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**Mai Po Inner Deep Bay Ramsar Site
Waterbird Monitoring Programme
2007 - 08**

**Egretty Counts in Hong Kong,
with particular reference to the Mai Po
Inner Deep Bay Ramsar Site**

Summer 2007 Report



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Waterbird Monitoring at the Mai Po Inner Deep Bay Ramsar Site

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Summer 2007 Report: Egretty Counts in Hong Kong with particular reference to the Mai Po Inner Deep Bay Ramsar Site

Report



The Hong Kong Bird Watching Society Limited



Agriculture, Fisheries and Conservation Department

EGRETRY COUNTS IN HONG KONG, WITH PARTICULAR REFERENCE TO THE MAI PO INNER DEEP BAY RAMSAR SITE

SUMMER 2007 REPORT

Summary

In the 2007 breeding season, a total of 275 nests of three ardeid species in eight egrettries (thereafter colonies) were recorded in the Deep Bay area. Chinese Pond Herons (*Ardeola bacchus*) and Little Egrets (*Egretta garzetta*) were the dominant species in the Deep Bay area (53.3% and 48.0% of the total number of nests in the Deep Bay area, respectively). The number of nests in the Deep Bay area accounted for 33.5% of the total one in Hong Kong in 2007. The abovementioned two species were also the dominated species in Hong Kong (34.7% and 30.2% of the total number of nests in Hong Kong, respectively). The least species in Hong Kong was Cattle Egret (7.2% of the total). The total number of nests in Hong Kong in 2007 was 822 nests of five species in 21 colonies. No new colony was found in this year but a new part of the Pak Nai colony was found. Abandonment at part of the Mai Po Village colony, Centre Island and San Po Tsui colonies were noted. Compared with 406 nests in the Deep Bay area and 1017 nests in Hong Kong in 2006, there is a 33% decrease in the Deep Bay area and 20% decrease in Hong Kong, respectively. In considering the long term decline in the number of nests of Black-crowned Night Heron since 2002, studies of their feeding habitats and breeding performance are suggested to be conducted in the 2008 breeding season for investigating the cause of the decline.

1 INTRODUCTION

Breeding activity is an important aspect of population dynamics. Nesting populations of colonial waterbirds are counted as part of long-term monitoring studies in Mediterranean Europe (Tourenq *et al.* 2000), Australia (McKilligan 2001) and the United States (Gawlik *et al.* 1998). In East and Southeast Asia long-term records of breeding populations of colonial nesting ardeids only exist in Hong Kong and Vietnam (Lansdown *et al.* 2000). Reporting of the number of nesting pairs in Hong Kong, organized by the Hong Kong Bird Watching Society, started as early as 1958, but was suspended between 1975 and 1989 (Young and Cha 1995). Recording was far from complete, and on many occasions only breeding species were recorded with no count of nesting pairs made. In addition, not all colonies were counted each year. The recording of numbers of nests in the Deep Bay area, as part of the long-term monitoring of waterbird abundance in the Mai Po Inner Deep

Bay Ramsar Site, started in 1998. Both breeding species and the number of nesting pairs, in the Deep Bay area and elsewhere in Hong Kong were recorded.

2 METHODS

Active and abandoned colonies which were identified in the past two years (i.e. 2005 and 2006), were surveyed between April and July 2007 (Table 1, Figure 1, Appendix 1). In addition, potential new nesting sites were also visited. New colonies were located by personal observations, and information from birdwatchers and environmentalists. A nesting colony of egrets and herons is defined as an area where more than a pair of these birds building nests, laying eggs and raising young. Active nests, determined by the presence of incubating adults or chicks, were counted directly from vantage points or along the edge of the colony at all colonies with 10x binoculars or naked-eye, depending on the proximity between the surveyor and the colony. The number of nests in colonies surveyed more than once was taken to be the sum of the highest count of the number of nests of each species. Apart from the number of nests, the nesting substratum was also identified.

Nearly all nests on Little Green Island were invisible as they were hidden in vegetation or built inside bushes. Landing locations were marked on a sketch of Little Green Island and repeated landings around the same location were considered as one nest.

