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

SUMMER 2002 REPORT

Captain, L. C. Wong

Summary

In the 2002 breeding season in the Deep Bay area, a total of 289 nests of five ardeid species in seven egretries were recorded. Little Egrets (*Egretta garzetta* 135 nests) and Chinese Pond Herons (*Ardeola bacchus* 111 nests) were the two dominant species in the Deep Bay area, which comprised 50% and 42% of local populations of that species, respectively. The Deep Bay nesting population accounted for one third of the total number of nests in Hong Kong in 2002. The total nesting population in Hong Kong in 2002 was 972 nests of five species in 19 egretries. No new egretry was discovered in the Deep Bay area but two new egretries at To Kau Wan on Lantau, and Ha Che at Shek Kong were first reported, while the one at Shui Mei was abandoned. Compared with the 2001 figures, a 2% decrease and 17% increase in the ardeid nesting population was noted in the Deep Bay area and Hong Kong, respectively. Such a population fluctuation cannot be explained as no prey and wetland quality monitoring can be referenced.

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 (Hafner and Fasola 1997), Australia (Maddock and Baxter 1991) 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 the Hong Kong Special Administrative Region (HKSAR) 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. . This kind of record submission 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. A total of 37 egretries, active or abandoned, have been reported in Hong Kong up to the year 2002. At least 19 of these 37 colonies were discovered after 1990 (*ibid*.), and therefore have a dataset of less than 10 years. As a result of these factors, it is difficult to study long-term trends in local ardeid breeding population.

The recording of breeding populations of egretries in the Deep Bay area, as part of the long-term monitoring of waterbird abundance in the Mai Po and Inner Deep Bay Ramsar Site, started in 1998. Both breeding species and the number of nesting pairs, in the Deep Bay area are recorded. In addition to recording breeding species and the breeding population, an estimation of breeding success was incorporated into the surveys. This information will be useful for the long-term monitoring of local ardeid nesting population, in particular those in the Inner Deep Bay area.

2 METHODS

Active egretries between 2000 and 2001 were surveyed between March and June 2002 (Table 1, Figure 1). In addition, suspected new nesting sites were also visited. New egretries were located by personal observations and from various information sources. 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 egretries. In addition, the nesting substratum was noted recorded. The nesting population of each species in each egretry was taken to be the sum of the highest count of the number of nests of each species (for egretries surveyed more than once).

Table 1. Dates of egretry surveys in the 2002 breeding season (Locations in Figure 1).

Egretry	Date
1. Mai Po Village*	6 April, 1 June
2. Tam Kon Chau*	6 April, 1 June
3. Pak Nai*	9 April
4. Ngau Hom Shek*	9 April
5. Ho Sheung Heung	6 April, 18 May
6. Tai Po Market	22 March, 16 May
7. Centre Island	20 May
8. Penfold Park	23 May
9. A Chau	30 March, 20 April,
10. Stonecutters	19 May
11. Lam Tsuen	16 May
12. Tai O	2 May
13. Ho Pui	8 May, 19 June
14. Ma On Kong	8 May, 19 June
15. Mai Po Lung Village*	6 April, 1 June
16. Small Traders New Village*	18 May
17. Shing Uk Tsuen*	18 May
18. To Kau Wan	19 May
19. Ha Che	14 June

Note:

*: Deep Bay egretries

3 RESULTS and DISCUSSION

3.1 Breeding population in the 2002 breeding season

A total of 972 nests were recorded at 19 egretries in the HKSAR (Figure 1, Appendix 1 - 19). Underestimation of active nests at A Chau, Centre Island and the Stonecutters egretries may be occurred as some nests may hide in dense vegetation. A 17% increase in total nests from 2001 was found. Such a population increase cannot be explained as there is neither qualitative nor quantitative monitoring of prey, nor any monitoring of the area or productivity of wetland habitats in Hong Kong.

The egretries at To Kau Wan on Lantau and Ha Che at Shek Kong were first discovered

this year, while the Shui Mei egretry was abandoned. During the first visit on 6 April, one to two birds of Chinese Pond Herons were seen active in the egretry, while neither birds nor nests were found on 1 June, although the nesting site was apparently intact in both visits. One egretry comprising Little and Cattle Egrets and Chinese Pond Herons at Tai Tong, Yuen Long was discovered on 25 July 2002 (Ecosystems Ltd. in litt.). It is not considered here as it was discovered near the end of breeding seasons and the count was incomplete. In addition, the original nesting sites at Pak Nai and the Stonecutters moved to a new location, though near their former sites.

