REPORT ON THE 2005 BREEDING SEASON OF THE GREEN HERON Butorides virescens ON BERMUDA

Continued Establishment of Bermuda's Newest Breeding Bird Species

Figure 1: Adult Green heron *Butorides virescens*

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Figure 2: Green Heron nest with 3-egg clutch, Mangrove Lake, June 22, 2005

Figure 3: Two Green heron chicks in nest, Trott's Pond, June 22, 2005.

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* Photographs by Jeremy Madeiros except where indicated

INTRODUCTION AND HISTORICAL BACKGROUND

Herons and Egrets are among the largest and most spectacular of waterbirds with about 60 different species found worldwide, mainly in wetlands and coastal habitats. Bermuda is no stranger to these interesting birds and at the time when it was first settled by British colonists, hosted large breeding colonies of both Herons and Egrets. Herons are mentioned in Silvanus Jourdain's Narrative, 1610, which states the following; "*there are also great store and plenty of Herons and these so familiar and tame, that wee beate them downe from the trees with stones and staues (sticks): but such were young Herons: besides many white Herons, without so much as a blacke or grey feather on them"* (Lefroy, J. H. 1877). As this account suggests, these breeding colonies were quickly destroyed by persecution and hunting by man and possibly predation from introduced mammal predators such as dogs, cats and rats.

After the 1600s, there appears to have been only rare nesting attempts by single pairs of Herons in Mangrove areas on Bermuda, with the Great Blue heron *Ardea herodias* specifically mentioned as having bred on the islands in 1846. Many species of Herons and Egrets continued to visit Bermuda on migration, often staying on the island throughout the winter months and occasionally through summer, especially in the case of immature birds.

The Yellow-crowned night Heron *Nyctanassa violacea* was successfully re-introduced to Bermuda as a natural predator of the native Land Crab *Gecarcinus lateralis* by then Conservation Officer David Wingate between 1976 and 1978. First recorded as nesting in the Walsingham area in 1982 and then on Nonsuch Island (Wingate, D. B. 1982), they now breed throughout Bermuda in mangrove areas, offshore islands and undisturbed woodland habitats. For some years, it has been speculated that the presence of nesting Night Herons could encourage other Heron species to stay and breed on Bermuda. Herons and Egrets are colonial breeders with birds of several species often nesting in close proximity to each other for safety and security.

The Green Heron *Butorides virescens* is one of the smaller and more colorful of the Heron species and was considered one of the most likely candidates for natural re-colonization because of its increasing tendency to stay in small numbers throughout the year on Bermuda. One of the first clues that they were beginning to carry out breeding activity on the island came in 2000, when displaying Green Herons were observed on 12th June at South Pond, Mid-ocean Golf Course, still being present at this location on 30th July. In 2001, there were again summer sightings of Green Herons in the same area.

In 2002, at least 4 adult Green Herons were seen at Trott's Pond (See Fig. 5) by Wendy Frith on 26th May and again in early June (W. Frith pers. comm.). On the 30th July of that year, David Wingate observed 1 adult with 1 juvenile at Mangrove Lake (See Fig. 6), Hamilton Parish, which was the first direct proof of successful breeding having taken place. This was reinforced on the 2nd August when 6 Green Herons, consisting of 3 adults and 3 juveniles, were seen at Mangrove Lake (Dobson, A. *Green Heron-New Breeding Species for Bermuda,* 2002). These observations indicated the presence of at least 2 breeding pairs residing in the Mangrove lake/Trott's Pond area.

During 2003, David Wingate carried out two surveys on the 27th and 29th July by swimming around the mangrove-lined shorelines of both bodies of water (Wingate, D. B. *Green Heron Breeding Update,* 2004). These surveys revealed a total of 20 adult Green Herons and 12 active or vacant

nests around the edges of the ponds, confirming the presence of a breeding population which appeared to be increasing in numbers.

2004 GREEN HERON NESTING SURVEY

In 2004 a survey of both ponds was carried out on July 4th by the author with the assistance of Mr. Mark Outerbridge of the Bermuda Biodiversity Program, using a small plastic 2-person kayak. This kayak is normally used by Mr. Outerbridge to carry out surveys of the endemic Bermuda Killifish *Fundulus bermudae* in various ponds around Bermuda, and proved to be ideal for the purpose of checking for nests in the pond-side Mangroves, being quiet, maneuverable and low to the water. In addition to Green Herons, a check was also made for any other nesting waterbirds in these ponds, including Yellow-crowned Night Herons and Common Gallinules *Gallinula chloropus.* During the 2004 survey, a total of 6 Green Heron nests were recorded on the west side of Trott's Pond (See Fig. 7), with 2 of the nests containing a total of 6 chicks between them (See Fig. 12). Although the other 4 nests were empty, most showed signs of recent occupation and a total of 5 adults and 7 recently fledged juveniles were recorded in the nearby mangroves. Mangrove Lake contained a total of 4 Green Heron nests, all active (See Fig. 8), with a total of 9 chicks and a 3-egg clutch between them. In addition, 3 Night Heron nests were also found, one containing a nearly fully-fledged chick and another with a 3-egg clutch, as well as 3 Common Gallinule nests, 2 with egg clutches in them.

