JOB PROGRESS REPORT
RESEARCH PROJECT SEGMENT

STATE: Territory of Guam

PROJECT NO.: E-2-2
SUB-PROJECT NO.: A
JOB NO.: 3

JOB TITLE: Translocation of Mariana Crows

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

SUMMARY

Activities associated with translocation of Mariana crows (*Corvus kubaryi*) from Rota to Guam began with the issuance of endangered species permits from the U.S. Fish and Wildlife Service's (USFWS) and Commonwealth of the Northern Marianas Islands (CNMI). Two approximately 14-day old nestlings were collected on Rota and brought to Guam for handrearing. Additionally, Division of Aquatic and Wildlife Resources (DAWR) staff made two trips to Rota to capture crows, but did not have success.

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.

The federal recovery plan for native forest birds on Guam and Rota makes an interim recovery objective for the Mariana crow as the maintenance "... of at least 700 crows on Rota and to restore the Guam population to at least 700...." (Beck and Savidge 1990). A recent study of the status of the Mariana crow stressed the importance of having multiple populations and recommended that an additional crow population be established on another island (National Research Council 1997). Translocation of Mariana crows from Rota to Guam, as outlined in the recovery plan, is currently the best avenue to achieve the above objectives. Recently, the Mariana Crow Recovery Team, a committee organized to oversee the preservation and recovery of the species, endorsed the translocation of a limited number of crows from Rota to Guam.

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 handrearing 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.

In 1993, six crows were captured on Rota and sent to the National Zoo's Conservation and Research Center in Front Royal, Virginia and the Houston Zoo. They were then transferred to back Guam and released into the wild in 1997. Two of the birds currently remain alive and are interacting with wild Guam crows, while the status of two others is unknown. A

female and a male died 13 and 34 days, respectively, after their release. Causes of death are unknown, but necropsies found no evidence of snake predation. The decline of the population of crows on Guam will continue unabated without supplementation of birds from Rota.

OBJECTIVES

To support reproduction of Mariana crows on Guam by translocating adults, eggs, and chicks from Rota.

PROCEDURES

1. Collect eggs and/or chicks from nests of Mariana crows on Rota and transport them to Guam.

2. Hand-rear nestlings and hold them in captivity until their release in appropriate areas.

3. Prepare release sites by trapping for snakes prior to the introduction of crows.

4. Capture adult Mariana crows on Rota and release them as soon as possible in appropriate forested areas on Guam.

5. Monitor crow movements after their release and record their locations, as well as the date, time, weather conditions (percent cloud cover, wind speed, and presence or absence of rain), habitat type, activity of the bird, the species of tree being used and location in tree, and height above ground.

6. Necropsy the carcasses of any birds that die to determine their possible cause of death. If possible, keep specimens for museum purposes as partial or complete skeletons or skins.

RESULTS

Permits - The DAWR was received the USFWS's Endangered Species Subpermit GDAWR-2 for its Mariana crow work in the 1998-1999 breeding season. The permit allowed the take of up to 6 adult crows and 18 eggs/chicks. The CNMI issued a scientific collecting permit (No. 01506) to DAWR, which expires on December 21, 1999. Restrictions in this permit reflected conditions set in the USFWS permit. The Mayor of Rota issued his concurrence to the taking of crow eggs, chicks, and adults. In his letter, the date to take adult birds was extended to May 15, 1999. Subsequently, the USFWS and CNMI (Permit No. 01508) also extended their deadlines to capture birds.

Translocation of Adult Crows - A total of 221.7 hours was spent netting for crows during two trips to Rota from January 11-18 and February 13-24. Mist netting was conducted at six sites, including the Songsong, Pona Point, Tatgua, Coconut Village, and Swimming Hole areas. Nets were opened from about dawn to about 4 hours after sunrise, and from about 3:00 p.m. until dark.

In spite of the mist-netting efforts, no crows were caught. The lack of netting success probably stemmed from several factors. The areas netted did not have forest cover that enhanced the "invisibility" of nets. Because crows move cautiously through the forest, they are less likely to run into the nets. Increased visibility of nets as the day progressed probably contributed to the lack of success. Even when nets were used with crow models and playback, crows were not stimulated enough to fly into the nets. All the birds selected for netting were non-breeding. At least one pair had a juvenile.

