

Mountain Lion Management Updates

SDGFP Commission Meeting
October 2016

Population Management and Potential Trend Indicators



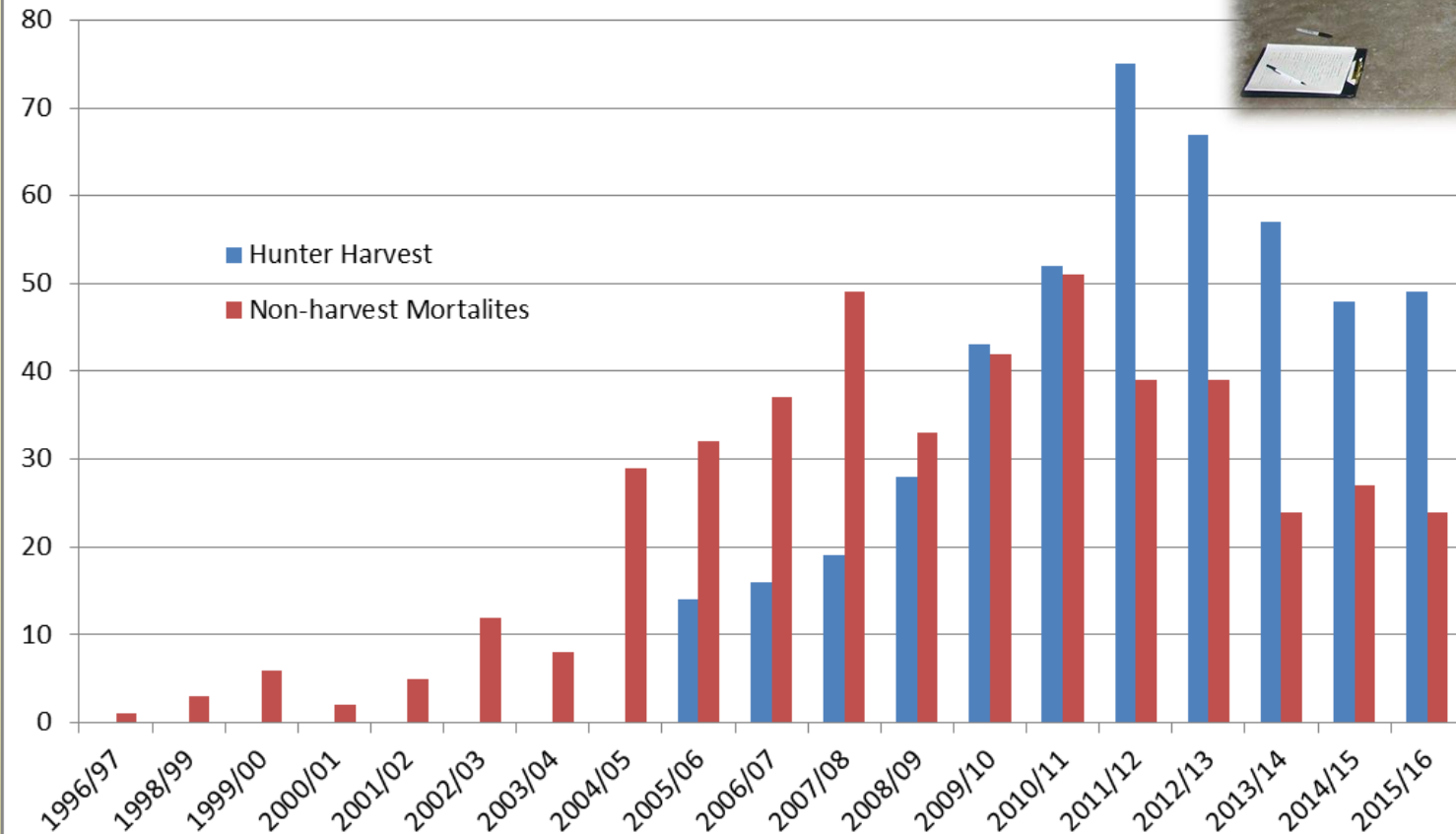
- Observation Reports
- Documented Mortalities
- Mortality density
- Hunter harvest
 - Hunter harvest
 - Harvest success
 - Mean days hunted
 - Lion hunter attitudes
 - Harvest per day
 - Harvest per unit effort
- Lion Research
- Adult female harvest %
- Biopsy darting DNA analyses
 - Catch per unit effort
 - Population estimates

