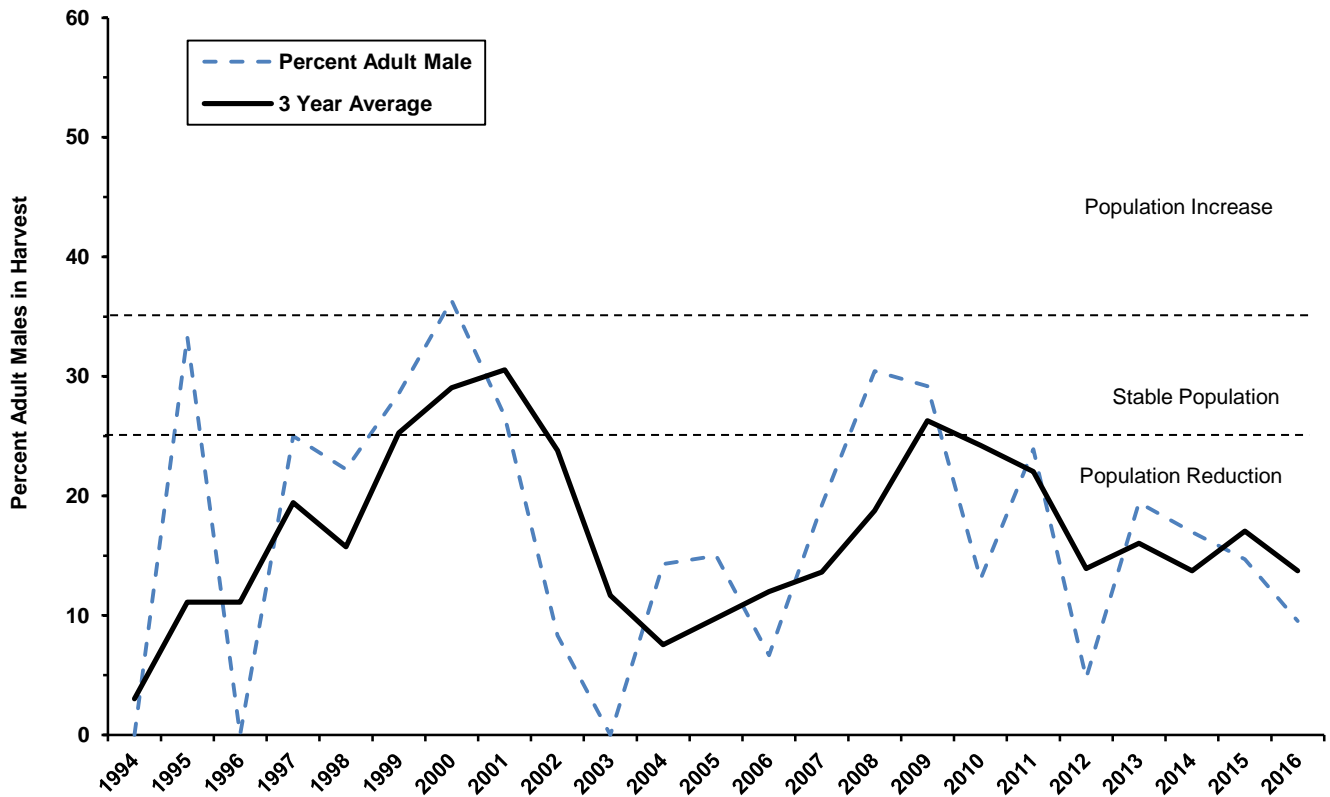


Figure 45. Percent adult males in the total legal black bear harvest in Sierra Madres BMU, 1994-2016.

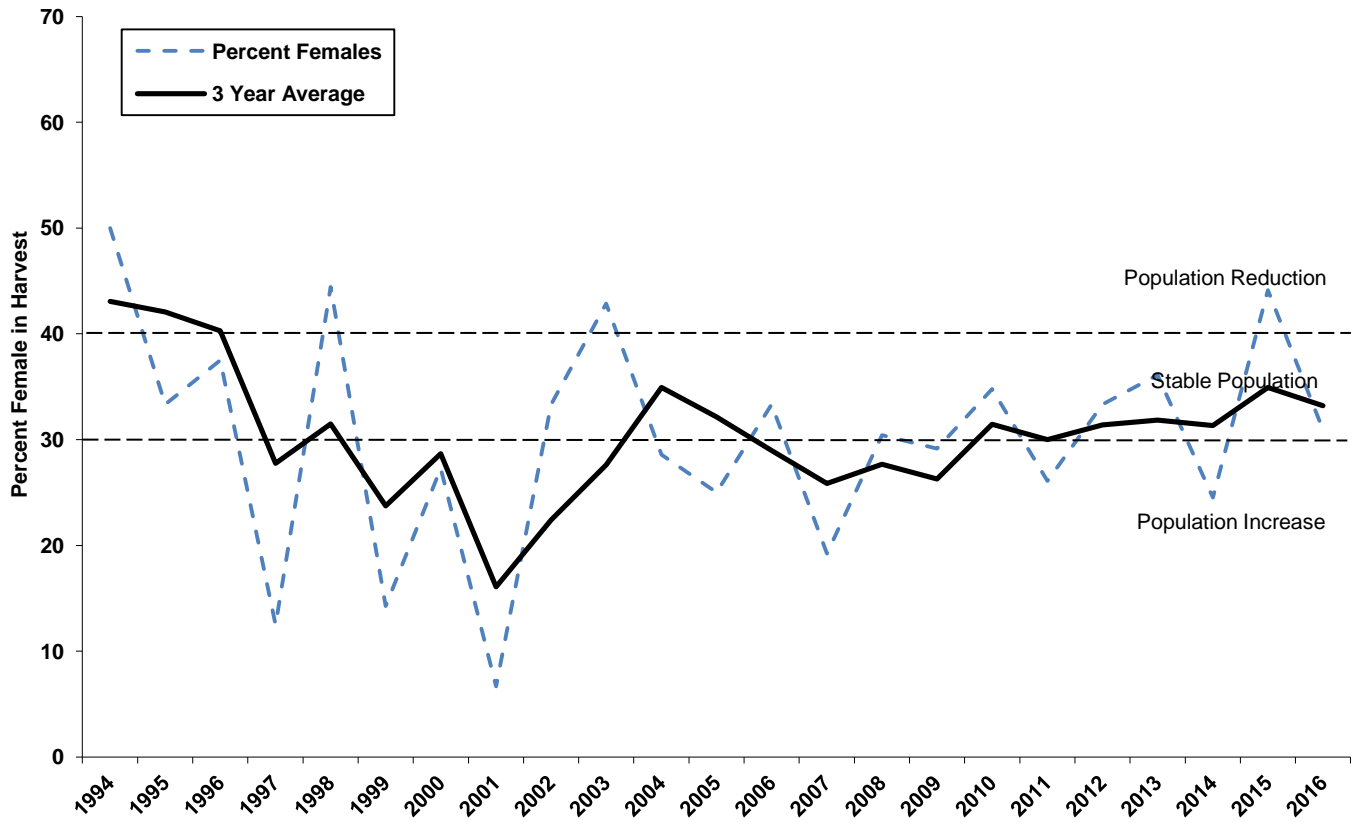


Figure 46. Percent females of the total legal black bear harvest in Sierra Madres BMU, 1994-2016.

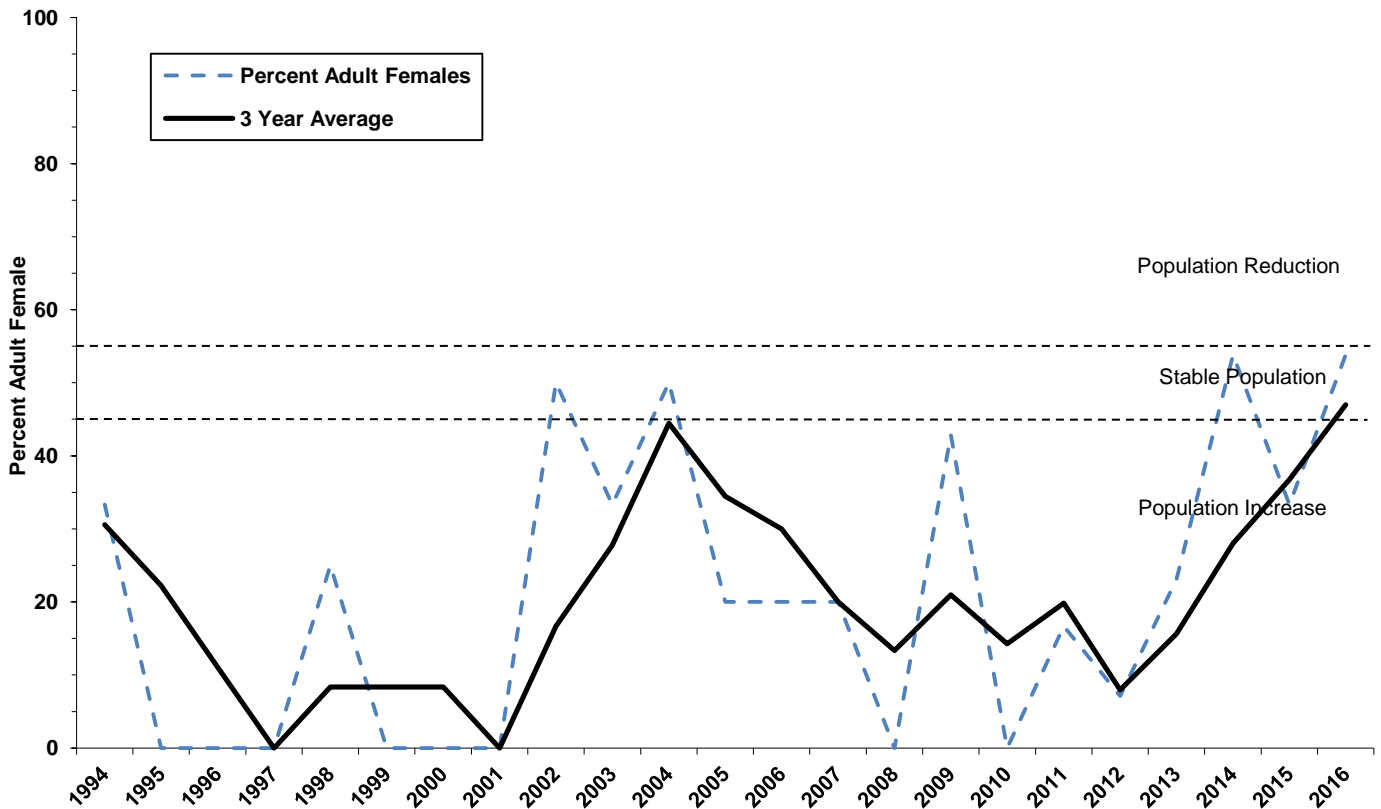


Figure 47. Percent adult females of the total female legal harvest in Sierra Madres BMU, 1994-2016.

UINTA BEAR MANAGEMENT UNIT (402)

2016 Black Bear Mortality

For the 2014 – 2016 harvest cycle, a new hunt area (Hunt Area 12) was created from the eastern portion of BMU 402 (Figure 1). This new hunt area encompasses the area to the east of Flaming Gorge Reservoir. A mortality limit of 2 females (1 spring, 1 fall) was allocated to this area. The female mortality limit for the portion of BMU 402 west of Flaming Gorge Reservoir remained at 4 females (2 spring, 2 fall) for the 2014 – 2016 seasons. For the 2014-2016 cycle, harvest was nearly evenly split between hunt area 10 and 12, with 6 bears in hunt area 10 and 8 bears in area 12 (Table 11). All harvest for this BMU took place in the spring season and was 76% male, with slightly more than half of those subadults. In addition to harvest mortality there was 1 damage mortality and 1 vehicle-related mortality. Small sample sizes prevent interpretation of harvest data and their relationship to the harvest criteria for BMU 402.

Table 11. Uinta BMU female mortality limits, harvest (legal/illegal harvest) by sex and season, and season closure dates for the 2014-2016 black bear hunting seasons. Yellow cells indicate season closure prior to the closing date listed in regulation (Appendix I) after reaching the female mortality limit.

			Female Mortality Limit		Harvest				Season Closure Dates	
					Spring		Fall			
YEAR	MGMT UNIT	HUNT AREA	Spring	Fall	M	F	M	F	Spring	Fall
2014	UINTA	10	2	2	4	0	0	0	6/15/14	10/31/14
		12	1	1	0	1	0	0	5/26/14	10/31/14
2015	UINTA	10	2	2	1	0	0	0	6/15/15	10/31/15
		12	1	1	2	1	0	0	6/15/15*	10/31/15
2016	UINTA	10	2	2	1	0	0	0	6/15/16	10/31/16
		12	1	1	3	1	0	0	6/13/16	10/31/16

*Female mortality limit met on last day of season

LARAMIE PEAK BEAR MANAGEMENT UNIT (501)

2016 Black Bear Mortality

Female mortality limits for hunt area 7 were increased by 1 each in the spring and fall, while the fall female mortality limit for hunt area 33 was decreased by 1 for the 2014 – 2016 harvest cycle (Table 12). Black bear mortalities and harvest in BMU 501 were similar to levels those seen in 2011 – 2013 (Figures 48 and 49). For the 2014-2016 cycle, the percent of adult males in the harvest and the percent of females show movements back toward stable from reduction for both statistics variation from 2013, due mostly to a high proportion of male harvest during that period (Table 13, Figures 50 and 51). However, the long-term trend of the percent of adult males in the harvest, decreasing since 1998, suggests that the adult male segment of the population has been reduced. The proportion of adults in the female harvest has decreased in recent years (Figure 52), indicating that subadult females are currently absorbing most of the female harvest. Because hunt area 7 makes up the majority of harvest for this BMU, separate analysis of hunt area 7 shows similar trends (Figures 53-56).

Overall, harvest pressure appears to be affecting adult males, but has had less affect on females. Data suggest a fluctuating cycle of high and low harvests with varying proportions of males and females indicating possible reductions followed by recruitment of subadults, specifically males, which make up a slightly increasing proportion of the harvest.

Table 12. Laramie Peak BMU female mortality limits, harvest (legal/illegal harvest) by sex and season, and season closure dates for the 2014-2016 black bear hunting seasons. Yellow cells indicate season closure prior to the closing date listed in regulation (Appendix I) after reaching the female mortality limit.