Future attempts to catch crows should include prebaiting and using other forms of trapping or a combination of trapping techniques. Trapping birds at old nests may increase netting success. Mariana crows are known to visit old nests possibly to forage for insects hidden among the stick structures. Use of live caged crows might excite wild crows enough to cause them to fly into the mist nets. No matter what technique is used, focal trapping (i.e., trapping a particular bird or pair of birds) will probably be much more difficult than trapping birds randomly.

Translocation and Hand-Rearing of Crow Chicks - Because approval of the permits came late in the breeding season, only a few opportunities were available to move chicks from Rota to Guam. In a few instances, nests were preyed on before the eggs or chicks could be collected.

Two chicks were taken from two nests on Rota and transported to Guam on January 7 and April 29, 1999. At the time they were collected, the chicks, known as "Una" and "Segundo", were about 21 and 17 days old, respectively. They were transported in a portable brooder and hand-carried on a commercial flight. The chicks were pulled from their nests less than an hour before their flights to Guam. Thus, transport time was minimized and no complications occurred during transport.

Release Site Preparation – Snake trapping was performed to prepare a hacksite in the Munitions Storage Area (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.

Survival of Released Crows

Only two of the six Rota crows released on Guam in 1997 were known to survive during the 1998-1999 season. Both are females with Guam mates and have now been in the wild for 912 and 925 days.

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 the translocation of eggs, chicks, and adults from Rota to Guam.

2. Hand-rear chicks with live models or in company of other chicks.

3. Cross-foster chicks into active nests on Guam, using non-egg producing pairs as surrogates.

4. Continue snake-proofing active nest trees.

5. Continue monitoring Rota crows released on Guam.

6. Explore techniques for capturing crows.

7. Renew DAWR permits from the USFWS and CNMI to continue translocation activities.

PROGRAM COSTS

The estimated cost for this project under E-2-2 is $25,000.

LITERATURE CITED

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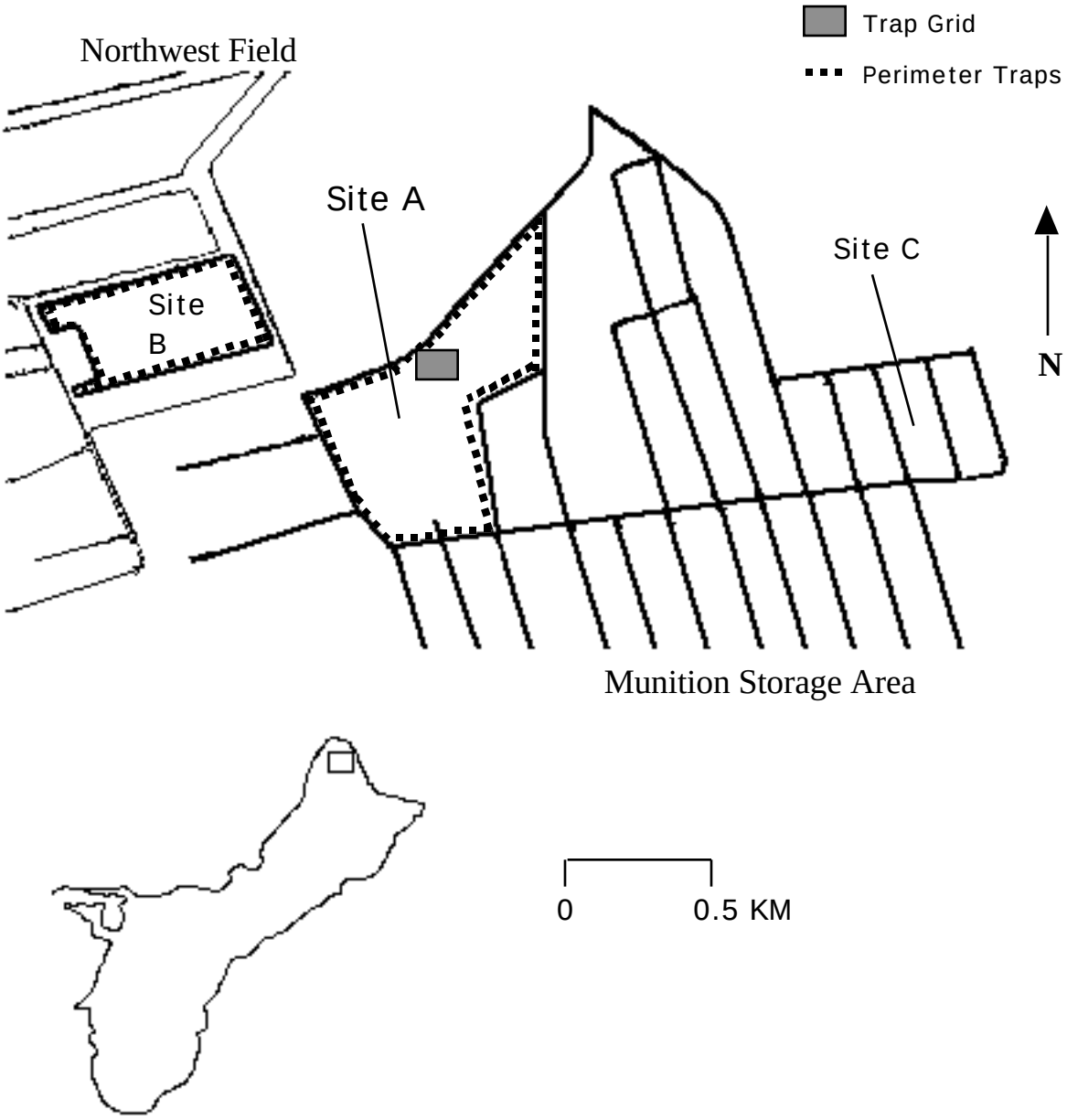