The highest number of nests was recorded at the A Chau Egretry (31% of total nests in Hong Kong) while the lowest was at Tai O (1% of total nests in Hong Kong) (Table 2). The A Chau Egretry contained the highest number of nests of Great Egrets (*Egretta alba*) (63% of the total number of nests), Black-crowned Night Herons (*Nycticorax nycticorax*) (71% of the total number of nests), and Cattle Egrets (*Bubulcus ibis*) (38% the total number of nests) in Hong Kong. With regard to Little Egrets, the Mai Po Village Egretry (14% of total Little Egret nests in Hong Kong) and the Pak Nai Egretry (17%) are the two most important sites, while the Ho Sheung Heung Egretry is the main nesting site of Chinese Pond Herons (*Ardeola bacchus*) (34% of the total Chinese Pond Heron nests in HK).

Numerically, the dominant breeding species in Hong Kong was Little Egrets (28% of the total number of nests), while Cattle Egrets were the least numerous (8% of the total number of nests, Table 2). Little Egrets and Chinese Pond Herons are the two most widespread species. Little Egrets bred at 17 egretries, while Chinese Pond Herons bred at 15 egretries.

The overall nesting population and the number of nesting sites in Hong Kong between 1998 and 2002 generally increased (Figure 2). The population of Great and Little Egrets, and Chinese Pond Herons showed marked increases since 1999, while Black-crowned Night Herons and Cattle Egrets fluctuated.

Table 2. The number of nests at surveyed egretries in the Hong Kong in the 2002 breeding season.

	Great Egret	Little Egret	Black-crowned Night Herons	Chinese Pond Heron	Cattle Egret	Total (%)
1. Mai Po Village*	15	37	9	14	12	87 (9.0)
2. Tam Kon Chau*				32		32 (3.3)
3. Pak Nai*		45		3	3	51 (5.2)
4. Ngau Hom Shek*		5		8		13 (1.3)
5. Ho Sheung Heung		16		90	12	118 (12.1)
6. Tai Po Market	5	15	9	1		30 (3.1)
7. Centre Island	20	13	20		1	54 (5.6)
8. Penfold Park	1	24	5	2		32 (3.3)
9. A Chau	70	24	177		30	301 (31.0)
10. Stonecutters		3	20	1		24 (2.5)
11. Lam Tsuen		3		17		20 (2.1)
12. Tai O		6	5			11 (1.1)
13. Ho Pui		2		1	17	20 (2.1)
14. Ma On Kong				12		12 (1.2)
15. Mai Po Lung Village*		2		45		47 (4.8)
16. Small Traders New Village*		27		5		32 (3.3)
17. Shing Uk Tsuen *		19		4	4	27 (2.8)
18. To Kau Wan	1	25	5			31 (3.2)
19. Ha Che		3		27		30 (3.1)
Total	112	269	250	262	79	972
(%)	(11.5)	(27.7)	(25.7)	(27.0)	(8.1)	(100.0)
No. of egretries that the particular ardeid was found	6	17	8	15	7	

Note: 30 empty nests were found in the Mai Po Village Egretry on 1 June. It indicates birds had completed breeding and parents and chicks had left the nests in early June (Yu, Y. T. pers. comm.).

3.2 Egretries in Deep Bay

Five species nested in seven egretries in the Deep Bay area during the 2002 breeding season (Mai Po Village, Tam Kon Chau, Pak Nai, Ngau Hom Shek, Ma Po Lung Village, Small Trader New Village and Shing Uk Tsuen). The Tam Kon Chau Egretry is the only egretry inside the Mai Po Inner Deep Bay Ramsar Site. The total number of nests in egretries in the Deep Bay area comprised 30% of the total number of nests in Hong Kong (Table 3). Little Egrets and Chinese Pond Herons were the two dominant species in the Deep Bay area, and comprised 50% and 42% of local populations, respectively.

Nesting population in Deep Bay area decreased by 2% between 2001 and 2002 was recorded, though the reasons for such an increase was not known and may be natural annual fluctuation. Following a decline between 1994 and 1999, the nesting population in the Deep Bay area, apart from Black-crowned Night Herons, showed an overall increase between 1999 and 2002 (Figure 3). The total number of nests in 2002 was more than twice that in 1999, but was only 21% of 1994 when the peak nesting population in Deep Bay was recorded.