			Female Mortality Limit		Harvest				Season Closure Dates	
					Spring		Fall			
YEAR	MGMT UNIT	HUNT AREA	Spring	Fall	M	F	M	F	Spring	Fall
2014	LARAMIE PEAK	7	4	4	7	1	7	2	5/31/14	10/31/14
		33	3	2	2	0	2	0	5/31/14	10/31/14
2015	LARAMIE PEAK	7	4	4	6	4	6	4	5/27/15	9/13/15
		33	3	2	0	1	3	1	5/31/15	10/31/15
2016	LARAMIE PEAK	7	4	4	9	4	7	4	5/27/16	9/15/16
		33	3	2	3	0	2	1	5/31/16	10/31/16

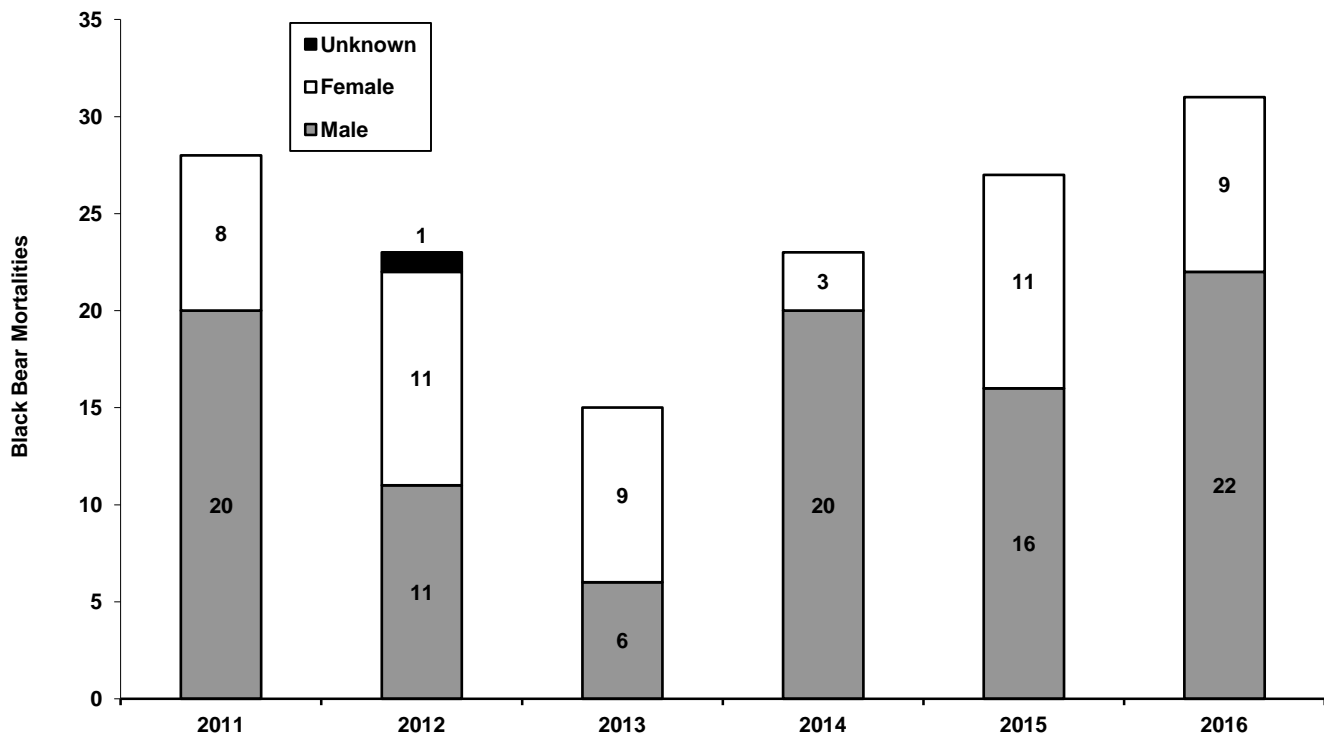


Figure 48. Number of black bear mortalities of all causes in Laramie Peak BMU by sex, 2011-2016.

Table 13. Harvest criteria for Laramie Peak BMU legal black bear harvest, 2014-2016. Criteria are presented by objective as 3-year averages of percent adult males in the total harvest, percent females in the total harvest, and percent adult females in the female harvest.

Year	Objective	Harvest Criteria		
		% Adult ^a Males in Total Harvest	% Females in Total Harvest	% Adult ^a Females in Female Harvest
	Population Reduction	< 25%	> 40%	> 55%
	Stable Population	25 – 35%	30 – 40%	45 – 55%
	Population Increase	> 35%	< 30%	< 45%
2014-2016		22.4	28.1	32.2

^a Adults classified as males and females ≥ 5 years of age based on tooth cementum annuli.

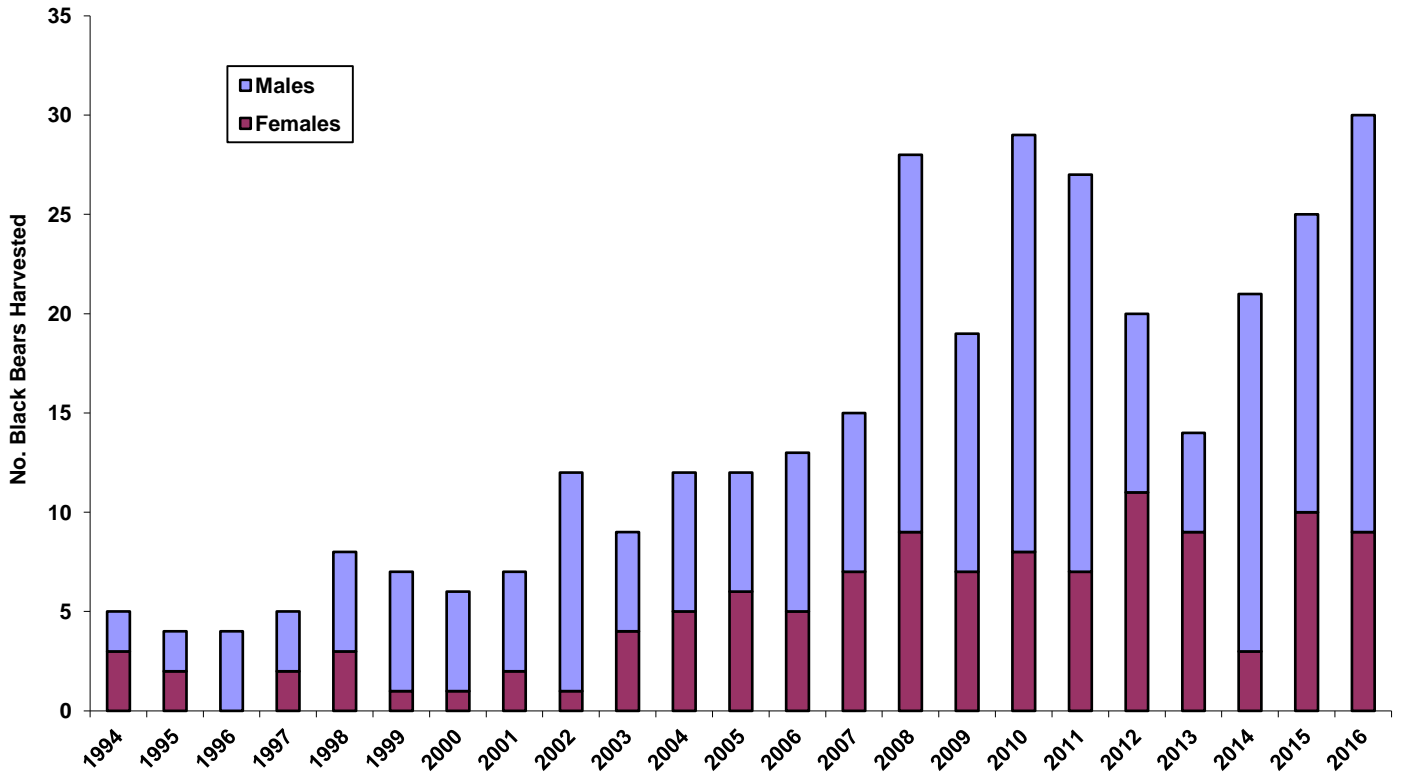


Figure 49. Legal harvest of black bears in Laramie Peak BMU, 1994-2016.

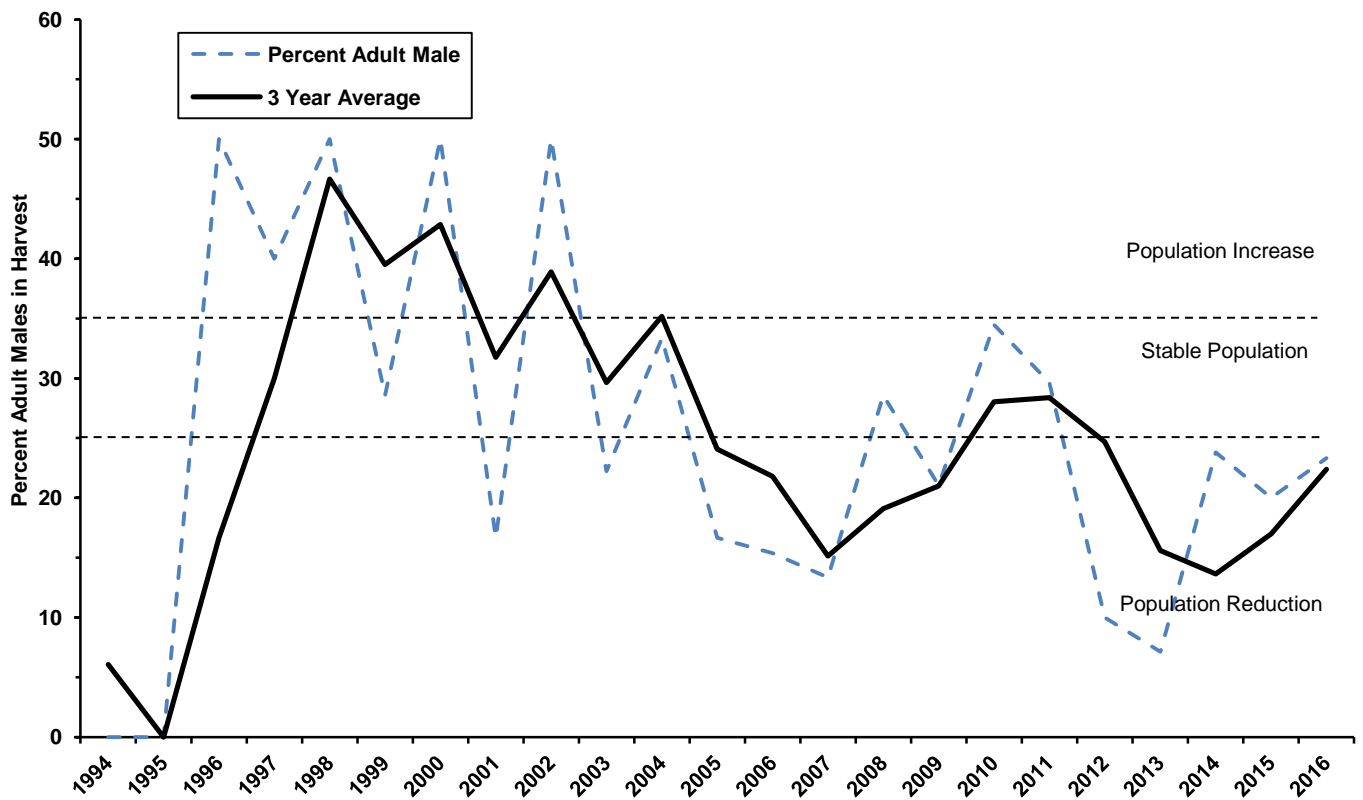


Figure 50. Percent adult males in the total legal black bear harvest in Laramie Peak BMU, 1994-2016.

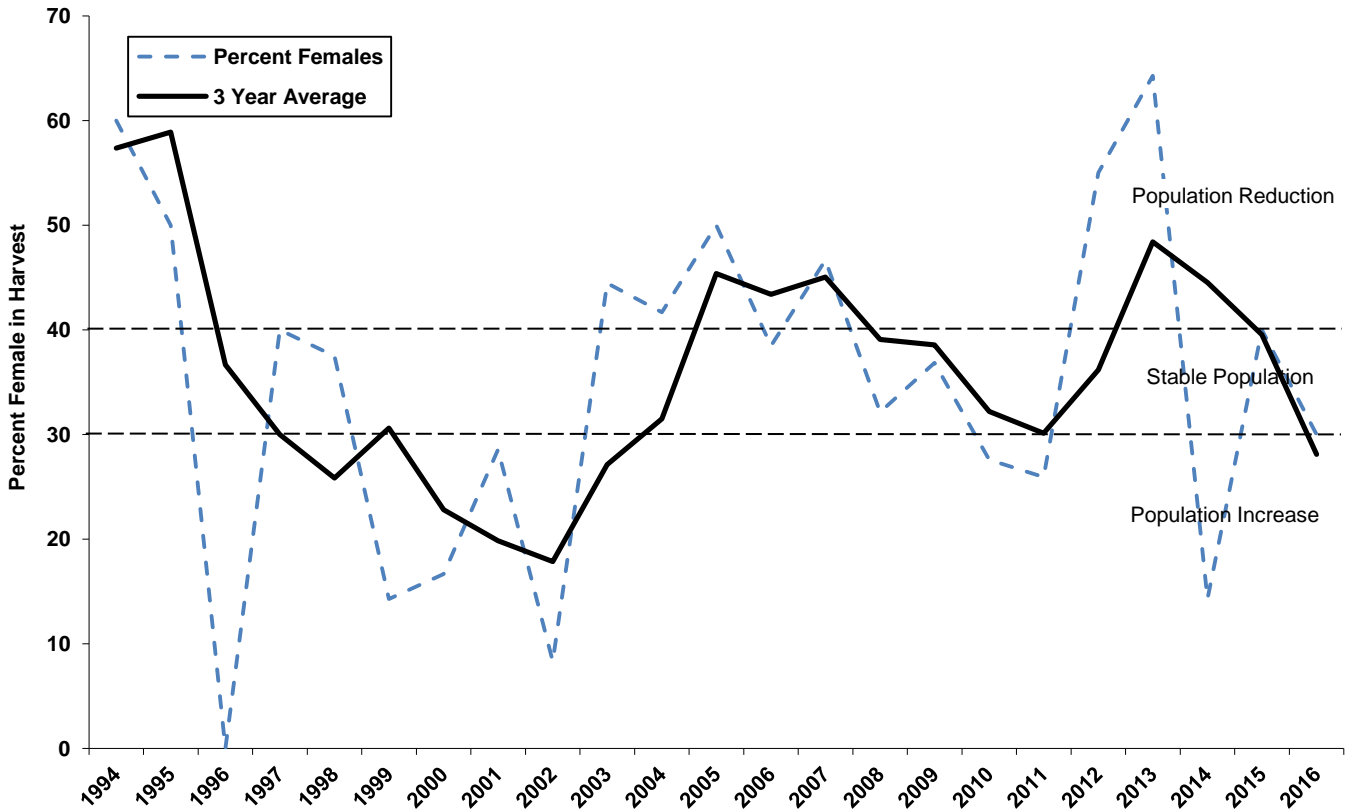


Figure 51. Percent females of the total legal black bear harvest in Laramie Peak BMU, 1994-2016.

