Factors explaining the decline of black-tailed deer: a comparative study on public and private lands in northern California

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Third Quarter Fiscal Year 2009/2010 Progress report
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(Note: results presented here should be considered preliminary and are not intended for wide dissemination)

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Progress January 1 until March 31, 2010

1) Adult deer

a) Captures:

No additional deer were captured during the winter months. Thus the total number of deer fitted with GPS collars over the course of the study remains at 15 (Table 1). A total of 16 additional collars are currently available for captures set to resume in May.

b) Monitoring:

Given the high amount of snow our study area received this year, monitoring the status of deer has been challenging during the months covered by this report. All access to the study area via the high roads (both FH7 and M1) is currently blocked. In addition, monitoring flights were also cancelled either due to weather conditions or internal safety reassessments within the California Department of Fish & Game (David Casady, pers. communication). Thus we have essentially only been able to monitor deer opportunistically. Despite our attempts to continue monitoring deer from the ground, we have been unable to locate some deer for an extended period of time (Table 1) highlighting the need for future aerial monitoring during winter. Without the ability to monitor the status of adult deer at least once every 2 weeks, we risk being unable to determine cause of mortality for animals that have died.

c) Status:

One additional adult deer (ID 8805) is currently on mortality signal. However, due to limited access we have been unable to retrieve the collar and thus confirm the status of the deer. If 8805 is confirmed dead, the total number of adults that have died over the course of this study would increase to 3 individuals (Table 1). Verification of causes of mortality using DNA methods is still outstanding.

Table 1: Status of adult black-tailed deer Mendocino black-tailed deer project; March 31, 2010

Number	ID	Group	Capture date	Sex	Age (estimated)[1]	Weight (kg)	Date last observed	Status	Cause of mortality (estimated)[2]
1	8796	M1	8-Jun-09	female	2 to 3	52.2	10-Oct-09	dead	predation (unknown)
2	8809	M1	9-Jun-09	female	3	55.8	12-Jan-10	alive	
3	8805	M1	9-Jun-09	female	2	43.1	18-Mar-10	unknown	
4	5740	M1	9-Jun-09	female	7	44.5	16-Nov-09	alive	
5	8810	M1	9-Jun-09	female	5+	58.1	11-Jan-10	alive	
6	8801	M1	10-Jun-09	female	4	47.2	18-Mar-10	alive	
7	8808	FH7	10-Jun-09	female	2	32.7	08-Aug-09	dead	predation (unknown)
8	8798	FH7	10-Jun-09	female	4	52.2	28-Feb-10	alive	
9	8803	FH7	11-Jun-09	female	2	37.2	28-Feb-10	alive	
10	8804	FH7	11-Jun-09	female	4+	47.7	12-Feb-10	alive	
11	8800	FH7	11-Jun-09	female	4 to 5	60.0	28-Feb-10	alive	
12	8802	M1	8-Aug-09	female	2 to 3	48.1	12-Jan-10	alive	
13	8835	M1	13-Aug-09	female	2 to 3	45.8	18-Mar-10	alive	
14	8817	FH7	14-Aug-09	female	1	41.7	12-Feb-10	alive	
15	8835	M1	21-Dec-09	female	3+	68.1	12-Jan-10	alive	

[1] Age at capture estimated from tooth wear and replacement; confirmation using cement-annuli from extracted tooth pending

[2] Cause of mortality preliminary until verified using DNA evidence collected at kill/mortality site

2) Fawns

a) Monitoring:

We have not been able to relocate our remaining 3 tagged fawns. Signals from ear tags are likely too weak to be picked up from any of the roads currently accessible. We will make a concerted effort to try and relocate the remaining fawns in spring to confirm their status. It would be interesting for future years to test if ear tags can still be picked up from the air during the winter months.

b) Status:

To the best of our knowledge, 3 of the 15 fawns may still be alive (Table 2).

c) Captures:

A new order of 40 VHF ear tags is currently being delivered. Thus we will have 60 ear tags available for fawn captures this spring.

Table 2: Status of black-tailed deer fawns Mendocino black-tailed deer project; March 31, 2010

Number	ID	Group	Capture date	Sex	Age (estimated)	Weight (kg)	Date last observed	Status	Cause of mortality (estimated)[1]	Predator species[2]
1	R1130	M1	30-Jun-09	male	<1 week	2.7		dead	predation	coyote
2	Y10	M1	1-Jul-09	female	5-7 days	3.1		dead	predation	coyote
3	R1110	M1	1-Jul-09	female	5 days	4.5	01-Jul-09	unknown		
4	R1123	M1	1-Jul-09	female	<1 week	3.1		dead	predation	coyote
5	R1125	M1	2-Jul-09	female	4-5 days	4.3		dead	unknown	
6	R1109	M1	3-Jul-09	male	<3 days	2.3		dead	predation	bear/coyote
7	R1121	M1	3-Jul-09	female	<3 days	2.3		dead	starvation/disease	
8	R1071	M1	6-Jul-09	male	<1 week	3.9	16-Nov-09	alive		
9	R1119	FH7	7-Jul-09	female	>1 week	3.5		dead	predation	coyote
10	R1068	M1	8-Jul-09	female	1 week	3.1		dead	unknown	
11	R1116	M1	9-Jul-09	female	5 days	2.7	05-Dec-09	alive		
12	R1054	M1	9-Jul-09	female	>1 week	3.9		dead	predation	coyote
13	R1055	M1	11-Jul-09	female	>1 week	4.1	16-Nov-09	alive		
14	R1191	FH7	12-Jul-09	male	>1 week	5.0		dead	predation	cougar
15	R1185	FH7	14-Jul-09	male	<1 week	4.4		dead	predation	bobcat

[1] Cause of mortality preliminary until verified using DNA evidence collected at kill/mortality site

[2] Predator species preliminary until verified using DNA evidence collected at kill/mortality site

3) Cougar captures

Attempts to capture cougars began in December 2009. So far we have had 2 capture sessions with hounds, and have also spent time attempting to trap cougars in the study area. Until now, we have not successfully collared a cougar.

