



**Plateau**

**Land & Wildlife  
Management**

**SURVEY ANALYSIS  
& HARVEST RECOMMENDATIONS**

**YO Ranchlands Landowner Association**

Prepared By:  
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August 6, 2010

## Executive Summary

### Survey Goal

Determine the total number of native and exotic deer on the YO Ranchlands by sex, separated into Ranchland Phases.

### Management Goal

Optimize the number and diversity of hunting opportunities for the landowners of all exotic and native game animals of average to good quality or better.

### Results

Three spotlight surveys were conducted in July 2010. Distance Sampling methodology was used to determine the number and kind of deer living on the YO Ranchlands. Rarer species did not provide sufficient data to estimate populations by phase so phase-level estimates are based on historical and current distributions.

**# of Deer by Ranchland Phase**

Phase	Axis	White-tailed	Sika	Fallow	Blackbuck	TOTAL
Phase 1A	173	56	135	42	30	436
Phase 1B	169	163	60	42	56	490
Phase 2 & 1C	316	136	60	125	56	693
Phase 3	81	40	45	42	8	216
<b>TOTAL</b>	<b>739</b>	<b>395</b>	<b>300</b>	<b>251</b>	<b>150</b>	<b>1835</b>

**% of Species by Ranchland Phase**

Phase	Axis	White-tailed	Sika	Fallow	Blackbuck	All Deer
Phase 1A	40%	13%	31%	10%	7%	24%
Phase 1B	34%	33%	12%	9%	11%	27%
Phase 2 & 1C	46%	20%	9%	18%	8%	38%
Phase 3	38%	19%	21%	19%	4%	12%
<b>TOTAL</b>	<b>40%</b>	<b>22%</b>	<b>16%</b>	<b>14%</b>	<b>8%</b>	<b>100%</b>

The long-term population goals, originally established in 2005 and revised in 2006, have largely been met in regards to overall population numbers. The overall trend as seen on the attached chart shows this positive progress. Axis deer remain a larger proportion of the population and Phase 3 continues to support a lower percentage of the overall deer herd than originally desired. Sika deer numbers showed an unexpected decline over previous estimates. Harvest recommendations are designed to allow deer populations to remain stable over the next year while attempting to continue to reduce the dominance of Axis deer.

YOLA Harvest Recommendations 2010/2011		Total
<b>Axis</b>	Buck	110
	Doe	145
<b>White-tailed</b>	Buck	25
	Doe	25
<b>Sika</b>	Buck	15
	Doe	20
<b>Fallow</b>	Buck	15
	Doe	5
<b>Blackbuck</b>	Buck	10
	Doe	5
<b>Grand Total</b>	Buck	175
	Doe	200
	<b>Total</b>	<b>375</b>

## Deer Survey Analysis & Harvest Recommendations *YO Ranchlands - General*

### Survey Goal

Determine the total number of native and exotic deer on the YO Ranchlands by sex, separated into Ranchland Phases.

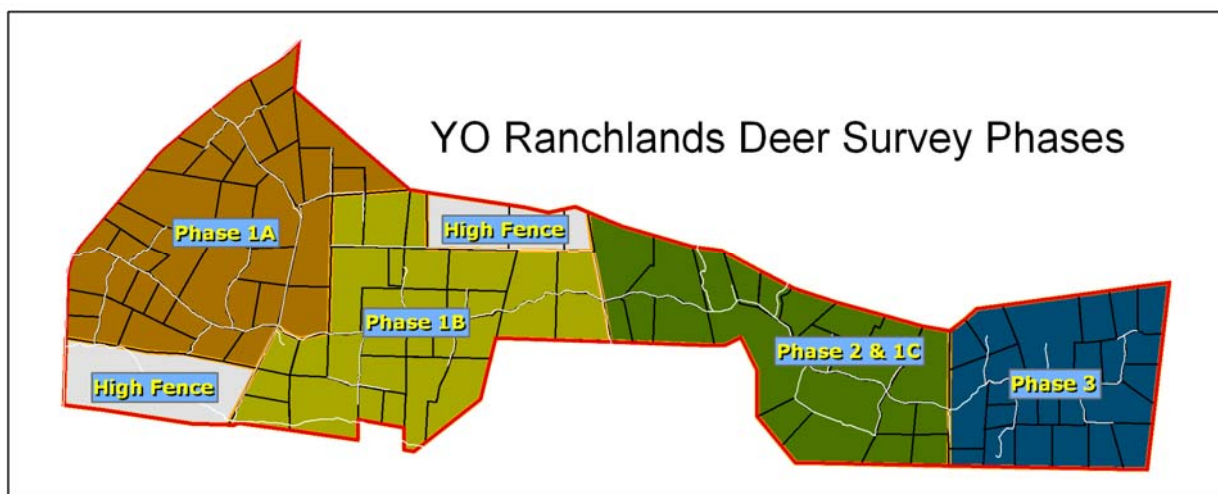
### Survey Methods

We surveyed the YO Ranchlands using Distance Sampling methodology. Two teams of Plateau staff and YOLA volunteers surveyed opposite ends of the property on July 13, 19, and 27, covering an average of 24.4 miles/night. Assistance from YOLA volunteers was essential and greatly appreciated.