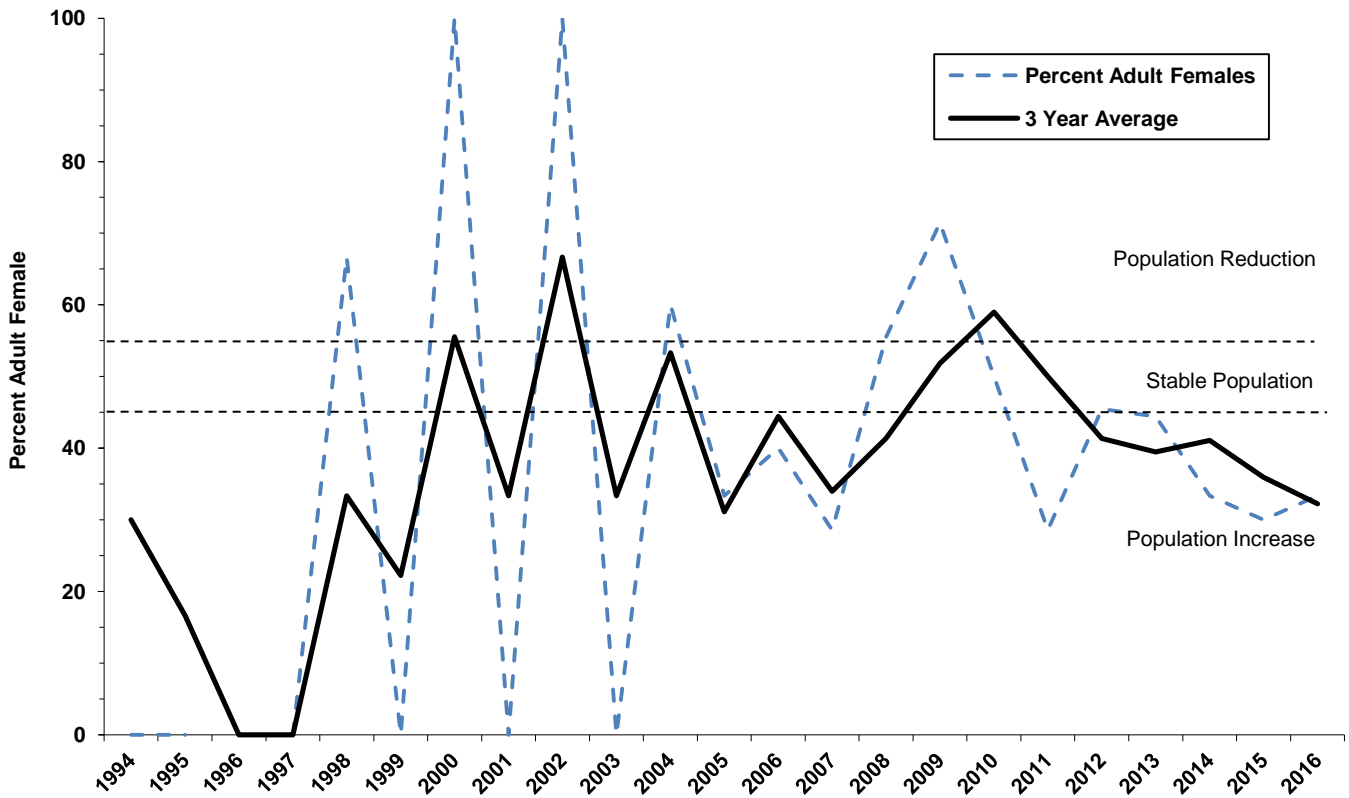


Figure 52. Percent adult females of the total female legal harvest in Laramie Peak BMU, 1994-2016.

Harvest Criteria by Harvest Limit – Hunt Area 7

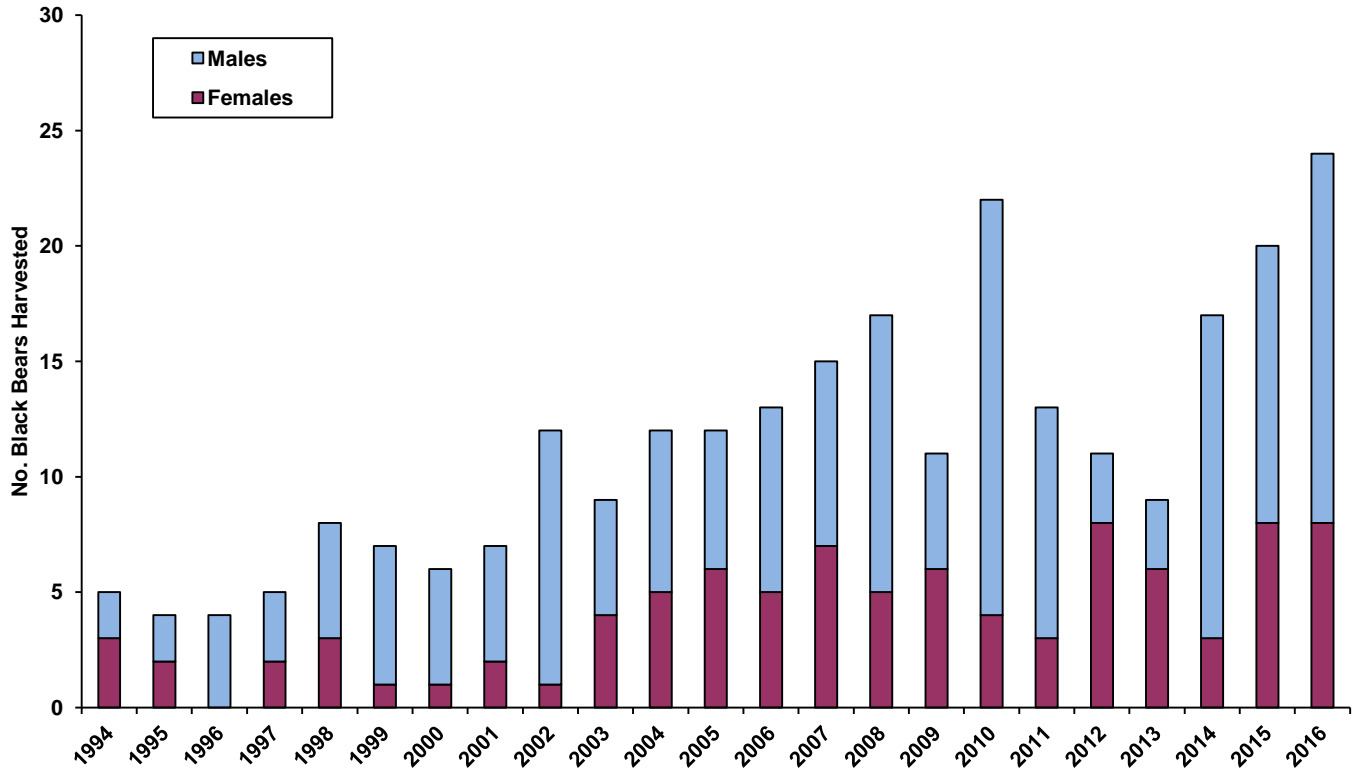


Figure 53. Legal harvest of black bears in hunt area 7 of Laramie Peak BMU, 1994-2016.

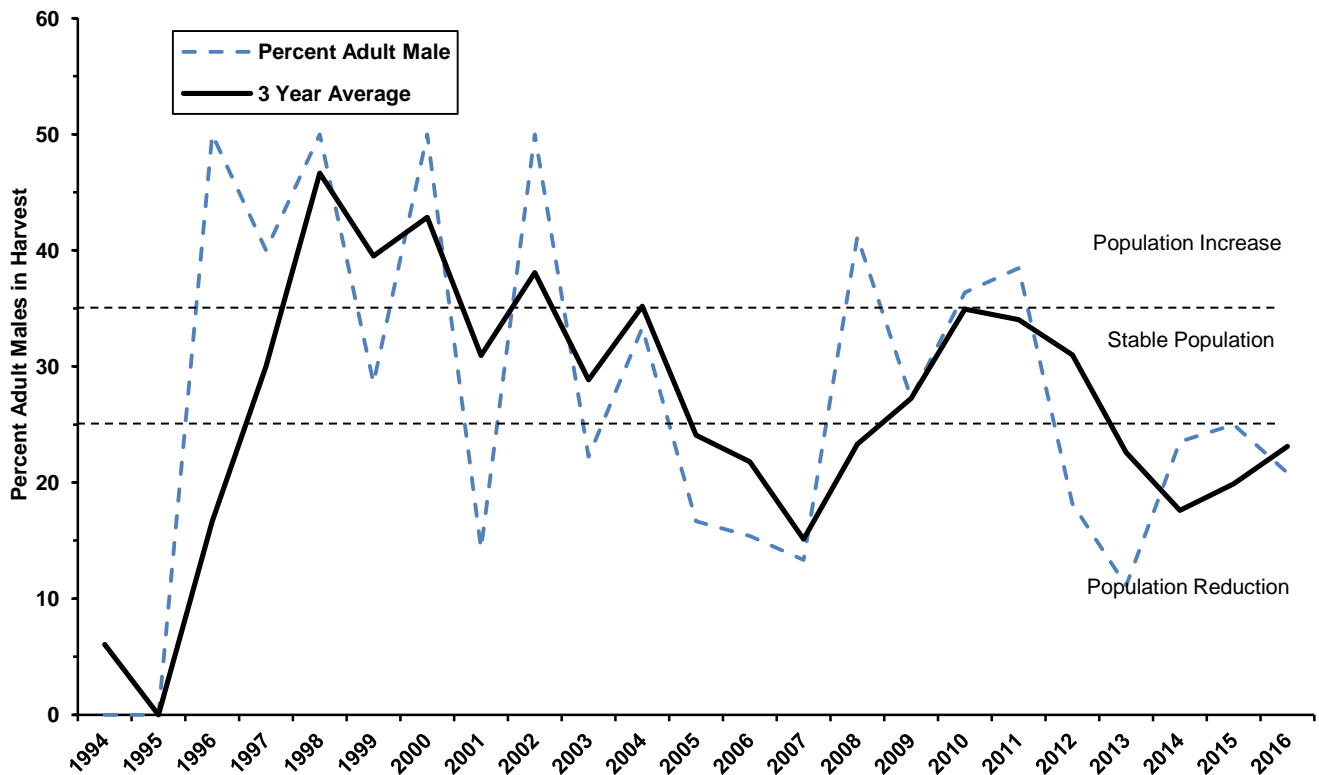


Figure 54. Percent adult males in the total legal black bear harvest in hunt area 7 of Laramie Peak BMU, 1994-2016.

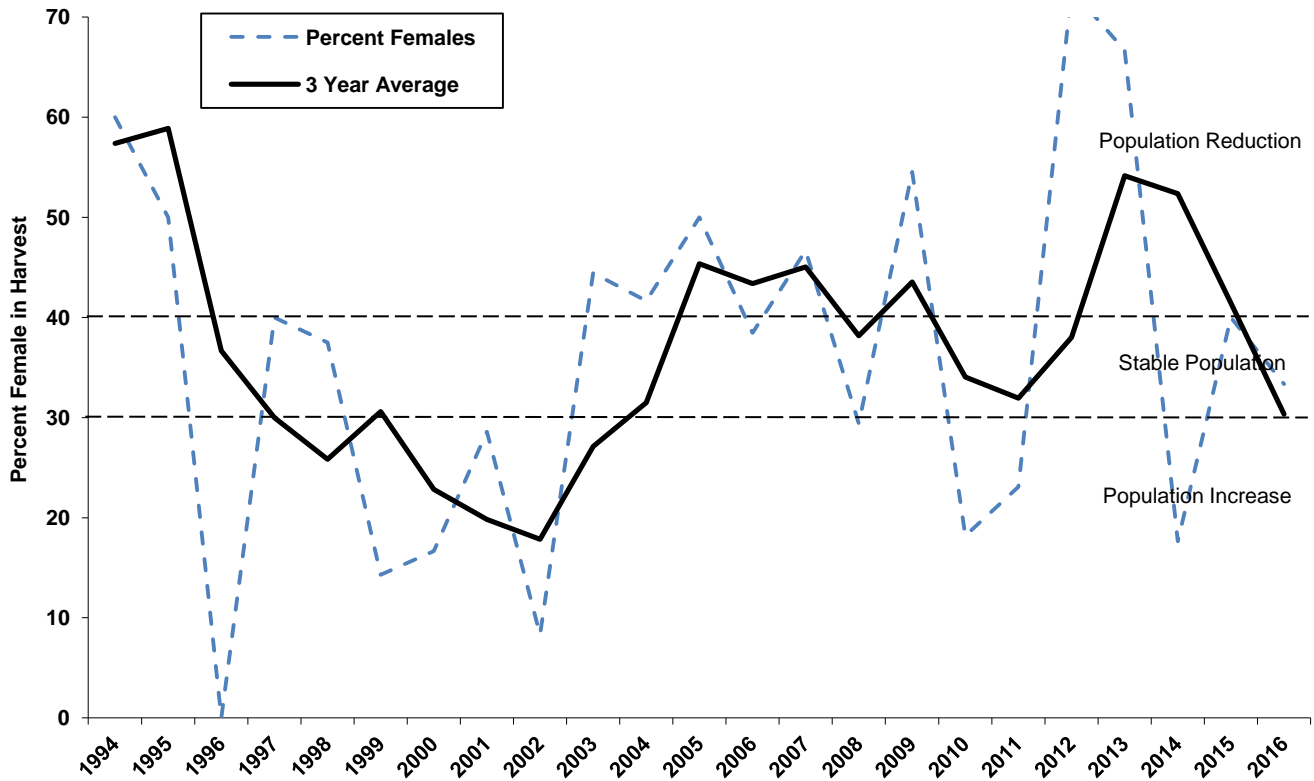


Figure 55. Percent females of the total legal black bear harvest in hunt area 7 of Laramie Peak BMU, 1994-2016.

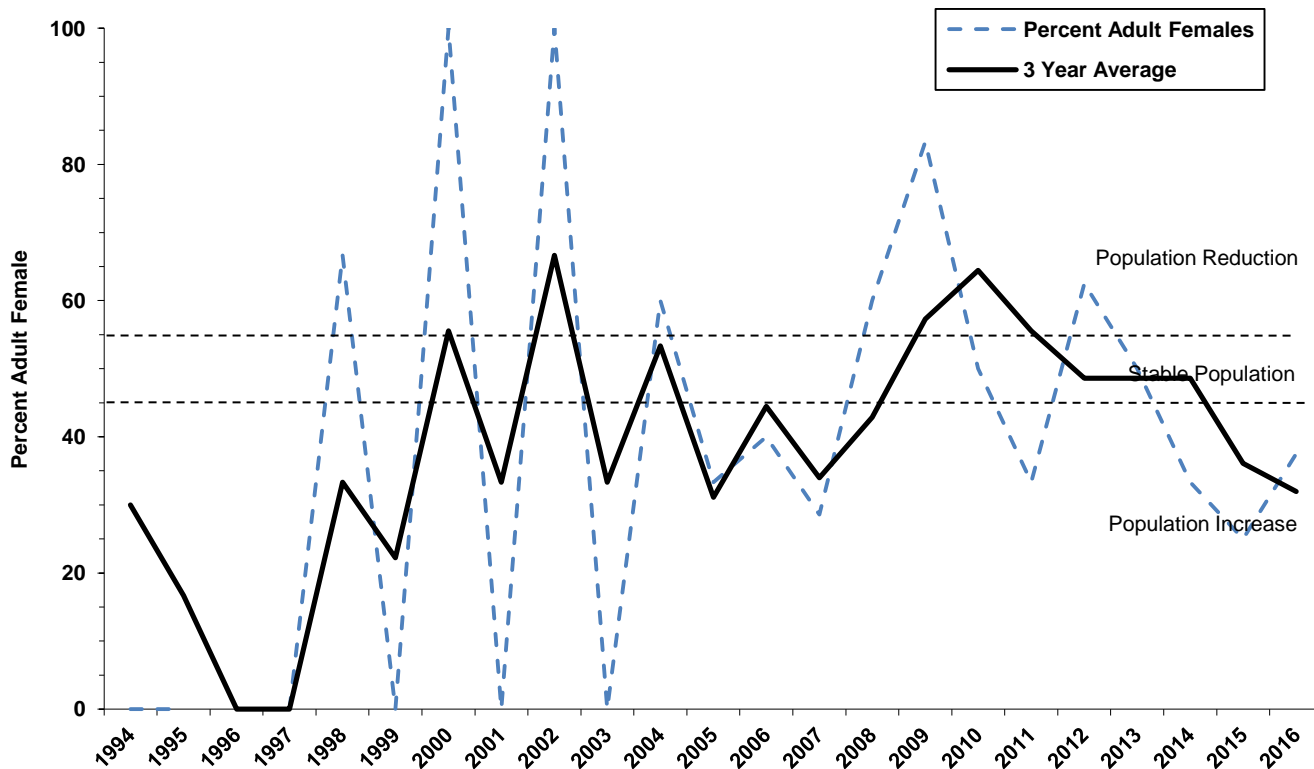


Figure 56. Percent adult females of the total female legal harvest in hunt area 7 of Laramie Peak BMU, 1994-2016.

