MAI PO INNER DEEP BAY RAMSAR SITE
WATERBIRD MONITORING PROGRAMME

Programme 2003/04	Monthly Waterbird Counts	April - September 2003

Summer 2003 Report

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Introduction

Comprehensive counts of waterbirds in the Deep Bay area were first carried out as part of an annual waterbird census first undertaken by the Hong Kong Bird Watching Society (HKBWS) in 1979. These continued in January every winter (excluding 1980) until 1992-93 when they were expanded to cover the winter period from November to March. With the establishment of the Mai Po Inner Deep Bay Ramsar Site, a monthly waterbird monitoring programme was developed. This long-term project, which commenced in March 1998, was coordinated and carried out by the HKBWS and subvented by the Agriculture, Fisheries and Conservation Department. Monthly counts of waterbirds in the site form a major part of this programme, the others being counts of shorebirds during the migration season, and egretry surveys during the breeding season. This report concerns the monthly waterbird monitoring component.

Methodology

The methodology used and the areas covered are described in detail in the *Waterbird Count Handbook* (Carey undated, Carey 2002, Map 1, Map 2). In general terms, however, it involves surveying specified areas and, where possible, mapping birds to individual fishponds or *gei wai*. Other variables, such as the vegetation surrounding each pond, the height of exposed edge to the pond and the percentage of pond bottom exposed as a result of drain-down are also measured. Tidal areas of Inner Deep Bay are surveyed simultaneously so as to ensure as little double-counting as possible occurs. During summer months counts occur at high tide. During the winter months when there are substantial numbers of birds in the bay and when there are no diurnal tides of a sufficient height to force all birds off the mudflat and onto roost sites inland, counts occur on a rising tide, preferably one that comes to about 2.0 m. Higher counts of individual species one week either side of the count date are included if they are considered to be more accurate than that made on the count day.

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Monthly summary reports are produced, while seasonal reports are produced bi-annually, one for the summer period from April to September, and the other for the winter period from October to March. This report concerns the summer period of 2003.

Results

The results of each monthly count are provided in detail in Appendix 1.

April

The April 2003 waterbird count took place on the 20th. Coverage of the Ramsar Site and the whole Deep Bay area was complete, except at Shenzhen River B (Ma Tso Lung). A total of 9,019 waterbirds was counted in the Deep Bay area including the Futian National Nature Reserve at Shenzhen, of which 7,595 (84%) were present in the Ramsar Site. The largest group comprised waders, whose peak of occurrence in terms of numbers occurs in the latter half of the month. Up to 6,821 (76%) waders were counted. The next largest group is ardeids, and a total of 1,910 (21%) were counted in the Deep Bay area. No Great Cormorants were counted, while ducks and grebes have dropped to low numbers at this time of year, and only 107 (1%) were counted. Table 1 summarizes the April count. Table 2 compares the total of Deep Bay area and the Ramsar Site with previous years.

Table 1. Summary of waterbird count for April 2003.

	Deep Bay Area	%	Ramsar Site	%	SW	SI
Cormorants	0	0.0	0	0.0	0	3
Ardeids etc	1910	21.2	984	13.0	43	434
Ducks, grebes, pelicans	107	1.2	59	0.8	0	1
Rails, Coot etc	110	1.2	71	0.9	0	0
Waders	6821	75.6	6410	84.4	18	64
Gulls and terns	71	0.8	71	0.9	0	0
TOTAL	9019	100	7595	100	61	502

SW: Shuen Wan, SI: Starling Inlet

Table 2. April waterbird counts 1999-2003.

April	1999	2000	2001	2002	2003	Average	Std. Dev.
Deep Bay area	11,686	8049	12,858	10,399	9,019	10,402	1945
Ramsar Site	11,148	7826	11,683	8319	7,595	9,314	1945

Table 2 shows that this year's Deep Bay area and Ramsar site counts were lower than the average.

May

The May 2003 waterbird count took place on the 18th, although the following sites were not counted: Deep Bay B (Mai Po boardwalk). Tsim Bei Tsui fishponds 1-40, San Tin and Shenzhen River B (Ma Tso Lung). A total of 3,925 waterbirds was recorded in the Deep Bay area, including Futian National Nature Reserve, Shenzhen, of which 3,153 (80%) were present in the Ramsar Site. Waders comprised the largest group of birds, numbering 2,019 (51%), and ardeids formed the second largest group, with 1,762 (45%) present. This reflects the fact that some migrant waders were still present in Deep Bay area at this time of the year. Table 3 summarizes the May count. Table 4 compares the totals for the Deep Bay area and the Ramsar Site to previous years.

Table 3. Summary of waterbird count for May 2003.

	Deep Bay Area	%	Ramsar Site	%	SW	SI
Cormorants	0	0.0	0	0.0	0	0
Ardeids etc	1762	45.0	1113	35.3	61	500
Ducks, grebes, pelicans	72	1.8	37	1.2	0	0
Rails, Coot etc	72	1.8	54	1.7	4	2
Waders	2019	51.4	1949	61.8	20	1
Gulls and terns	0	0.0	0	0.0	0	0
TOTAL	3925	100	3153	100	85	503

SW: Shuen Wan, SI: Starling Inlet

Table 4. May waterbird counts 1999-2003.