As in previous years between 1998 and 2006, the small colony of Chinese Pond Herons (*Ardeola bacchus*), which is located about 200 m northeast to the Mai Po Village colony, was included in the total number of nests of the Mai Po Village colony. A new nesting site will be considered as a new nesting colony if it is at least 500m away from the existing one as the lowest feeding range of a colony was about 500m (L. C. Wong unpublished data). Thus, overlapping of feeding habitats of nesting sites within 500m is expected to be high and combining breeding birds in locations within the 500m could avoid defining too much small nesting sites in the same area.

RESULTS and DISCUSSION

2.1 Breeding population in the 2007 breeding season

A total of 822 nests were recorded at 21 colonies between April and July 2007 in Hong Kong (Table 1, Figure 1-22, Appendix 2). Underestimation of the number of nests at A Chau, Yeung Chau, Little Green Island colonies may have occurred as some nests were built in dense vegetation, and were thus invisible. A new colony site at Pak Nai was found on 1 June 2007. This colony was

about 800m away from the existing colony at Pak Nai, therefore it is considered as a separate one. This site was the location of the Pak Nai colony in 2000 and it is situated in a private orchard. No nesting was seen at one part of the Mai Po Village (between San Tam Road and Castle Peak Road) during the visits, suggesting that this part of the colony was abandoned. However, another part of the Mai Po Village colony near the junction between Mai Po Road and Castle Peak Road was still active in this breeding season. In this part of the Mai Po Village colony, both Little Egret and Chinese Pond Heron were seen to breed. Visits to Centre Island, San Po Tsui (Lantau) and Ho Pui were made but no breeding was noted. A shifting of nesting colony at Tai O, Lantau was noted in this breeding season. In this breeding, it was situated on Kat Hing Back Street and was about 150m southeast of the previous site.

Table 1. The number of nests at surveyed colonies in the Hong Kong in 2007 (*: Deep Bay colonies).

	Great Egret	Little Egret	Black-crowned Night Heron	Chinese Pond Heron	Cattle Egret	Total	%
1. Mai Po Village*		4		30		34	4.1
2. Tam Kon Chau*				26		26	3.2
3. Mai Po Lung Village*		18		31		49	6.0
4. Tung Shing Lane*		51		24	3	78	9.5
5. Ha Mei San Tsuen*		8		23	1	32	3.9
6. Pak Nai *		13		4		17	2.1
7. Pak Nai 2*		12		4		16	1.9
8. Sham Po*		13		10		23	2.8
9. Ho Sheung Heung		31		71	17	119	14.5
10. A Chau	59	2	24		21	106	12.9
11. Tai Po Market		12	17	1	1	31	3.8
12. Penfold Park	9	15	7	4		35	4.3
13. Yeung Chau (Plover Cove)	67	6	17		1	91	11.1
14. Shuen Wan				3		3	0.4
15. Lam Tsuen				3		3	0.4
16. Ma On Kong		1		8		9	1.1
17. Ha Che		1		19		20	2.4
18. Tai Tong				24	15	39	4.7
19. Tuen Mun		26				26	3.2
20. Little Green Island		17	12			29	3.5
21. Tai O		18	18			36	4.4
Total	135	248	95	285	59	822	100.0
%	16.4	30.2	11.6	34.7	7.2	100.0	

The highest number of nests was recorded at the Ho Sheung Heung colony (119 nests, 15% of total nests in Hong Kong), while the smallest was at the Lam Tsuen colony and Shuen Wan colony

(each 3 nests, 0.2% of total nests in Hong Kong, Table 1). Yeung Chau contained the highest number of nests of Great Egrets (67 nests, 50% of the total number of nests). A Chau contained the highest number of nests of Black-crowned Night Herons (24 nests, 25% of the total number of nests, and Cattle Egrets (*Bubulcus ibis*, 21 nests, 36% the total number of nests) in Hong Kong. With regard to Little Egrets (*Egretta garzetta*), the Tung Shing Lane colony (51 nests, 21% of total Little Egret nests in Hong Kong) is the most important site, while the Ho Sheung Heung colony is the main nesting site of Chinese Pond Herons (71 nests, 25% of the total Chinese Pond Heron nests in Hong Kong).