SNOWY RANGE BEAR MANAGEMENT UNIT (502)

2016 Black Bear Mortality

Female mortality limits for the Snowy Range BMU were increased by 1 in the spring and 3 in the fall season for the 2014 – 2016 harvest cycle (Table 14). With the exception of a spike in harvest in 2015, total mortalities and harvest were relatively stable for the 2014-2016 cycle (Figures 57 and 58). The spike in 2015 consisted of a large increase in both adult and subadult male harvest during the spring season of that year. The current harvest trends show that, with the exception of 2015, harvest levels have been steady since the mid 2000s. The adult male and percent female criteria are moving back into the population increase range, indicating a continued upward trend in the black bear population for this BMU (Table 15, Figures 59 and 60). The percent of adults in the female harvest has fluctuated around the stable range (Figure 61).

Immigration from the adjacent black bear population in Colorado likely provides a source of bears that contribute to the upward trend of this population, with moderate harvest effects allowing for a slight rebound in the population.

Table 14. Snowy Range BMU female mortality limits, harvest (legal/illegal harvest) by sex and season, and season closure dates for the 2014-2016 black bear hunting seasons. Yellow cells indicate season closure prior to the closing date listed in regulation (Appendix I) after reaching the female mortality limit.

			Female Mortality Limit		Harvest				Season Closure Dates	
					Spring		Fall			
YEAR	MGMT UNIT	HUNT AREA	Spring	Fall	M	F	M	F	Spring	Fall
2014	SNOWY RANGE	8	5	6	10	3	9	4	6/7/14	10/31/14
2015	SNOWY RANGE	8	5	6	21	4	9	7	6/7/15	10/14/15
2016	SNOWY RANGE	8	5	6	10	4	5	4	6/7/16	10/31/16

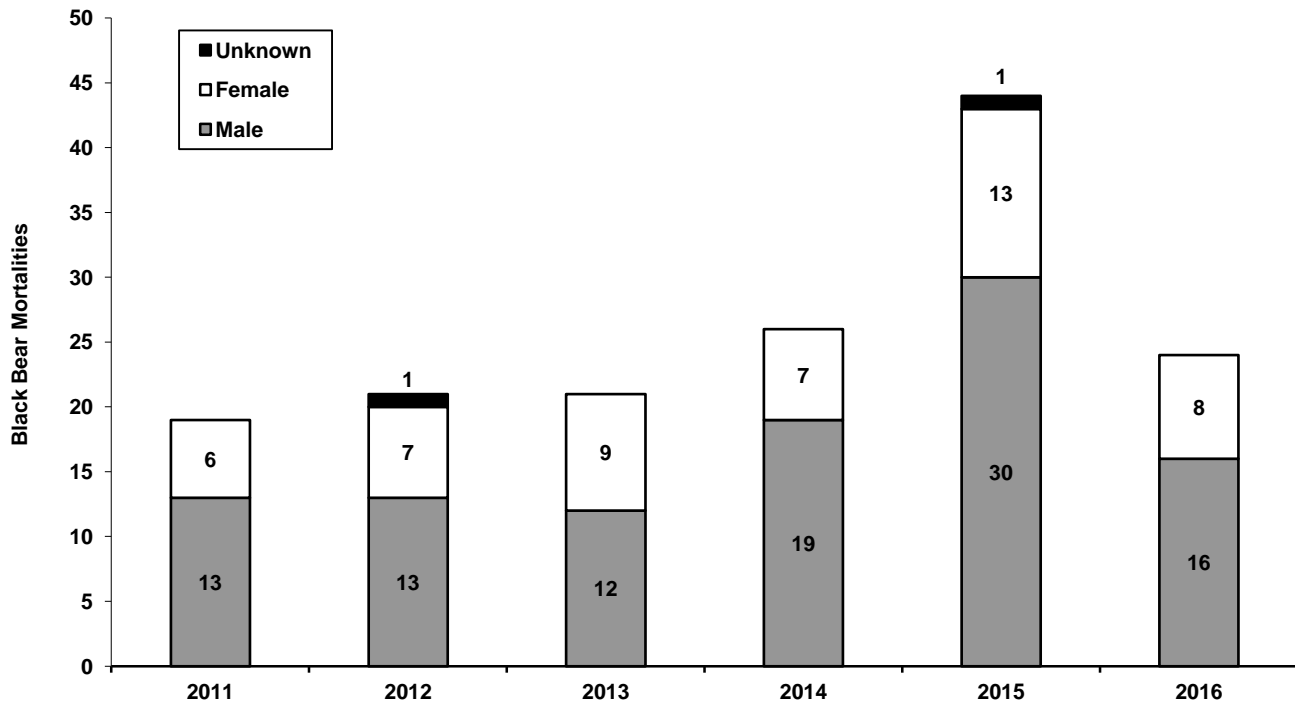


Figure 57. Number of black bear mortalities of all causes in Snowy Range BMU by sex, 2011-2016.

Table 15. Harvest criteria for Snowy Range BMU legal black bear harvest, 2014-2016. Criteria are presented by objective as 3-year averages of percent adult males in the total harvest, percent females in the total harvest, and percent adult females in the female harvest.

Year	Objective	Harvest Criteria		
		% Adult ^a Males in Total Harvest	% Females in Total Harvest	% Adult ^a Females in Female Harvest
	Population Reduction	< 25%	> 40%	> 55%
	Stable Population	25 – 35%	30 – 40%	45 – 55%
	Population Increase	> 35%	< 30%	< 45%
2014-2016		35.2	29.4	44.0

^a Adults classified as males and females ≥ 5 years of age based on tooth cementum annuli.

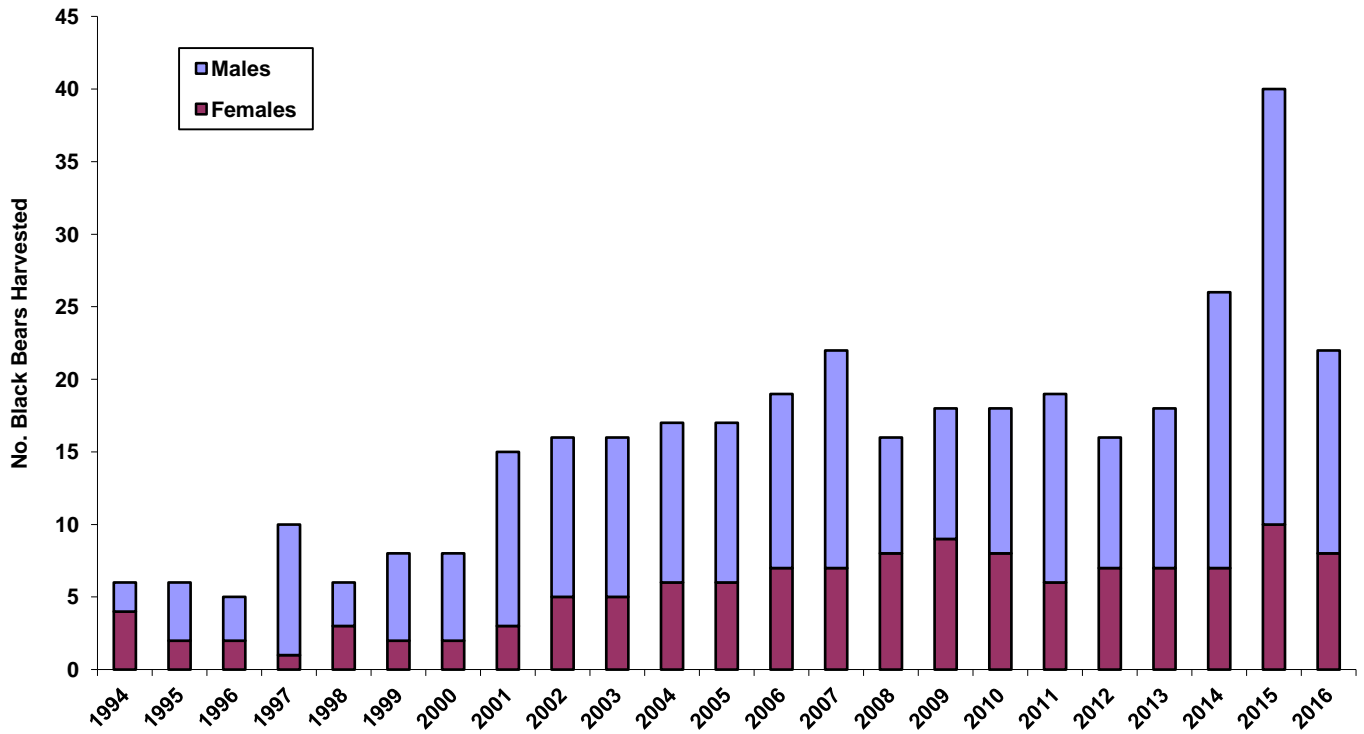


Figure 58. Legal harvest of black bears in Snowy Range BMU, 1994-2016.

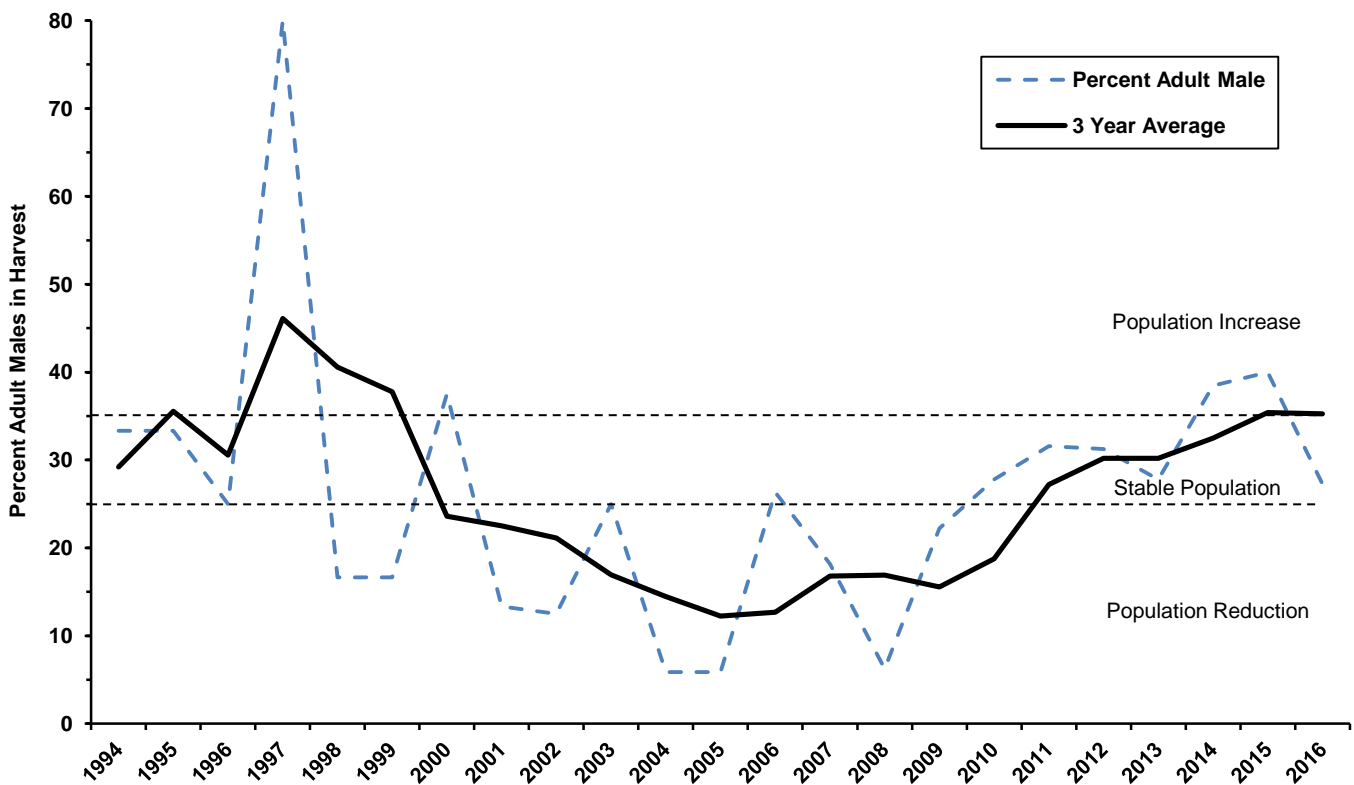


Figure 59. Percent adult males in the total legal black bear harvest in Snowy Range BMU, 1994-2016.

