

**JOB PROGRESS REPORT  
RESEARCH PROJECT SEGMENT**

**STATE:** Territory of Guam

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

**SUB-PROJECT NO.:** A

**JOB NO.:** 1

**JOB TITLE:** Reproductive Biology of the Mariana Crow and Other Endangered Species  
(1470)

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

**SUMMARY**

Except for a previously protected nesting tree there were no new nests. Area-wide Brown treesnake (BTS) control continued through the season in preparation for the release of hand-reared crows transported from Rota.

**BACKGROUND**

Roadside counts by the Guam Division of Aquatic and Wildlife Resources (DAWR) have documented the decline of the native forest birds of Guam (DAWR 1974-1988). Studies by Conry (1988) and Savidge (1987) have indicated that predation by BTS is the main cause of this decline.

Since these studies, attempts to develop effective means of protecting active nests of Mariana crows have been made. Clearing of vegetation in direct contact with the nest tree, snake trapping, use of galvanized sheet metal girdles, and use of the adhesive resin Tanglefoot® have all been used as BTS barriers around nest trees. The use of sheet metal girdles and Tanglefoot was partially successful but resulted in the mortality of nest trees and was discontinued. One fledgling was produced from a nest in 1989 as a result of protection by the use of Tanglefoot.

Since 1990, active nests have been protected successfully with the use of a combination of electrical barriers placed on the trunks of active nesting trees and clearing of vegetation around them (Aguon et al. 1992). Successful protection of active nests resulted in the fledging of 3 crows from 2 nests in 1992 (DAWR 1992) and 2 from 2 nests in 1994 (DAWR 1994). These were the first fledglings in the wild since 1985 (Michael 1987), with the exception of the one produced as a result of Tangle-Foot protection in 1989.

**OBJECTIVES**

- 1) Develop methods for controlling BTS predation on active nests of native birds.
- 2) Apply these methods to protect active crow nests.

## PROCEDURES

- 1) Develop methods for snake-proofing active native forest bird nest sites (Figure 1).
- 2) Implement snake-proofing methods at Mariana crow nest sites.
- 3) Monitor crow movements and for each observation record the date, time, weather conditions (percent cloud cover, wind speed, and presence or absence of rain), habitat type, activity of the bird, species of tree used, location in tree, and height above ground.
- 4) Recovered remains of any released birds that died were necropsied to determine possible cause of death. When possible, specimens will be kept for museum purposes as partial skeletons or skins.

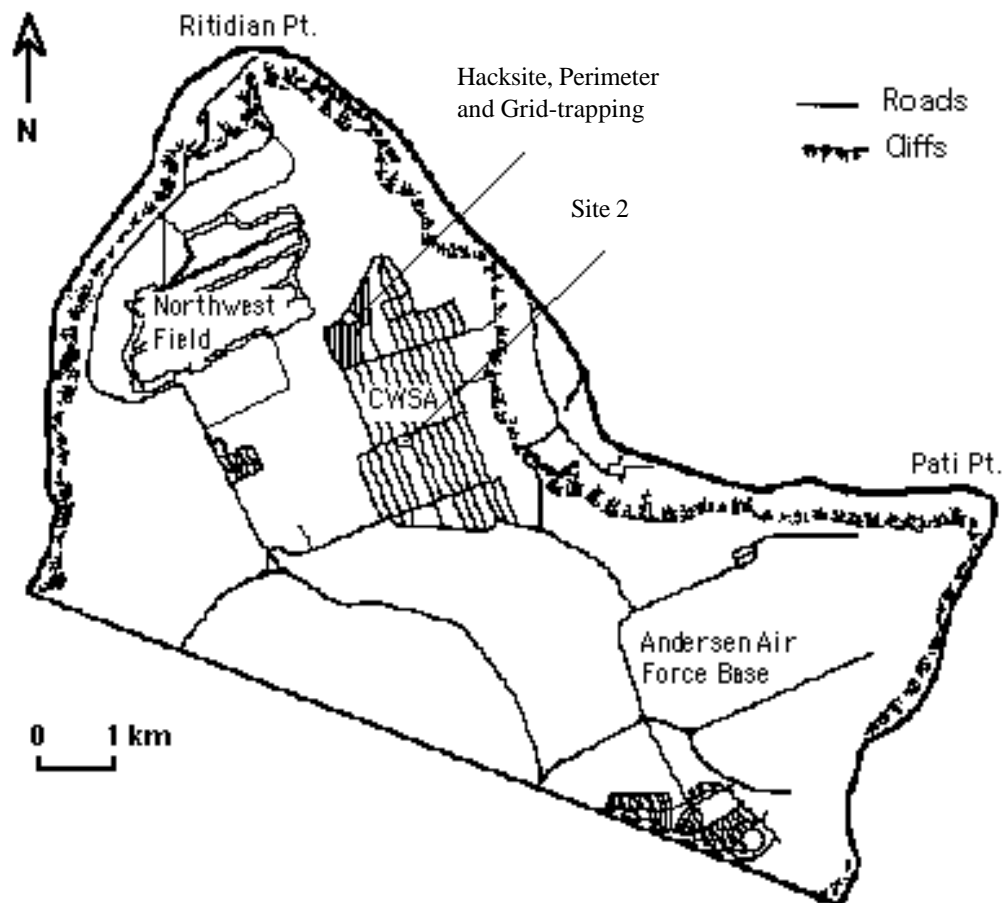


Figure 1. The darkened area in CWSA denotes the area perimeter trapped and the circled area marks the area where grid trapping was conducted and 7 crows were released, of which, 5 continue to survive.