In considering the number of nests of each species, the Chinese Pond Heron (285 nests, 35% of the total number of nests) was the most abundant, while the Cattle Egret was the least numerous (59 nests, 7% of the total number of nests numerous, Table 1). Little Egrets and Chinese Pond Herons are the two most widespread species, of bred at 17 and 16 colonies, respectively.

3.2 Colonies in the Deep Bay area

A total of 275 nests of three species were recorded in eight colonies in the Deep Bay area in the 2007 breeding season (Table 2). Tam Kon Chau is the only colony that falls within the boundary of the Mai Po Inner Deep Bay Ramsar Site. No breeding of Great Egret was noted in this year, although they were found to breed in 2006. No Black-crowned Night Heron was recorded breeding in the Deep Bay area. This species bred in the Deep Bay area prior to 2003. Chinese Pond Heron and Little Egret were the two dominant breeding ardeids in the Deep Bay area (CPH: 55.0% of the total nests in the Deep Bay area; LE: 43.5%), while the least was Cattle Egret (1.5%). The total number of nests in the eight Deep Bay colonies comprised 34% of the total one in Hong Kong.

Table 2. The relative importance of Deep Bay colonies to the others in Hong Kong in 2007. Colonies in the Deep Bay area are Mai Po Village, Tam Kon Chau, Pak Nai, Pak Nai 2, Sham Po, Mai Po Lung Village, Tung Shing Lane, and Ha Mei San Tsuen.

Species	No. of nests in Deep Bay	Total no. of nests in Hong Kong	Deep Bay nests as % of all nests in Hong Kong
Great Egret		135	
Little Egret	119	248	48.0
Black-crowned Night Heron		95	
Chinese Pond Heron	152	285	53.5
Cattle Egret	4	59	7.0
Total	275	822	33.5

3.3 A comparison of the number of nests with previous year

A 20% decrease in the overall number of nests in Hong Kong between 2006 and 2007 was noted (Table 3). In Deep Bay, it showed a 33% decrease in the number of nests. All species, except Great Egret, showed 19-26% decrease in the number of nests, while no change in the number of nests of Great Egret was noted. The largest colony, in terms of the total number of nests, was A Chau in 2006 but it is Ho Sheung Heung in this year. The A Chau colony has been the largest one since the egret count 1998. The shrinking of A Chau is primarily due to dramatic decline in the number of nests of Black-crowned Night Heron (see section 3.5). As no obvious habitat loss was observed in 2007, it is expected that the overall decline of nests in Hong Kong is related to natural variation including food availability, weather conditions, and/or unknown reasons.

Table 3. A comparison of nests in 2007 with previous year

	2006	2007	Percentage change (%)
Great Egret	135	135	0.0
Little Egret	305	248	- 18.7
Black-crowned Night Heron	121	95	- 21.5
Chinese Pond Heron	376	285	- 24.2
Cattle Egret	80	59	- 26.3
Total in Hong Kong	1017	822	- 19.2
Sub-total in Deep Bay	406	275	- 32.3

3.4 Nesting habitats

Bamboo was the main nesting habitat of egrets and herons nesting in Tai O, North and Northwest New Territories (Table 4). All nests at the Tam Kon Chau colonies were built on Banyan trees (*Ficus microcarpa*). The exotic trees, *Lagerstroemia speciosa*, were used by ardeids for nesting in the Tuen Mun colony. The majority of nests on the A Chau colony were built on Cuban Bast (*Hibiscus tiliaceus*), while unidentified coastal plants were used by birds nesting in Little Green Island. On Yeung Chau, most nests were seen to build inside climbers, which may provide a better shelter against bad weather and sun exposure.