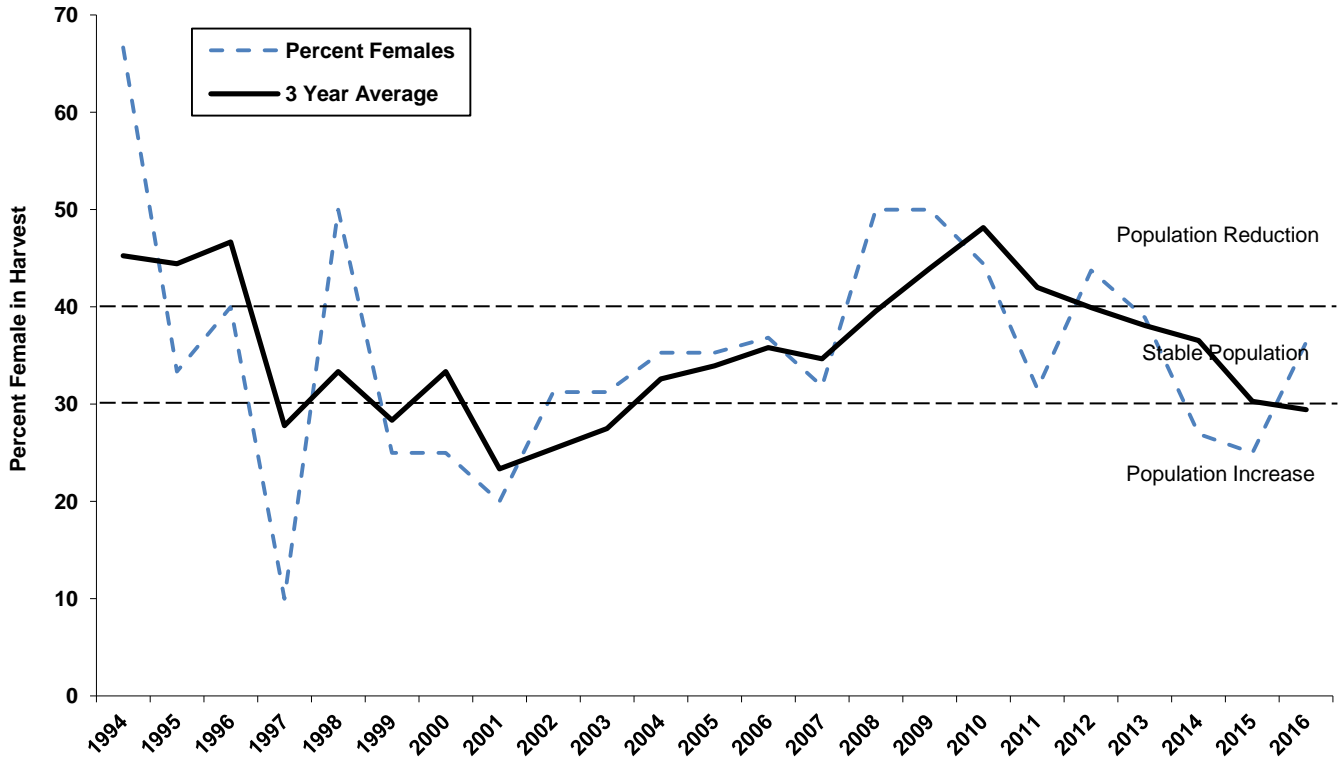


Figure 60. Percent females of the total legal black bear harvest in Snowy Range BMU, 1994-2016.

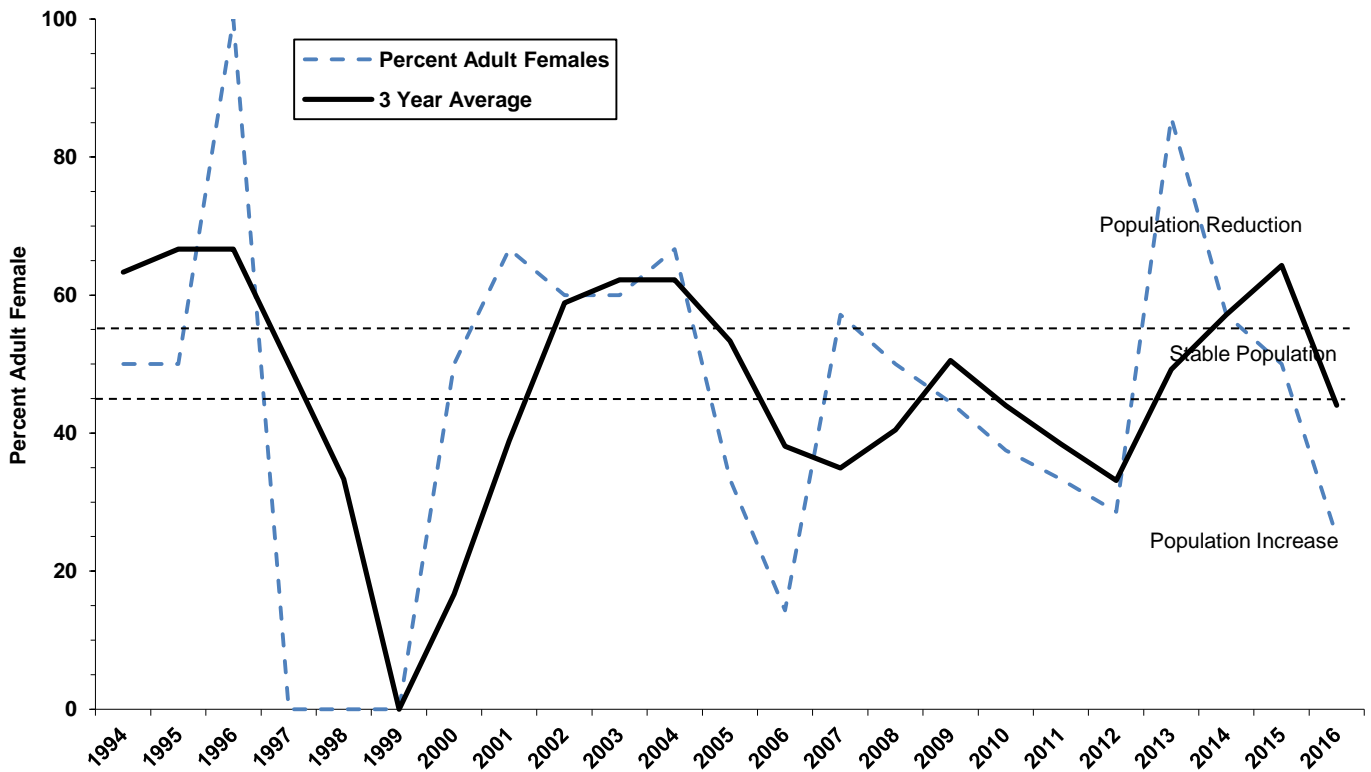


Figure 61. Percent adult females of the total female legal harvest in Snowy Range BMU, 1994-2016.

WIND RIVER RANGE BEAR MANAGEMENT UNIT (601)

2016 Black Bear Mortality

Female mortality limits increased by 1 in spring and 1 in the fall seasons for hunt area 13, while the mortality limits for all other hunt areas in the Wind River BMU remained unchanged for the 2014 – 2016 harvest cycle (Table 16). Total black bear mortalities and legal harvest in BMU 601 were comparable to that of 2011-2013 (Figures 62 and 63). The percent of adult males and the percent of females in the harvest remained in the stable to increase range and the percent of adults in the female harvest fluctuating around stable (Table 17; Figures 64-66). Analyzed independently, hunt area 13 shows similar trends to the overall BMU (Figures 67-70); however the decreasing percent of adult males in the harvest since 2011 indicate reductions to that cohort in recent years (Figure 68). However, the percent female (Figure 69) and percent adult female (Figure 70) criteria both indicate that females in hunt area 13 are minimally impacted by harvest. In hunt area 19, the increasing trend in the percent adult males and the relatively stable female criteria suggest minimal impacts of harvest on the black bear population in this hunt area (Figures 71-74).

Overall, the black bear population in the Wind River BMU appears to be generally stable and experiencing light to moderate harvest effects, with adult males in hunt area 13 showing some signs of reduction.

Table 16. Wind River BMU female mortality limits, harvest (legal/illegal harvest) by sex and season, and season closure dates for the 2014-2016 black bear hunting seasons. Yellow cells indicate season closure prior to the closing date listed in regulation (Appendix I) after reaching the female mortality limit.

			Female Mortality Limit		Harvest				Season Closure Dates	
					Spring		Fall			
YEAR	MGMT UNIT	HUNT AREA	Spring	Fall	M	F	M	F	Spring	Fall
2014	WIND RIVER	13	5	5	8	6	2	2	6/13/14	10/31/14
		19	10	8	7	3	4	1	6/15/14	11/15/14
		28	4	4	1	0	2	0	6/15/14	10/31/14
		31	2	2	0	0	0	0	6/15/14	10/31/14
2015	WIND RIVER	13	5	5	10	5	10	2	6/14/15	10/31/15
		19	10	8	10	1	5	4	6/15/15	11/15/15
		28	4	4	4	0	3	1	6/15/15	10/31/15
		31	2	2	0	0	1	0	6/15/15	10/31/15
2016	WIND RIVER	13	5	5	9	3	1	5	6/15/16	10/31/15
		19	10	8	6	4	5	3	6/15/16	11/15/15
		28	4	4	2	0	1	1	6/15/16	10/31/15
		31	2	2	0	0	0	0	6/15/16	10/31/15

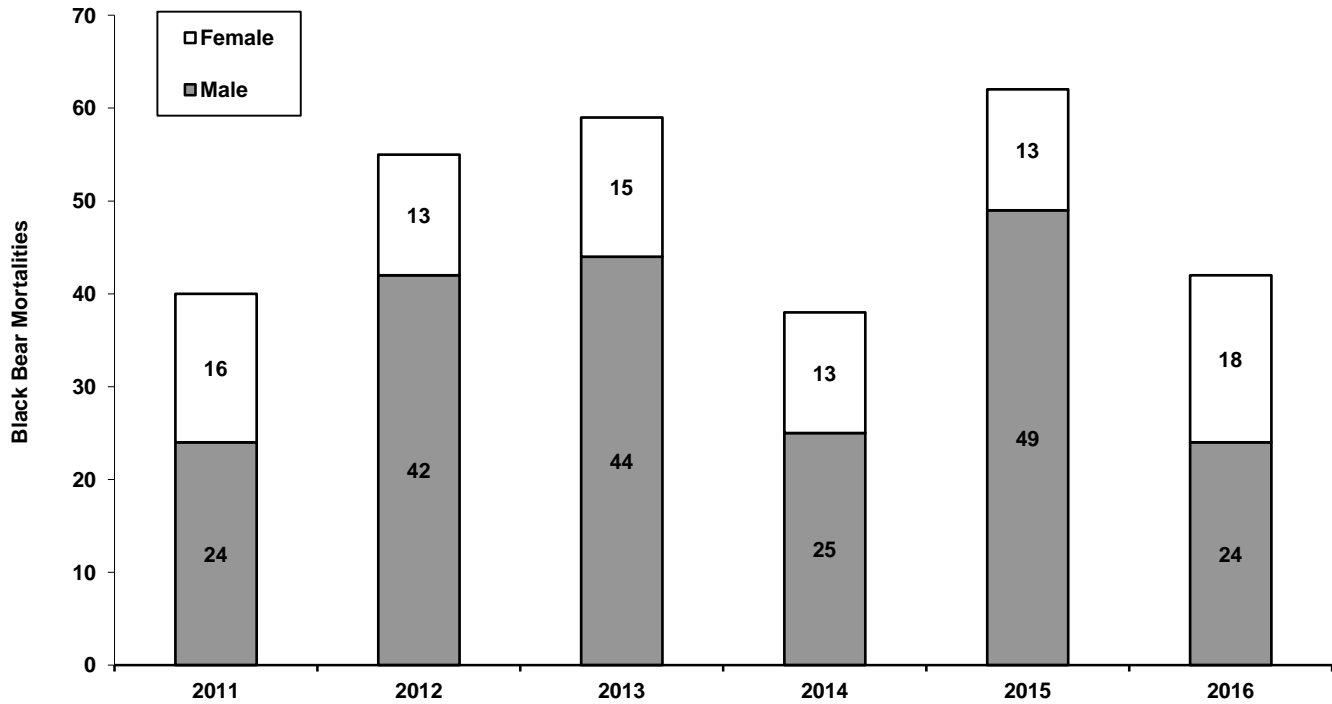


Figure 62. Number of black bear mortalities of all causes in Wind River BMU by sex, 2011-2016.

Table 17. Harvest criteria for Wind River BMU legal black bear harvest, 2014-2016. Criteria are presented by objective as 3-year averages of percent adult males in the total harvest, percent females in the total harvest, and percent adult females in the female harvest.

Year	Objective	Harvest Criteria		
		% Adult ^a Males in Total Harvest	% Females in Total Harvest	% Adult ^a Females in Female Harvest
	Population Reduction	< 25%	> 40%	> 55%
	Stable Population	25 – 35%	30 – 40%	45 – 55%
	Population Increase	> 35%	< 30%	< 45%
2014-2016		30.5	32.2	53.1

^a Adults classified as males and females ≥ 5 years of age based on tooth cementum annuli.

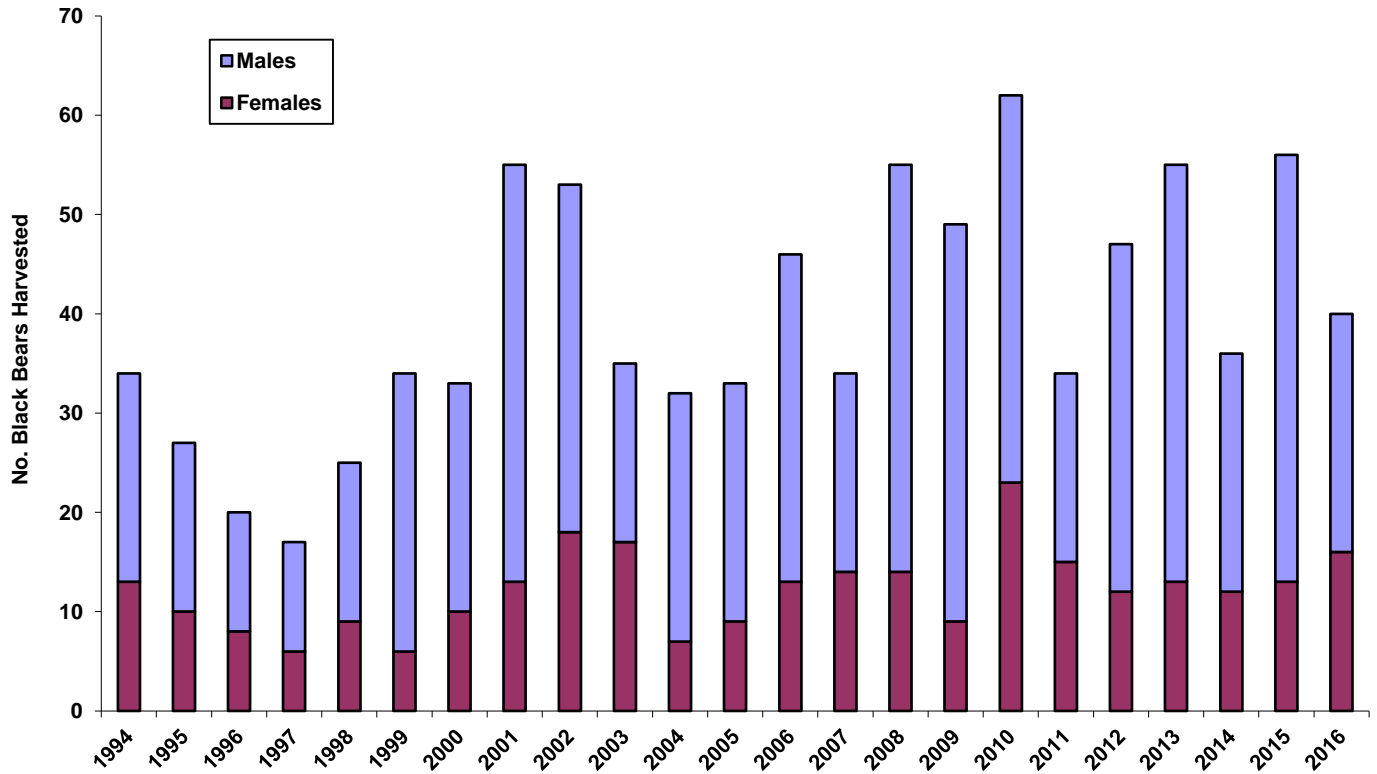


Figure 63. Legal harvest of black bears in Wind River BMU, 1994-2016.