Fig 4: Brood of 3 Green Heron chicks in nest at Trott's Pond on July 21, 2005 (3rd chick on branch to left of nest)

Figure 5: Trott's Pond, Hamilton Parish (looking southeast)

Figure 6: Mangrove Lake, Hamilton Parish (looking north)

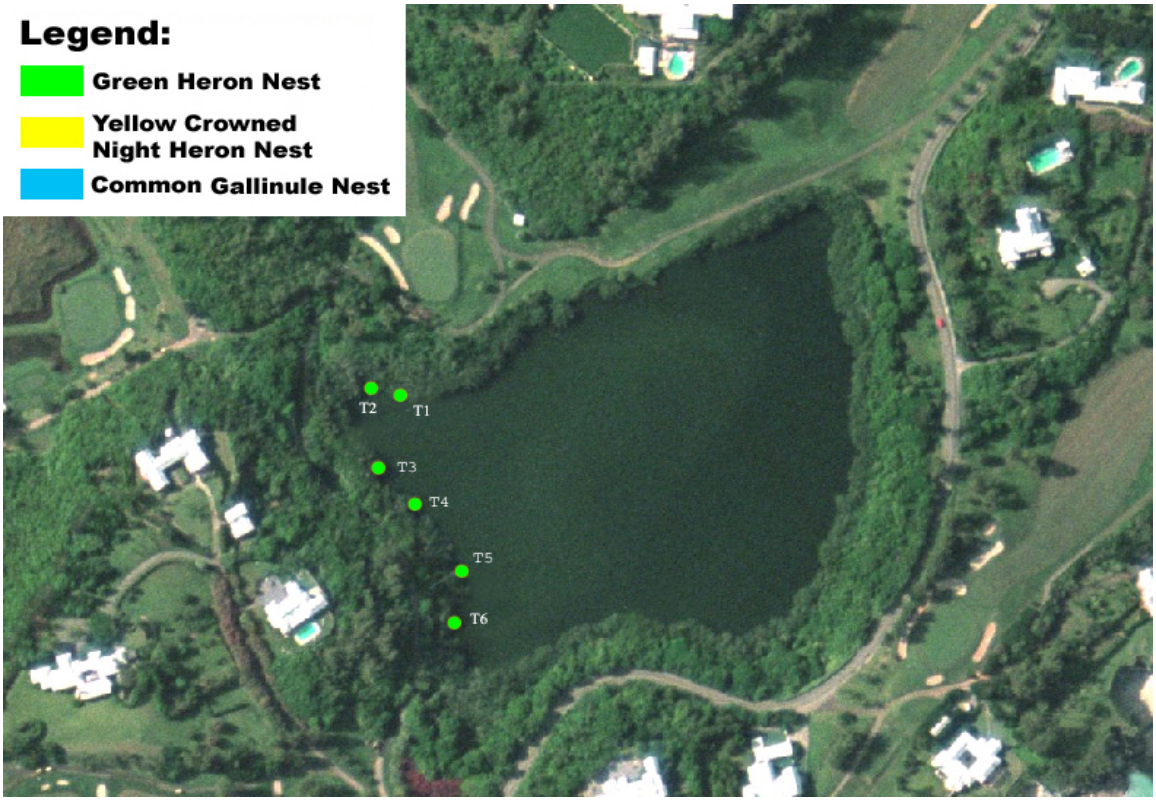

Figure 7: Location of Green Heron nest sites around Trott's Pond during July 2004 survey