Table 4. Plants used by ardeids as nesting habitats in 2007

	Bamboo	<i>Ficus microcarpa</i>	Exotic trees	Other plants	Remarks
1. Mai Po Village	+	+	+	<i>Celtis sinensis</i>	
2. Tam Kon Chau		+			
3. Mai Po Lung Village	+			Lychee and Longgan trees	

4. Tung Shing Lane	+		Lychee and Longgan trees	<i>Celtis sinensis</i>
5. Ha Mei San Tsuen	+			
6. Pak Nai	+			
7. Pak Nai 2	+			
7. Sham Po	+			
8. Ho Sheung Heung	+			
9. A Chau			Mainly on <i>Hibiscus titiaces</i> , <i>Mallotus mamiculatus</i>	
10. Tai Po Market				No detailed plant survey was conducted
11. Penfold Park		+	+	<i>Acacia confusa</i>
12. Yeung Chau (Plover Cove)				No detailed plant survey was conducted
13. Shuen Wan				<i>Cinnamommum camphora</i>
14. Lam Tsuen		+		
15. Ma On Kong				Lychee and Longgan trees
16. Ha Che			+	
17. Tai Tong	+			
18. Tuen Mun			+	<i>Lagerstroemia speciosa</i>
19. Little Green Island				No detailed plant survey was conducted
20. Tai O	+			

3.5 Dramatic decline in nests in the A Chau colony

The number of nests of Black-crowned Night Herons declined from 177 nests in 2002 to 24 this year. The decline appears to be species-specific as nesting Great Egrets increased in number during the period and remained high in recent years, while Little Egrets and Cattle Egrets fluctuated around 20 and 50 nests, respectively. In considering A Chau is the stronghold of nesting Black-crowned Night Herons and the long term decline of this bird in Hong Kong, it is recommended that a detailed study of their breeding performance, prey analysis and feeding habitat use by nesting birds on A Chau should be conducted for investigating possible factors leading to the decline.

3.6 Protection of colonies against minor construction and maintenance works

In considering the disturbance due to inappropriate developments and public facilities maintenance at colonies, it is recommended that a list of colony locations should be circulated within relevant government departments to increase the awareness of their existence. Disturbance to these colonies could be minimized when better planning for impact avoidance is implemented earlier. Recommended government departments on the circulation list are Planning Department, in particular Central Enforcement and Prosecution Section, Lands Department, Environmental Protection Department, Drainage Services Department, Civil Engineering and Development Department and Highways Department. Attention should also be given to roadside colonies that may be subject to disturbance due to maintenance work of roadside government and public utilities.

Roadside colonies are those falling within 50m of a public road. In the breeding season in 2007, these colonies were Mai Po Village (including a small colony off Mai Po Lo Wai), Tam Kon Chau, Mai Po Lung Village, Ha Mei San Tsuen, Pak Nai 2, Ma On Kong, and Tuen Mun.

3.7 Training workshop for ardeid nesting colony monitoring

A training workshop was conducted during the breeding season in 2006 and 2007. Participants of the training workshop joined the subsequent counts in 2007. In view of the success of this training workshop, it is recommended that this open training workshop should be conducted in subsequent years.

3.8 Ecological enhancement in nesting colonies

Several exotic trees were found dead and there are fewer nesting sites inside the Mai Po Village colony. It is advised that planting suitable species, for instance *Hibiscus tiliaceus*, for providing more nesting sites should be undertaken. It is known that the Highways Department, which is the responsible government department for the management of the site, is considering undertaking plantation. Nevertheless, the authority concerned is suggested to undertake ecological enhancement in other colonies if necessary.

3.9 Monitoring of feeding habitat use pattern of important colonies

Understanding feeding habitat use pattern by nesting ardeids is essential to secure a viable nesting population. The relationship between the area of feeding habitat and the nesting population in a colony should be investigated. Therefore, the minimum area of feeding habitat for supporting a viable nesting population could be obtained. It is particularly important in Hong Kong as the land use pattern is changed rapidly and a nesting colony could be affected by development as their feeding habitats, i.e. fishponds and man-made wetlands in the lowland, are prime area for development. Monitoring of feeding habitat has been terminated since 2002 and there is no update habitat use pattern for sizeable colonies, in particular A Chau, of which the only study was conducted in 1997 and 1998. In order to obtain the up-to-date information on habitat use, it is suggested that monitoring of sizeable colonies for instance A Chau, Mai Po Village, Mai Po Lung and Pak Nai, should be conducted once every two to three years.

