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**Mai Po Inner Deep Bay Ramsar Site
Waterbird Monitoring Programme
2006 - 07**

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

Summer 2006 Report



Submitted by

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Waterbird Monitoring at the Mai Po Inner Deep Bay Ramsar Site

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Summer 2006 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 2006 REPORT

Summary

In the 2006 breeding season, a total of 406 nests of four ardeid species in seven 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 (58% and 41% of the total number of nests in the Deep Bay area, respectively). These two species comprised 63% and 54% of their total number of nests by species in Hong Kong, respectively. Number of nests in the Deep Bay area accounted for 40% of the total one in Hong Kong in 2006. The total number of nests in Hong Kong in 2006 was 1017 nests of five species in 21 colonies. Two new colonies at Sham Po near Ngau Hom Shek and Yeung Chau, Plover Cove were reported. Compared with 333 nests in the Deep Bay area and 1030 nests in Hong Kong in 2005, there is a 22% increase in the Deep Bay area and 1.0% decrease in Hong Kong, respectively. An open training workshop on the egrettry count techniques will be conducted in 2007 for sharing such counting techniques.

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 were recorded.

2 METHODS

Active and abandoned colonies were surveyed in 2004 and 2005 and between March and July 2006 (Tables 1 and 2, Figure 1). In addition, potential new nesting sites were also visited. New colonies were located by personal observations, and information from birdwatchers and environmentalists. Active nests, determined by the presence of incubating adults or chicks, were counted directly from vantage points or by the walk-and-count method at all colonies with 10x binoculars or bare eyes, except A Chau, Centre Island and Little Green Island with telescope of 20-45x zoom range, depending on the proximity between the surveyor and the colony. 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 2004, 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 that 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 in a colony in 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. Apart from the number of nests, the nesting substratum was also identified. 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.

Table 1. Survey dates of nesting colonies in 2006 (*: Deep Bay colonies).

Colony	Date
Mai Po Village*	21 April, 28 May
Tam Kon Chau*	30 April, 28 May
Pak Nai*	8 April, 15 May
Ho Sheung Heung	12 May, 28 May
Tai Po Market	15 and 29 May
Centre Island	26 March, 13 May, 9 July
Penfold Park	19 May, 24 June
A Chau	18 March, 16 April, 14 May
Lam Tsuen	2 and 6 June
Tai O	20 May
Ho Pui	31 May and 14 June
Ma On Kong	1 and 31 May
Mai Po Lung Village*	1 and 28 May

Tung Shing Lane*	1 and 31 May
Ha Che	30 May
Tai Tong	1 and 31 May
Ha Mei San Tsuen*	1 and 31 May
Tuen Mun	30 April, 26 May
Sham Po (Ngau Hom Shek)*	8 April
Chim Uk, Shuen Wan	15 May,
Little Green Island	17 May, 4 June
Yeung Chau (Plover Cove)	13 May
San Po Tsui, Lantau	20 May

3 RESULTS and DISCUSSION

3.1 Breeding population in the 2006 breeding season

A total of 1017 nests were recorded at 21 colonies between March and July 2006 in Hong Kong (Table 2, Figure 1, Appendices 1 - 21). Underestimation of the number of nests at A Chau, Yeung Chau, Centre Island, Little Green Island and San Po Tsui colonies may have occurred as some nests were built in dense vegetation, and were thus invisible. Colonies at Sham Po and Yeung Chau were first noted. In Ma On Kong, a tree containing two Chinese Pond Heron nests at Ma On Kong village was reported on 16 May. As the location was only about 150m away, it was included in the number of nests in the Ma On Kong colony. No relocation of colonies was noted in all colonies, but no breeding was noted in a banyan tree at Ha Che, which is used to be the main breeding location at Ha Che. Visits to Chim Uk (Shuen Wan) and Ho Pui were made but no breeding was noted. On the Centre Island colony, no breeding of egrets and herons was noted during the visits on 26 March and 13 May. However, observation on 9 July from the Ma On Shan waterfront with telescope found possible locations of Great Egrets (*Egretta alba*) and Black-crowned Night Herons (*Nycticorax nycticorax*) nests on the island and they were seen to land and active around the vegetation, suggesting that breeding activities may be underway. Observations from AFCD later confirmed breeding, as active nests with juveniles were found on the island.