Table 3. Importance of Deep Bay egretries (Mai Po Village, Tam Kon Chau, Pak Nai, Ngau Hom Shek, Mai Po Lung Village, Small Traders New Village, and Shing Uk Tsuen) relative to other egretries in the HKSAR in the 2002 breeding season.

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	15	112	13
Little Egret	135	269	50
Black-crowned Night Heron	9	250	4
Chinese Pond Heron	111	262	42
Cattle Egret	19	79	24
Total	289	972	30

3.3 Nesting habitats

Bamboo was the major nesting habitat of ardeids nesting in North and North West NT including Ho Sheung Heung, Mai Po Lung Village, and Ho Pui (Table 4). All nests at the Tam Kon Chau Egretry were built on Banyan trees (*Ficus microcarpa*). Exotic trees including *Melaleuca leucadendron* were made use by ardeids nesting in the Mai Po Village and Tai Po Market egretries. In the A Chau Egretry, the majority of nests were found in *Hibiscus tiliaceus*, while unidentified coastal plants were used by birds nesting in the Stonecutters, Centre Island and To Kau Wan egretries.

Table 4. Plants used by ardeids as nesting habitats in 2002.

	Bamboo	*Ficus microcarpa*	Exotic trees	Other plants	Remarks
1. Mai Po Village	+	+	+		
2. Tam Kon Chau		+			
3. Pak Nai	+				
4. Ngau Hom Shek	+				
5. Ho Sheung Heung	+				
6. Tai Po Market		+	+		
7. Centre Island					No detailed plant survey was conducted
8. Penfold Park		+			
9. A Chau				Mainly on *Hibiscus titiaces, Mallotus mamiculatus*	
10. Stonecutters					No detailed plant survey was conducted
11. Lam Tsuen	+				
13. Tai O				Not noted	
14. Ho Pui	+				
15. Ma On Kong				Lychee and Longgan trees	
16. Mai Po Lung Village	+				
17. Small Traders New Village	+				
18. Shing Uk Tsuen	+	+			
19. To Kau Wan					No detailed plant survey was conducted
20. Ha Che		+			

3.4 Egretries counted between 1998 and 2002

A total of seven egretries have been counted every year since 1998 (Table 5). The counts between 2001 and 2002 are similar but fewer nests were found at the Pak Nai and the Stonecutters egretries, while more nests were present at the Mai Po Village, Ngau Hom Shek, Ho Pui, A Chau and Ma On Kong egretries. Reasons for the increase in nesting population at the Ho Pui and Ma On Kong egretries and the decline of the nesting population at the Stonecutters in 2002 are not known.

Table 5. Number of nests of egretries counted between 1998 and 2002

	Mai Po Village	Pak Nai	Ngau Hom Shek	Ho Pui	A Chau	Stonecutters	Ma On Kong	Total
1998	133	57	6	34	292	79	4	567
1999	105	25	10	22	392	80	7	612
2000	108	44	15	13	251	51	6	488
2001	109	54	7	9	257	46	5	487
2002	87	51	13	20	291	24	12	498

3.5 Recommendation

(1) To study the relationship between population trend and weather

Nesting ardeid population trend in Europe is thought to associate with weather, in particular rainfall and winter temperature (Hafner and Fasola 1997). In Hong Kong, the Hong Kong Observatory reported that January to April 2002 was the warmest on record and the mean temperature is about 20^{o}C (http://www.weather.gov.hk/wxinfo/news/2002/pre0501c.htm). It is not known whether the population increase this year is associated with this warm temperature. Therefore, it is recommended that a desktop study should be conducted for investigating the relationship. In addition to temperature, rainfall and number of typhoons visiting Hong Kong may also be analysed. Although the peak season of typhoon invasion in Hong Kong is usually at the end (June and July) or after the breeding season (August and September), and may cause insignificant impact on the population in that year, such invasion may adversely affect the survival of juveniles, in turn, reduces the recruitment and thus nesting population of next few years. Nevertheless, such analysis would be enhanced our understanding to the relationship between population trend and weather.

(2) To increase the awareness of local police about the presence of these egretries

In order to enhance protection of egretries against human disturbances, it is recommended that an introductory talk about egretry conservation can be given to the Police in relevant districts. This talk can help to make the Police aware about the presence of these egretries in their patrolled areas.

(3) To evaluate breeding success of important egretries.