Documented Mortalities

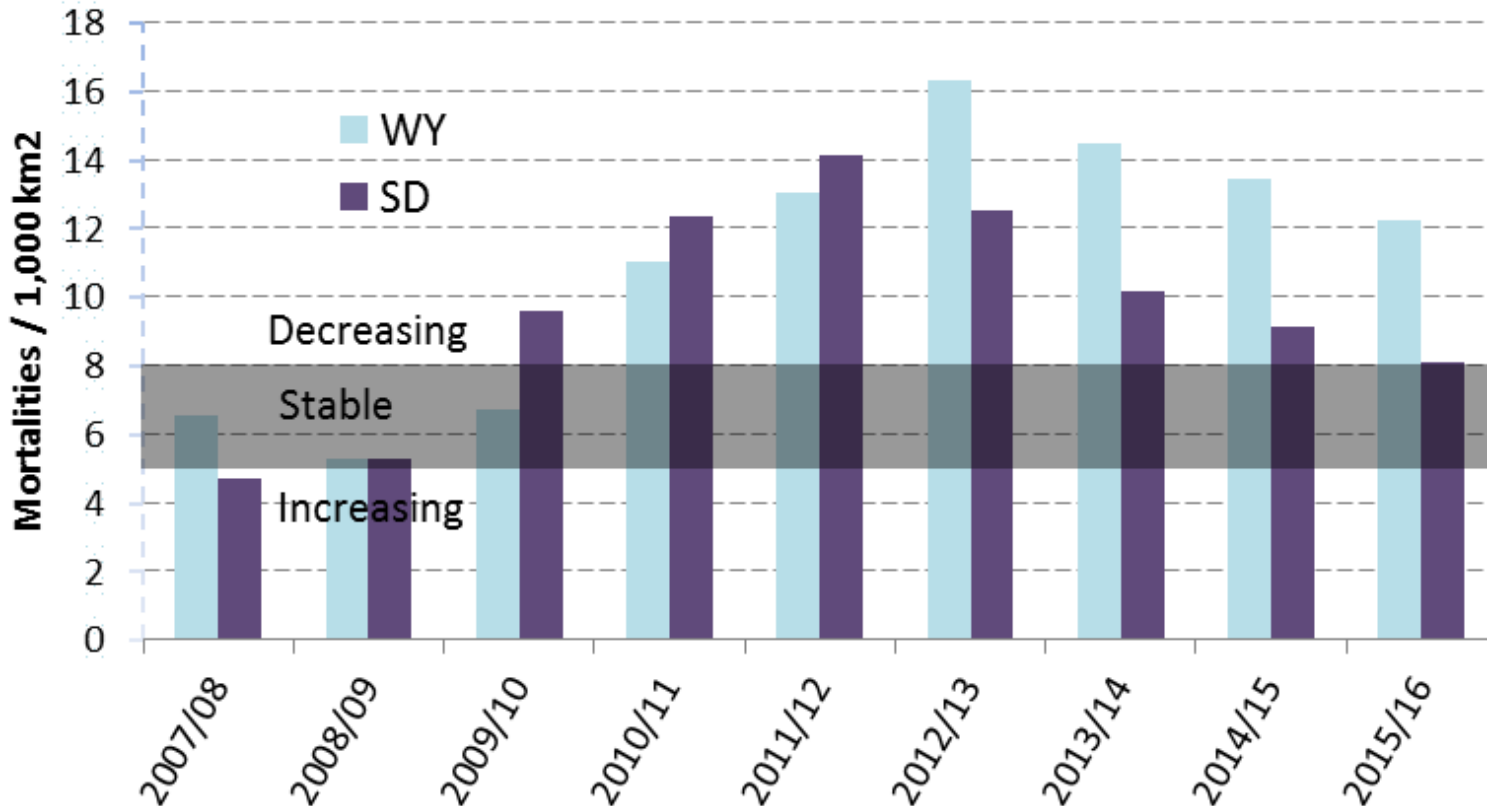
(April 1 – March 31)



