

JOB PROGRESS REPORT RESEARCH PROJECT SEGMENT

STATE: Territory of Guam

PROJECT NO.: W-1R-7
SUBPROJECT NO.: W-4
STUDY NO.: 1
JOB NO.: 1

JOB TITLE: Survey and Inventory of Non-Game Birds in the Mariana Islands

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

SUMMARY

Eleven species of resident birds were detected on spring bird counts made throughout the island. Censuses of Guam swiftlets (*Aerodramus bartschi*) at Mahlac Cave indicated that the population has increased to about 500-550 birds this year. Trapping for brown tree snakes (*Boiga irregularis*) was conducted at the cave from March to September, with 44 animals caught, including three containing swiftlet feathers in their alimentary tracts.

BACKGROUND

Predation by brown tree snakes is the major factor in the decline of most of Guam's native bird species during the last few decades (Savidge 1987, Conry 1988, Engbring and Fritts 1988). Census data from a variety of sources have documented the extirpations of eight species, while four others have undergone severe population decreases, both in terms of overall numbers and geographic range (Division of Aquatic and Wildlife Resources [DAWR] 1963-1998, Engbring and Ramsey 1984, Wiles et al. 1995).

Common moorhens (*Gallinula chloropus guami*) continue to be scattered throughout the southern and central parts of Guam, with recent population estimates placed at 100-125 birds (Stinson et al. 1991, Ritter 1997). Guam swiftlets occur primarily in one large colony on Naval Ordnance Annex (formerly Naval Magazine). Three much smaller colonies are also known and occur on the Ordnance Annex, in the Lumuna district of Yigo, and in the vicinity of the Mt. Sasalaguan in Merizo (DAWR 1987-1998, Wiles et al. 1995). Two small populations of Micronesian starlings also persist on the island, with most birds remaining on AAFB and Yigo, while smaller numbers occur on Cocos Island (DAWR 1991-1998, Wiles et al. 1995). Recovery plans have been written for each of these species except the starling (Beck and Savidge 1990, U.S. Fish and Wildlife Service 1991a, 1991b). In addition, the island continues to retain small to moderate numbers of several other resident bird species, as well as migratory shorebirds, seabirds, and waterfowl (Stinson et al. 1997a, b).

OBJECTIVES

To continue status surveys and natural history studies as called for in the recovery plans for Guam's endangered native birds (Beck and Savidge 1990, U.S. Fish and Wildlife Service 1991a, 1991b).

PROCEDURES

1. Spring bird counts were conducted on 23 routes throughout Guam during June. Locations of survey route are presented in DAWR (1987). These surveys consisted

of 5-minute station counts at up to 10 stations per route with the numbers of birds seen or heard recorded per species at each station.

2. Monthly visits to Mahlac Cave on Ordnance Annex were made to monitor the Guam swiftlet colony. When counts were conducted, observers sat at both entrances of the cave for a period of 1-2 hours before dark and recorded the numbers of birds flying in and out. The total number of birds inhabiting the cave was determined by subtracting the number of departures from the number of arrivals and by adding the number of birds estimated to be in the cave at the start of the count. During all visits, observers entered the cave for about 1 hr (prior to any counts) to record numbers of nestlings. In order to avoid disturbing nesting birds, nests were viewed from a slightly elevated position off to the side of the cave rather than by using a mirror to look inside the nests. The cave floor was searched and cleaned each month of eggshell fragments and whole eggs that had fallen in the guano from nests overhead.

RESULTS

Roadside and Spring Bird Counts

Roadside bird counts were discontinued this year. Results from this year's spring bird counts are presented in Table 1, with 11 species recorded. Data for three species are omitted from Table 1 because of space considerations. Results for these birds were as follows: Brown Noddies, 2.6 birds per station on the Cocos Island route; Black Noddies, 1.7 birds per station on the Cocos Island route; and Mariana Crows, 0.1 birds per station on the MSA route.

Table 1. Mean numbers of birds recorded per station along surveys routes in northern and southern Guam. Abbreviations are YEBI - yellow bittern, BLFR - black francolin, BBQU - blue-breasted quail, FATE - fairy tern; PTDO - Philippine turtle-dove, BLDR - black drongo, MIST - Micronesian starling, ETSP - Eurasian tree sparrow. Black francolin and Philippine turtle-doves are also discussed in their respective reports. Data for three species are omitted from Table 1 because of space considerations. Results for these birds were as follows: Brown Noddies, 2.6 birds per station on the Cocos Island route; Black Noddies, 1.7 birds per station on the Cocos Island route; and Mariana Crows, 0.1 birds per station on the MSA (formerly CWA) route.