### Survey Results

Estimates of Axis, Sika, Fallow, Blackbuck, and White-tailed Deer were made and compared to historical estimates and harvest data from 2009-2010 provided by YOLA. Harvest data were only provided for the property as a whole. Feral hogs and aoudad were seen during the surveys but not often enough to give any information about the number of these species living on the YO Ranchlands. While population estimates for each phase were calculated, the rarer species (Sika, Fallow, and Blackbuck) did not provide sufficient data to reliably estimate populations by phase so phase-level estimates for those species are partially based on historical and current distributions. As a result, the available data are not sufficient to reliably recommend precise harvest recommendations by phase. To improve distribution of animals across the property, Axis and Fallow harvest should be focused on Phase 2 & 1C, White-tailed deer and Blackbuck harvest should be focused on Phase 1B, and Sika harvest should be focused on Phase 1A.

The Ranchlands was split into the sections show in the map below. The results for the overall survey and for each phase are listed on the next page.



## SURVEY RESULTS & OVERALL SPECIES COMPOSITION

### All Deer

Phase	# of Deer	% of Deer	Ac / Deer
Phase 1A	436	24%	7.1
Phase 1B	490	27%	5.5
Phase 2 & 1C	693	38%	3.5
Phase 3	216	12%	8.5
TOTAL	1,835	100%	5.4

### # of Deer by Ranchland Phase

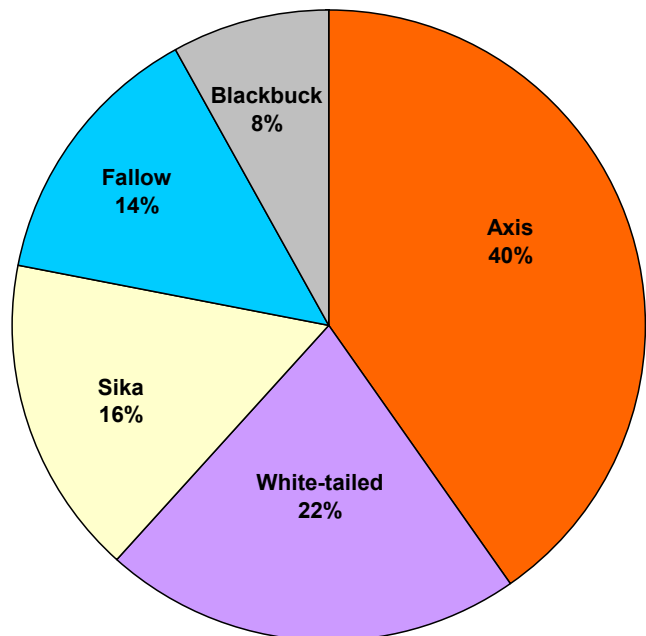
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Phase 2 & 1C	316	136	60	125	56	693
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TOTAL	739	395	300	251	150	1835

### % of Species by Ranchland Phase

Phase	Axis	White-tailed	Sika	Fallow	Blackbuck	All Deer
Phase 1A	40%	13%	31%	10%	7%	24%
Phase 1B	34%	33%	12%	9%	11%	27%
Phase 2 & 1C	46%	20%	9%	18%	8%	38%
Phase 3	38%	19%	21%	19%	4%	12%
TOTAL	40%	22%	16%	14%	8%	100%

Sex Ratios	Buck : Doe	
	Current	Ideal
White-tailed	1:2	1 : 1
Axis	1:2	1 : 2
Sika	1:3	1 : 2
Fallow	1:2	1 : 1
Blackbuck	1:3	1 : 4

Overall Proportions of Deer Species



### Survey Lengths & Phase Acreages

Phase	Average Length (miles)	Area (acres)
Phase 1A	7.5	3,078
Phase 1B	6.1	2,686
Phase 2 & 1C	7.1	2,401
Phase 3	3.7	1,834
TOTAL	24.4	10,000

## Management Goal

Optimize the number and diversity of hunting opportunities for the landowners of all exotic and native game animals of average to good quality or better.

## Harvest Recommendations

### *Overall Deer Density*

The current year's estimates are nearly identical to the expected 2010 population of ~1,900 animals calculated from the 2009 survey and harvest recommendations. The YO Ranchlands, as a whole, has exceeded the original long-term goal for overall deer density. This should result in improvements in habitat for all species, including wild turkey and non-game animals, and a more manageable harvest schedule going forward. Lower densities will allow for population increases without severe degradation of habitat and will allow populations to better withstand drought conditions.