4. CONCLUSION

In 2007, a total of 822 nests of 5 species in 21 colonies were recorded in Hong Kong, including 275 nests of 3 species in 8 colonies in the Deep Bay area. Compared with 2006, there was a

decrease in 20% and 33% in Hong Kong and Deep Bay, respectively. The decline is not well-understood but may relate to food availability. A long term decline of Black-crowned Night Heron in A Chau was noted. Recommendations on the management of local nesting population are:

- (1) A detailed study of the breeding performance, prey analysis and feeding habitat use by nesting Black-crowned Night Herons on A Chau,
- (2) Circulation of the latest location of nesting colonies amongst government population for avoiding and minimizing disturbance due to minor work projects,
- (3) Continuing the egret count training workshop in 2008,
- (4) Providing more nesting substratum by planting appropriate plants, for instance, bamboo and *Hibiscus tiliaceus*, at degraded colonies, and
- (5) Monitoring the feeding habitat use by birds nesting at major colonies.

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Figure

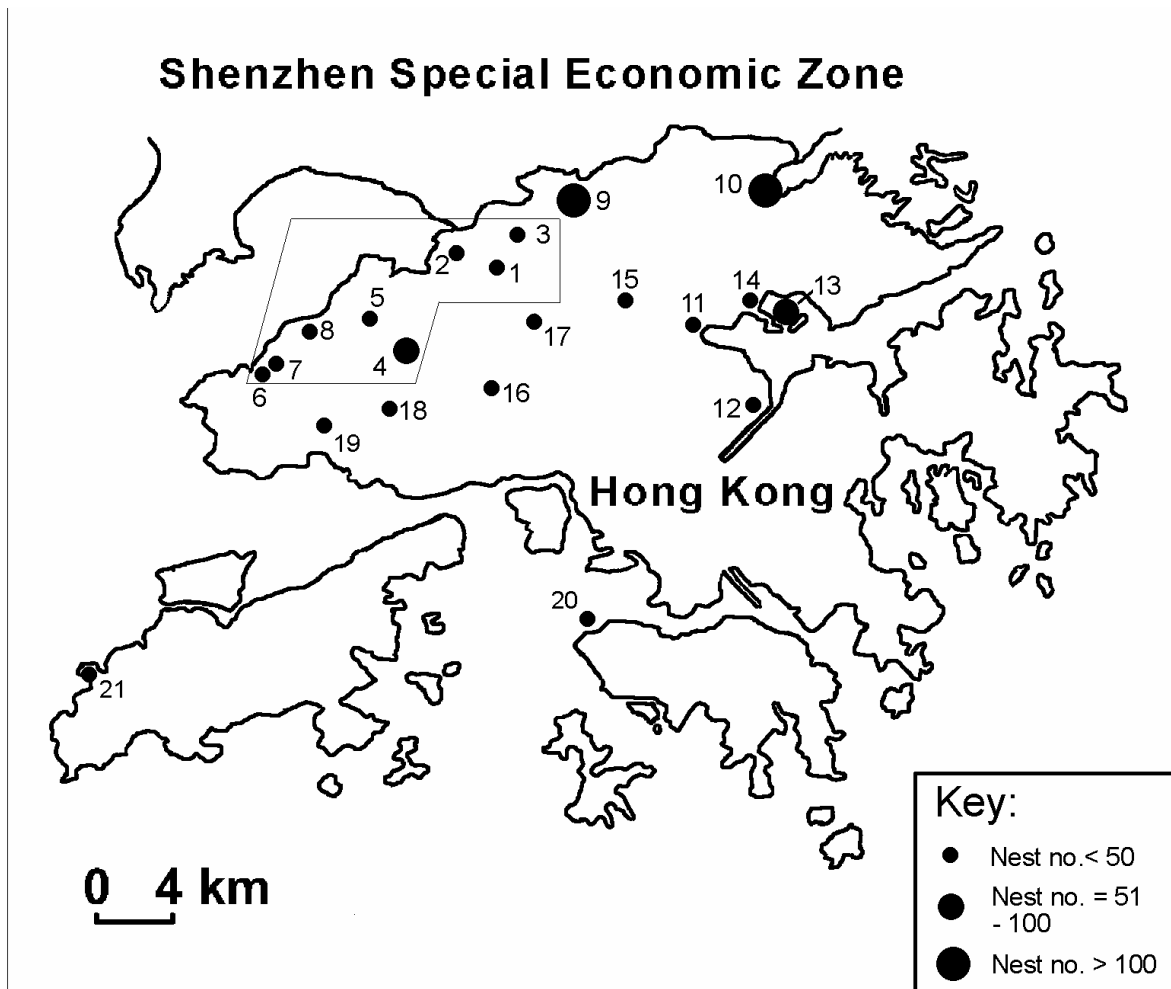


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Figure 1. Locations of colonies in Hong Kong in 2007. Nesting colonies in the Deep Bay area are enclosed. (1: Mai Po Village, 2: Tam Kon Chau, 3: Mai Po Lung Tsuen, 4: Tung Shing Lane, 5: Ha Mei San Tsuen, 6: Pak Nai, 7: Pak Nai 2, 8: Sham Po, 9: Ho Sheung Heung, 10: A Chau, 11: Tai Po Market, 12: Penfold Park, 13: Yeung Chau, 14: Shuen Wan; 15: Lam Tsuen, 16: Ma On Kong, 17: Ha Che, 18: Tai Tong, 19: Tuen Mun, 20: Little Green Island, and 21: Tai O).



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Appendices



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Agriculture, Fisheries and Conservation Department

Appendix 1. Survey dates of nesting colonies in 2007 (*: Deep Bay colonies).