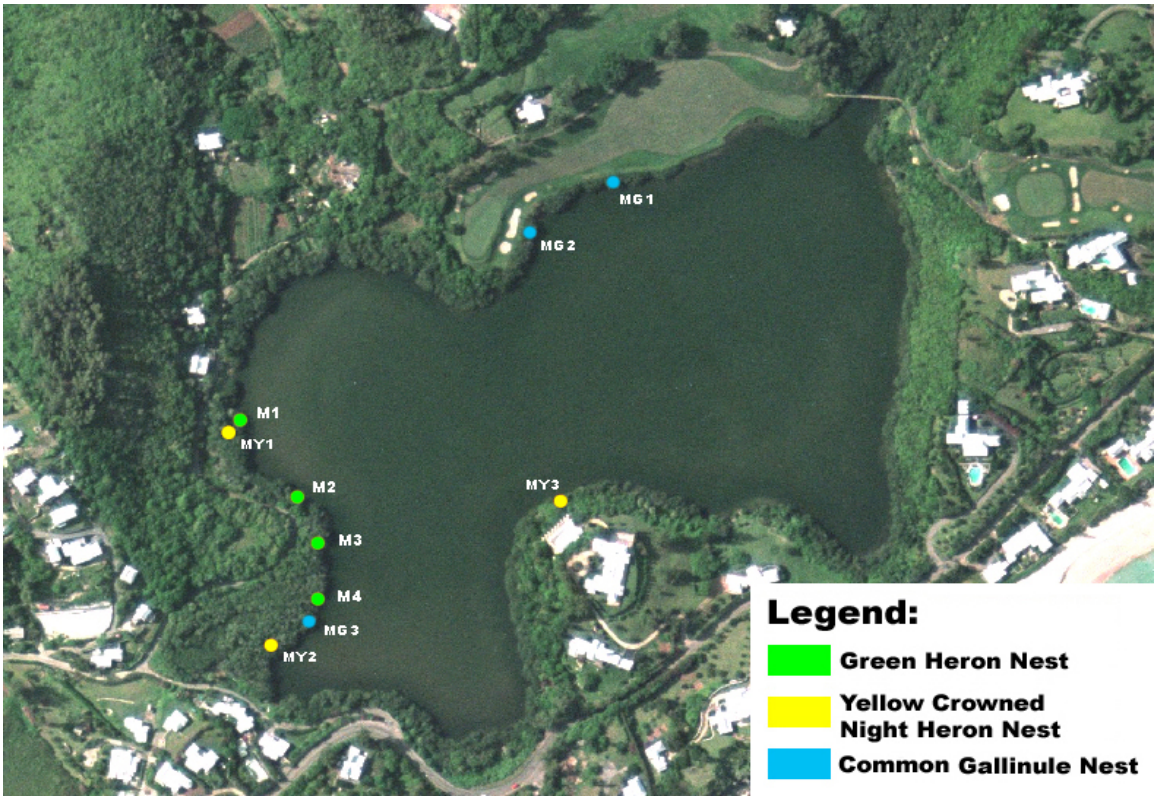

Figure 8: Location of Green Heron, Yellow-crowned Night Heron and Common Gallinule nest sites around Mangrove Lake during July 2004 survey

2005 GREEN HERON NESTING SURVEY

Methodology:

For 2005, several surveys of Mangrove Lake and Trott's pond were carried out to try to determine the timing of the green Heron breeding season, locate all active nest sites and also estimate the total number of young produced by the breeding population. No more than one survey a month was scheduled so as not to cause undue disturbance to the nesting Herons, as some species are known to be sensitive to disturbance during the nesting season. The presence of other nesting waterbirds was also to be noted. The help of Mark Outerbridge was again enlisted and the surveys were timed to overlap with his visits to the ponds to sample Bermuda Killifish.

Survey trips were carried out on June 22nd, July 21st and August 25th and 26th, during which the mangroves and other vegetation around the entire circumference of both bodies of water were carefully checked by kayak for the presence of nests. Note was also taken of the number of adult Herons (if any) attending each nest site, and the presence and location of adult birds and already fledged Heron chicks roosting in the mangroves was also recorded, as were herons observed flying over the Ponds. The locations and details of each nest site and bird observed were marked down on an aerial photograph of each pond for future reference. Photographs were also taken with an Olympus Stylus 410 Digital camera to record each nest site and any egg clutches or chicks present. During the June 22nd survey trip the height of each Heron nest site above water level was recorded.

A number of other potential breeding locations around Bermuda were also surveyed between June and August for the presence of breeding Green Herons (with negative results). These included Mangrove Inlet (east of the Bermuda Biological Station for Research) St. George's Parish; Walsingham Bay and Pond, Hamilton Parish; Compston's Pond (Tucker's Point Golf Club), Hamilton Parish; Hungry Bay Mangrove Swamp, Paget Parish; Parson's Road Pond (near playground), Pembroke Parish; Evan's Pond, Southampton Parish; Pilchaird Bay, Sandy's Parish; Wreck Hill Mangroves, Sandy's Parish and the Lagoon, Ireland Island.

RESULTS OF 2005 NESTING SURVEY

When the first survey was carried out on June 22nd, it was obvious that nesting was already well underway, with some nests already containing chicks in various stages of development (See Figs. 3 & 4). Chicks had in fact already fledged from at least one and possibly more nests. The nesting season had not yet peaked, however, with many nests still being built or containing clutches of unhatched eggs (See Figs. 2 & 11).

By the second survey on July 21st, most of the Heron chicks seen in June had already fledged from their nests but were lingering in the mangroves close to the nest sites, obviously still being attended and fed by the adults. Most of the nests where egg clutches had been noted in June now contained from 1 to 4 chicks.