Harvest / Non-harvest Mortality



Human-caused Lion Mortalities (Black Hills)



- Mortality density of 5-8/1000 sq. km = stable (WYGF)
- Stable threshold established in western lion populations

Hunting Season Summary



Year	Licenses Sold	Season Dates	BLACK HILLS HARVEST			PRAIRIE	Harvest Limit	Limit Reached	Season Length(days)
			Males	Females	Total				
2005/06	2,589	Oct. 1 - Dec. 15	6	7	13	1	25 or 5 breeding age females	Female	24
2006/07	3,297	Nov. 1 - Dec. 31	7	8	15	1	25 or 8 females	Female	19
2007/08	4,067	Nov. 1 - Dec. 31	2	15	17	2	35 or 15 females	Female	23
2008/09	2,678	Jan. 1 - Mar. 31	11	15	26	0	35 or 15 females	Female	45
2009/10	2,356	Jan. 1 - Mar. 31	16	24	40	0	40 or 25 females	Total	41
2010/11	2,560	Jan. 1 - Mar. 31	20	27	47	2	45 or 30 females*	Total	52
2011/12	3,786	Jan. 1 - Mar. 31	27	46	73	0	70 or 50 females	Total	61
2012/13	4,344	Dec. 26-Mar. 31	26	35	61	3	100 or 70 females	Date	96
2013/14	3,293	Dec. 26-Mar. 31	22	31	53	4	75 or 50 females	Date	96
2014/15	3,210	Dec. 26-Mar. 31	21	22	43	5	75 or 50 females	Date	96
2015/16	3,102	Dec. 26-Mar. 31	16	25	41	8	60 or 40 females	Date	97



2015/16 Harvest Statistics

Black Hills

- 49% of licensed hunters spent time hunting lions
- Black Hills Success per active hunter = 2.3%

Custer State Park

- 52% of licensed hunters spent time hunting lions
 - 36% for boot hunters, 100% for hunters using hounds
- Harvested 1 female and 5 males
- Success per active hunter
 - 50% (with hounds), 0% (boot)

Harvest Method	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Hounds	na	na	6	8	5	6
Boot	2	4	1	1	0	0