Shifts in distribution due to changes in feeding patterns may be affecting annual estimates of individual species such as Axis in 2009 and Sika in 2010, but the overall trend is a more important indicator of progress. The goal moving forward should be to level the trend-line and maintain overall numbers while adjusting species composition according to landowner goals. Phase 2 of the Ranchlands still supports a disproportionate number of deer (38%), so harvest should remain higher in this phase relative to the others. Axis deer were harvested within the suggested range for 2009, but well below the suggested maximum. White-tailed deer and Blackbuck were overharvested in relation to recommendations. Overall harvest was near the recommended level and it achieved the stated goal of maintaining a stable population. Due to continued concerns about their dominance, Axis should make up almost 70% of the total harvest for the coming year. Good range conditions due to favorable weather in 2009 and 2010 and the positive reductions in overall density should result in strong reproduction of all species and an improvement in antler quality in 2010.

The overall combined deer density on the YO Ranchlands is 5.4 acres / deer, down from a high of 2.8 ac/deer in 2005 and virtually identical to the 2009 estimate of 5.3 acres / deer. The actual deer density varied greatly by Phase and remains similar to historical estimates from 2005 and 2006. The original density goals designed to provide a large number of hunting opportunities for deer and maintain moderate to good production of gamebirds was 4.5 acres / deer. The maximum combined deer density for trophy animal management is 6 acres / deer. The property is currently well-positioned to produce some high-quality deer while providing strong habitat conditions for other wildlife. The target density for summer of 2011 is 5.4 acres / deer. Unless community-wide goals change, the long-term target should be to maintain current densities while attempting to shift species composition toward the less common species to improve the diversity of hunting opportunities. The harvest guidelines outlined below will maintain a stable deer density while attempting to reduce the dominance of Axis deer. The recommendations are based on expected strong reproduction due to good range conditions.

### *Species Composition*

Axis deer remain overabundant in relation to other species though their overall numbers have declined substantially. The decline noted in 2009 appears to have been a real effect, though the cause of such a rapid decrease in population remains unclear. It is possible the continued favorable range conditions and/or changes in feeding habits may have shifted their distribution. They comprise 40% of the deer on the Ranchlands as a whole and they make up 46% of the deer on Phase 2. Axis are more aggressive, dominant, and productive than any other species of deer on the property. Last year's axis harvest was within the recommended range though it remained on the low end of those recommendations. Axis should make up almost 70% of the total harvest for the coming year. A continued combination of aggressive Axis harvesting and conservative management of the remaining species should improve the overall species composition.

The White-tailed deer population appears to be stable with only a slight decline over last year despite the fact that the 2009 White-tailed harvest was 90% above recommended levels. Stronger than expected production due to favorable conditions or an underestimated sex ratio may have mitigated the effect of overharvest. The populations of Blackbuck and Sika remain lower than they should be to optimize the diversity of hunting opportunities. Sika populations suffered an unexpected and unexplained decline this year. Conservative harvest is recommended until future surveys can reveal if this is a real phenomenon or just an anomaly. Blackbuck have remained stable but still comprise <10% of overall numbers. Harvest recommendations remain conservative and favor females to encourage a slight increase in numbers. The Fallow population has improved over previous years and now comprises 14% of all deer. Harvest recommendations are designed to keep fallow populations stable.

### *Sex Ratios*

Sex ratios were assumed to remain stable unless the available data warranted change. White-tailed deer sex ratios were adjusted to help ensure harvest recommendations are not too low. To maintain sex ratios, it is important to harvest at least as many does as bucks of any species and often 2 – 3 times as many does as bucks. Stand counts would greatly improve sex ratio and fawn production estimates, providing greater confidence in making harvest recommendations.

## HARVEST RECOMMENDATIONS & ESTIMATED 2011 POPULATION

YOLA Harvest Recommendations 2010/2011		Total
<b>Axis</b>	Buck	110
	Doe	145
<b>White-tailed</b>	Buck	25
	Doe	25
<b>Sika</b>	Buck	15
	Doe	20
<b>Fallow</b>	Buck	15
	Doe	5
<b>Blackbuck</b>	Buck	10
	Doe	5
<b>Grand Total</b>	Buck	175
	Doe	200
	<b>Total</b>	<b>375</b>

Estimated Population	Axis		White-tailed		Sika		Fallow		Blackbuck	
	Buck	Doe	Buck	Doe	Buck	Doe	Buck	Doe	Buck	Doe
Phase 1A	42	89	17	35	44	110	14	31	8	24
Phase 1B	46	93	64	119	18	47	14	31	18	47
Phase 2 & 1C	109	206	53	98	18	47	50	95	18	47
Phase 3	13	33	12	26	13	35	15	31	1	6
<b>Total</b>	<b>210</b>	<b>422</b>	<b>146</b>	<b>278</b>	<b>94</b>	<b>239</b>	<b>94</b>	<b>187</b>	<b>44</b>	<b>124</b>