Figure 1. Locations of three sites slated for Mariana crow releases and area-wide snake control. Site A (42 ha in size) is an ideal site since up to four releases of crow can be made in this area. Snake control is ongoing in Areas A (perimeter and grid trapping) and B (24 ha in size), also known as Area 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.

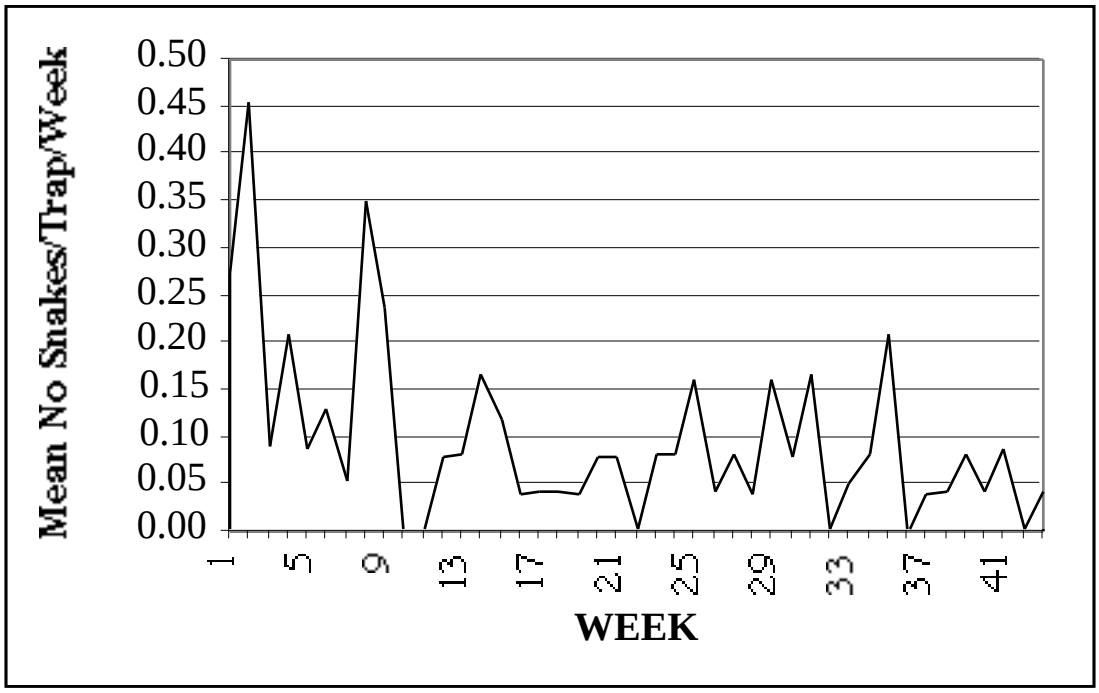

Figure 2. The average number of snakes caught per trap per trap week from November 1998 to September 1999. At total of 98 snakes were caught during this period.