Harvest per unit effort

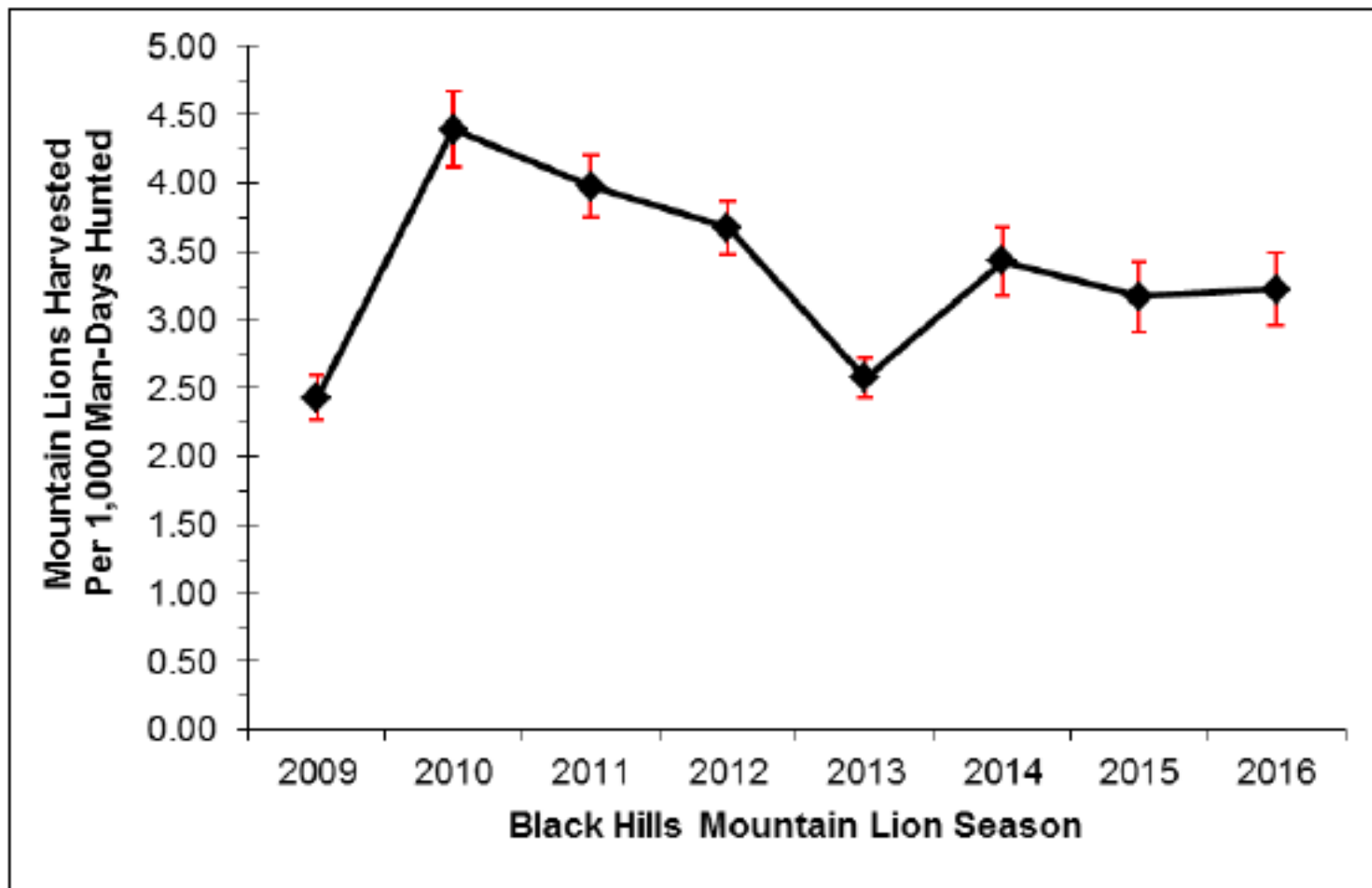