The highest number of nests was recorded at the A Chau colony (195 nests, 19% of total nests in Hong Kong), while the smallest was at the Sham Po colony (4 nests, 0.4% of total nests in Hong Kong) (Table 2). A Chau contained the highest number of nests of Great Egrets (80 nests, 59% of the total number of nests), Black-crowned Night Herons (78 nests, 64% of the total number of nests, and Cattle Egrets (*Bubulcus ibis*, 32 nests, 40% the total number of nests) in Hong Kong. With regard to Little Egrets (*Egretta garzetta*), the Pak Nai colony (64 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 (82 nests, 22% of the total Chinese Pond Heron nests in Hong Kong).

In considering the number of nests of each species, the Chinese Pond Heron (376 nests, 37% of the total number of nests) was the most abundant, while the Cattle Egret was the least numerous (80 nests, 8% of the total number of nests numerous, Table 2). Little Egrets and Chinese Pond Herons are the two most widespread species, of bred at 16 and 14 colonies, respectively.

Table 2. The number of nests at surveyed colonies in the Hong Kong in 2006 (*: Deep Bay colonies; + = present but no confirmed breeding).

	Great Egret	Little Egret	Black-crowned Night Heron	Chinese Pond Heron	Cattle Egret	Total	%
1. Mai Po Village*		35		50		85	8.4
2. Tam Kon Chau*				37		37	3.6
3. Mai Po Lung Village*		12		74		86	8.5
4. Tung Shing Lane*		43		32	2	77	7.6
5. Ha Mei San Tsuen*		9		30		39	3.8
6. Pak Nai*	3	64		10	1	78	7.7
7. Sham Po* (near Ngau Hom Shek)		2		2		4	0.4
8. Ho Sheung Heung		36		82	29	147	14.5
9. A Chau	80	5	78		32	195	19.2
10. Tai Po Market	1	12	8			21	2.1
11. Centre Island	4		5			9	0.9
12. Penfold Park	42	25	7	2		76	7.5
13. Yeung Chau (Plover Cove)	5	2	10		1	18	1.8
14. Lam Tsuen				7		7	0.7
15. Ma On Kong				18		18	1.8
16. Ha Che				17		17	1.7
17. Tai Tong		1		10	15	26	2.6
18. Tuen Mun		16				16	1.6
19. Little Green Island		13	4		+	17	1.7
20. Tai O		15	9			24	2.4
21. San Po Tsui (Lantau)		15		5		20	2.0
Total	135	305	121	376	80	1017	100.0
%	13.3	30.0	11.9	37.0	7.9	100.0	

3.2 A comparison between the 2005 and 2006 breeding seasons

Although the number of nests slightly decreased from 1030 in 2005 to 1017 in 2006, i.e. a 1.0% decrease, variations of number of nests in individual colonies between 2005 and 2006 were found.

These variations were shown below and they were thought to relate to natural variation including food availability, and unidentified disturbance.

- (1) Breeding of Great Egrets at Penfold Park: None bred in 2005 and 42 nests were found in 2006. These breeding birds were believed to originate from Centre Island as the number of breeding birds at Penfold Park in 2006 were similar to those on Centre Island in 2005. Also, no breeding was noted on Centre Island in the early breeding season.
- (2) More Chinese Pond Heron nesting at Mai Po Lung Village: A 40% increase in number of Chinese Pond Heron nests at Mai Po Lung Village was noted (2005: 61 nests)
- (3) More Little Egret and Cattle Egret nesting at Ho Sheung Heung: About 2 and 2.5 times increased in the nests of Little Egret (LE) and Cattle Egret (CE) at Ho Sheung Heung were noted, respectively (2005: LE – 17 nests, CE – 12 nests).
- (4) Fewer Little Egrets and Black-crowned Night Herons nesting on A Chau: A 83% and 30% decrease in the number of nests of Little Egrets and Black-crowned Night Herons (BCNH) on A Chau was found, respectively (2005: LE – 29 nests, BCNH – 111 nests).