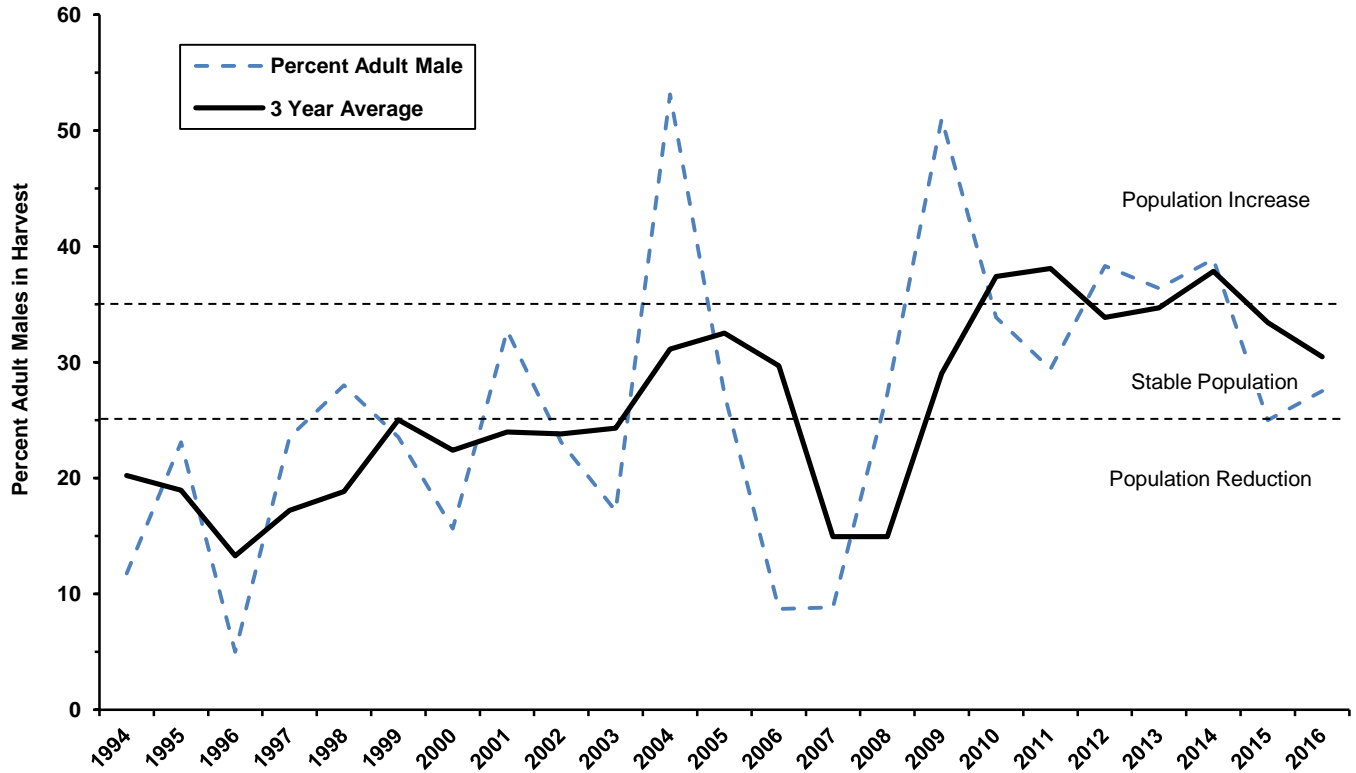


Figure 64. Percent adult males in the total legal black bear harvest in Wind River BMU, 1994-2016.

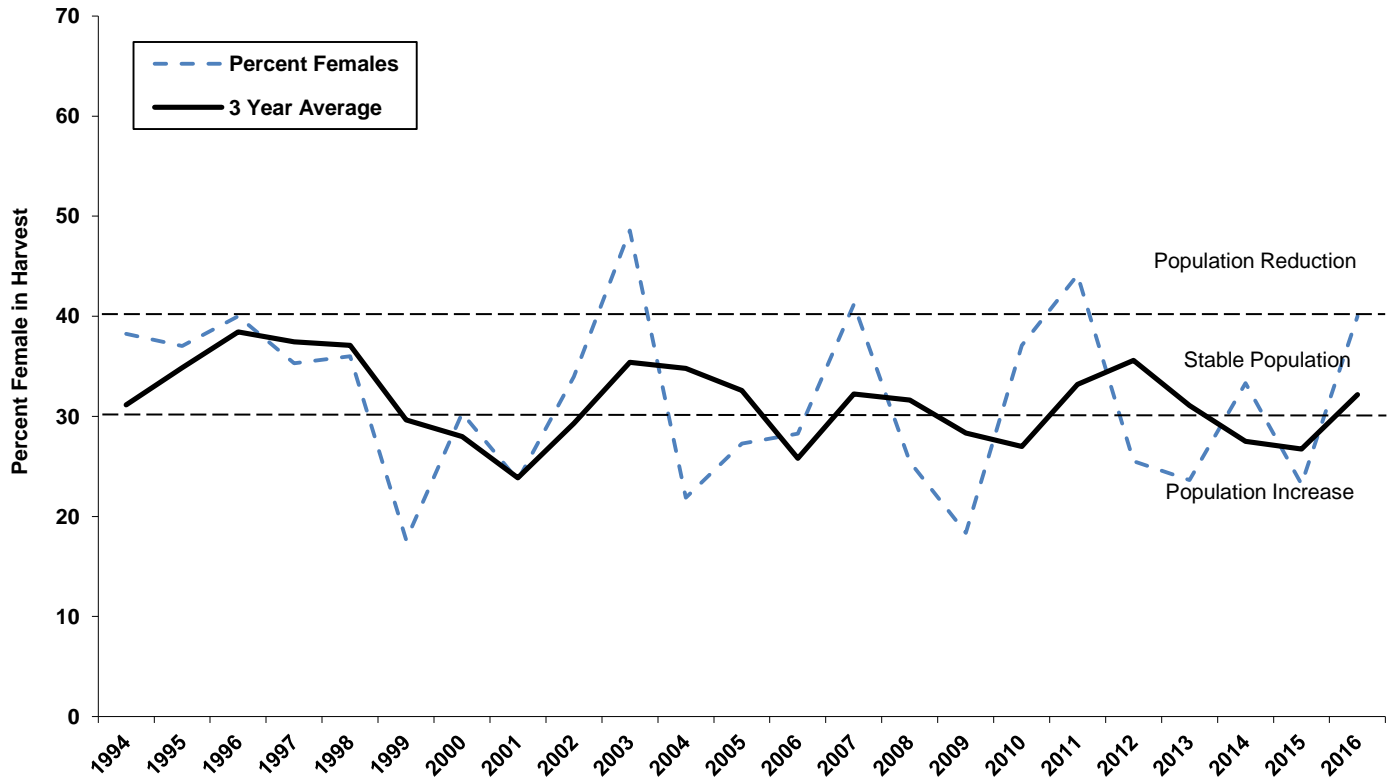


Figure 65. Percent females of the total legal black bear harvest in Wind River BMU, 1994-2016.

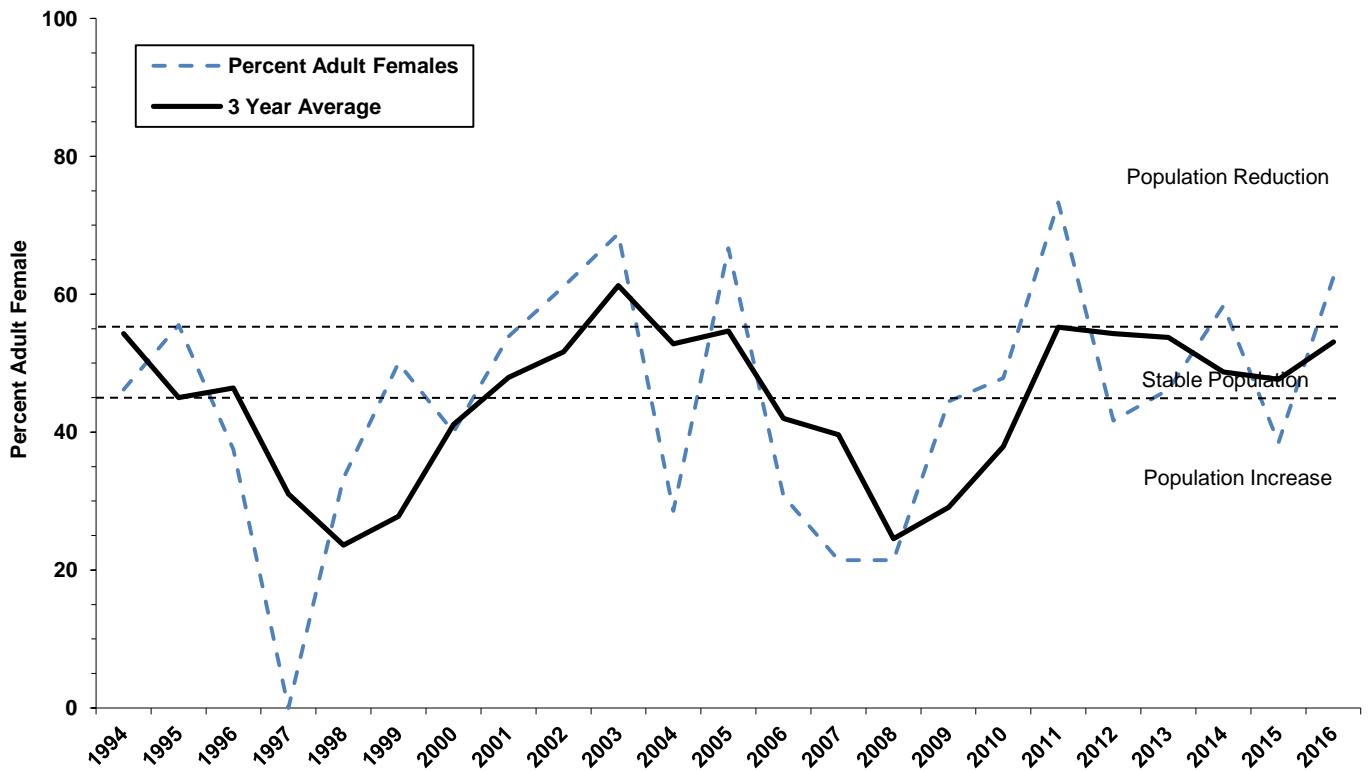


Figure 66. Percent adult females of the total female legal harvest in Wind River BMU, 1994-2016.

Harvest Criteria by Harvest Limit – Hunt Area 13

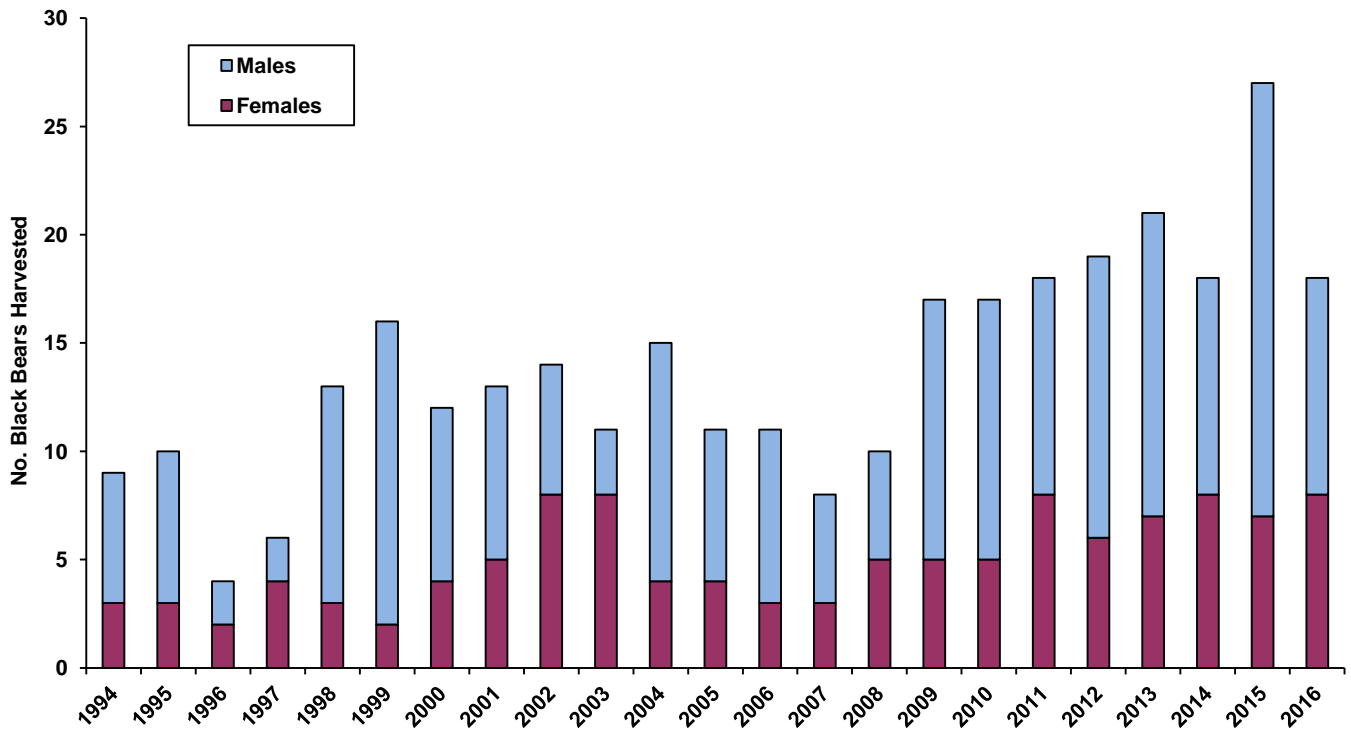


Figure 67. Legal harvest of black bears in hunt area 13 of Wind River BMU, 1994-2016.