Following is a breakdown of the survey results from each pond:

TROTT'S POND (Hamilton Parish)

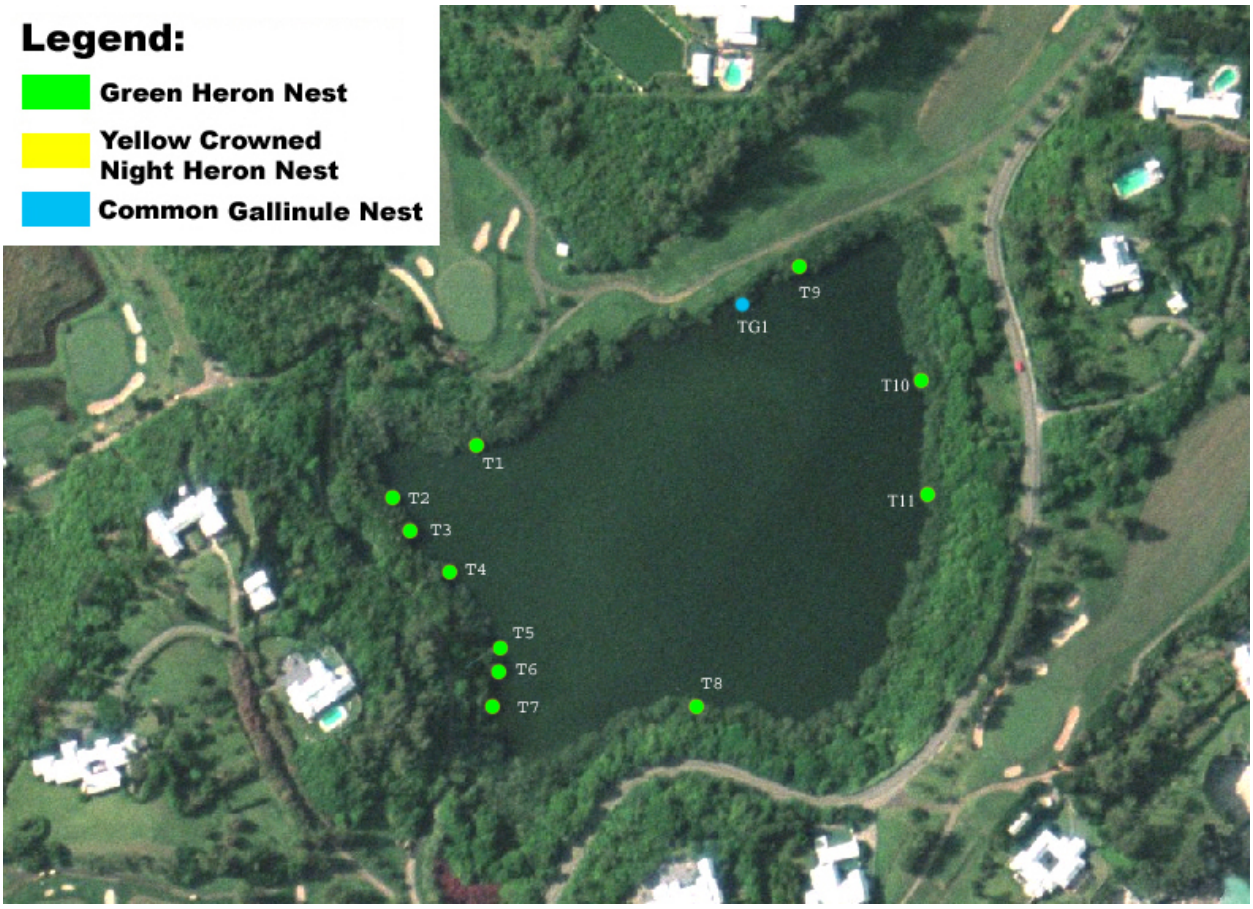

Figure 9: Location of Green Heron & Gallinule nests around Trott's Pond, July 2005 survey.

Trott's Pond – Results of 2005 Survey

Trott's Pond (See Fig. 5) is 10 acres in area; of which 2.4 acres is covered by mangrove swamp (Hayward, Gomez & Sterrer, *Bermuda's Delicate balance*, 1981), with over 90% of its shoreline bordered by a thick fringe forest of Red Mangrove *Rhizophora mangle*. These mangroves extend more than 50' out into the pond in many places, and grade into belts of secondary woodland along the east, south and west sides of the pond, while the Mid-ocean Golf Course borders the northern edge. The pond supports large populations of Mosquito Minnow *Gambusia holbrooki* and Bermuda Killifish, which presumably provide an ample food supply for the Green heron, which is known to prefer small fish and insect prey. Small numbers of Pied-billed Grebes *Podilymbus podiceps* and various species of wild ducks commonly winter in the pond or stop briefly to forage during the fall migration (Sept. to Nov.).