3.3 Colonies in the Deep Bay area

A total of 406 nests of four species were recorded in seven colonies in the Deep Bay area in the 2006 breeding season (Table 3). Tam Kon Chau is the only colony that falls within the boundary of the Mai Po Inner Deep Bay Ramsar Site. After the absence of breeding in 2004 and 2005, Great Egret nested in the Deep Bay area again, of which three nests were seen at Pak Nai. 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 Egrets were the two dominant breeding ardeids in the Deep Bay area (CPH: 58% of the total nests in the Deep Bay area; LE: 41%), while the least was Great Egret (0.7%). The total number of nests in the seven Deep Bay colonies comprised 40% of the total one in Hong Kong (Table 3).

Table 3. The relative importance of Deep Bay colonies to the others in Hong Kong in 2006. Colonies in the Deep Bay area are Mai Po Village, Tam Kon Chau, Pak Nai, 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	3	135	2

Little Egret	165	305	54
Black-crowned Night Heron	0	121	0
Chinese Pond Heron	235	376	63
Cattle Egret	3	80	4
Total	406	1017	40

3.4 Nesting habitats

Bamboo was the main nesting habitat of ardeids nesting in Tai O, North and Northwest New Territories including colonies at Ho Sheung Heung and Mai Po Lung Village (Table 4). All nests at the Tam Kon Chau colonies were built on Banyan trees (*Ficus microcarpa*). Exotic trees including *Melaleuca quinquenervia* and *Lagerstroemia speciosa* were used by ardeids for nesting in the Mai Po Village and Tuen Mun colonies, respectively. 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 Centre Island, Little Green Island and Yeung Chau.

Table 4. Plants used by ardeids as nesting habitats in 2006

	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	+				
5. Ha Mei San Tsuen	+				
6. Pak Nai	+				
7. Sham Po	+				
8. Ho Sheung Heung	+				
9. A Chau				Mainly on <i>Hibiscus tiliaceus</i> , <i>Mallotus mamiculatus</i>	
10. Tai Po Market					No detailed plant survey was conducted
11. Centre Island					No detailed plant survey was conducted
12. Penfold Park		+	+		<i>Acacia confusa</i>
13. Yeung Chau (Plover Cove)					No detailed plant survey was conducted
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	+				
21. San Po Tsui, Lantau					No detailed plant survey was conducted

3.5 Counting difficulty at the A Chau colony

Counting the nests of this colony from two vantage points outside A Chau has become more difficult in recent years due to vegetation growth, causing heavy screening of the nests. Difficulty in counting the Great and Little Egret nests could be overcome by the presence of adults or juveniles, which contrast enough from the surrounding to indicate the presence of a nest. However, this technique could not be applied to Black-crowned Night Herons as their body colour is dull and blends with the background. Thus, an underestimation of this species may be resulted. It is recommended that a survey of nests could be made in the colony by qualified researchers for more accurate estimation of nest abundance.

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 2006, these colonies were Mai Po Village (including a small colony off Mai Po Lo Wai), Tam Kon Chau, Mai Po Lung Village, Ma On Kong, Ha Mei San Tsuen and Tuen Mun.

3.7 Training workshop for ardeid nesting colony monitoring

A training workshop will be scheduled in April / May 2007 to introduce basic techniques of locating possible new nesting colonies and estimating nesting pairs in a colony. This workshop will be opened to the public, in particular interested birdwatchers and environmentalists.

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. It is particularly important in Hong Kong as the land use pattern is changed rapidly. 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.

3.10 Decline in nesting Black-crowned Night Herons on A Chau

The number of nests of Black-crowned Night Herons declined from 177 nests in 2002 to 78 this year. The decline appears to be species-specific as nesting Great Egrets increased in number during the period, while Little Egrets and Cattle Egrets fluctuated around 20 and 50 nests, respectively. As A Chau is the stronghold of nesting Black-crowned Night Herons in Hong Kong, it is recommended that a detailed study of their breeding performance, prey analysis and feeding habitat use should be conducted for investigating possible factors leading to the decline.