## **Deer Survey Analysis & Harvest Recommendations**

### ***YO Ranchlands - Details***

#### Survey Methods

Three nights of driving surveys were conducted by Plateau Land & Wildlife Management using the same protocol established in 2005 and 2006. The surveys used a technique called Distance Sampling. An explanation of the technique is provided in previous years' survey reports. During the driving surveys, we drove at an average speed of <10mph. We visually searched both sides of the roads for deer. We actively surveyed an average of 24.4 miles of road during these surveys. When deer were seen, we measured the distance and bearing to the animal or group of animals using a laser rangefinder and a compass. The surveys were conducted from 10pm – 2am on July 13, 19, and 27. Original dates set for early July were cancelled due to rain. We recorded the number and species, if possible, of all deer seen. Both surveys were performed by 2 groups of 4 or more people. We saw a total of 877 (273 in 2009) deer in 320 (128) groups during the surveys and over 95% of the deer were identified to species.

### ***Phase 1***

#### Survey Results

Phase 1 was split into 3 sections for the analysis of our surveys. Phase 1A included all the property to west of immediately adjacent to 7OL road and all property to the west of Bundy road. Phase 1B was comprised of all property between Phase 1A and YO Ranch road. The remainder of Phase 1 (Phase 1C) was combined with Phase 2 to make each survey section as equitable as possible and avoid separating any properties into 2 survey sections. The table below details the results of the survey for Phase 1A & 1B.

As a whole, Phase 1 has an appropriate amount of deer for the management goals. Phase 1A & 1B support approximately 50% of the animals on the Ranchlands. Harvest in this Phase should focus on Axis, White-tailed deer, and Sika.

#### Harvest Recommendations

- Axis – The majority of the harvest from this section should be Axis.
- White-tailed – Phase 1B can support more White-tailed deer harvest than any other area of the ranch.
- Sika – The majority of the Sika harvest should occur in this section.
- Fallow – Conservative harvest of Fallow is recommended on this section.
- Blackbuck – Phase 1B should be the focus of Blackbuck harvest.



## All Deer

Phase	# of Deer	% Total Deer	Ac / Deer
Phase 1A	436	24%	7.1
Phase 1B	490	27%	5.5
Phase 1 A&B	926	50%	6.2

## # of Deer in Phase 1A & 1B

Phase	Axis	White-tailed	Sika	Fallow	Blackbuck	TOTAL
Phase 1A	173	56	135	42	30	436
Phase 1B	169	163	60	42	56	490
Phase 1 A&B	342	219	195	84	86	926

## % of Species in Phase 1A & 1B

Phase	Axis	White-tailed	Sika	Fallow	Blackbuck	All Deer
Phase 1A	40%	13%	31%	10%	7%	24%
Phase 1B	34%	33%	12%	9%	11%	27%
Phase 1 A&B	37%	24%	21%	9%	9%	50%

## Phase 2

### Survey Results

Population levels in Phase 2 remain higher than the other sections. Axis continue to represent a large portion (46%) of the animals in this section. White-tailed deer, Blackbuck, and Fallow numbers are strong in this section. The table below provides the details of our survey in Phase 2.

### Harvest Recommendations

Deer density remains high, but significant improvement has been made since 2006, reflecting the overall improvement across the property as a whole. The majority of Axis and Fallow harvested on the Ranchlands should come from this section.

- Axis – Continue to harvest Axis at high numbers to maintain distribution across Ranchlands and continue population reductions in this Phase. This is still the most heavily populated Phase and Axis are the most significant contribution to that overpopulation. Methods other than landowner harvest may need to be employed.
- White-tailed – Moderate harvest levels are recommended here as well across the ranch. Harvest efforts are better spent on Axis.
- Sika – Sika harvest should be limited in this phase.
- Fallow – Fallow numbers are higher here than any other section. The majority of the Fallow harvest on the Ranchlands should come from this phase.
- Blackbuck – A limited harvest of Blackbuck is recommended to allow their relative contribution to increase.

## All Deer

Phase	# of Deer	% Total Deer	Ac / Deer
Phase 2 & 1C	693	38%	3.5

## # of Deer in Phase 2 & 1C

Phase	Axis	White-tailed	Sika	Fallow	Blackbuck	TOTAL
Phase 2 & 1C	316	136	60	125	56	693

## % of Species in Phase 2 & 1C

Phase	Axis	White-tailed	Sika	Fallow	Blackbuck	TOTAL
Phase 2 & 1C	46%	20%	9%	18%	8%	100%

## Phase 3

### Survey Results

Overall numbers appear to be down in this phase. Overall density is lower than any other section on the property, though limited access for surveys may influence the estimates. Harvest should focus on Axis deer, followed by Sika and Fallow. Blackbuck will be unlikely to ever have a large presence in this Phase unless significant brush management occurs. The table below details the results of our survey for this section.

### Harvest Recommendations

- Axis – The majority of the harvest in this phase should be Axis deer.
- White-tailed – Limited white-tailed deer harvest may help shift animals from Phase 2.
- Sika – Conservative harvest may help shift distributions to adjacent sections.
- Fallow – This section can support more Fallow harvest than any other section except Phase 2.
- Blackbuck – There are still very few Blackbuck on Phase 3, though a small harvest of them may be possible.