Current monitoring of the ardeid nesting population could indicate the major trends. However, this monitoring cannot reveal any information about recruitment. In order to gain a better understanding of the demography of local ardeids for conservation, and relating both breeding and demographic parameters to abiotic and biotic conditions (inter-colony, and inter-annual variations of weather). Study of the breeding success of nesting ardeids in large egretries, e.g. A Chau, Mai Po Village and Ho Sheung Heung egretries is recommended. The monitoring of breeding success is particularly important to the Mai Po Village egretry, as there has been a decline of the Black-crowned Night Heron nesting population in recent years with unknown reason.

(4) To clear invasive climbers

Clearance of climbers was conducted at Mai Po Village, A Chau and Centre Island by AFCD in late 2001 and early 2002. It is unknown whether any clearance was undertaken at Tai Po Market egretry. Continued manual clearance of climbers in winter 2002/2003 in these egretries is recommended. The further clearance of climbers, in particular *Mikania* spp., would control the size of impacted areas in these egretries and allow a generation of new plants for ardeids to nest.

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Figure 1. Locations of egretries in Hong Kong. Egretries in the Deep Bay area are enclosed. (1: Mai Po Village, 2: Tam Kon Chau, 3: Pak Nai, 4: Ngau Hom Shek, 5: Ho Sheung Heung, 6: Tai Po Market, 7: Centre Island, 8: Penfold Park, 9: A Chau, 10: Stonecutters, 11: Lam Tsuen, 12: Tai O, 13: Ho Pui, 14: Ma On Kong, 15: Mai Po Lung Tsuen, 16: Small Traders New Village and 17: Shing Uk Tsuen, 18 To Kau Wan and 19: Ha Che).

