JOB PROGRESS REPORT
RESEARCH PROJECT SEGMENT

STATE: Territory of Guam

PROJECT NO.: E-2-2
STUDY NO.: A
JOB NO.: 2

JOB TITLE: Area-Wide Control of Brown Tree Snakes

PERIOD COVERED: October 1, 1998 to September 30, 1999

SUMMARY

Two Mariana crow (*Corvus kubaryi*) nests were snake-proofed during the year. Perimeter and grid trapping was conducted in the Munitions Storage Area (MSA) on Andersen Air Force Base to remove snakes prior to the release of two crows at a hack site.

BACKGROUND

Since the brown tree snake (*Boiga irregularis*) invaded Guam in the 1940s, the island's avifauna has rapidly declined (Savidge 1987, Conry 1988, Jaffe 1994). Despite of this impact, the Mariana crow continues to survive in the wild in very low numbers.

For those species that remain in the wild on Guam, protection of nests with barriers may be a way of reducing further decline. Electrical barriers have been employed successfully elsewhere to protect bird nests from mammalian predation. Campbell (1999) tested various fence designs for excluding brown tree snakes from 1-ha plots in Northwest Field. In their review of the Mariana crow, the National Research Council (1997) recommended that electrical barriers be used to protect active nest trees. Furthermore, they recommended that research, development, and implementation of methods to control brown tree snakes be expanded.

Techniques required to successfully conduct a translocation project have been tried by the DAWR and proven satisfactory, including protection of nest trees from snakes and hand rearing of crow chicks. The development of an effective electrical snake barrier to protect crow nests from snake predation resulted in five birds being fledging from wild nests between 1993 and 1995 (Aguon et al. 1998). In 1996, two crows were successfully hand-reared from eggs retrieved from protected nests and artificially incubated. These juveniles were hacked into the wild in 1997. Of these birds died 219 days after its release due to unknown causes, while the status of the second bird remains unknown.

OBJECTIVES

To implement area control methods for brown tree snakes as recommended in the recovery plans for Guam's endangered birds and fruit bats.

PROCEDURES

1. Install electrical barriers to the trunks of active Mariana crow nest trees at night and before the start of the incubation period.

2. Prepare release sites by trapping for snakes prior to the introduction of crows. Begin grid-trapping in a 1-ha area around release sites at least one month before the release of crows into the wild.

3. Maintain records of the numbers of snakes caught, their sexes, weights, total lengths, and snout-to-vent lengths.

RESULTS

Electrical Barriers - Two Mariana crow nests were snake-proofed using electrical barriers on the nights of 23 December 1998 and 1 February 1999. The second nest held a single egg, which was dumped or preyed on on about 9 February.

Release Site Preparation – Snake trapping was performed to prepare a hacksite in the MSA for the release of the translocated crows. Trapping began in June 1998, when 112 traps were installed along the shoulder of the road encompassing the area (Site A, Figures 1, 2). Capture rates from perimeter trapping ranged from 0-3.5 snakes per 100 trap nights. A 100 m x 100 m trapping grid, established in November 1998, initially recorded. Capture rates on the grid fell from 6.4 snakes per 100 trap nights to a modal number of 1.0 snakes per 100 trap nights during the last few months.

Two young wild-hatched birds from Rota were hand-reared on Guam and released in the MSA in September 1999. The birds survived only 2 and 13 days. The first died of asphyxiation when a small leaf and insect part became lodged in its esophagus, thus blocking the trachea. The second bird died of hepatitis. Predation, trauma, and malnutrition were ruled out. Tissues were sent for histological examination. In both cases, the weight and condition of the birds were excellent.

RECOMMENDATIONS

1. Continue translocation of eggs, chicks, and adults.

2. Continue snake-proofing of active nest trees.

3. Continue area-wide snake control via grid-trapping and/or perimeter trapping at release sites.

PROGRAM COSTS

The estimated cost for this project under E-2-2 is $40,000.