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Figures

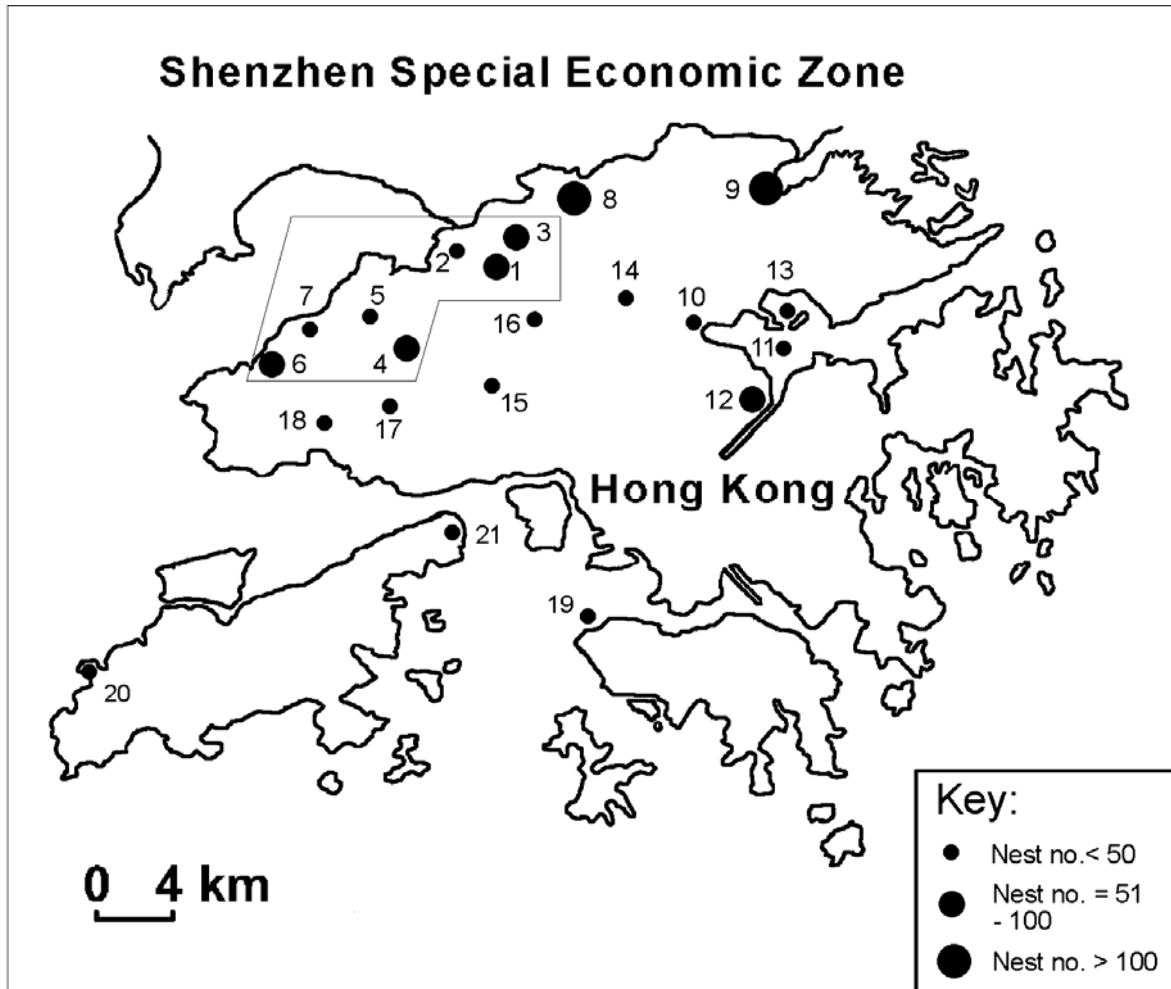


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Figure 1. Locations of colonies in Hong Kong in 2006. Nesting colonies in the Deep Bay area are enclosed. (1: Mai Po Village, 2: Tam Kon Chau, 3: Mai Po Lung Tsuen, 4: Tung Shing Lane, 5: Ha Mei San Tsuen, 6: Pak Nai, 7: Sham Po, 8: Ho Sheung Heung, 9: A Chau, 10: Tai Po Market, 11: Centre Island, 12: Penfold Park, 13: Yeung Chau, 14: Lam Tsuen, 15: Ma On Kong, 16: Ha Che, 17: Tai Tong, 18: Tuen Mun, 19: Little Green Island, 20 Tai O and 21: San Po Tsui).