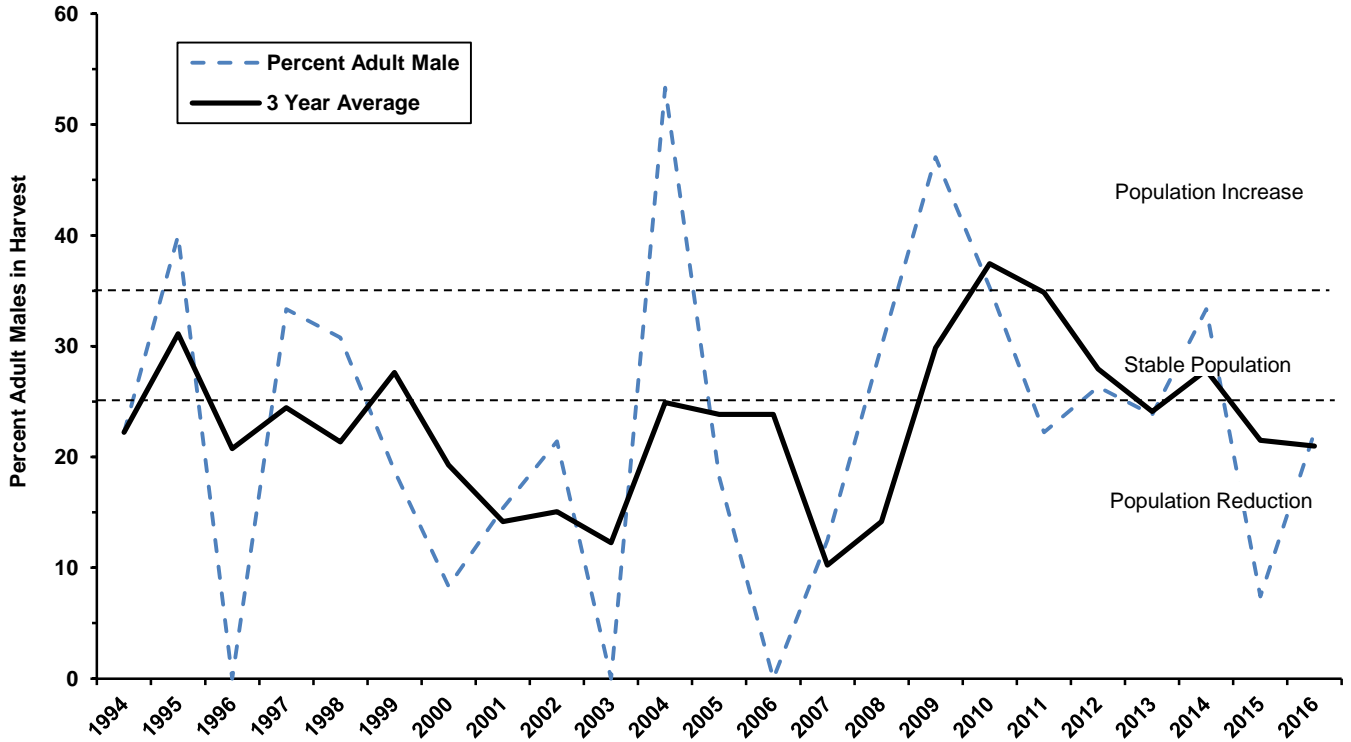


Figure 68. Percent adult males in the total legal black bear harvest in hunt area 13 of Wind River BMU, 1994-2016.

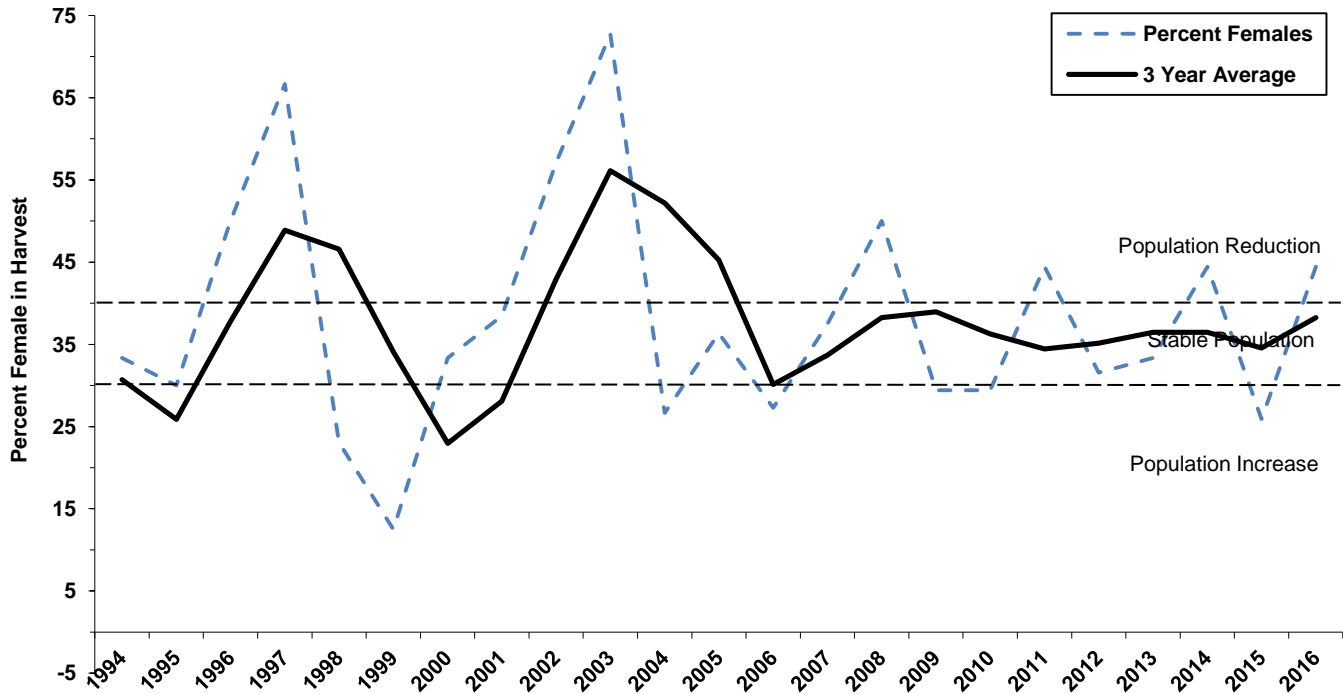


Figure 69. Percent females of the total legal black bear harvest in hunt area 13 of Wind River BMU, 1994-2016.

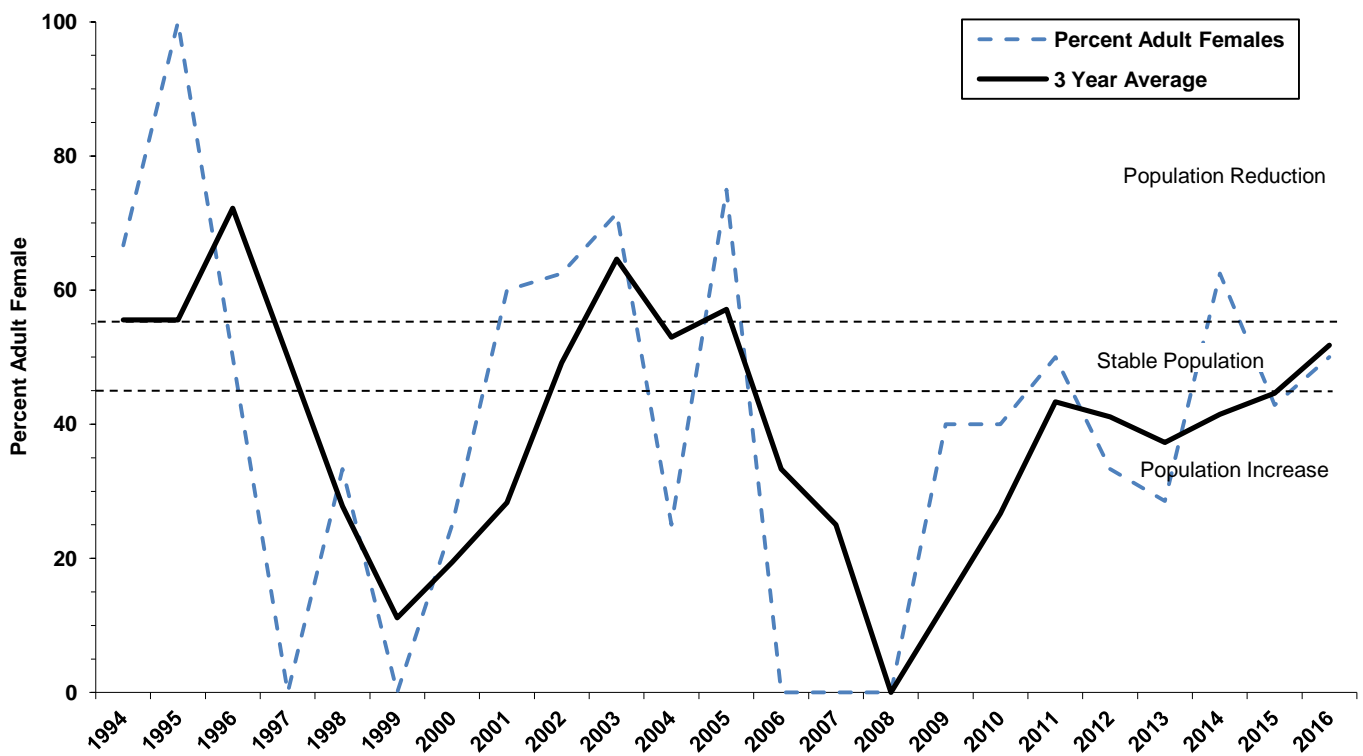


Figure 70. Percent adult females of the total female legal harvest in hunt area 13 of Wind River BMU, 1994-2016.

Harvest Criteria by Harvest Limit – Hunt Area 19

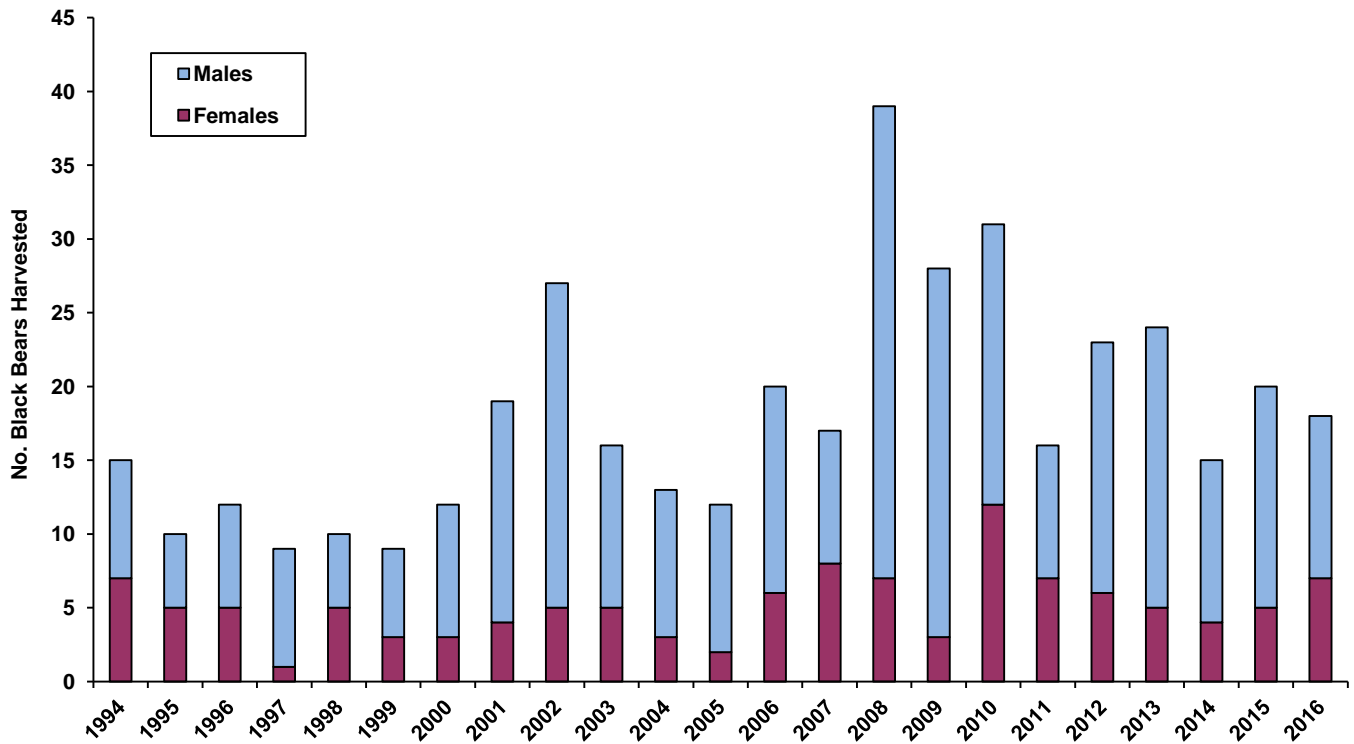


Figure 71. Legal harvest of black bears in hunt area 19 of Wind River BMU, 1994-2016.

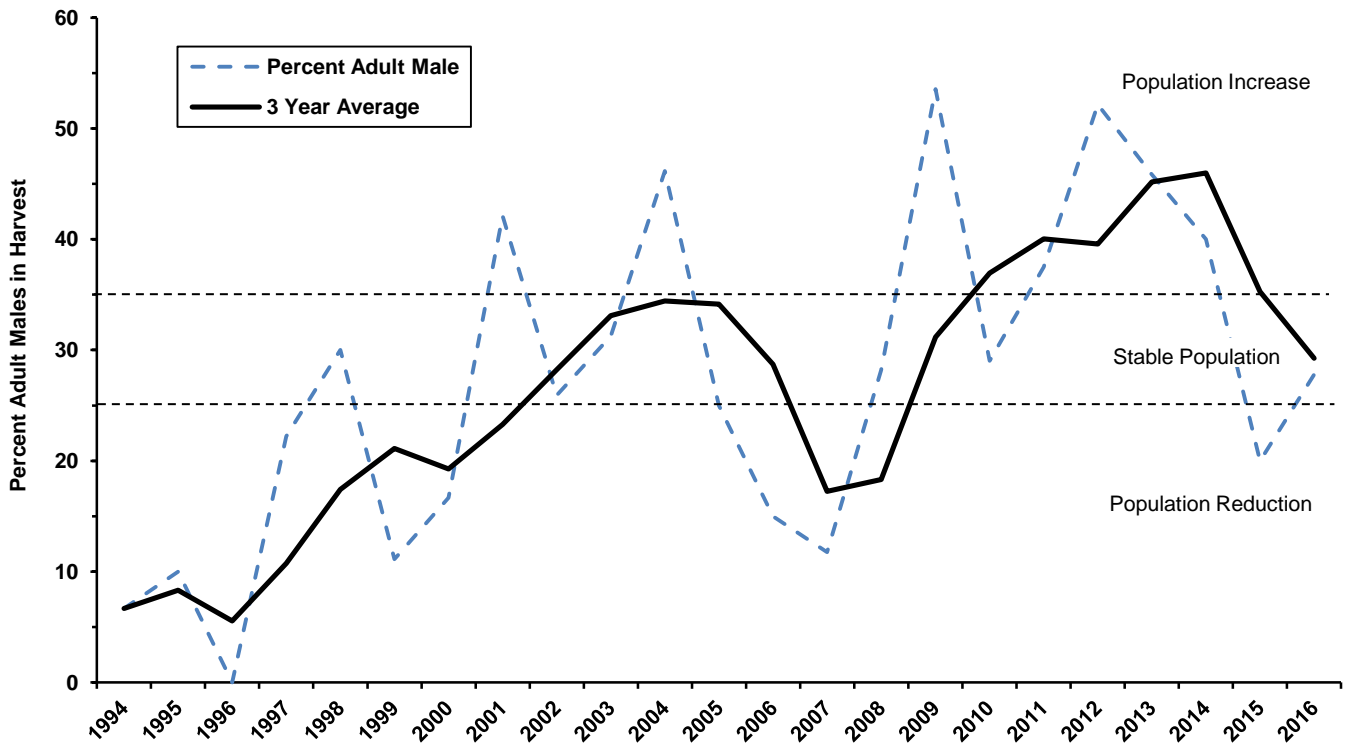


Figure 72. Percent adult males in the total legal black bear harvest in hunt area 19 of Wind River BMU, 1994-2016.