A total of 11 Green Heron nests were observed at Trott's Pond, all built low in horizontal mangrove branches extending far out over open water (See Fig. 11); these nests were given designations from T1 to T11 according to the order in which they were found (See Fig. 9). Chicks or egg clutches were produced at 7 of these nests, with a total of 17 chicks recorded from them. Two nests (T4, T5) were seen with 2 chicks each on the June survey (See Fig. 3), while 2 recently fledged chicks were seen at

a third nest site (T9). In addition, 2 nests (T2, T3) were seen with 2 and 3-egg clutches respectively and a third nest contained a single failed egg. During the July survey, 4 more nests (T1, T2, T10 and T11) were observed with 2, 3, 2 and 4 chicks respectively (See Fig. 4). No eggs or chicks were seen at any nests during the August survey and breeding activity had obviously finished at this site. The largest numbers of adults seen during the surveys were consistently recorded at this pond, either attending nests, foraging or roosting in mangroves or flying over the pond, with a maximum of 17 seen during the June 22 survey. Eggs or chicks were not recorded at 3 of the nests (T6, T7 and T8, although adults were occasionally seen in or close to them (See Table 1 for full summary of survey at Trott's Pond).

All nests located were built very low in the mangroves with most averaging 12" to 18" above water level. Only two were built more than 30" above water level, the most elevated being 4' 6" high. At least two of the nests at Trott's Pond were as low as 6" to 8" above water level.

TROTT'S POND – GREEN HERON NESTS 2005

Nest ID#	Number of eggs In nest		Status of Nest	Number of adults present at nest		Number 0f chicks present at nest (total = 17 chicks)	
	June 22	July 21		June22	July 21	June 22	July 21
T1	0	0	Active	0	1	0	2
T2	2	0	Active	2	1	0	3
T3	3	0	Active	2	0	0	0
T4	1 (failed)	0	Active	1	0	2	0
T5	0	0	Active	1	0	2	0
T6	0	0	No eggs/chicks recorded	0	0	0	0
T7	0	0	No eggs/chicks recorded	1	0	0	0
T8	0	0	No eggs/chicks recorded	1	0	0	0
T9	0	0	Active earlier in season?	1	0	2 chicks already fledged	0
T10	*	0	Active	*	1	*	2
T11	*	0	Active	*	1	*	4

Table 1: Results of 2005 Green Heron survey showing numbers of eggs, chicks and attendant adults recorded at each nest during June and July checks at Trott's Pond. (* nests not discovered in June survey)

MANGROVE LAKE (Hamilton Parish)