Colony	Date
Mai Po Village*	28 Apr, 24 May, 17 June, 30 July
Tam Kon Chau*	15 April, 1 May, 17 June, 30 July
Mai Po Lung Village*	28 April, 24 May, 17 June, 30 July
Tung Shing Lane*	28 April, 24 May, 17 June, 29 July
Ha Mei San Tsuen*	28 April, 24 May, 23 June, 29 July
Pak Nai*	27 April, 31 May, 23 June, 29 July
Pak Nai 2*	1 June, 23 June, 29 July
Sham Po (Sheung Pak Nai)*	27 April, 31 May, 23 June, 29 July
Ho Sheung Heung	28 April, 24 May, 30 June, 30 July
A Chau	8 April, 12 May, 16 June, 15 July
Tai Po Market	19 April, 19 May, 27 June, 20 July
Penfold Park	5 May, 19 May
Yeung Chau (Plover Cove)	29 April, 19 May, 16 June, 20 July
Shuen Wan	8 April, 12 May, 16 June, 15 July
Lam Tsuen	28 April, 31 May, 26 June, 20 July
Ma On Kong	28 April, 24 May, 17 June, 29 July
Ha Che	28 April, 24 May, 17 June, 29 July
Tai Tong	28 April, 24 May, 29 July
Tuen Mun	23 April, 30 May, 25 June
Little Green Island	21 April, 29 May, 25 June
Tai O	5 May
Ho Pui	28 April, 31 May
Centre Island	29 April, 19 May, 16 June, 20 July
San Po Tsui, Lantau	5 May

Appendix 2. The number of nests recorded in each survey in the 21 colonies in 2007.

Appendix 2.1. Number of nests at Mai Po Village. Only the part near the junction between Mai Po Road and Castle Peak Road was active. Another part of the colony, i.e. between San Tam Road and Castle Peak Road, was abandoned.

	28 Apr	24 May	17 June	30 July	Max
Little Egret	4	1			4
Chinese Pond Heron	18	30			30
Total	22	31	0	0	34

Appendix 2.2. Number of nests at Tam Kon Chau

	15 April	1 May	17 June	30 July	Max
Chinese Pond Heron	15	24	26	0	26

Appendix 2.3. Number of nests at Mai Po Lung Village

	28 April	24 May	17 June	30 July	Max
Little Egret	18	9	17		18
Chinese Pond Heron	15	31	20		31
Total	33	40	37	0	49

Appendix 2.4. Number of nests at Tung Shing Lane

	28 April	24 May	17 June	29 July	Max
Little Egret	25	51	17		51
Cattle Egret	3	1			3
Chinese Pond Heron	18	20	24		24
Total	46	72	41	0	78