## All Deer

Phase	# of Deer	% of Deer	Ac / Deer
Phase 3	216	12%	8.5

## # of Deer in Phase 3

Phase	Axis	White-tailed	Sika	Fallow	Blackbuck	TOTAL
Phase 3	81	40	45	42	8	216

## % of Species in Phase 3

Phase	Axis	White-tailed	Sika	Fallow	Blackbuck	TOTAL
Phase 3	38%	19%	21%	19%	4%	100%

## Deer Survey Analysis & Harvest Recommendations YO Ranchlands – Additional Information

### Other Species of Interest

**Hogs Seen During 2010 Surveys – 23**

**Wild Sheep Seen During 2010 Surveys - 24**

### **Other Species Identified during 2010 Surveys:**

Cottontail (*Sylvilagus sp.*)  
 Black-tailed Jackrabbit  
 Coyote  
 Gray Fox  
 Deer Mouse (*Peromyscus sp.*)  
 Poorwill sp.  
 North American Porcupine  
 Raccoon  
 Striped Skunk  
 Coastal Plains Toad (audio)  
 Gray Tree Frog (audio)

### 2009/2010 Harvest Summary Compared to Recommendations (As of July 17, 2010)

YOLA Actual Harvest 2009/2010		Total	2009/2010 Suggested (Maximum)	Difference
<b>Axis</b>	Buck	53	115	-62
	Doe	97	125	-28
<b>Whitetail</b>	Buck	32	20	12
	Doe	44	20	24
<b>Sika</b>	Buck	19	20	-1
	Doe	39	40	-1
<b>Fallow</b>	Buck	8	5	3
	Doe	28	20	8
<b>Blackbuck</b>	Buck	19	15	4
	Doe	17	5	12
<b>Grand Total</b>	Buck	131	175	-44
	Doe	225	210	15
	<b>Total</b>	<b>356</b>	<b>385</b>	<b>-29</b>

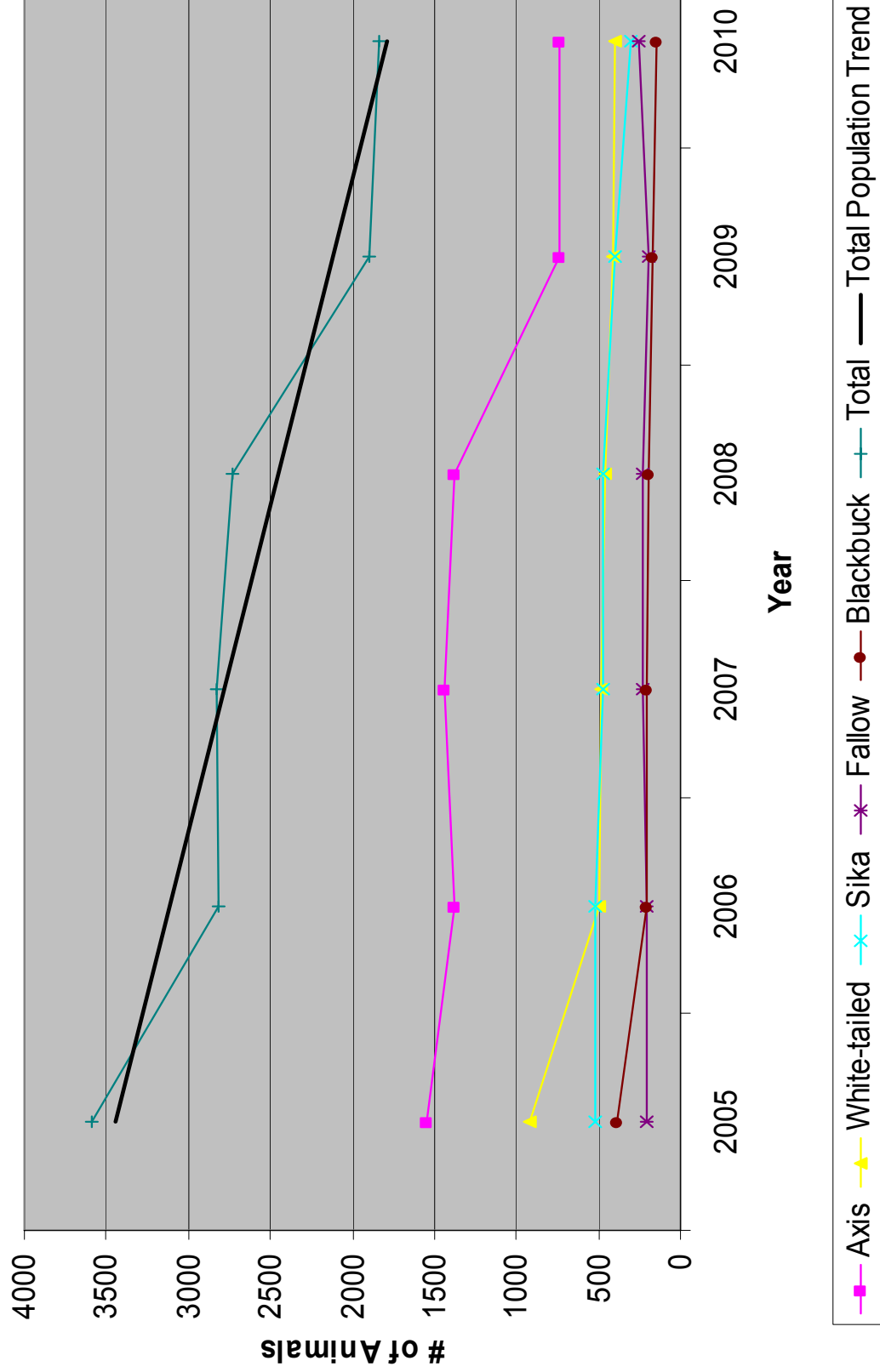
## Original 2010 Goal Compared to Current Estimates and 2011 Projections

