

**JOB PROGRESS REPORT  
RESEARCH PROJECT SEGMENT**

**STATE:** Territory of Guam

**PROJECT NO.:** W-1 R-8

**SUBPROJECT NO.:** W-1

**STUDY NO.:** 1

**JOB NO.:** 1

**JOB TITLE:** Determination of Current Population Size and Distribution of Guam Deer  
(1460)

**PERIOD COVERED:** October 1, 1999 to September 30, 2000

**SUMMARY**

Revised hunting regulations were implemented this fiscal year, authorizing each hunter to take three either-sex deer from October 1 - March 31, which was exclusive of any special hunts. Official logs with deer harvest statistics for Andersen Air Force Base (AAFB) were examined and revealed a total of 6,115 hunter sorties, 375 harvested deer, and a harvest rate of 1 deer per 8.6 hunter-days. Population trend data obtained with spotlight counts at Pati Point, Andersen Air Force Base (AAFB), showed a non-significant increase ( $P > 0.10$ ) in deer numbers with an average of 9.3 deer/km recorded during counts. The Munitions Storage Area (MSA) on AAFB experienced a non-significant decrease ( $P > 0.10$ ), with an average of 4.8 deer/km recorded during counts. Naval Ordnance Annex (NOA), spotlight counts revealed a significant increase ( $P < 0.001$ ) in deer numbers, with an average of 4.9 deer/km recorded during counts. Spotlight counts at the Naval Computer and Telecommunications Area Master Station indicated a non-significant increase ( $P > 0.10$ ) in deer numbers, with an average of 6.6 deer/ count recorded.

**BACKGROUND**

The Guam deer (*Cervus mariannus*), or Philippine deer, has been studied by the Division of Aquatic and Wildlife Resources (DAWR) since 1961 (DAWR 1961-1999, Wiles et al. 1999). Wheeler (1979) and Wiles et al. (1999) reported on the distribution, population trends, and reproductive biology. Deer hunting statistics have been compiled annually since 1968 (DAWR 1968-1999). Guam has a 6-month deer-hunting season, running from October 1 to March 31. There is a bag limit of three either-sex deer/season per license holder exclusive of any special harvest.

**OBJECTIVES**

- 1) To determine the current size and distribution of deer on Guam.
- 2) To reduce deer population levels in areas of special concern.

## PROCEDURES

- 1) Conduct monthly spotlight counts on AAFB and NOA, and periodic counts elsewhere on the island.
  - a) Record number, sex, age, and group composition.
  - b) Analyze count data and compare with previous data to discern population trends.
- 2) Monitor hunter participation and harvest during the hunting season.
- 3) Collect biological data from animals killed during the hunting season and from incidental sources such as road kills or confiscated animals.

## RESULTS

### Deer Hunting Statistics

Revised hunting regulations were implemented in January 2000. The new regulations authorized each hunter to take three either-sex deer from October 1- March 31. In addition, an island-wide bow hunting only special hunt was held April 10-30. Two island-wide special hunts (gun and bow hunting) were held from May 1-31 and August 1-31. Each hunter was limited to a total of five either-sex deer tags for FY00.

Records of hunting activity and harvest at Northwest Field (NWF) were kept by AAFB during the deer-hunting season (Table 1).

Table 1. Hunter effort and deer taken on AAFB during FY00, based on official hunter logs. Special hunts for gun and archery occurred in May and August and archery only in April 2000.

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
<b>AAFB</b>													
<b>NWF (gun hunting only)</b>													
No. hunter sorties	372	411	311	464	409	485	-	380	-	-	444	-	3276
No. hunter days (8 hr)	246.1	237.0	164.6	275.2	263.9	288.2	-	255.1	-	-	233.1	-	1963.2
Deer taken	8	9	7	52	56	42	-	66	-	-	48	-	288
Days effort/take	30.8	26.3	23.5	5.3	4.2	6.9	-	3.9	-	-	4.9	-	6.8
<b>Main Base</b>													
<b>Bowhunting</b>													
No. hunter sorties	260	188	257	245	332	249	228	229	-	-	268	-	2256
No. hunter days (8 hr)	88.5	68.5	93.4	117.5	158.4	109.8	101.0	93.4	-	-	100.0	-	930.5

Deer taken	0	0	1	8	5	9	4	8	-	-	5	-	40
Days effort/take	-	-	93.4	14.7	31.7	12.2	25.3	11.7	-	-	20.0	-	23.3
<b>Gun Hunting</b>													
No. hunter sorties	48	40	48	34	90	160	-	135	-	-	28	-	583
No. hunter days (8 hr)	28.0	20.8	24.1	22.9	45.7	83.7	-	89.9	-	-	13.4	-	328.5
Deer taken	0	0	3	3	7	18	-	16	-	-	0	-	47
Days effort/take	-	-	8.0	7.6	6.5	4.7	-	5.6	-	-	-	-	7.0
<b>TOTALS</b>													
Gun hunting													
No. hunter sorties	420	451	359	498	499	645	-	515	-	-	472	-	3859
No. hunter days (8 hr)	274.1	257.8	188.7	298.1	309.6	371.9	-	345.0	-	-	246.5	-	2291.7
Deer taken	8	9	10	55	63	60	-	82	-	-	48	-	335
Days effort/take	34.3	28.6	18.9	5.4	4.9	6.2	-	4.2	-	-	5.1	-	6.8