Appendix 2.5. Number of nests at Ha Mei San Tsuen

	28 April	24 May	23 June	29 July	Max
Little Egret	8	8	2		8
Cattle Egret	1				1
Chinese Pond Heron	23	18	6		23
Total	32	24	8	0	32

Appendix 2.6. Number of nests at Pak Nai

	27 April	31 May	23 June	29 July	Max
Little Egret	13	8	9		13
Chinese Pond Heron	4	3	3		4
Sub-total	17	11	12	0	17

Appendix 2.7. Number of nests at Pak Nai 2

	1 June	23 June	29 July	Max
Little Egret	12			12
Chinese Pond Heron	4			4
Sub-total	16	0	0	16

Appendix 2.8. Number of nests at Sham Po, Ngau Hom Shek

	27 Apr	31 May	23 June	29 July	Max
Little Egret	13	NC	2	1	13
Chinese Pond Heron	10	NC	1		10
Total	23	NC	3	1	23

NC: not count due to access blocked by unauthorized dumping

Appendix 2.9. Number of nests at Ho Sheung Heung

	28 April	24 May	30 June	30 July	Max
Little Egret	23	25	31		31
Cattle Egret	17	11	2		17
Chinese Pond Heron	39	71	18	7	71
Total	79	107	51	7	119

Appendix 2.10. Number of nests at A Chau

	8 April	12 May	16 June	15 July	Max
Great Egret	59	37	4		59
Little Egret	2		1		2
Cattle Egret	7	24	15	5	24
Black-crowned Night Heron	19	21	18	10	21
Total	87	82	38	15	106

Appendix 2.11. Number of nests at Tai Po Market (Wan Tau Kok Lane)

	19 April	19 May	27 June	20 July	Max
Little Egret	9	12	4		12
Cattle Egret		1			1
Black-crowned Night Heron	4	17	8		17
Chinese Pond Heron			1		1
Total	13	30	13	0	31

Appendix 2.12. Number of nests on Penfold Park

	5 May	19 May	Max
Great Egret	8	9	9
Little Egret	14	15	15
Black-crowned Night Heron	5	7	7
Chinese Pond Heron	4	1	4
Total	31	32	35

Appendix 2.13. Number of nests on Yueng Chau, Plover Cove

	29 April	19 May	16 June	20 July	Max
Great Egret	67	30	63	5	67
Little Egret	1	2	6	3	6
Cattle Egret	1	1	1	1	1
Black-crowned Night Heron	13	17	4	4	17
Total	82	50	74	13	91

Appendix 2.14. Number of nests at Shuen Wan

	8 April	12 May	16 June	20 July	Max
Chinese Pond Heron	0	0	1	3	3

Appendix 2.15. Number of nests at Lam Tsuen.

	28 April	31 May	26 June	20 July	Max
Chinese Pond Heron	3	2	0	0	3

Appendix 2.16. Number of nests at Ma On Kong

	28 April	24 May	17 June	29 July	Max
Little Egret	1	1	1		1
Chinese Pond Heron	3	8	5		8
Total	4	9	6	0	9

Appendix 2.17. Number of nests at Ha Che

	28 April	24 May	17 June	29 July	Max
Little Egret	1	1			1
Chinese Pond Heron	10	19	8		19
Total	11	20	8	0	20

Appendix 2.18. Number of nests at Tai Tong

	28 April	24 May	29 July	Max
Cattle Egret	15	11		15
Chinese Pond Heron	14	24		24
Total	29	35	0	39

Appendix 2.19. Number of nests at Tuen Mun

	23 Apr	30 May	25 June	Max
Little Egret	13	24	26	26
Total	13	24	26	26

Appendix 2.20. Number of nests at Little Green Island

	21 April	29 May	25 June	Max
Little Egret	6	17	15	17
Black-crowned Night Heron	8	12	10	12
Total	14	29	25	29

Appendix 2.21. Number of nests at Tai O

	5 May
Little Egret	18
Black-crowned Night Heron	18
Total	36