

**JOB PROGRESS REPORT  
RESEARCH PROJECT SEGMENT**

**STATE:** Territory of Guam

**PROJECT NO.:** E-2-3

**STUDY NO.:** A

**JOB NO.:** 2

**JOB TITLE:** Area-Wide Control of Brown Treesnakes

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

**SUMMARY**

One Mariana crow (*Corvus kubaryi*) nest was snake-proofed during the year. Perimeter and grid trapping was continued in the Munitions Storage Area (MSA), Andersen Air Force Base (AAFB) to remove Brown treesnakes (BTS) prior to the release of 7 crows in the area, where 5 continue to survive. BTS predation was ruled out as the cause of death for the 2 crows.

**BACKGROUND**

Since Brown treesnakes (*Boiga irregularis*) invaded Guam in the 1940s, the island's avifauna has rapidly declined (Savidge 1987, Conry 1988, Jaffe 1994). As a result of this impact, Mariana crow numbers have declined to very low numbers in the wild.

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

Techniques required to successfully conduct a translocation project have been tried by DAWR and proven satisfactory, including protection of nest trees from BTS and hand-reared crow chicks. The development of an effective electrical snake barrier to protect crow nests from BTS predation, resulted in 5 fledged crows from wild nests between 1993 and 1995 (Aguon et al. 1998). In 1996, 2 retrieved crow eggs from protected nests were successfully hand-reared and artificially incubated. These juveniles were hacked into the wild in 1997, but one of these birds died 219 d after its release due to unknown causes, while the status of the second bird remains unknown. In addition, 6 Rota crows were released on Guam in 1997 and 2 of these birds continue to survive in the wild (DAWR 1997).

## **OBJECTIVE**

- 1) To implement area control methods for BTS as recommended in the recovery plans for Guam's endangered birds and fruit bats.

## **PROCEDURES**

- 1) Install electrical barriers before the start of the incubation period to the trunks of active Mariana crow nest trees at night.
- 2) Prepare release sites by trapping for BTS prior to the introduction of crows.
- 3) Begin grid-trapping in a 1 ha area around release sites at least one month before the release of crows into the wild.
- 4) Maintain recorded numbers of BTS caught that include: sex; weights; total lengths and snout-to-vent lengths.

## **RESULTS**

### **Electrical Barriers**

One Mariana crow nest was snake-proofed using an electrical barrier, which was placed in the previous breeding season. The crows returned to the same nest tree, but no eggs were laid and the birds eventually abandoned the nest.

### **Release Site Preparation**

BTS trapping was conducted within the Munitions Storage Area (MSA), Andersen Air Force Base (AAFB) to prepare hacksites for the release of translocated crows. Perimeter trapping began in June 1998, with 112 traps installed on the edge of the forest block A (Figures 1, 2).

In July 2000, the distance between traps was changed to a uniform 30 m apart, which reduced the number of perimeter traps from 112 to 99. The capture rate in the perimeter traps ranged from 20.54, during the first week of trapping, to 0.25 BTS per 100 trap nights, after 110 weeks of trapping in June 2000. As of September 30, 2000, perimeter traps had removed 1,017 BTS. In addition to perimeter trapping, two 25-trap interior grids, covering a 100 m<sup>2</sup> area each, actively removed BTS. The first grid (Site A, Figures 1, 2) was established in November 1998 and removed 92 BTS and capture rates varied from 0 to 5.7 BTS per 100 trap nights in FY99. Thirty-three BTS were removed and the capture rates ranged from 0 to 1.7 BTS per 100 trap nights in FY00.

The second 25-trap interior grid was initiated in April 2000 in a forested block (Block DD, Figure 1). As of September 30, 2000, 33 BTS were removed and capture rates varied from 19.4 during the first week of trapping to 0.0 BTS per 100 trap nights. U S Department of

Agriculture's (USDA) Wildlife Services began trapping the perimeter of the forested block in May 2000 as part of a Legacy-funded wide-area BTS control project.