Original 2010 Goal Population	Axis		White-tailed		Sika		Fallow		Blackbuck		GRAND TOTAL	
	Buck	Doe	Buck	Doe	Buck	Doe	Buck	Doe	Buck	Doe	Buck	Doe
Phase 1A	51	128	74	74	40	79	30	30	18	71	213	383
Phase 1B	51	128	74	74	40	79	30	30	18	71	213	383
Phase 2 & 1C	61	153	89	89	48	95	36	36	21	86	255	459
Phase 3	41	102	60	60	32	63	24	24	14	57	170	306
Total	204	510	298	298	159	317	119	119	71	286	851	1530

2010 Estimated Population	Axis		White-tailed		Sika		Fallow		Blackbuck		GRAND TOTAL	
	Buck	Doe	Buck	Doe	Buck	Doe	Buck	Doe	Buck	Doe	Buck	Doe
Phase 1A	58	115	19	37	34	101	14	28	8	23	132	304
Phase 1B	56	113	54	109	15	45	14	28	14	42	154	336
Phase 2 & 1C	105	211	45	91	15	45	42	83	14	42	221	472
Phase 3	27	54	13	27	11	34	14	28	2	6	68	148
Total	246	493	132	263	75	225	84	167	38	113	574	1261

2011 Projected Population	Axis		White-tailed		Sika		Fallow		Blackbuck		GRAND TOTAL	
	Buck	Doe	Buck	Doe	Buck	Doe	Buck	Doe	Buck	Doe	Buck	Doe
Phase 1A	42	89	17	35	44	110	14	31	8	24	125	290
Phase 1B	46	93	64	119	18	47	14	31	18	47	160	337
Phase 2 & 1C	109	206	53	98	18	47	50	95	18	47	248	492
Phase 3	13	33	12	26	13	35	15	31	1	6	55	131
Total	210	422	146	278	94	239	94	187	44	124	588	1250