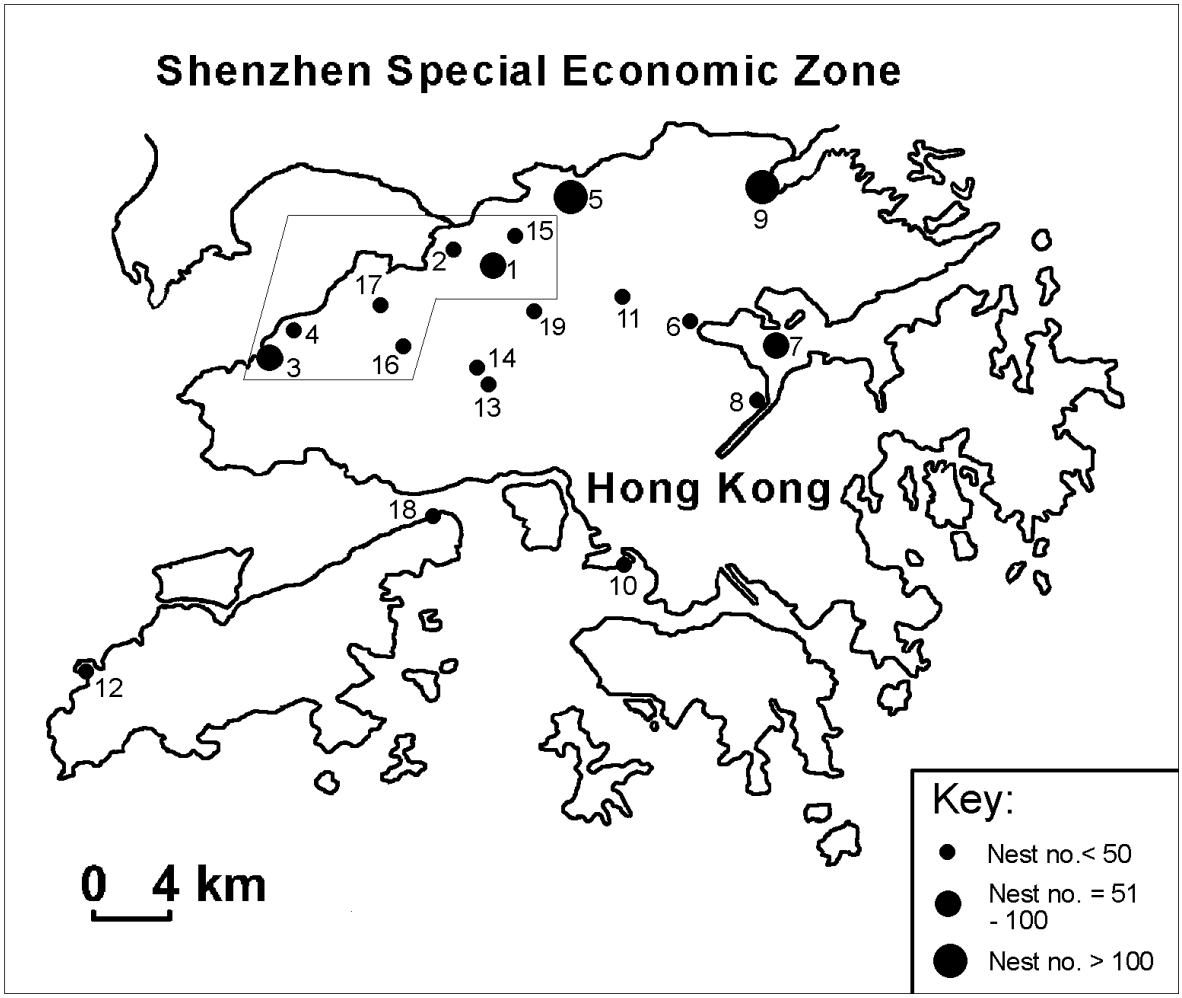
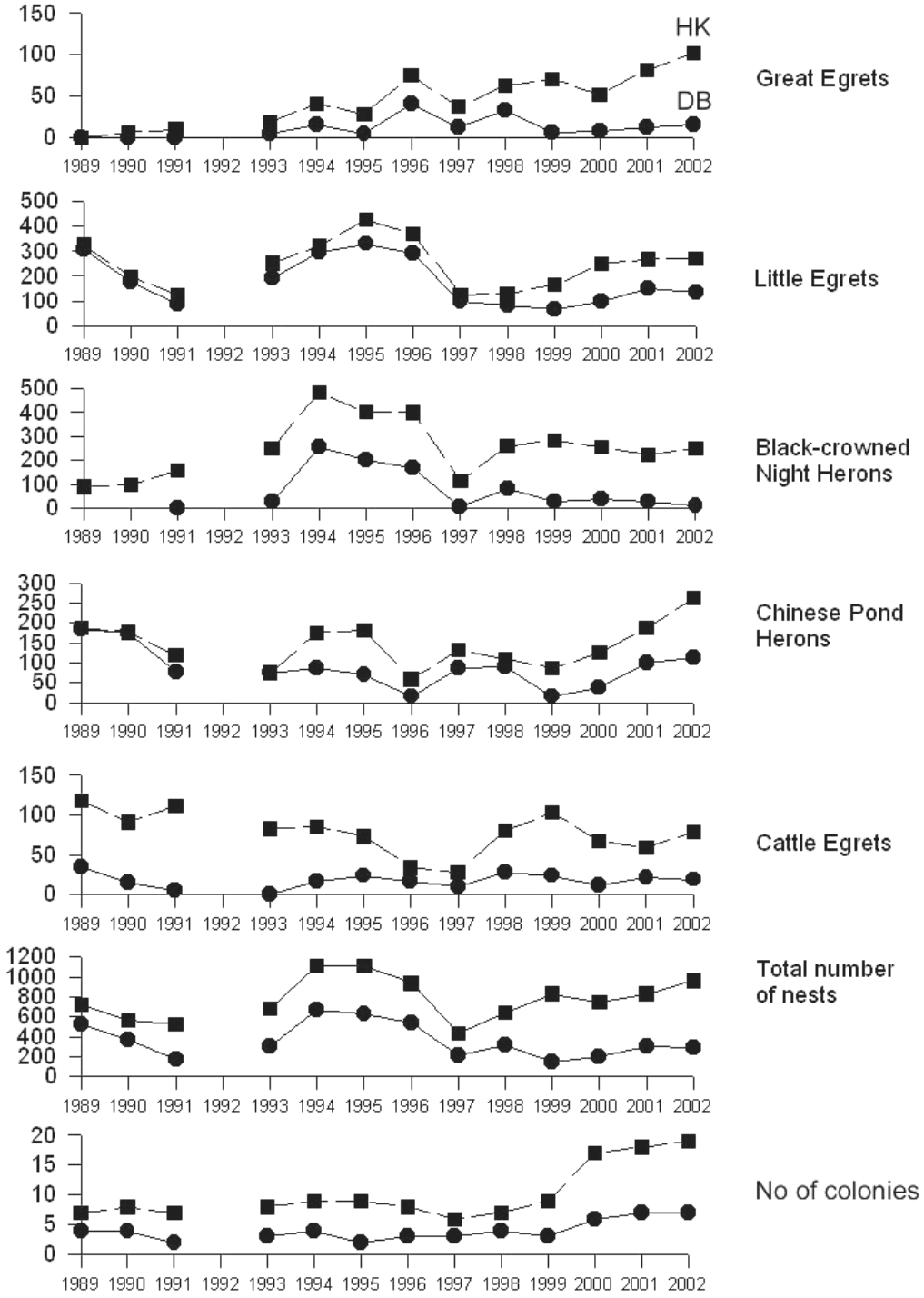


Figure 2. Nesting population trends of ardeids in Hong Kong and the Deep Bay area between 1989 and 2002. No 1992 data is available in Young and Cha (1994) as no counting was conducted in that year.