According to hunter logs from AAFB, 1,963.2 hunter-days (3,276 sorties, gun hunting only) were expended at NWF and resulted in the harvest of 288 deer. Hunting areas on the main portion of the base (MSA, Tarague basin, near the landfill, and areas north and east of the flightline) and Andersen South recorded 919.7 hunter-days (2,839 sorties, primarily bow hunting), with 87 deer harvested. NCTAMS remained closed to all hunting.

Gun hunting totals revealed 2,062.2 hunter-days (3,859 sorties) were expended, resulting in the harvest 335 deer (6.0 hunter-days/deer). Bow hunters expended 820.7 hunter-days (2,256 sorties) to harvest 40 deer (20.5 hunter-days/deer).

### Spotlight Count Trends

At Pati Point, AAFB, deer numbers non-significant increase this year (Mann Whitney *U*-Test,  $U' = 50.5$ ,  $n_1 = 10$ ,  $n_2 = 9$ ,  $P < 0.10$ ) from those of the previous year. The average number of deer seen per count increased from 52.1 (8.7 deer/km) in FY99 to 60.1 (9.3 deer/km) in FY00 (Table 2).

Table 2. Composition of unclassified (UC) buck and deer seen during spotlight counts at Pati Point, AAFB during FY00.

Class	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Mean	SD
UC Buck	2	4	3	1	6	3		2	0	3		0	24	2.4	1.7
Spike	4	6	2	3	1	3		8	3	2		5	37	3.7	2.0
2 pt	0	2	5	4	2	1		1	1	0		2	18	1.8	1.5
3 pt	8	6	7	4	3	6		10	4	8		4	60	6.0	2.1
4 pt	0	0	0	0	0	0		1	0	1		0	2	0.2	0.4
Doe	16	13	11	17	17	21		15	22	20		14	166	16.6	3.4
Yearling	4	3	3	7	5	2		4	7	3		3	41	4.1	1.6
Fawn	6	4	2	4	4	7		3	4	2		2	38	3.8	1.6
UC Deer	14	21	22	16	27	26		21	24	25		29	225	22.5	4.5
Total deer	54	58	55	56	67	69	nc	55	65	63	nc	59	601	60.1	5.2
Mi traveled	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	40.0	4.0	0.0
Km traveled	6.4	6.4	6.4	6.4	6.4	6.4		6.4	6.4	6.4		6.4	64.0	6.4	0.0
Deer/mi	13.5	14.5	13.8	14.0	16.8	17.3		13.8	16.3	15.8		14.8	150.6	15.1	1.3

Deer/km 8.4 9.1 8.6 8.6 10.5 10.8 8.6 10.1 9.8 9.2 93.4 9.3 0.9  
 nc = no count was made.

The largest single nightly count at Pati Point decreased from 87 deer in FY99 to 69 deer in FY00. Deer numbers at MSA, AAFB showed a non-significant decrease this year (Mann Whitney *U*-Test,  $U' = 29.5$ ,  $n_1 = 8$ ,  $n_2 = 7$ ,  $P < 0.10$ ) as compared to FY99 (Table 3). The average number of deer recorded per count decreased from 65.0 (5.1 deer/km) in FY99 to 54.1 (4.8 deer/km) in FY00.

On NOA, deer numbers showed a significant increase (Mann Whitney *U*-Test,  $U' = 85.5$ ,  $n_1 = 10$ ,  $n_2 = 9$ ,  $P > 0.001$ ) in FY00 (Table 4) from FY99. The average number of deer recorded per count increased from 50.6 animals (2.3 deer/km) in FY99 to 108.1 animals (4.9 deer/km) in FY00 (Table 4). The largest single nightly count increased two-fold from 76 deer in FY99 to 156 deer in FY00.

Table 3. Composition of unclassified (UC) buck and deer seen during spotlight counts in MSA, AAFB during FY00.

Class	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Mean	SD
UC Buck	3		9	8		5	3	4			5	3	40	5.0	2.2
Spike	0		1	4		6	3	8			3	2	27	3.4	2.5
2 pt	1		1	3		2	1	0			3	1	12	1.5	1.0
3 pt	1		4	6		5	3	7			5	8	39	4.9	2.1
4 pt	0		0	0		1	0	0			0	0	1	0.1	0.3
Doe	13		14	16		14	18	21			13	19	128	16.0	2.8
Yearling	7		4	5		6	3	4			2	5	36	4.5	1.5
Fawn	4		1	3		2	3	5			3	2	23	2.9	1.2
UC Deer	15		15	20		14	13	23			21	16	137	17.1	3.4
Total deer	44	nc	49	65	nc	55	37	72	nc	nc	55	56	433	54.1	10.4
Mi traveled	7.0		7.0	7.1		7.0	7.0	7.0			7.0	7.0	56.1	7.0	0.0
Km traveled	11.2		11.2	11.4		11.2	11.2	11.2			11.2	11.2	89.8	11.2	0.1
Deer/mi	6.3		7.0	9.2		7.9	5.3	10.3			7.9	8.0	61.9	7.7	1.5
Deer/km	3.9		4.4	5.7		4.9	3.3	6.4			4.5	5.0	38.1	4.8	1.0

nc = no count was made

Table 4. Composition of unclassified (UC) buck and deer seen during spotlight counts on NOA, during FY00.