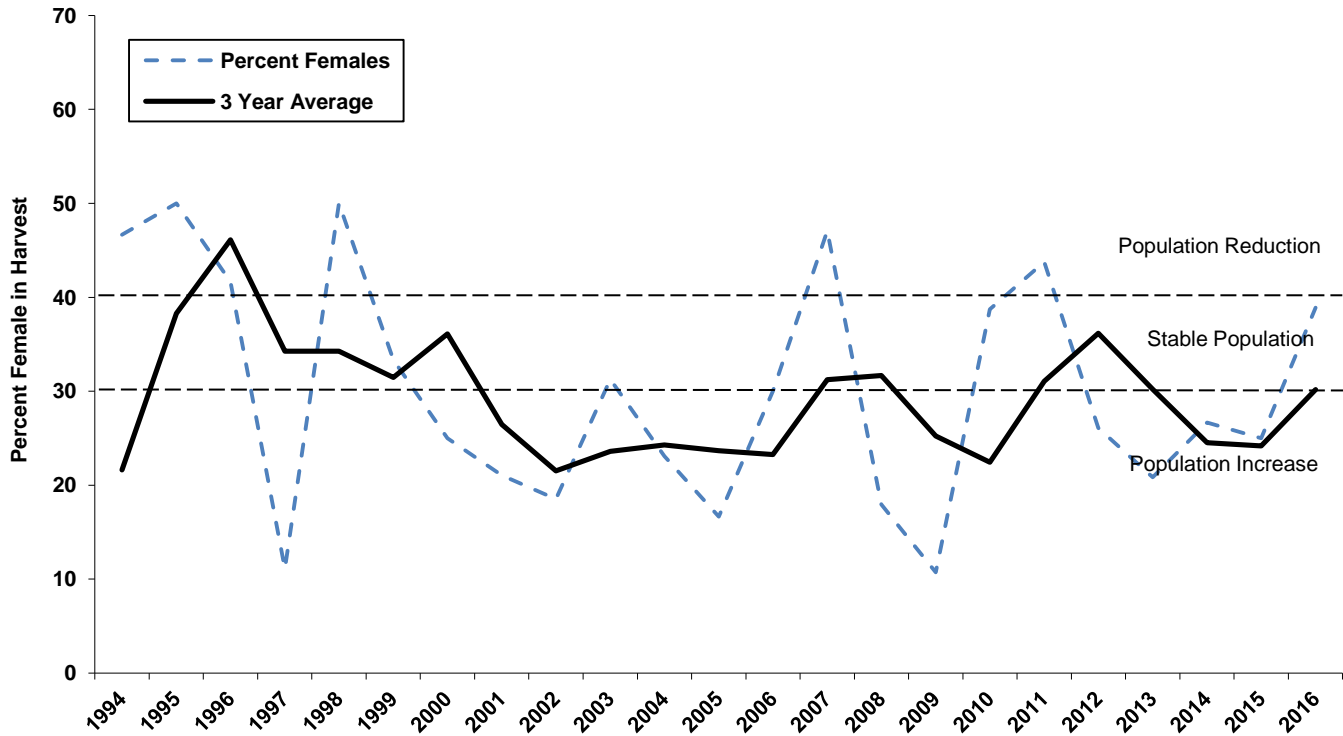


Figure 73. Percent females of the total legal black bear harvest in hunt area 19 of Wind River BMU, 1994-2016.

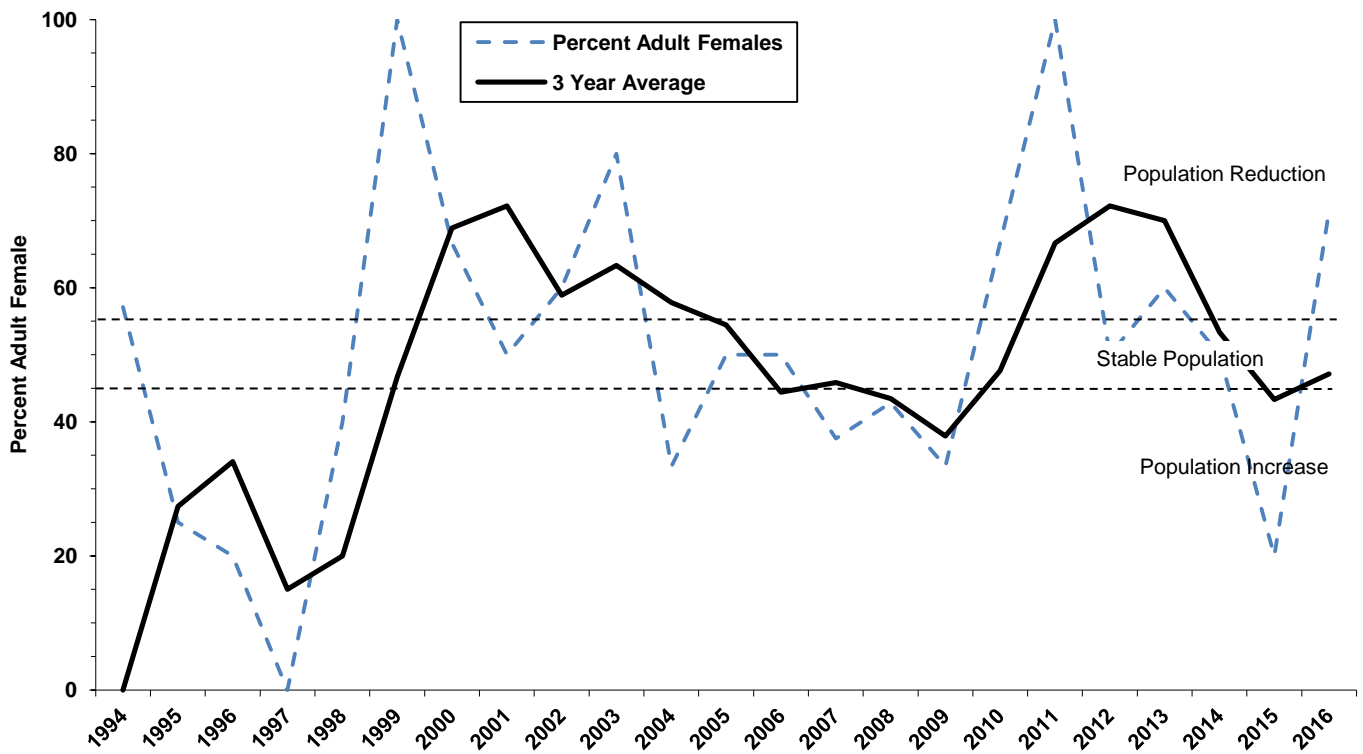


Figure 74. Percent adult females of the total female legal harvest in hunt area 19 of Wind River BMU, 1994-2016.

STATEWIDE HUNT AREA 35

During the season-setting process prior to the 2011-2013 cycle, hunt area 35 was created to include all areas of Wyoming that previously did not fall within established hunt areas. Although there are pockets of suitable habitat, this area is not considered quality black bear habitat and contains few black bears. However, black bears, especially subadult males dispersing from higher quality habitats, may move through and occasionally take up residence in some of the smaller, more isolated mountain ranges and riparian habitats of the state. Hunt area 35 was created to provide hunting opportunity for these ranges. The hunt area has no female mortality limit and the season runs from April 15 to June 15 and August 1 to October 31 (Table 18).

There were 23 total black bear mortalities in hunt area 35 during the 2014-2016 harvest cycle, 7 during the spring season and 16 during the fall. These mortalities were distributed throughout central and eastern Wyoming (Figure 75). These mortalities included 17 legal harvests, 2 damage removals, 1 vehicle-related, and 3 incidental human-caused mortalities. The number of legally harvested black bears decreased to 2 in 2016, from 8 in 2015 and 7 in 2014. All but 3 harvest-related mortalities occurred during the fall season (Table 18). Thirteen of the 23 mortalities were subadult males, which is expected given this cohort's tendency to disperse long distances in search of new areas to establish home ranges. Of note was a mortality in 2014 near the town of Lingle, only 20 miles from the Nebraska border as well as 3 legally harvested bears in the Bear Lodge Mountains of northeastern Wyoming (Figure 75).

Table 18. Statewide BMU female mortality limits, harvest (legal/illegal harvest) by sex and season, and season closure dates for the 2014-2016 black bear hunting seasons. All seasons for this BMU closed on the final date of the season as listed in regulation (Appendix I).

			Female Mortality Limit		Harvest				Season Closure Dates	
					Spring		Fall			
YEAR	MGMT UNIT	HUNT AREA	Spring	Fall	M	F	M	F	Spring	Fall
2014	STATEWIDE	35	NA	NA	3	0	3	1	6/15/14	10/31/14
2015	STATEWIDE	35	NA	NA	0	0	5	3	6/15/14	10/31/14
2016	STATEWIDE	35	NA	NA	0	0	1	1	6/15/14	10/31/14

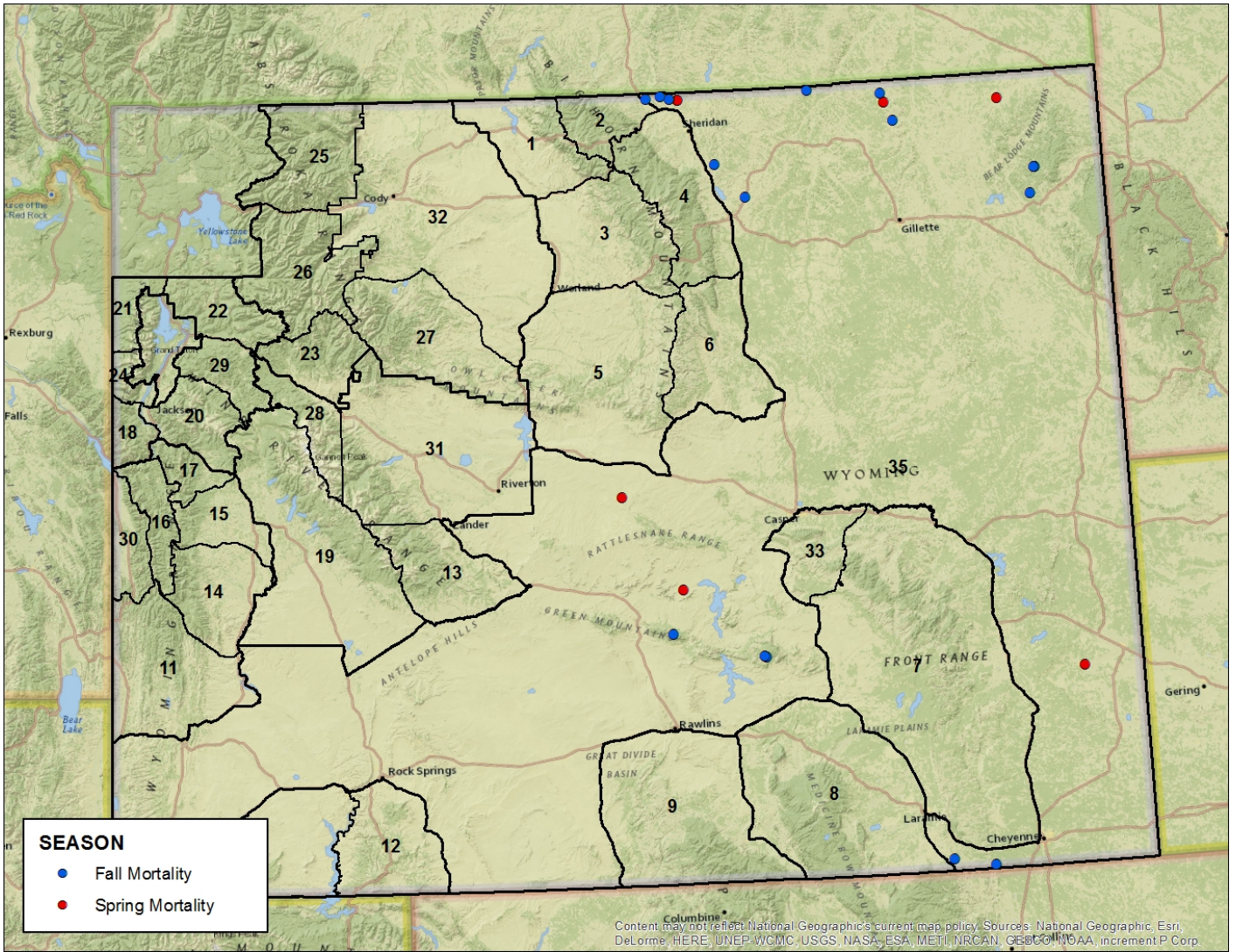


Figure 75. Statewide hunt area 35 total black bear mortalities by season, 2014-2016. Dots may represent more than one black bear mortality.

Appendix I. Wyoming black bear hunting season dates and seasonal female mortality limits by management unit and hunt area, 2014 – 2016.

Black Bear Management Units	Hunt Areas	Season Dates		Female Mortality Limits
		Archery	General	
Bighorns (301)	1, 2	May 1-14	May 15-June 15 Sept.1-Oct. 31	8 Spring 6 Fall
	3, 4	May 1-14	May 1-June 15 Sept. 1-Oct. 31	6 Spring 4 Fall
	5, 6		May 1-June 15 Aug. 15-Nov. 15	2 Spring 2 Fall
Laramie Peak (501)	7		April 15-May 31 Sept. 1-Oct. 31	4 Spring 4 Fall
	33		April 15-May 31 Sept 1-Oct 31	3 Spring 2 Fall
Snowy Range (502)	8	April 15-30 Sept. 15-30	May 1-June 7 Oct. 1-31	5 Spring 6 Fall
Sierra Madres (401)	9	April 15-30 Sept. 1-30	May 1-June 15 Oct. 1-31	8 Spring 6 Fall
Uinta (402)	10	April 15-30 Sept. 1-30	May 1-June 15 Oct. 1-31	2 Spring 2 Fall
	12	April 15-30 Sept. 1-30	May 1-June 15 Oct. 1-31	1 Spring 1 Fall
Greys River (102)	11	April 15-30 Aug. 15-31	May 1-June 15 Sept. 1- Oct. 31	5 Spring 5 Fall
	14, 15, 16 17, 30	April 15-30 Aug. 15-31	May 1-June 15 Sept. 1-Oct 31	30 Spring 18 Fall
Wind River (601)	13	April 15-30 Aug. 15-31	May 1-June 15 Aug. 1-31-valid only in that portion of Hunt Area 13 within the Popo Agie Wilderness Sept 1-Oct. 31	5 Spring 5 Fall
	19	April 15-30 Aug. 15-31	May 1-June 15 Sept. 1-Nov. 15	10 Spring 8 Fall
	28	April 15-30 Aug. 1-14	May 1-June 15 Aug. 15-Oct. 31	4 Spring 4 Fall
	31	April 15-30 Aug. 1-14	May 1-June 15 Aug. 15-Oct. 31	2 Spring 2 Fall
Jackson (101)	18, 20, 21 22, 24, 29	April 15-30 Aug. 15-31	May 1-June 15 Sept. 1-Oct. 31	13 Spring 20 Fall
Absaroka (201)	23	April 15-30 Aug. 1-14	May 1-June 15 Aug. 15-Oct. 31	8 Spring* 12 Fall*
	25, 26, 27	April 15-30 Aug. 15-31	May 1-June 15 Sept. 1- Oct. 31	
	32	April 15-30	May 1 – June 15 Aug. 1 – Oct. 31	Unlimited
Statewide	35		April 15-June 15 August 1-Oct. 31	Unlimited

*Annual female mortality limit applies to areas 23, 25, 26, and 27 in combination.