In our first capture session with hounds in December (houndsman Cliff Wiley) we were successful in treeing 2 cougars, a male and female. Both captures began with releasing the hounds on forest road 22N21. Neither cougar was collared, as both trees were considered to be too unsafe (for the cougar) to attempt a capture in. The female was 100 feet up in a tree, the male was in a smaller tree, but hanging over a steep cliff. Attempts to capture could have led to the death of the Cougar, and the cougars were let go.

In our second session (houndsman Boone Smith) we had poor weather conditions, and never located a confirmed fresh cougar track to begin running the hounds on. We did run the dogs, but most likely this was on bobcats and possibly a black bear.

In future captures with hounds, it would be better to schedule a longer capture session of 8-10 days. This will help in working around poor weather conditions, and allow for the entire team to have a better working knowledge of the study area. With good conditions and a capture session of this length we believe we will have very good chances of treeing and collaring one or more cougars.

Our trapping efforts have been focused on three areas; the Game Refuge, the Golden Ram Property, and the area east of Mendocino Pass. The trapping method we are using is to set out deer carcasses in likely places for cougar travel and activity. We then check the carcasses on a daily basis for activity. If a carcass is in a snow-free area, a motion camera is set up to record activity. We have also recently begun using electronic predator calls in an attempt to lure in the cougars to the carcasses. When a cougar begins to feed on a carcass, we will set up 2 cage traps with what is left of the deer inside of them, and then wait within range of the radio-signal for the trap to be triggered. In addition to using radio-collars to monitor traps, we have also recently begun setting up carcasses

with radio-collars. Once the carcass is moved a distance greater than 2 feet, the radio-collar will turn active indicating cougar activity at the carcass. This method will likely reduce our time investment as well as disturbance at the carcass.

Based on our field efforts, we have located tracks and sign from cougars throughout the study area. It is not possible to give any kind of population information from the information we have found so far, but it is informing our decisions on where to attempt trapping and concentrate our time when running with hounds. Forest Road 22N21 is one of the areas we most consistently find cougar signs. We have recently gained access to use the Golden Ram property west of Mendocino Pass, and this area shows a lot of promise as well.

All evidence points to cougars relocating to lower elevations during winter, following the seasonal shift of deer to lower elevations. Cougars will still travel through the higher elevations, especially to pass from one valley to another, but it seems most of their hunting activity is in lower and snow-free areas where deer are found.

4) Obtaining deer carcasses as bait

Deer carcasses have been obtained from a variety of sources including CalTrans and CDFG offices and wardens. Further efforts are required to ensure a steady supply of carcasses is available for cougar captures. All help from CDFG personnel in this matter is greatly appreciated.

5) Bone marrow analyses

A trial has established that our lab at UC Davis is now able to determine body condition from bone marrow content of all animals that have died.

6) DNA analyses

DNA collected at kill sites has been given to Dr. Ben Sack's lab at UC Davis. Together with his collaborators, Dr. Sacks has begun identifying DNA found at kill sites to determine predator species. No date has been set when these results will become available.

7) Outlook

a) Deer:

We currently still have 16 GPS collars ready for deployment of adult deer. Additional capture sessions will be scheduled for May and June.

b) Cougars:

Cougar capture efforts will be intensified again during late March and early April. By scheduling cougar capture sessions for longer periods of time, we hope to improve our capture success. Due to the deep snowpack and the resulting dependency on snowmobiles, the capture team will be limited to 4 individuals. This will include Max Allen (UC Davis), the houndsman Cliff Wiley, and CDFG biologist David Casady. Captures will be focused on the areas with snowpack in order to find fresh tracks, as well as checking carcasses placed on the nearby Golden Ram property for fresh cougar activity. We also expect that our bait trapping lines will improve future capture success.

c) Pigs:

The status of the pig telemetry project remains uncertain. While approval has been received to hire a scientific aide who would help with the field work, availability for funds to purchase 10 GPS Argos collars for pigs remains uncertain (David Casady, pers. communication). Thus, no dates have currently been set for when pigs will be captured.

Appendix 1: Spending report including expenses occurred until March 1, 2010. Total amount allocated for 2008-09 and 2009-2010 fiscal year = 227,616.

	2008-09 4th quarter	**2009-10 1st quarter**	**2009-10 2nd quarter***	**2009-10 3rd quarter**	**Total**
Salary	5,450.00	11,196.82	12,537.33	10,556.80	39,740.95
Benefits	1,734.29	2,078.8	3,870.55	2,945.41	10,629.05
Supplies and Expenses	69,389.91	7,447.19	30,074.58	2325.73	109,237.41
Travel				1701.73	1,701.73
Indirect costs	19,396.38	5,064.48	11,359.62	4262.82	40,083.30
Total	95,970.58	25,787.29	57,842.08	21,792.49	**201,392.44**

*Note: expenses for March 2010 unavailable until April 10, 2010.