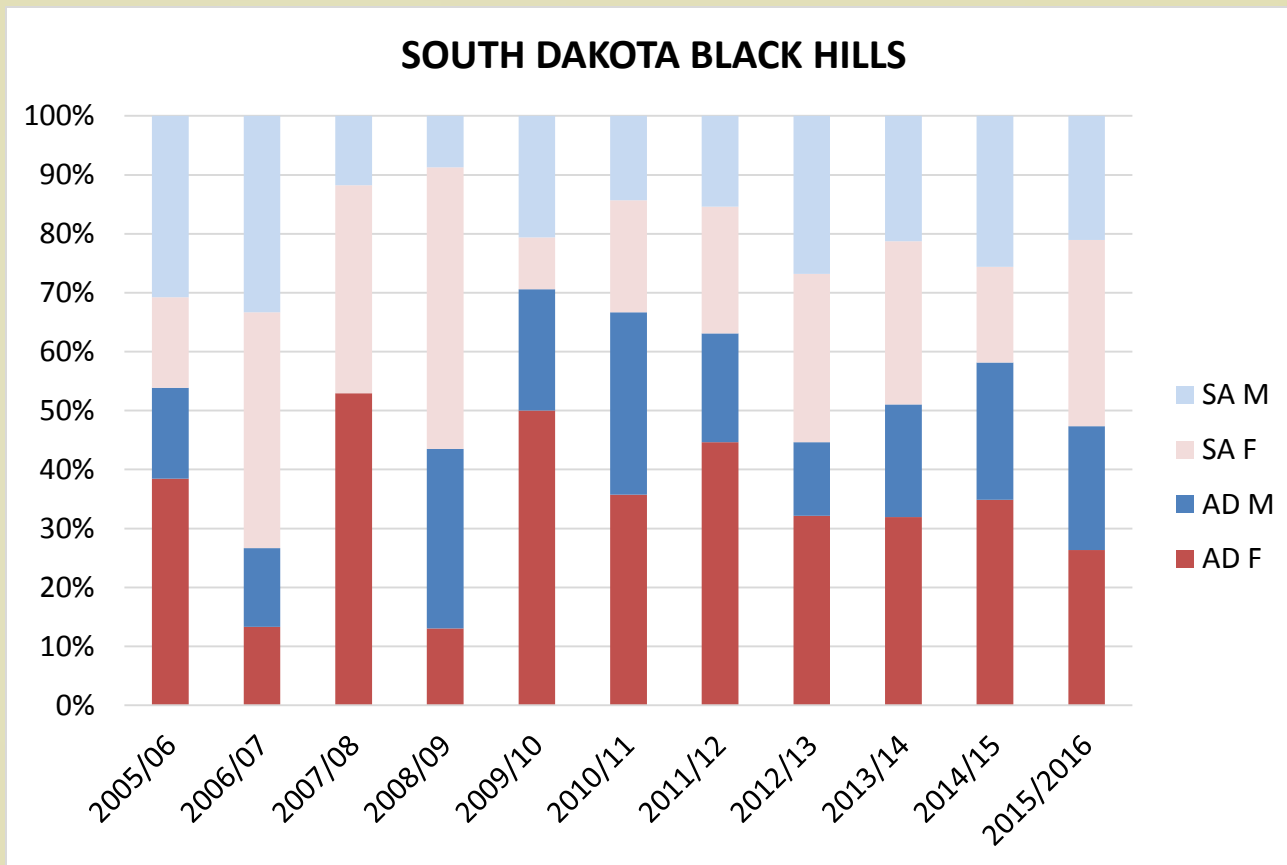