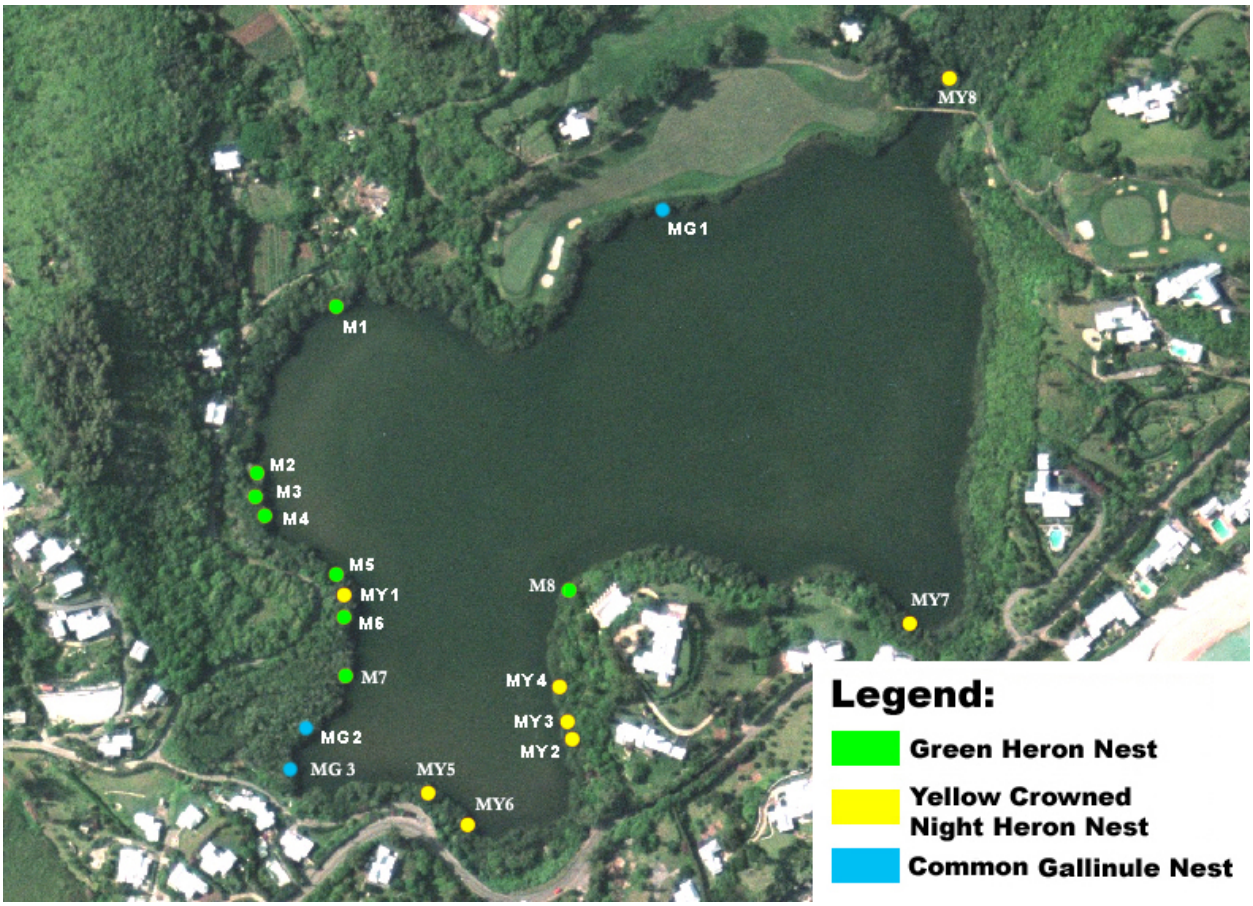

Figure 10: Location of Green Heron, Yellow-crowned Night Heron and Common Gallinule nests at Mangrove Lake during July 2005 survey.

Mangrove Lake – Results of 2005 Survey

Mangrove Lake (See Fig. 6) is Bermuda's largest inland (totally enclosed) body of water at 30.4 acres in area, of which 4.8 acres are covered with extensive fringe forests of Red Mangroves (Hayward, Gomez & Sterrer, *Bermuda's Delicate Balance*, 1981). These mangroves are particularly thick along the western and southern shorelines of the Lake, in some areas extending more than 100' out from the solid shoreline. There are high hills which provide some shelter from the north and west, but Mangrove Lake is more open and exposed than the sheltered Trott's Pond, and its larger size allows considerable wave action to build up in the lake, particularly with strong northeasterly or easterly winds.
Mangrove Lake supports large populations of Gambusia Minnows, Bermuda Killifish and Crested Goby *Lophogobius cyprinoides* in addition to many other fish and is used for foraging and roosting by many species of Herons, Egrets, Grebes, Ducks and Cormorants.

A total of 8 Green Heron nests were observed at Mangrove Lake during the surveys in 2005 (See Fig. 10). These were all located at the end of long horizontal branches of Red Mangroves extending

well out over the water and built quite low close to the surface of the Lake, ranging from 9" to 3'6" above water level. Clutches of eggs ranging from 2 to 4 in number (See Figs. 2 & 11) were produced at 6 of these nests. One of the nests (M2) contained 2 half-fledged chicks and another (M1) contained 2 recently hatched young chicks with a third egg in the process of hatching during the June 22 survey. The M1 nest still contained 3 chicks (now almost fully fledged) during the July 21 survey, while 3 additional nests (M4, M5 and M6) contained 1, 1 and 3 chicks respectively (See table 2). No nests were observed with any chicks during the late August surveys, but 3 nests (M1, M3 and M4) still contained 1, 3 and 2 eggs respectively, all obviously failed (possibly from the effects of a tropical storm). More than 10 adult Green Herons were observed attending nests, foraging or roosting in the mangroves during each of the survey trips at Mangrove Lake.

In addition to the green Heron nests, a total of 8 Yellow-crowned Night Heron nests were also observed around Mangrove Lake during the surveys (See Fig. 10) of which at least 6 successfully produced chicks. Brood sizes for the Night Heron nests were recorded as 3, 1, 2, 1 and 2 chicks respectively, all of which appeared to fledge successfully. These nests were all located in Red Mangroves, with the exception of one built in a Buttonwood tree *Conocarpus erecta* on the south edge of the Lake. These nests were also built much higher (ranging from 5' to 18' above water level) than the low-lying Green Heron nests. Night herons are normally quite wary during breeding season and build their nests in out of the way sites which are often difficult to find and observe. One of their nests at Mangrove Lake (numbered MY7 on Fig. 10) proved very much to be the exception to the rule, being built in mangroves less than 70' from an active construction site where a residential dwelling was being built. The Herons not only seemed unaffected by the noisy machinery and workers a short distance away throughout the entire nesting season, but successfully raised a brood of 2 chicks.

A total of 3 Common Gallinule nests were also observed, all on the north and west sides of the Lake, built among the Red Mangrove prop roots at water level. Two contained clutches of 3 and 4 eggs respectively during the June 22 survey. A brood of 3 juvenile Gallinules attended by 2 adults, presumably from one of these nests, was seen grazing on the Golf Course fairway adjacent to the east end of Mangrove Lake in August.

MANGROVE LAKE – GREEN HERON NESTS 2005

Nest ID#	Number of eggs		Status of Nest	Number of adults present		Number 0f chicks present (total = 10 chicks)	
	June 22	July 21		June 22	July 21	June 22	July 21
M1	2	0	Active	1	2	2	3
M2	0	3	Active	1	2	2	0
M3	4	3	Active	1	0	0	0
M4	3	2	Active	1	0	0	1
M5	3	0	Active	1	0	0	1
M6	4	0	Active	0	1	0	3
M7	0	0	No eggs/chicks	0	1	0	0
M8	0	0	No eggs/chicks	0	1	0	0

Table 2: Results of 2005 Green Heron Survey showing numbers of eggs, chicks and attendant adults recorded at each nest during June and July checks at Mangrove Lake.