Survey Location	No. Stations	YEBI	BLFR	BBQU	FATE	PTDO	BLDR	MIST	ETSP
Northern Surveys									
Tarague	10	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0
MSA	10	0.0	1.0	0.0	0.0	1.0	0.1	0.0	0.0
NWF	10	0.0	1.4	0.0	0.0	0.2	0.0	0.0	0.4
NCTAMS	10	0.0	1.9	0.0	0.0	0.4	0.0	0.0	0.6
Capitol Improvemt Rd	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Mt. Santa Rosa	10	0.0	0.2	0.0	0.0	0.9	1.1	0.6	4.9
Y-Sengsong Road	10	0.2	0.0	0.0	0.0	0.0	0.0	0.0	2.9
Two Lover's Point	10	0.5	2.7	0.0	0.0	0.0	0.0	0.0	3.4
Andersen South	10	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.7
Navy Golf Course, Barrigada	10	0.1	3.8	0.0	0.0	0.4	0.0	0.0	1.6
Barrigada Hill	10	0.8	3.0	0.0	0.0	0.3	0.2	0.0	2.2
Toto Pipeline	7	0.9	0.0	0.0	0.0	0.9	0.0	0.0	4.3

Southern Surveys

Nimitz Hill	10	0.3	4.5	0.5	0.0	0.0	0.0	0.0	0.8
Reserv Craft Beach Rd	4	0.5	0.0	0.0	0.0	1.8	0.0	0.0	2.0
Orote Point	6	0.3	2.7	0.0	0.0	0.2	1.0	0.0	1.0
Pulantat	10	0.0	2.9	0.2	0.0	0.3	0.0	0.0	2.5
Cross Island Road	10	0.1	3.0	0.0	0.0	1.0	0.0	0.0	3.9
Ordnance Annex	10	0.0	5.3	0.0	0.0	0.5	0.0	0.0	0.2
Umatac	10	0.2	3.6	0.0	0.0	0.0	0.0	0.0	0.7
Dandan	8	0.1	3.8	0.4	0.0	0.1	0.0	0.0	4.0
Ija	8	0.0	4.5	0.3	0.0	0.4	0.0	0.0	1.2
Merizo	4	0.3	5.5	0.5	0.0	0.0	0.0	0.0	1.8
Cocos Island	10	0.0	0.0	0.0	8.4	1.5	0.0	2.8	2.8

Common Moorhens

Moorhen records of special interest during FY99 are listed here: 1) A dead adult moorhen was found in the early morning at a private residence on Sgt. R. Mendiola Street in Lalo, Barrigada. The bird had perhaps flown into the side of a building. The person who found the bird showed DAWR staff a nearby pond on Limtiaco Street that has held water for many years and been occasionally used by moorhens. This site was not previously known to the DAWR. 2) Up to eight moorhens, including several immatures, were observed at the large open pond on the north side of the Guam International Airport terminal throughout the year. 3) Vegetation appropriate for moorhens regrew at the Barrigada ponding basin and a single bird was observed there on occasion. However, reestablishment of breeding has not yet been documented at this location.

Native Doves

No confirmed reports of White-throated Ground-Doves (*Gallicolumba xanthonura*) or Mariana Fruit-Doves (*Ptilinopus roseicapilla*) were obtained during the year.

Guam Swiftlets

Mahlac Cave – Only two censuses of swiftlets at this colony were attempted in FY99. The first, on 7 January, was considered fairly accurate, with a tally of 538 birds (Table 2). The results of a second count on 28 January were questionable because of disturbance problems during the census. Based on the results of the first count only, it appears that the colony has increased by 16-38% to roughly 500-550 birds during the past year. Censuses made from January to March 1998 indicated a colony size of approximately 400-430 birds (DAWR 1998). Reproductive activity in the colony continued to be monitored this year. Nesting seasonality generally agreed with observations from past years (DAWR 1987-1998). Egg and chick production was greatest from February to early November (Table 2).