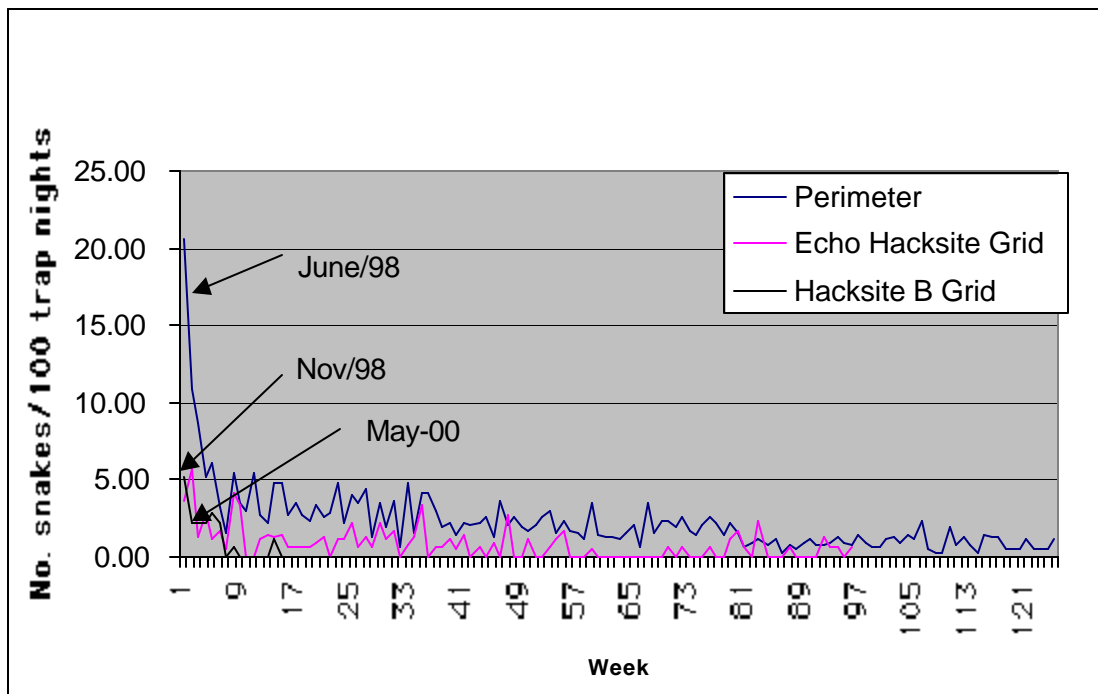


Figure 2. The average number of snakes caught per trap per trap week from June 1998 to September 2000 from perimeter and grid-trapping, (see Figure 1). Hacksite B was established as a second release site.

After an active nest was discovered, an electrical barrier was installed on the trunk of the nest tree at night prior to completion of the nest. Installation occurred at night to avoid undue disturbances to the nesting crows. In addition, installation before completion of the nest allowed for the trapping and removal of BTS prior to egg-laying. Trapping for BTS usually involved the use of 10 traps around and 1 in the nest tree. Care and feeding of the baited traps with mice and maintenance of the barrier occurred on a regular basis under the cover of darkness before dawn.

One potentially active pair of crows was found this season. A crow pair was observed going into a nest within the Munitions Storage Area (MSA), AAFB that had been previously installed with an electrical barrier from the previous season. The pair did not lay any eggs and eventually abandoned the nest.

### Preparation of Hack-sites/Predator Control

BTS trapping was conducted within the MSA, AAFB to prepare hacksites for the translocation of crows. Perimeter trapping began in June 1998, with 112 traps installed on the edge of the forest block A (Figure 1). 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 (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 (Figure 2). 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, Figure 1) was established in November 1998, removing 92 BTS and capture rates varied from 0 to 5.7 BTS per 100 trap nights in FY99. Thirty-three BTS were removed with capture rates from 0 to 1.7 BTS per 100 trap nights (Figure 2) 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 (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.

### **Survival of Released Crows**

Two of the 6 Rota crows brought from mainland zoos and released on Guam in 1997 are known to remain on Guam. Both crows are females and have survived in the wild for 1,278 d and 1,221 d, as of September 30, 2000. The other 4 released crows from Rota had 2 crows known dead and the status of other 2 unknown, but presumed dead.

Five hand-reared crow transported from Rota and 2 other wild crows brought to Guam by the USFWS, were released in the MSA, AAFB in September 11 and 13, 2000. Two of the 7 birds died on September 20 and October 2. Causes of their death is not known, though BTS predation was rule out.

### **RECOMMENDATIONS**

- 1) Implement proven methods for protecting nesting Mariana crows.
- 2) Conduct *in situ* tests of methods which prove effective in laboratory experiments on actual active nest trees.
- 3) Conduct laboratory tests of the efficacy of electrical barriers on horizontal trunks.
- 4) Explore the feasibility of area-wide snake control and exclusion of snake from larger areas encompassing nesting territories of crows with the use of barriers.
- 5) Explore and implement other methods or techniques to improve reproductive success of nesting birds to be used in conjunction with nest protection, i.e., translocation of crows from Rota.
- 6) Implement recommendations by the NRC for the recovery of the Mariana crow on Guam and Rota.

### **PROGRAM COSTS**

The estimated cost for this project is \$75,000.

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#### **LITERATURE CITED**

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