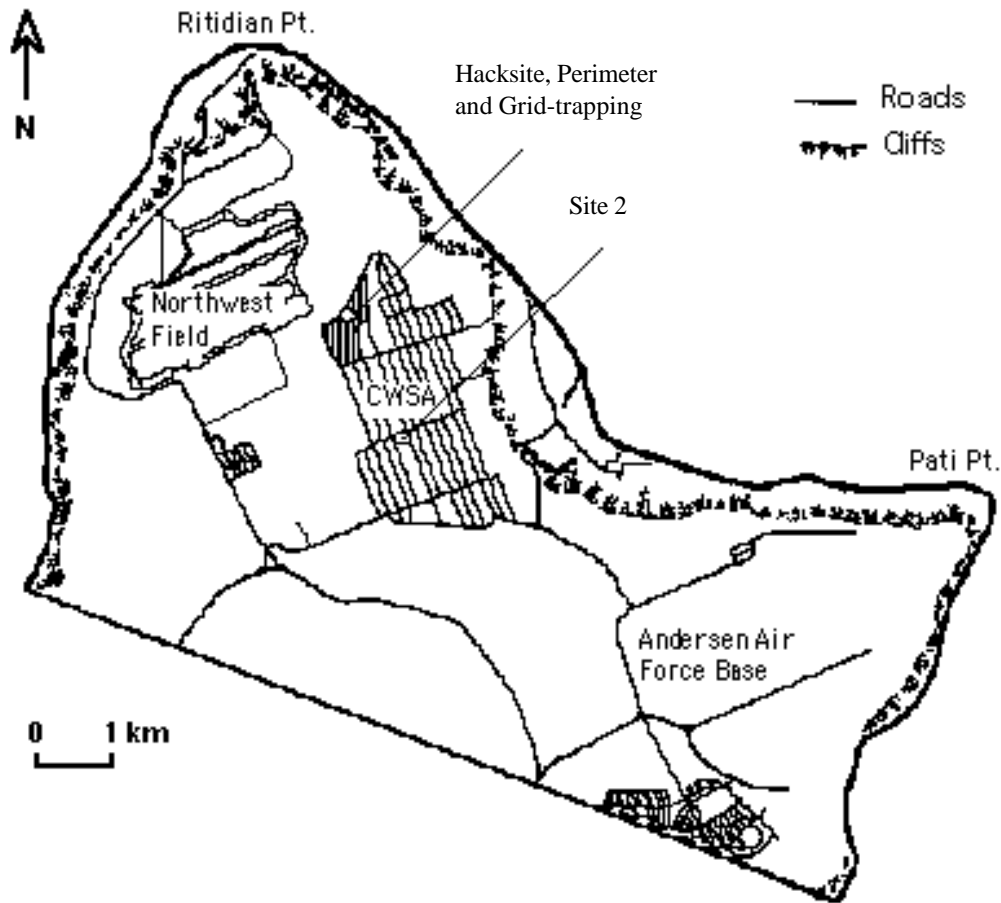


Figure 1. The locations of the hacksite where seven Mariana crows were released this fiscal year, and the areas that were grid and perimeter trapped. Preparation of a second release site (Site 2) began with a 25-trap interior grid covering a 100 m<sup>2</sup> area.

Seven Rota crows were released in the first hack site including 5 Rota juveniles translocated in November–December, and 2 wild-caught Rota crows, an adult and juvenile male (Site A, Figure 1). To date, 4 of the hand-reared juveniles and the adult male continue to survive in the wild. Of the birds that died, a female died 9 d after its release and the wild juvenile male died 20 d after its release. The female was discovered 2 days after it died in tact but badly decomposed. The male juvenile was found in tact the day after it died. No definitive cause of death was found although predation by BTS or some other animal was ruled out for both birds. Laboratory analyses of the second bird it still pending.

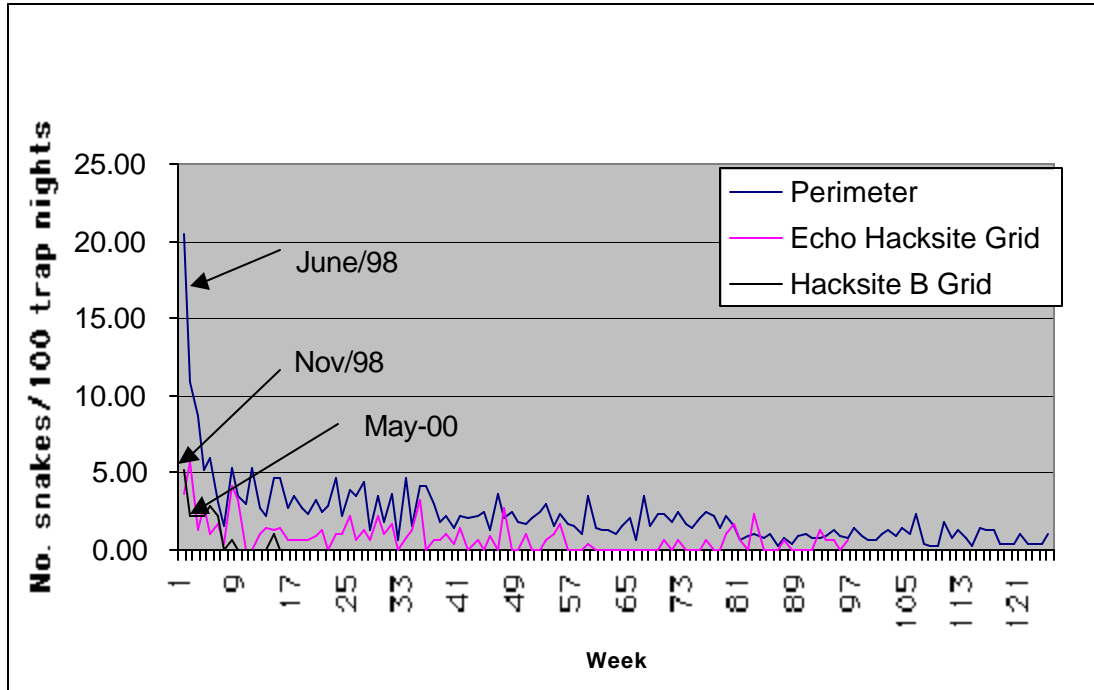


Figure 2. The average number of BTS caught per trap per trap week from June 1998 to September 2000 from perimeter and grid-trapping (see Figure 1). Hacksite B was established as a second release site.

## 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 is \$55,000.

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## LITERATURE CITED

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