LITERATURE CITED

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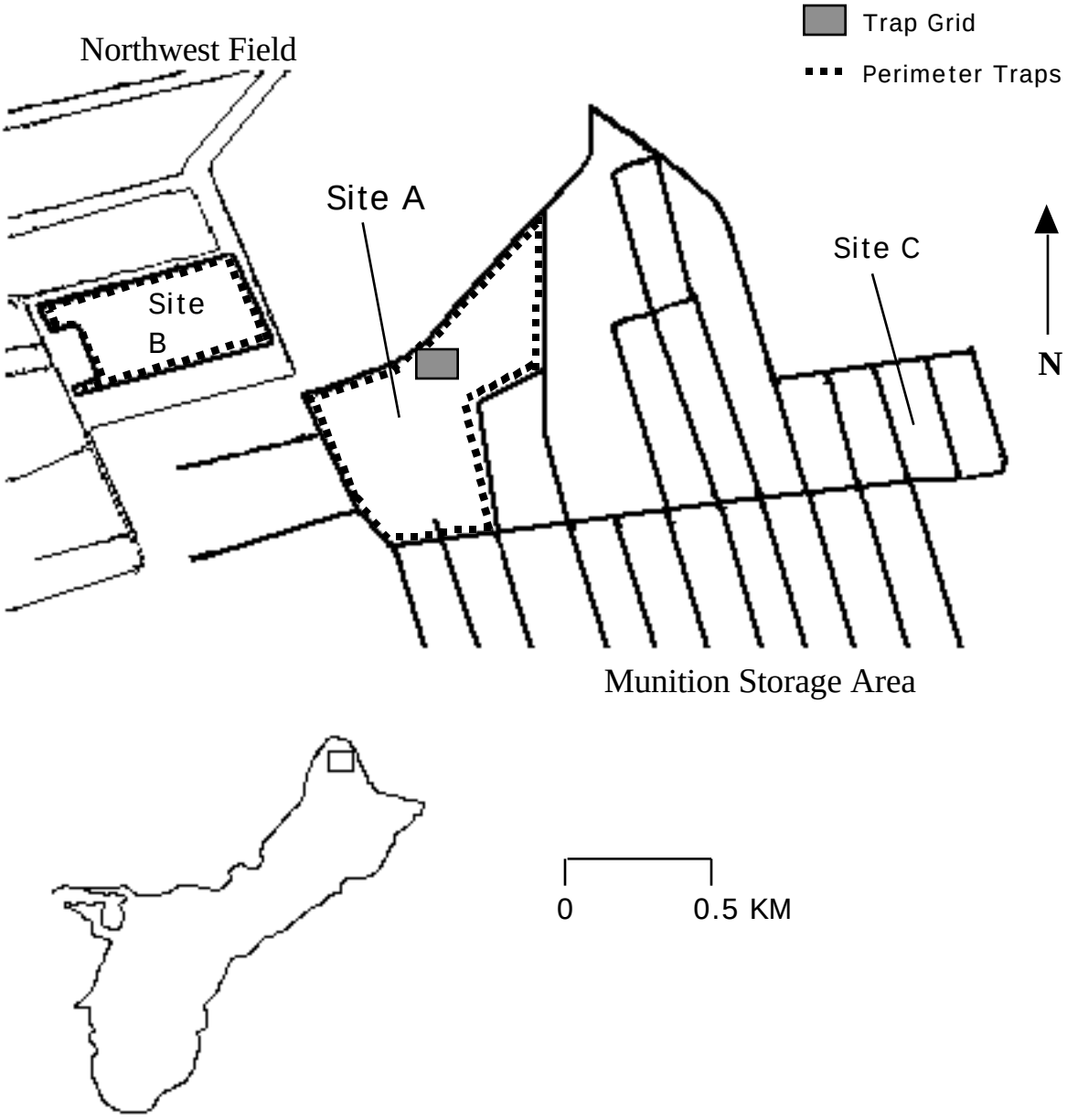

Figure 1. Locations of three sites slated for Mariana crow releases and area-wide snake control. Site A (42 ha in size) is an ideal site since up to four releases of crow can be made in this area. Snake control is ongoing in Areas A (perimeter and grid trapping) and B (24 ha in size), also known as Area 50. A static snake barrier attached to an existing cyclone chain-link fence encompasses Area B. Guam Rails, *Gallirallus owstoni*, have been reintroduced into Area B. Snake trapping is not being conducted in Area C (MSA-2). Two crows were released in Area A in August 1999.

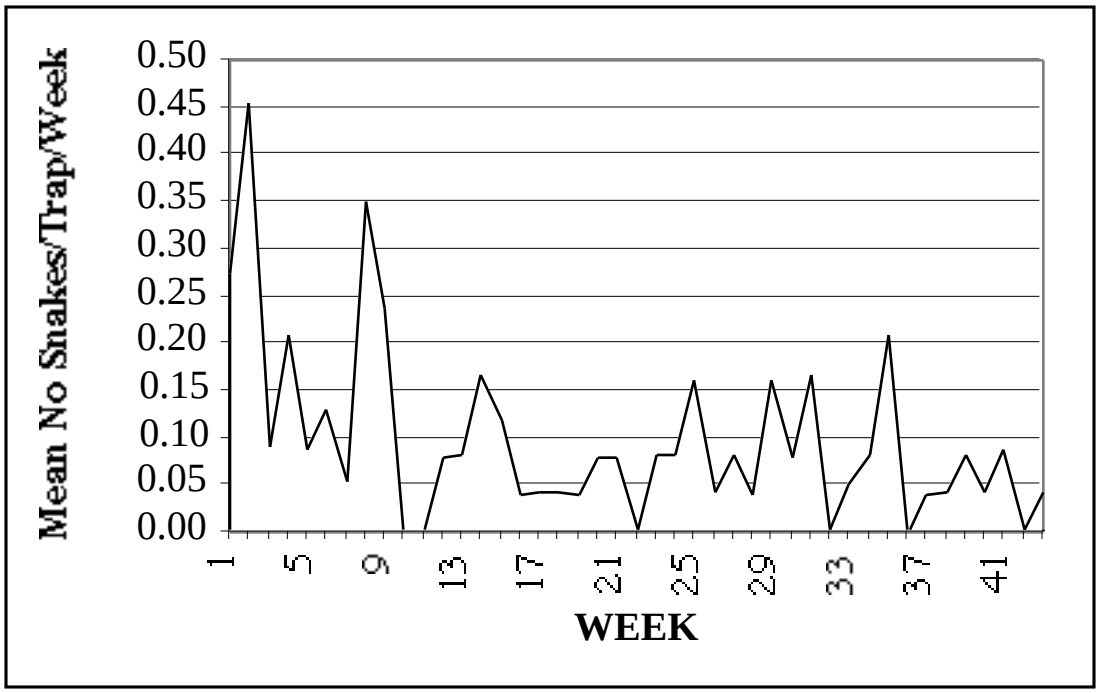

Figure 2. The average number of snakes caught per trap per trap week from November 1998 to September 1999 in grid-trapping Area A, see Figure 1. A total of 98 snakes were caught during this period.