Figure 1: Harvest per unit effort for Black Hills seasons, 2009 to 2016 (excludes CSP)

* Error bars represent 95% confidence interval

Harvest Composition

Adult Female Harvest %



- Some Western States research suggests lion populations begin to decline when adult females comprise $\geq 25\%$ of the harvest
- SD 2016 adult female harvest = 26%



DNA Sampling – Biopsy Darting



- 3 houndsman teams
- Sampling period Nov 23- Dec 24, 2015
- 6 sampling units to ensure all areas sampled and represented
- 56 DNA samples collected (*31 in 2014*)
 - 32 females, 22 males, 2 unknown
 - 37 adults, 14 subadults, 5 kittens
 - DNA sent to USFS Genetics Lab in Montana

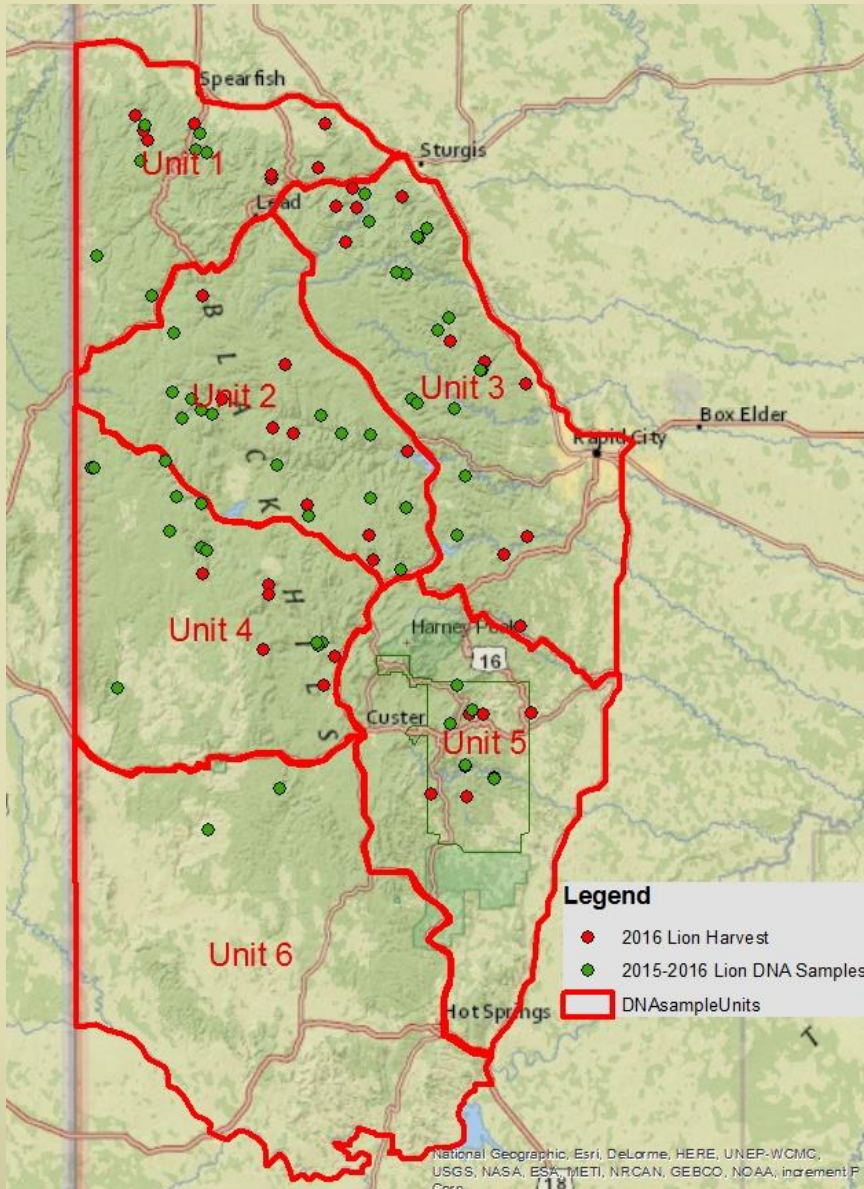
Biopsy Darting

Catch per unit effort



Year	hours	lions	hrs/lion	catch/100 hrs
2013	319	26.0	12.3	8.2
2014	615	31	19.8	5.0
2015	508	56	9.1	11.0

DNA Sampling Results - 2015



- Survey sampling distribution:
 - Area 1 = 7 Area 4 = 12
 - Area 2 = 14 Area 5 = 5
 - Area 3 = 16 Area 6 = 2
- 56 DNA samples collected via biopsy darting
 - 7 duplicates, 49 individual lions
 - 5 kittens biopsied = 44 samples
- 9 active radio collared lions
 - 3 sampled in biopsy darting sampling; 6 collar samples
- 50 total individuals with DNA in mark/recapture analyses

POPULATION ESTIMATE

(~01 Jan 2016)



