

JOB PROGRESS REPORT RESEARCH PROJECT SEGMENT

STATE: Territory of Guam

PROJECT NO.: W-1R-5

SUB-PROJECT 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, 1996 to September 30, 1997

SUMMARY

Official logs with deer harvest statistics for Andersen Air Force Base (AAFB) were examined and revealed a total of 3,771 hunter sorties, a harvest of 115 deer, and a harvest rate of one deer per 16.3 hunter-days. On Naval Computer and Telecommunications Area Master Station (NCTAMS), there were 538 hunter sorties, a take of five deer, and a harvest rate of one deer per 46.3 hunter-days. Population trend data obtained with spotlight counts on AAFB showed no significant changes ($P > 0.05$) in deer numbers, with an average of 9.6 animals recorded per km during counts. On Naval Ordnance Annex (formerly Naval Magazine), spotlight counts revealed a significant decrease ($P < 0.001$) in deer numbers, with the average number of animals declining from 3.0 deer per km in FY96 to 1.9 deer per km in FY97. Revision of Guam's existing deer hunting regulations is an ongoing attempt to liberalize restrictions on the take of this species.

BACKGROUND

The Guam deer (*Cervus mariannus*), or Philippine deer, has been under investigation by the Division of Aquatic and Wildlife Resources (DAWR) since 1961 (DAWR 1961-1996). Preliminary information on distribution, population trends, and biology appeared in Wheeler (1979). Deer hunting statistics have been compiled annually since 1968. Guam has a split deer hunting season, running from October 1 to December 31 and from September 1-30. There is a bag limit of one antlered deer per season per license holder exclusive of any special harvest.

OBJECTIVES

To determine the current size and distribution of the deer population on Guam and to monitor population trends.

Main Base (primarily bow hunting; Munitions Storage Area was closed Oct and Nov)

No. hunter sorties	126	195	224		335	880
No. hunter days (8 hr)	47	72	86.8		140.6	346.4
Deer taken	1	1	1		4	7
Days effort/take	47	72	86.8		35.2	241

Andersen South (bow hunting only; closed Oct-Dec)

No. hunter sorties					26	26
No. hunter days (8 hr)					8.1	8.1
Deer taken					0	0
Days effort/take					-	-

NCTAMS (gun and bow hunting; closed Sep)

No. hunter sorties	205*	136	197			538*
No. hunter days (8 hr)	85.9*	59.5	86.2			231.6*
Deer taken	1*	1	3			5*
Days effort/take	85.9*	59.5	28.7			174.1*

*data missing for first 10 days of September

Spotlight Count Trends

On AAFB, deer numbers observed on spotlight counts in FY97 revealed a non-significant increase (Mann Whitney *U*-Test, $U = 17.5$, $n_1 = 10$, $n_2 = 6$, $P > 0.05$) over from those of the previous year. The average number of deer seen per count increased from 58.7 (7.6 deer/km) in FY96 to 63.2 (9.6 deer/km) in FY97 (Table 2). Despite this, the largest single nightly count on AAFB decreased from 91 deer in FY96 to 73 deer in FY97.

Table 2. Composition of deer seen during spotlight counts on AAFB, FY97.

Class	----- 1996 -----			----- 1997 -----									Total	Mean	SD	
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep				
Unclassed buck	1					0		2	0	2			1	6	1.0	0.9
Spike	4					3		3	2	2			1	15	2.5	1.0
2 pt	2					0		2	1	8			11	24	4.0	4.4
3 pt	2					1		1	4	2			2	12	2.0	1.1
4 pt	0					0		0	0	0			0	0	0	0
Doe	32					32		25	20	22			24	155	25.8	5.1
Yearling	3					2		6	7	7			9	34	5.7	2.7
Fawn	2					2		0	0	2			2	8	1.3	1.0
Unclassed deer	22					22		17	23	18			23	125	20.8	2.6
Total deer	68	nc	nc	nc	nc	62	nc	56	57	63	nc	73	379	63.2	6.5	
Miles traveled	4					4		4	5	4			4	25	4.2	0.4
Km traveled	6.4					6.4		6.4	8	6.4			6.4	40	6.7	0.7
Deer/mi	17.0					15.5		14	11.4	15.8			18.3	92	15.3	2.4
Deer/km	10.6					9.7		8.8	7.1	9.8			11.4	57.4	9.6	1.5