Class	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Mean	SD
UC Buck	3		4	4	2	2	10	4		3			32	4.0	2.4
Spike	5		2	3	8	6	2	5		9			40	5.0	2.5
2 pt	6		3	7	5	10	7	4		3			45	5.6	2.2
3 pt	9		8	5	9	9	7	11		3			61	7.6	2.4
4 pt	0		0	2	0	0	0	0		0			2	0.3	0.7
Doe	21		17	29	35	62	55	45		53			317	39.6	15.6
Yearling	8		6	5	8	18	10	9		10			74	9.3	3.7
Fawn	5		5	7	3	9	4	5		10			48	6.0	2.3
UC Deer	21		25	31	39	40	15	29		46			246	30.8	9.8
Total deer	78	nc	70	93	109	156	110	112	nc	137	nc	nc	865	108.1	26.8
Mi traveled	14.0		13.5	14.0	14.0	14.0	14.0	14.0		14.0			111.5	13.9	0.2
Km traveled	22.4		21.6	22.4	22.4	22.4	22.4	22.4		22.4			178.4	22.3	0.3

Deer/mi	5.6	5.2	6.6	7.8	11.1	7.9	8.0	9.8	62.0	7.8	1.9
Deer/km	3.5	3.2	4.2	4.9	7.0	4.9	5.0	6.1	48.7	4.9	1.1

nc = no count was made.

Spotlight counts at NCTAMS showed a non-significant increase (Mann Whitney *U*-Test,  $U' = 33$ ,  $n_1 = 8$ ,  $n_2 = 7$ ,  $P > 0.10$ ) in FY00 (Table 5) from FY99. An average of 52.6 deer (6.6 deer/km) were seen per count in FY00, whereas FY99 counts revealed an average of 50.0 deer (6.2 deer/km) seen per count. The largest single count this year was 69 deer, as compared to 79 deer last year.

Table 5. Composition of unclassified (UC) buck and deer seen during spotlight counts on NCTAMS, during FY00.

Class	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Mean	SD
UC Buck		1		0	2	2	1			0	2		8	1.1	0.8
Spike		1		2	3	1	1			3	2		13	1.9	0.8
2 pt		0		2	1	0	1			3	0		7	1.0	1.1
3 pt		2		1	3	0	2			1	3		12	1.7	1.0
4 pt		0		0	0	0	0			0	0		0	0	0
Doe		11		15	14	7	13			9	16		85	12.1	3.0
Yearling		2		0	3	1	4			3	3		16	2.3	1.3
Fawn		1		3	1	1	4			5	3		18	2.6	1.5
UC Deer		23		15	21	43	36			31	39		208	29.7	9.6
Total deer	nc	41	nc	38	48	55	62	nc	nc	55	69	nc	368	52.6	10.3
Mi traveled		5.0		5.0	5.0	5.0	5.0			5.0	5.0		35.0	5.0	0.0
Km traveled		8.0		8.0	8.0	8.0	8.0			8.0	8.0		56.0	8.0	0.0
Deer/mi		8.2		7.6	9.6	11.0	12.4			11.0	13.8		73.6	10.5	2.1
Deer/km		5.1		4.8	6.0	6.9	7.8			6.9	8.6		46.1	6.6	1.4

nc = no count was made.

### Depredation Permits

Twenty-nine animal depredation permits were issued during FY00. Twenty-three permits authorized deer take in agricultural areas, while two permitted take in suburban areas. Of these, eleven permits were issued to farmers registered with the Guam Department of Agriculture. Four permits authorized deer take on federal lands (AAFB, Guam National Wildlife Refuge, NOA and NCTAMS). Permittees are required to submit a report of all deer taken. No deer were killed on federal lands, while 26 deer were reported taken on farmlands.

### RECOMMENDATIONS

- 1) Continue spotlight counts at present intensity at Pati Point, MSA, NOA, and NCTAMS.

- 2) Extend spotlight counts to other areas such as Route 17, Bubulao, and Nimitz Hill is recommended.
- 3) Collect biological data from carcasses whenever possible.
- 4) Guidelines to maintaining complete hunter logbooks on military lands should be developed.
- 5) Hunting on NCTAMS should be reopened.
- 6) Study movements and habitat use of Guam deer.
- 7) Study impacts of deer on native ecosystems.

## **PROGRAM COST**

The estimated cost of the project is \$15,000.

This report was prepared by: Dana T. Lujan, Wildlife Biologist II.

## **LITERATURE CITED**

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