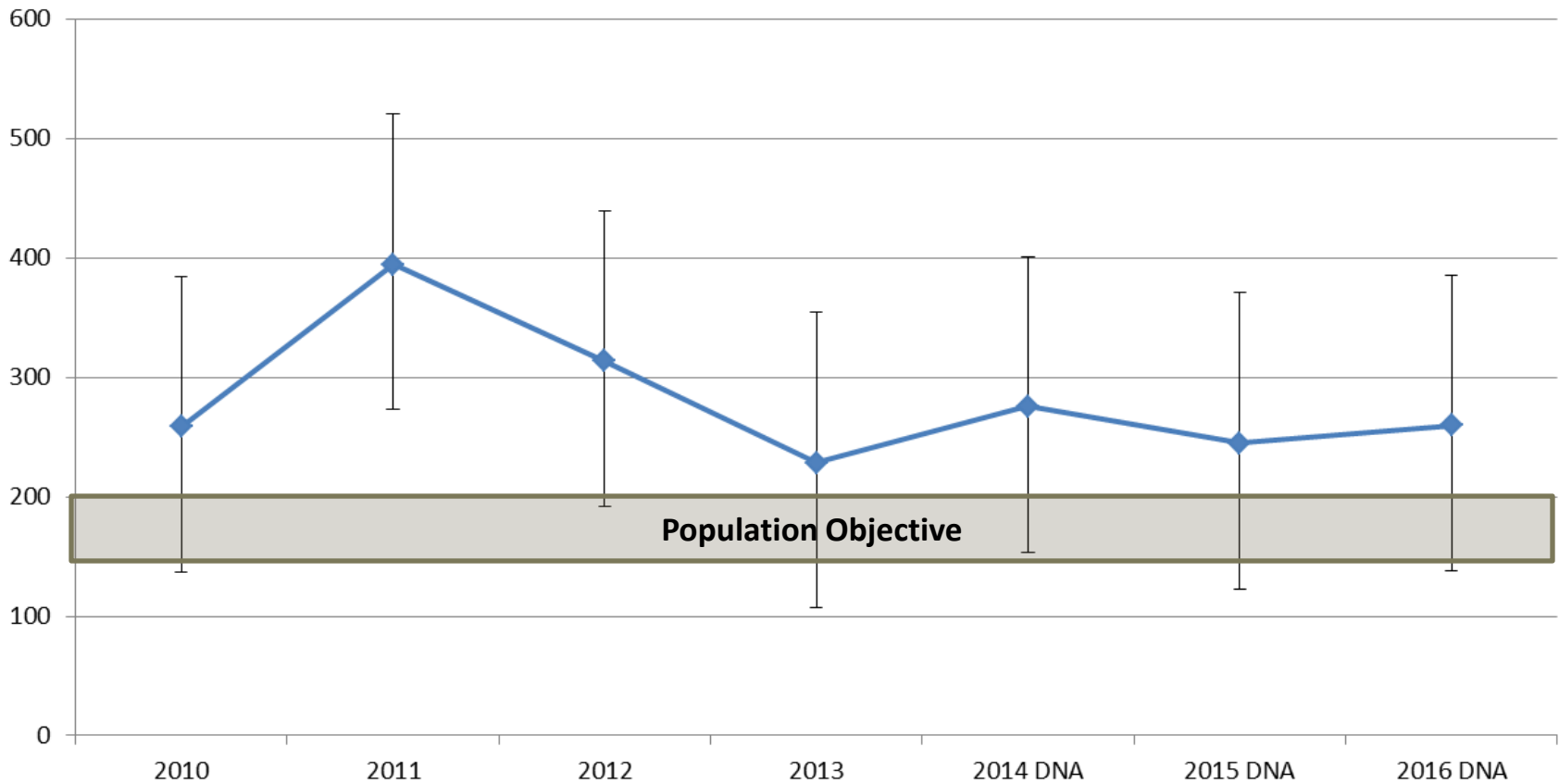
- Using Mark-Recapture Modified Lincoln-Petersen analyses
- Using 50 available DNA marked individual lions
- Estimate of adults and subadults

DNA Marked Adults/Subadults Available	Total AD/SA Harvest	# DNA Marked AD/SA harvest	LP Mod AD/SA Estimate
50	38	9	199
	<u>Total</u>	<u>95% lower</u>	<u>95% upper</u>
Adult/Subadult	199	108	290
Kitten	61	30	96
Total Population	260	138	386

Total Lion Estimates



Total Population Estimate



2016 and 2017 Lion Seasons



Most survey trend data suggest downward to stable lion population

- **Black Hills**

- Reduced annual harvest limits:
 - Total – reduce from 75 to 60
 - Female – reduce from 50 to 40

- **CSP**

- Made hunting intervals for boot and hound hunters equal (14 days)
- Hound hunting allowed permits:
 - Reduced from 4 to 3 access permits/hunting interval
 - Total permits = 12 (16 in 2015)
- No Hound hunting allowed permits:
 - Reduced from 30 to 15 access permits/hunting interval
 - Reduced from 4 to 3 hunting intervals
 - Total permits = 45 (120 in 2015)

Questions?