nc = no count was made

On Ordnance Annex, deer numbers showed a significant decrease (Mann Whitney *U*-Test, $U = 0.5$, $n_1 = 9$, $n_2 = 5$, $P < 0.001$) in FY97 (Table 3) from FY96. The average number of deer recorded per count fell from 67.1 animals (3.0 deer/km) in FY96 to 44.8 animals (1.9 deer/km) in FY97 (Table 3). The largest single nightly count decreased from 88 deer in FY96 to 52 deer in FY97.

In November, DAWR staff assisted the US Fish and Wildlife Service (USFWS) with a large mammal survey of Ordnance Annex (Walker et al. 1996). Survey methodology replicated that used by Biosystems Analysis Inc. (1989) in a previous study. Transect results showed a four-fold increase ($P = 0.0001$) in deer sign from 1989 to 1996. Deer sign was much more common in forested habitats, especially degraded ravine forests, than in savanna. These data corroborate the results of DAWR spotlight counts on Ordnance Annex and indicate that deer numbers have increased dramatically on the base over the past decade (DAWR 1987-1996; this report).

Table 3. Composition of deer seen during spotlight counts on Ordnance Annex, FY97.

Class	----- 1996 -----			----- 1997 -----									Total	Mean	SD	
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep				
Unclassed buck	1	1		3				7	1					13	2.6	2.6
Spike	0	2		3				2	1					8	1.6	1.1
2 pt	1	0		2				3	2					8	1.6	1.1
3 pt	2	0		1				2	2					7	1.4	0.9
4 pt	1	0		0				0	0					1	0.2	0.4
Doe	18	20		17				18	16					89	17.8	1.5
Yearling	3	4		7				4	2					20	4.0	1.9
Fawn	2	2		2				3	3					12	2.4	0.5
Unclassed deer	14	15		9				13	12					63	12.6	2.3
Total deer	45	44	nc	44	nc	nc	nc	52	39	nc	nc	nc		224	44.8	4.7
Miles traveled	15.3	15		14				14	14					72.3	14.5	0.6
Km traveled	24.6	24.2		22.5				22.5	22.5					116.3	23.3	1.1
Deer/mi	2.9	2.9		3.1				3.7	2.8					15.4	3.1	0.4
Deer/km	1.8	1.8		2.0				2.3	1.7					9.6	1.9	0.2

nc = no count was made

Other Activities

Work continued on the preparation of a new deer publication to update readers on recent population trends and hunter harvests, general biology, and ecological impacts, as well as needed management actions.

Steve Shea, a wildlife biologist with Tyndall Air Force Base in Florida, was contracted by the Air Force to evaluate the health of the deer herd on AAFB. Ten deer were collected on the base and necropsied during September. Blood, liver, kidney, heart and muscular tissue samples were collected. Live and field-dressed weights were taken and mandibles were extracted. The study's findings should be available in early 1998.

A revision to Guam's hunting regulations that will liberalize deer take was finalized in September and will be submitted to the Attorney General's office and the Twenty-Fourth Guam Legislature in FY98.

RECOMMENDATIONS

Continue monthly spotlight counts on AAFB and Ordnance Annex. Expansion of spotlight counts to Northwest Field and the Munitions Storage Area is recommended. Collect biological data from carcasses whenever possible. Written guidelines concerning hunter logbooks should be given to the proper personnel to ensure complete and accurate hunter participation records. A comprehensive investigation of the movements and habitat use of Guam's deer is needed. A study to examine the impacts of deer on native ecosystems remains a high priority.

PROGRAM COST

The estimated cost of the deer population and distribution project under W-1R-5 is \$32,000.

LITERATURE CITED

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Report was prepared by: Dana T. Lujan and Gary J. Wiles