

**JOB PROGRESS REPORT
RESEARCH PROJECT SEGMENT**

STATE: Territory of Guam

PROJECT NO.: W-1R-8
SUBPROJECT NO.: W-3
STUDY NO.: 1
JOB NO.: 1

JOB TITLE: Population Size and Distribution of Wild Asiatic Water Buffalo on Guam

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

SUMMARY

Counts of feral Asiatic water buffalo (AWB) at Naval Ordinance Annex (NOA) showed no significant changes ($P > 0.10$) in number of animals recorded per km during FY00. The AWB population on the base has shown a general increasing trend since the late 1970s.

BACKGROUND

Asiatic water buffalo (*Bubalis bubalis*) were introduced to Guam in the 1600s from the Philippines for use as beasts of burden (Wiles 1990). A population of about 2,000 water buffalo inhabited Guam prior to World War II and many of these animals, known locally as Carabao, were apparently set free during the Japanese occupation. This resulted in the creation of feral herds in the interior region of south central Guam.

The Division of Aquatic and Wildlife Resources (DAWR) began conducting spotlight counts of Asiatic Water Buffalo (AWB) on NOA (formerly Naval Magazine) in 1966 in conjunction with Philippine deer (*Cervus mariannus*) surveys (Wiles 1990). DAWR staff recorded an average of 0.6-0.8 animals/km on NOA between 1966 and 1978 (Anderson 1980). AWB numbers fluctuated thereafter, with a peak in 1996 when an average of 2.8 animals/km traveled was recorded (DAWR 1980-98). Abundance subsequently leveled off to an average of 2.3 animals/km traveled in 1998. Biosystems Analysis Inc. (1989) estimated the buffalo population on NOA to be 75-150 animals in 1987. In 1996, DAWR estimated 200-300 animals based on recent studies (Walker et al. 1996, Lujan and Wiles 1997). Illegal hunting has been a major cause of mortality in the population (Conry 1988), but expanded anti-poaching efforts on NOA by DAWR conservation officers and the Navy since the 1980s may be responsible for allowing the population to show steady growth. High buffalo densities have resulted in localized habitat damage on the base (Conry 1988, Biosystems Analysis Inc. 1989).

OBJECTIVES

- 1) To monitor the population trends of feral AWB on NOA.
- 2) To monitor feral AWB movements on NOA and surrounding areas of Guam.
- 3) To determine calving rates of feral female AWB treated with the porcine zona pellucida (PZP) vaccine.

PROCEDURES

- 1) Conduct monthly spotlight counts on NOA. Survey methodology is the same as for deer counts under Project No. W-1R-8, Subproject No. W-1, Study No. 1, Job No. 1 (DAWR 1999).
- 2) Monitor feral AWB movements on NOA and adjacent lands along Routes 17 and 5.
- 3) Monitor calving by feral female AWB treated with PZP vaccine.

RESULTS

Spotlight Count Trends

Eight counts were made on NOA in FY00. The number of AWB seen per km showed a non-significant increase (Mann-Whitney *U*-Test, $U = 46$, $P > 0.10$) from an average of 2.3 animals/km last year to 2.7 animals/km seen this year (Table 1). A mean of 61.1 animals were recorded per count this year. The largest number of AWB recorded on a monthly count remained the same (92 animals) for FY99 and FY00.

Table 1. Results of monthly spotlight counts of feral AWB at NOA, during FY00.

Month	No. AWB observed	Km traveled	AWB/ km	Miles traveled	AWB/ mile
Oct	45	22.5	2.0	14.0	3.2
Dec	31	24.2	1.3	15.0	2.1
Jan	51	22.5	2.3	14.0	3.6
Feb	67	22.5	3.0	14.0	4.8
Mar	81	22.5	3.6	14.0	5.8
Apr	92	22.5	4.1	14.0	6.6
May	69	22.5	3.1	14.0	4.9
Jul	53	24.2	2.2	15.0	3.5
Total	489	-	21.6	-	34.5
Ave	61.1	22.9	2.7	14.3	4.3
SD	21.8	0.4	1.1	0.5	1.4

Route 17 and 5 Sightings

Sightings of AWB along Route 17 are as follows: November 10 (0530), February 26 (0600), March 5 (1930), March 23 (2000), April 25 (0600), and July 17 (0200). Number of animals seen varied from 1-5 AWB. No AWB were reported in the Route 5/Santa Rita area. DAWR is considering a special hunt for these animals in FY01.

PZP Treated Female Monitoring

Female AWB treated with PZP (DAWR 1998-99) were not monitored for calving due to the lack of manpower. DAWR met with the US Navy and USFWS to discuss the vaccination of all female feral AWB on NOA (see Project No. W-1R-8, Subproject No. 3, Study No. 1, Job No. 3).

RECOMMENDATIONS

- 1) Continue spotlight counts on NOA and collect data concerning the movements of these animals, especially along Routes 17 and 5.
- 2) Report number of feral AWB taken under DAWR Depredation Permits

PROGRAM COST

The estimated cost of the project is \$25,000.

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LITERATURE CITED

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