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Appendices



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Agriculture, Fisheries and Conservation Department

APPENDICES. The number of nests recorded in each survey in the 21 colonies in 2006.

Appendix 1. Number of nests at Mai Po Village (NC: not count). Chinese Pond Heron nests were found at a nearby site

	21 Apr	28 May	Max
Little Egret	35	35	35
Chinese Pond Heron	NC	50	50
Total	35	50	85

Appendix 2. Number of nests at Tam Kon Chau

	30 Apr	28 May	Max
Chinese Pond Heron	33	37	37
Total	33	37	37

Appendix 3. Number of nests at Mai Po Lung Village

	1 May	28 May	Max
Little Egret	3	12	12
Chinese Pond Heron	39	74	74
Total	42	86	86

Appendix 4. Number of nests at Tung Shing Lane

	1 May	31 May	Max
Little Egret	43	18	43
Cattle Egret	2	2	2
Chinese Pond Heron	32	30	32
Total	77	50	77

Appendix 5. Number of nests at Ha Mei San Tsuen

	1 May	30 May	Max
Little Egret	9	9	9
Chinese Pond Heron	30	25	30
Total	39	34	39

Appendix 6. Number of nests at Pak Nai

	8 Apr	15 May	Max
Great Egret	2	3	3
Little Egret	64	33	64
Cattle Egret	1		1
Chinese Pond Heron	1	10	10
Total	68	46	78

Appendix 7. Number of nests at Sham Po, Ngau Hom Shek

	8 Apr
Little Egret	2
Chinese Pond Heron	2
Total	4

Appendix 8. Number of nests at Ho Sheung Heung

	12 May	28 May	Max
Little Egret	17	36	36
Cattle Egret	8	29	29
Chinese Pond Heron	52	82	82
Total	77	147	147

Appendix 9. Number of nests at A Chau

	18 Mar	10 Apr	8 May	Max
Great Egret	48	80	5	80
Little Egret	5	5	2	5
Cattle Egret		32	12	32
Black-crowned Night Heron	20	78	35	78
Total	73	195	54	195

Appendix 10. Number of nests at Tai Po Market (Wan Tau Kok Lane)

	15 May	29 May	Max
Great Egret	1	1	1
Little Egret	12	12	12
Black-crowned Night Heron	7	8	8
Total	20	21	21

Appendix 11. Number of nests on Centre Island

	13 May
Great Egret	4
Black-crowned Night Heron	5
Total	9

Appendix 12. Number of nests at Penfold Park

	19 May
Great Egret	42
Little Egret	25
Black-crowned Night Heron	7
Chinese Pond Heron	2
Total	76

Appendix 13. Number of nests on Yueng Chau, Plover Cove

	13 May
Great Egret	5
Little Egret	2
Cattle Egret	1
Black-crowned Night Heron	10
Total	18

Appendix 14. Number of nests at Lam Tsuen. No Chinese Pond Heron was found on 2 June

	2 June	8 June	Max
Chinese Pond Heron		7	7
Total		7	7

Appendix 15. Number of nests at Ma On Kong

	1 May	26 May	31 May	Max
Chinese Pond Heron	12		16	16
Chinese Pond Heron nesting site at Ma On Kong village		2		2
Total	12	2	16	18

Appendix 16. Number of nests at Ha Che (+ = present)

	30 May
Little Egret	+
Chinese Pond Heron	17
Total	17

Appendix 17. Number of nests at Tai Tong (NC: not count due to bad weather and flooding)

	1 May	31 May	Max
Little Egret	1	NC	1
Cattle Egret	15	NC	15
Chinese Pond Heron	9	10	10
Total	25	10	26

Appendix 18. Number of nests at Tuen Mun

	30 Apr	26 May	Max
Little Egret	16	13	16
Total	16	13	16

Appendix 19. Number of nests at Little Green Island (+ = present)

	17 May	4 June	Max
Little Egret	5	13	13
Cattle Egret		+	
Black-crowned Night Heron	+	4	4
Total	5	17	17

Appendix 20. Number of nests at Tai O

	20 May
Little Egret	15
Black-crowned Night Heron	9
Total	24

Appendix 21. Number of nests at San Po Tsui, Lantau

	20 May
Little Egret	15
Black-crowned Night Heron	5
Total	20