# YO Ranchlands Population Trends

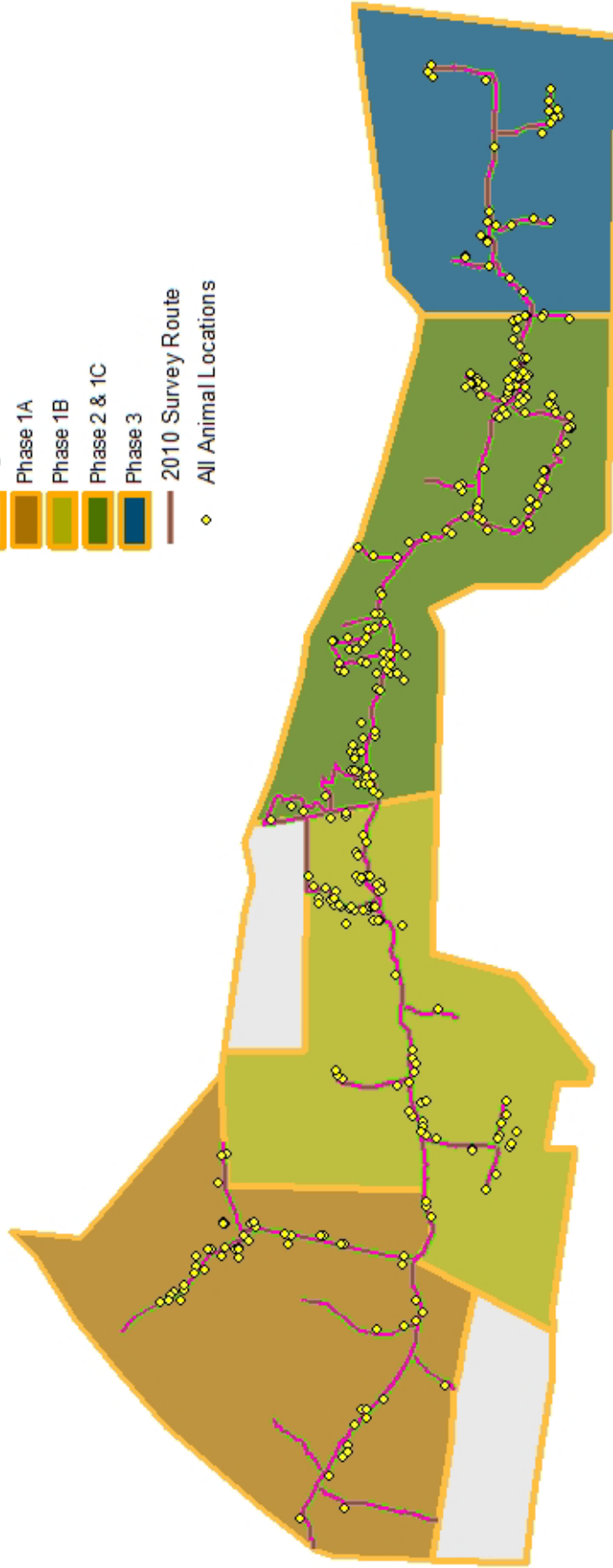


# YO Ranchlands 2010 Spotlight Survey

# All Animals

## YO Ranchland Sections

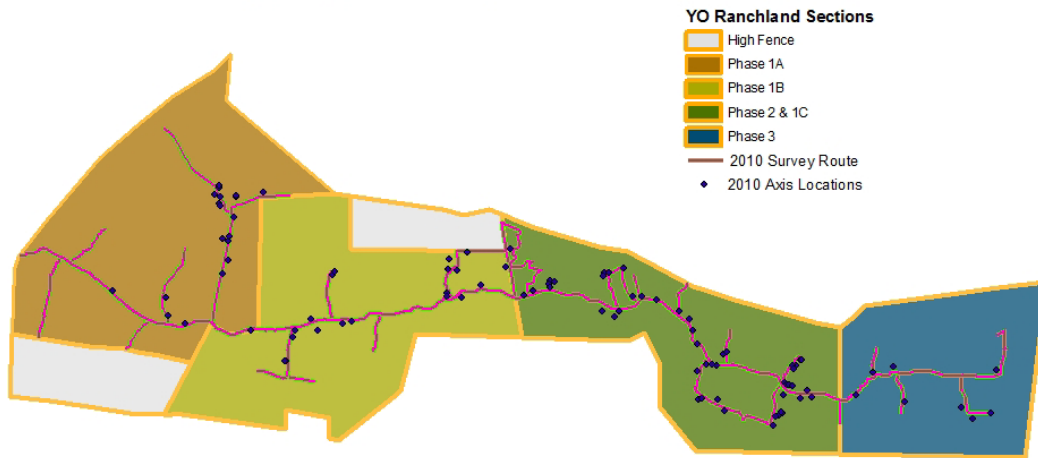
- High Fence
- Phase 1A
- Phase 1B
- Phase 2 & 1C
- Phase 3
- 2010 Survey Route
- All Animal Locations