PRESENT THREATS TO THE GREEN HERON

Hurricanes and Storms; Observed Effects of Tropical Storm 'Harvey'

Hurricanes, Tropical Storms and other severe weather events must be considered the most serious threat to the Green Heron on Bermuda, especially during the nesting season, when the eggs or young chicks are exposed and vulnerable in the nests. This is compounded by the fact that almost all Green Heron nests observed over the period 2004-2005 were built very low and close to the water surface where they are vulnerable to wave action.

Tropical Storm 'Harvey' passed only 30 miles south of Bermuda during the survey period on the 4th and 5th August, dropping over 4" of rain and battering the island with east-southeasterly and northeasterly winds of up to 44 knots (52mph) for an extended period. This is unusually early for a Tropical Storm and it was suspected that it had adversely affected the low-lying Green Heron nests, which are vulnerable to high winds blowing across these large ponds from this direction. This was confirmed during the last surveys carried out in late August, when it was found that all but two of the nests at Mangrove Lake had either been completely destroyed or partially washed away. These nests were all located on the west side of the Lake where they were exposed to large waves produced by the easterly winds blowing across the whole reach, or width of this large body of water. Although Trott's Pond is smaller and more sheltered by surrounding hills and woodland areas, at least 3 nests were destroyed and 1 damaged at this location as well. It appeared that late egg clutches in at least 3 of the nests on Mangrove Lake were destroyed or abandoned, while all of the chicks at active nests on Trott's Pond appeared to have already successfully fledged. It therefore appears that although 'Harvey' brought all nesting to a early end at these ponds, that the majority of nesting pairs had already succeeded in producing young, helped by the Green Heron's relatively quick fledging period with chicks fledging as early as 35 days after hatching (Hancock & Kushlan, 1984).

It is obvious that a Tropical Storm or Hurricane occurring earlier in the breeding season (June to July) would have a devastating effect on nesting Green Herons and Yellow-crowned Night Herons, destroying nests, chicks and eggs. Severe storms, such as hurricane 'Fabian' in 2003 can also cause serious damage to the mangrove trees themselves, with the damage from that event still being very evident around both ponds in 2005, and must be considered as the most serious threat to the continued establishment and survival of a viable breeding Green heron population on Bermuda.

Other Threats and Predators:

In addition to Tropical Storms and Hurricanes, there are a number of other observed or potential threats and predators which could impact on the Green Heron on Bermuda. These include the following:

1. The possibility of predation of eggs or young chicks by rats (particularly the Norway or Brown Rat *Rattus norvegicus*). Rats can easily climb through the mangrove trees out over the water to nest sites, although the adult Herons are probably capable in most instances of fighting them off.

2. Feral Domestic Cats are a real and continuing problem in many areas on Bermuda, even in some Parklands and Nature Reserve areas. This problem is often aggravated by well-meaning but misinformed members of the public which either feed feral cats in these locations, often triggering rapid population increases, or trap them on their own properties and release them into other locations. Although the cats can probably not reach Green Heron nests which are located on the very ends of long branches overhanging the water, they are fully capable of killing Herons, particularly inexperienced juvenile birds, when they forage near or on solid ground at the landward edge of ponds, mangrove areas or coastlines. In December, 2005 while this report was being completed, a feral cat was confirmed as having killed and partially eaten a first-year Green Heron (most likely from the Trott's Pond/Mangrove Lake colonies) at the Shelly Bay Nature Reserve.

3. Other large Heron and Egret Species, in particular the Great Blue Heron and Great Egret, are probably capable of predating on young Green Heron chicks still in the nest. A Great Blue Heron was in fact observed in mangroves on the south side of Mangrove Lake during the August survey, with several adult Green Herons in close proximity appearing to scold it with loud alarm calls. Green Heron chicks are capable of leaving their nests when threatened as early as 1 week after hatching and can climb and jump from branch to branch through the mangroves by 15 days, returning once the danger is past (Hancock, J. and Kushlan, J. 1984). This behavior was often noted during the course of the surveys, and probably makes predation by larger Herons, Egrets and Raptors (Birds of Prey) a rare occurrence.

4. Overhead power lines are a known hazard to birds large enough to bridge two adjacent lines with their legs or wings, creating a current flow and electrocuting the bird. There are records of this occurring on Bermuda with Great Blue Heron, Osprey *Pandion haliaetus* and Barn Owl *Tyto alba practincola.* The Green Heron is considerably smaller than these other species and so was thought to be not at risk from the danger of electrocution. There is however at least one record of electrocution of two Green herons simultaneously, one an adult and the other juvenile, in power lines above a road just west of Trott's Pond during the summer of 2005 (Wingate, D. B. 2005). This appears to have been an unusual incident in which the juvenile was perched on one power line when the adult landed on the adjacent line and attempted to reach over and feed wet fish to the juvenile. This resulted in the lines shorting out and killing both birds. Although this was a chance occurrence, this documented incident illustrates the potential threat that power lines pose to Green Herons. This would appear to present a good case for encouraging the relocation of overhead power lines underground in these areas, which would not only remove the threat they pose to large Herons and other birdlife, but would reduce their present vulnerability to high winds and overhanging vegetation, which cause power outages in storms and necessitate frequent costly repairs and pruning back of vegetation.