Snake trapping was resumed at the cave this year because of the continued presence of large numbers of snake tracks in guano on the floor. Trapping with mouse-baited funnel traps began on 12 March and continued through 30 September. During the first 12 weeks of trapping, six traps were placed inside the cave and six traps were set along the crevice outside of the cave's south entrance. On 28 May, all interior traps were moved outside and placed on the roof of the cave. A total of 44 snakes (7 inside, 37 outside) was caught during 2,472 trap nights (468 trap nights inside, 2,004 trap nights outside). More than half of all snakes (n = 26; 7 inside, 19 outside) were captured in the first 50 days (300 trap nights inside, 300 trap nights outside) of trapping. All snakes taken inside the cave were

captured from 12 March-30 April. Overall capture rates were considerably lower than in 1996 (DAWR 1996).

Table 2. Results of censuses for island swiftlets at Mahlac and Fachi Caves on Ordnance Annex during FY99. Evidence of reproductive activities of swiftlets is also presented.

Date	Net No. of Birds Entering Cave	No. of Birds Estimated in Cave at Start of Count	Total No. of Birds Counted	Reproductive Parameters					
				No. of Whole Eggs Found on Cave Floor	No. of Eggshell Fragments on Cave Floor	No. of Nestlings Heard	No. of Nestlings Seen ----- small med large		
<u>Mahlac Cave</u>									
3 October 1998	-	-	-	0	8	3-4	8	3	3
29 October	-	-	-	0	4	4-6	3	2	12
30 November	-	-	-	0	1	1	0	2	4
30 December	-	-	-	5	6	2	2	1	0
7 January 1999	538	-	538	-	-	-	-	-	-
28 January	427-527	-	427-527	3	13	4-6	4	3	3
24 February	-	-	-	1	16	3+	8	11	6
2 April	-	-	-	7	12	4-5	5	5	13
7 May	-	-	-	14	39	2-3	7	6	6
28 May	-	-	-	19	30	3-4	4	6	10
1 July	-	-	-	3	19	3-4	3	7	7
29 July	-	-	-	4	10	1	8	5	14
30 August	-	-	-	2	15	3-5	4	7	16
5 October	-	-	-	2	10	4-6	4	13	11
<u>Fachi Cave</u> no counts made this year									

Key: - = no data gathered.

Trapping was terminated inside the cave in May because of the apparent resulting disturbance to nesting swiftlets, as evidenced by the unusually large numbers of eggs found on the cave floor during the interior trapping period (Table 2). Removal of traps from the cave was followed immediately by a return to “normal” rates of eggs collected on the floor. The source of disturbance to nesting birds from the traps were never determined. Daytime observations did not indicate any unusual responses of the swiftlets to the traps or unusual noises emitted by the mice. Thus, some type of nighttime disturbance seems a more likely explanation. This type of disruption to nesting birds was not observed in 1996. It also suggests that researchers should use extreme caution when conducting any trapping inside the cave in the future, or should refrain entirely from this activity.

Most (95.5%) captured snakes had snout-vent lengths of 84-110 cm, with the largest individual measuring 123.0 cm. Most (70.5%) were females. Three animals (1 caught inside, 2 outside) held swiftlet feathers in their alimentary tracts, but none contained swiftlet eggshell fragments. Two of the snakes with feather remains were caught during the first two weeks of trapping, while the third animal was captured on 18 June.

Fachi Cave – No counts of the colony in Fachi Cave were made in FY99. The cave’s east entrance was visited several times during the year, but no indication of flooding was ever observed.

Firebreak 3 Cave – During FY99, night roosting and nesting by swiftlets were recorded in this cave for the first time since at least 1981. An evening observation period failed to detect any birds on 16 November. However, two birds were flushed from the cave during an incidental visit at midday on 15 March. Followup counts at dusk on 19 and 22 March

revealed the presence of 2-3 birds roosting inside. Three birds were still present on 11 May, when a nest with a medium-sized chick was also discovered. The nest was attached to the ceiling inside the second main solution dome nearest the main entrance. On 17 August, three volant individuals were still roosting in the cave overnight and a second chick (large in size) was noted in the nest. Observations were not conducted to determine whether either chick successfully fledged.

Prior to the cave's recolonization by swiftlets, staff from the DAWR, U.S. Fish and Wildlife Service, U.S. Department of Agriculture – Wildlife Services, and Navy had been planning a snake trapping and ceiling modification experiment inside this cave. This study is still planned for implementation in early FY '00. Thirty traps will be placed in the cave, with half set on lower walls within 2 m of the floor and the remaining half attached to the ceiling. An initial phase of trapping will be conducted, followed by efforts to smooth sections of the cave's ceiling to prevent snake access to important former nesting areas. A final trapping period will then be conducted to verify the effectiveness of smoothing measures.