# Surveyed Deer Locations by Species

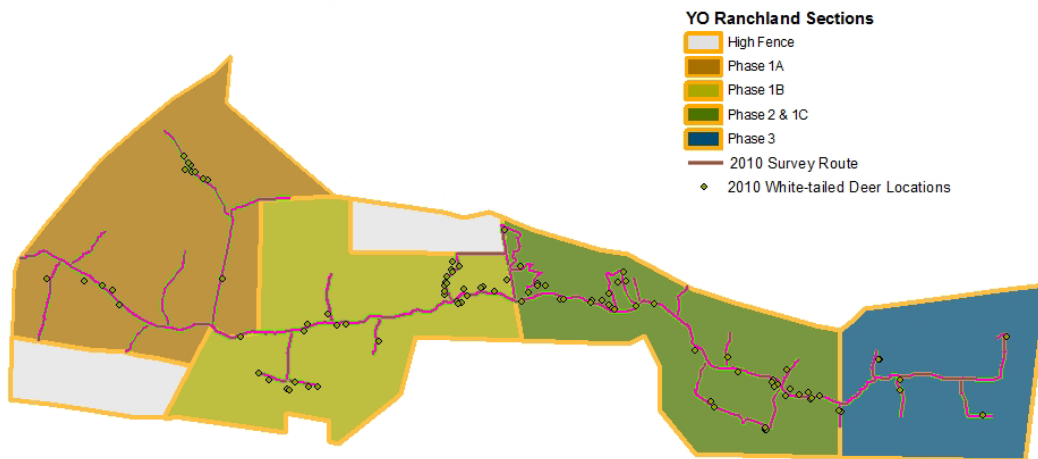
YO Ranchlands  
2010 Spotlight Survey

## Axis

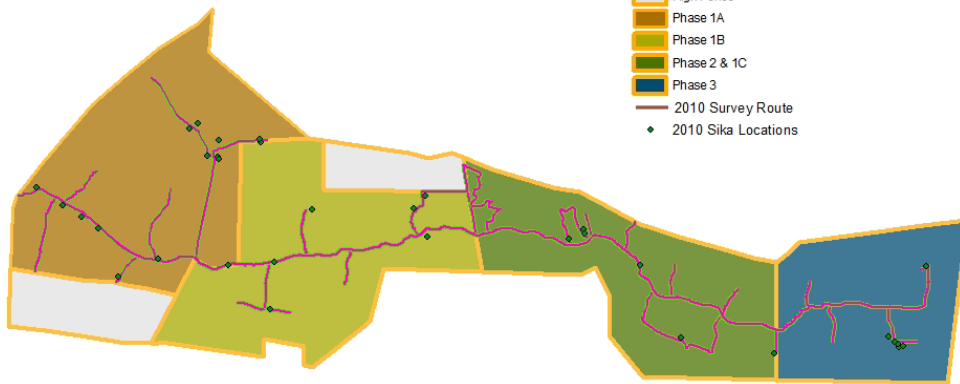


YO Ranchlands  
2010 Spotlight Survey

## White-tailed Deer



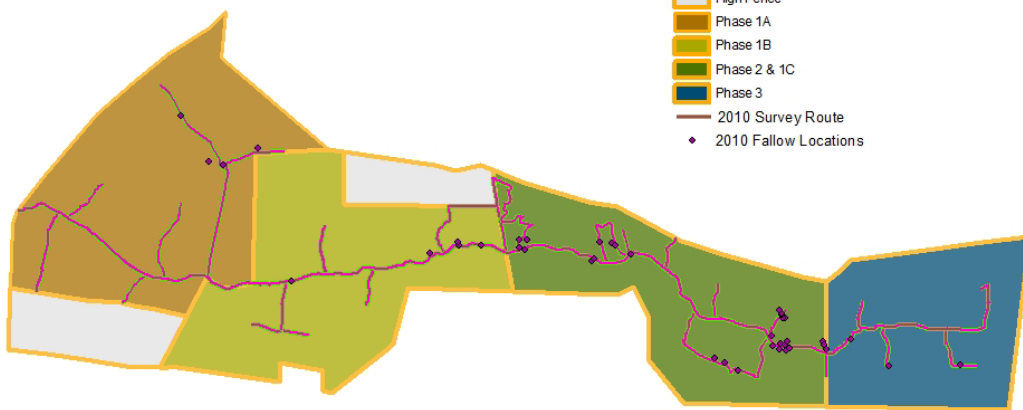
YO Ranchlands  
2010 Spotlight Survey



Sika

- YO Ranchland Sections**
- High Fence
  - Phase 1A
  - Phase 1B
  - Phase 2 & 1C
  - Phase 3
  - 2010 Survey Route
  - 2010 Sika Locations

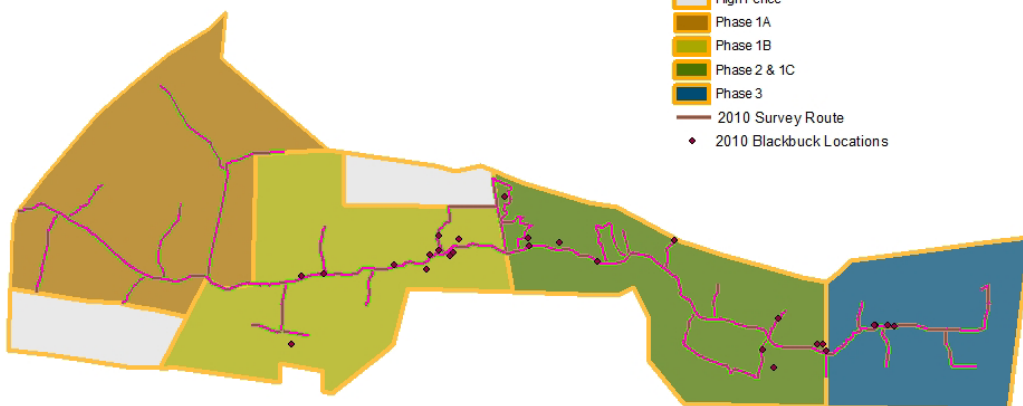
YO Ranchlands  
2010 Spotlight Survey



Fallow

- YO Ranchland Sections**
- High Fence
  - Phase 1A
  - Phase 1B
  - Phase 2 & 1C
  - Phase 3
  - 2010 Survey Route
  - 2010 Fallow Locations

YO Ranchlands  
2010 Spotlight Survey



Blackbuck

- YO Ranchland Sections**
- High Fence
  - Phase 1A
  - Phase 1B
  - Phase 2 & 1C
  - Phase 3
  - 2010 Survey Route
  - 2010 Blackbuck Locations