Figure 11: Low-lying Green Heron nest at Mangrove Lake, June 21, 2005

SUMMARY:

The survey revealed that this new Heron population is increasing in size with considerably more nests recorded in 2005 at both Mangrove Lake and Trott's Pond than in the 2004 survey. A total of 18 nests were recorded, including 11 at Trott's Pond and 7 at Mangrove Lake, compared to a total of 10 nests in 2004 (6 at Trott's Pond and 4 at Mangrove Lake). In addition, the Herons appeared to be using more of the available habitat around the edges of these ponds. On all previous years, nests were only seen on the western sides of both ponds, whereas in 2005 nests were starting to appear around all four sides of the ponds. At least 13 of the nests showed breeding activities with chicks and/or egg clutches recorded during different survey checks.

The total number of adult Green Herons associated with these nesting colonies is difficult to determine. There was constant activity with foraging adults flying back and forth across the ponds while on feeding trips to support the hungry chicks. The greatest number recorded at one time during the June 22 check was in excess of 27 adults (17 at Trott's Pond and 10 at Mangrove Lake). The total number of adults now connected with these two nesting colonies is approximately 36 to 40 birds.

The real measure of breeding success is the number of young which survive to fledging, and it appears that the majority of eggs produced by breeding pairs of Green Herons at these locations are

hatching and producing a good number of fledged chicks (ranging from 1 to 4 chicks per nest). A total of at least 27 chicks were confirmed from 13 of the nests, 17 chicks from 7 of the nests at Trott's Pond and 10 chicks from 6 of the nests at Mangrove Lake. Nests at Trott's Pond appear to have had higher breeding success than those at Mangrove Lake, most likely due to its more sheltered aspect during high winds.

As a result of this new successful breeding activity, the Green heron is becoming a more frequent sight on Bermuda throughout the year, with the juveniles produced at the breeding sites dispersing throughout the island during the fall and winter months. It now seems likely that the next stage in the establishment of this species on Bermuda would be for it to establish new breeding sites at other suitable locations throughout the island and nests have already been reported from Parson's Road Pond, Pembroke, in 2004 and from an unspecified location in Harrington Sound in 2005. This is a significant event for Bermuda's natural environment and biodiversity and highlights the great potential for continued restoration of habitats and species that were all but lost during the destructive early days of the island's human colonization.

Figure 12: Four Green Heron chicks (approximately 7 days old) in nest at Trott's Pond, June 2004

RECOMMENDATIONS:

- Because of the obvious importance of Mangrove Lake and Trott's Pond to Bermuda's Green Heron, Yellow-crowned Night Heron and Common Gallinule breeding populations, in addition to the value of these ponds as foraging habitat for these and other waterbirds, it is recommended that they are declared as critical habitat under the *Protected Species Act 2003.* This should also include the mangrove fringe areas.
- Efforts should be undertaken to contact and inform the landowners of properties bordering these two ponds about their importance and the protected status of the mangroves surrounding them. This would involve mainly the Mid-ocean Golf Course for Trott's Pond and the east and north side of Mangrove Lake, and a number of private landowners on the south and west sides of Mangrove Lake. This would be done to prevent inappropriate activities, such as illegal cutting of mangroves to open up views or provide access to the water.
- Feral cats are a serious threat to Green Herons and numerous other waterbirds and landbirds. All efforts should be taken to remove any feral cats detected near wetland areas and Nature Reserves in general.
- Annual checks or surveys of Mangrove Lake and Trott's Pond should be carried out during the breeding season to monitor breeding success, population expansion, signs of predation etc. It will be particularly important to carry out checks following severe storms or hurricanes to gauge the effect on breeding success and the overall population.
- Checks of other potential nesting locations should also be carried out during the breeding season when possible; note should also be made of any nesting activity by Y.C. Night Herons or any other Heron or Egret species. The local birding community should be contacted so that they also can report any such sitings to the department of Conservation Services.

Figure 13: View from kayak used to carry out nesting survey

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Mr. Andrew Dobson, president of the Bermuda Audubon Society and an avid bird enthusiast and photographer, kindly allowed use of two of his excellent photos of adult and nestling Green Herons.

Dr. David Wingate, former Conservation Officer, was the first to confirm breeding by this attractive and interesting Heron species on Bermuda and many of his observations during the important establishment period are included in the first section of this report.

Figure 14: Red Mangrove fringe forest on edge of Trott's Pond, Hamilton Parish

"To Conserve and Restore Bermuda's Natural Heritage"