APPENDICES

Appendix 1. Number of nests at the Mai Po Village Egretry

	9-Apr	1-Jun	Max
Great Egret	15	13	15
Little Egret	37	30	37
Black-crowned Night Heron	9	8	9
Chinese Pond Heron	1	14	14
Cattle Egret	12	10	12
Total	**74**	**75**	**87**

Appendix 2. Number of nests at the Tam Kon Chau Egretry

	9-Apr	1-Jun	Max
Chinese Pond Heron	4	32	32
Total	**4**	**32**	**32**

Appendix 3. Number of nests at the Pak Nai Egretry

	9-Apr
Little Egret	45
Cattle Egret	3
Chinese Pond Heron	3
Total	**51**

Appendix 4. Number of nests at the Ngau Hom Shek Egretry.

	9-Apr
Little Egret	3
Chinese Pond Heron	10
Total	**13**

Appendix 5. Number of nests at the Ho Sheung Heung Egretry

	9-Apr	18-May	Max
Little Egret	16	15	16
Chinese Pond Heron	32	90	90
Cattle Egret	3	12	12
Total	**51**	**117**	**118**

Appendix 6. Number of nests at the Tai Po Market Egretry

	22-Mar	16-May	Max
Great Egret	5	1	5
Little Egret	15	14	15
Black-crowned Night Heron	8	9	9
Chinese Pond Heron		1	1
Unidentified		3	
Total	**28**	**28**	**30**

Appendix 7. Number of nests at the Centre Island Egretry

	20-May
Great Egret	20
Little Egret	13
Black-crowned Night Heron	20
Cattle Egret	1
Total	**54**

Appendix 8. Number of nests at the Penfold Park Egretry.

	23-May
Great Egret	1
Little Egret	24
Chinese Pond Heron	2
Black-crowned Night Heron	5
Total	**32**

Appendix 9. Number of nests at the A Chau Egretry

Species	30-March	20-Apr	23-May	Max
Great Egret	57	70	49	70
Little Egret	24	17	7	24
Black-crowned Night Heron	128	177	142	177
Cattle Egret	12	30	30	30
Total	**221**	**294**	**228**	**301**

Appendix 10. Number of nests at the Stonecutters Egretry

	19-May
Little Egret	3
Black-crowned Night Heron	20
Chinese Pond Heron	1
Total	**24**

Appendix 11. Number of nests at the Lam Tsuen Egretry

	16-May
Little Egret	3
Chinese Pond Heron	17
Total	**20**

Appendix 12. Number of nests at the Tai O Egretry.

	2-May
Little Egret	6
Black-crowned Night Heron	5
Total	**11**

Appendix 13. Number of nests at the Ho Pui Egretry.

	8-May	19-Jun	Max
Little Egret	2		2
Cattle Egret	6	17	17
Chinese Pond Heron	1		1
Total	**9**	**17**	**20**

Appendix 14. Number of nests at the Ma On Kong Egretry.

	8-May	19-Jun	Max
Chinese Pond Heron	2	12	12
Total	**2**	**12**	**12**

Appendix 15. Number of nests at the Mai Po Lung Tsuen Egretry (+: Present).

	9-Apr	1-Jun	Max
Little Egret		2	2
Chinese Pond Heron	25	45	45
Total	**25**	**47**	**47**

Appendix 16. Number of nests at the Small Traders New Village Egretry.

	18-May
Little Egret	27
Chinese Pond Heron	5
Total	**32**

Appendix 17. Number of nests at the Shing Uk Tsuen Egretry.

	18-May
Little Egret	19
Chinese Pond Heron	4
Cattle Egret	4
Total	**27**

Appendix 18. Number of nests at the To Kau Wan Egretry

	19-May
Great Egret	1
Little Egret	25
Black-crowned Night Heron	5
Total	**31**

Appendix 19. Number of nests at the Ha Che Egretry

	14-Jun
Little Egret	3
Chinese Pond Heron	27
Total	**30**