Lumuna, Yigo – No visits to this area were made in FY99.

Mt. Sasalaguan, Merizo – Several hikes into the upper Ajayan River Valley on the south flank of Mt. Sasalaguan failed to produce sightings of swiftlets. Birds have not been recorded in this general area during the 1990s and may no longer be present. Further visits to the area should be made.

Mariana Crows

Crow survey results for this year are reported in Project W-1R-6, Subproject W-4, Study 1, Job 2.

Micronesian Starlings

An Air Force serviceman has continued a small program to build and monitor nest boxes for starlings on AAFB during the year. Results of his efforts have not been summarized to date.

Small numbers of starlings continued to be seen on NCTAMS this year, with nesting activity suspected. An adult and immature starling were seen near the base's post office and cafeteria on 16 September. Single adults were seen on two other occasions at this location in September and August.

Notable Species Recorded on Guam During FY99

Noteworthy records of birds for Guam in FY99 are presented here, some of which, have been included in Wiles et al. (in press). Two Red-tailed Tropicbirds (*Phaethon rubricauda*) flew over the beach at Ritidian Point on 27 May. Observers noted single Matsudaira's Storm-Petrels (*Oceanodroma matsudairae*) several miles off the southwest coast of Guam on 4 April and 13 June.

Lone Common Ringed Plovers (*Charadrius hiaticula*) were recorded at the west Tiyan concrete pads on 24 October and 11 September. Black-winged Stilts (*Himantopus himantopus*) were seen at the large pond on the north side of the Guam International Airport terminal on the following dates: four to five birds from 10 October to 22 January, and one bird on 16 September. Two more stilts were located at the Shell Oil facility in Piti on 22 January. Eighteen Marsh Sandpipers (*Tringa stagnatilis*) occurred at the Agfayan

Bay fish ponds in Inarajan on 16 September. This is the largest count of this species ever reported for Micronesia. Single marked Gray-tailed Tattlers (*Heteroscelus brevipes*) were seen at the Merizo sewage treatment ponds on 23 January and at the Agfayan Bay fishponds on 18 September. The Merizo bird had only one leg, which held an aluminum band, while the Inarajan bird had a blue flag placed above its left leg joint. A Eurasian Curlew (*Numenius madagascariensis*) resided at Togcha Beach from 4-17 October. Two immature Long-billed Dowitchers (*Limnodromus scolopaceus*) were sighted at a pool in a vacant construction site in Barrigada on 4-5 November and represented the first record of this species for Guam. A Red Knot (*Calidris canutus*) occurred at the Agfayan Bay fishponds from 16-19 September. Single Long-toed Stints (*Calidris subminuta*) were noted at the Tiyan pads on 10 October and from 9-12 September. This same location held a Pectoral Sandpiper (*Calidris melanotos*) on 10 October. One Ruff (*Philomachus pugnax*) was observed among a flock of Ruddy Turnstones (*Arenaria interpres*) at a mowed field at AAFB on 17 December. Four more Ruffs were recorded at the large pond north of the Guam International Airport terminal on 27 September.

One to two Black-headed Gulls (*Larus ridibundus*) in non-breeding plumage were sighted in East Agana Bay and Apra Harbor from 9 December to 7 March. A Long-tailed Cuckoo was seen in the Munitions Storage Area, AAFB on 30 June and represented another new species record for Guam. Three or four Fork-tailed Swifts (*Apus pacificus*) were recorded soaring above the cliff top at Ritidian Point on 30 April. This species has not been previously reported in Micronesia during spring migration. A flock of nine unidentified swallows, presumably Barn Swallows (*Hirundo rustica*) was noted at Tagua Point, AAFB from 3-6 August.

RECOMMENDATIONS

1. Develop and implement methods for controlling the brown tree snake.
2. Reinitiate censuses of common moorhens and develop an appropriate habitat improvement and development program.
3. Continue monthly cave censuses and efforts to assess population change and reproductive activity of island swiftlets. Consider snake-proofing Mahlac Cave to protect nesting swiftlets. Conduct further observations on the foraging behavior of swiftlets. Determine whether there is any seasonal variation in the foraging range of the colony. Interview farmers in the Talofofu River valley about the use of pesticides on their farms.
4. Continue predator control efforts on Cocos Island until complete eradication of monitor lizards and feral cats is attained.

PROGRAM COST

The estimated cost of the non-game bird project under W-1R-7 is \$45,000.

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