May	1999	2000	2001	2002	2003	Average	Std. Dev.
Deep Bay area	3,973	2,206	3,201	8,028	3,925	4,267	2,221
Ramsar Site	3,438	1,862	2,238	7,000	3,153	3,538	2,040

Table 4 shows that this year's counts of both Deep Bay area and Ramsar Site return to 'normal' from the particularly high number in previous year.

June

The June 2003 was scheduled for 15th. Coverage of the Ramsar Site and the whole Deep Bay area was incomplete, with the following sites not counted: Deep Bay B (Mai Po Boardwalk), C, D and E, Mai Po San Tsuen and Tsim Bei Tsui fishponds 41-80. A total of 1,313 waterbirds were recorded in the Deep Bay area, including Futian National Nature Reserve at Shenzhen. In the Ramsar Site, a total of 527 (40%) waterbirds was present. This is the lowest number recorded in summer 2003, due to the absence of passage waders, wintering ducks and cormorants. As usual, ardeids comprised by far the largest group of birds at this time of the year, with 1,025 (78%) recorded. The results of the count are summarized in Table 5, while

Table 6 compares the total for the Deep Bay area and the Ramsar Site to previous years.

Table 5. Summary of waterbird count for June 2003.

	Deep Bay Area	%	Ramsar Site	%	SW	SI
Cormorants	0	0.0	0	0.0	0	0
Ardeids etc	1025	78.1	337	64.0	83	571
Ducks, grebes, pelicans	70	5.3	22	4.2	0	0
Rails, Coot etc	34	2.6	10	1.9	5	3
Waders	165	12.6	139	26.4	1	0
Gulls and terns	19	1.5	19	3.6	0	0
TOTAL	1313	100	527	100	89	574

SW: Shuen Wan, SI: Starling Inlet

Table 6. June waterbird counts 1998-2003. (Note: Count in year 2000 was incomplete due to heavy rain.)

June	1998	1999	2001	2002	2003	Average	Std. Dev.
Deep Bay area	1,194	1307	3324	1879	1,313	1,803	891
Ramsar Site	891	999	1500	967	527	977	348

From table 6 it can be seen that this year's June count of birds in both Deep Bay area and Ramsar site were lower than the average, while the number of waterbirds in the Ramsar Site was the lowest since the monthly waterbird count has began.

July

The July 2003 waterbird count took place on 13th. Coverage of the Ramsar Site and the Deep Bay was complete. A total of 3,145 watebirds were counted in the Deep Bay area, including Futian National Nature Reserve at Shenzhen. A total of 2,133 (68%) was recorded in the Ramsar Site. Similar to the other summer months, ardeids comprised by far the largest group birds with 2,226 (71%) recorded. Table 7 summarizes the July count, while Table 8 compares the total for the Deep Bay area and the Ramsar Site to previous years.

Table 7. Summary of waterbird count for July 2003.

	Deep Bay Area	%	Ramsar Site	%	SW	SI
Cormorants	0	0.0	0	0.0	n/c	0
Ardeids etc	2226	70.8	1399	65.6	n/c	315
Ducks, grebes, pelicans	108	3.4	41	1.9	n/c	0
Rails, Coot etc	55	1.8	23	1.1	n/c	2
Waders	755	24.0	669	31.4	n/c	6
Gulls and terns	1	0.0	1	0.1	n/c	0
TOTAL	3145	100	2133	100	-	323

SW: Shuen Wan, SI: Starling Inlet; n/c: not counted.

Table 8. July Waterbird Counts 1998 - 2003. (Note: Count in year 2001 was incomplete due to heavy rain.)

July	1998	1999	2000	2002	2003	Average	Std. Dev.
Deep Bay area	2439	1941	3020	2135	3145	2,536	531
Ramsar Site	1976	1273	1173	1217	2133	1,554	461

Table 8 shows that this year's count was the highest since the monthly waterbird count has begun.

August

The August 2003 waterbird count took place on the 10th, and coverage of the Ramsar Site was complete, except for Deep Bay B (Mai Po Boardwalk) and San Tin. A total of 3,060 waterbirds was counted in the Deep Bay area, including Futian National Nature Reserve, of which 1,588 (52%) were present in the Ramsar Site. The largest group comprised ardeids at 2,197 (72%), and the second largest was migrant waders at 715 (23%). The results of the count are summarized in Table 9, while Table 10 compares the total for the Deep Bay area and the Ramsar Site to previous years.

Table 9. Summary of waterbird count for August 2003.

	Deep Bay Area	%	Ramsar Site	%	SW	SI
Cormorants	0	0.0	0	0.0	n/c	0
Ardeids etc	2197	71.8	1036	65.2	n/c	271
Ducks, grebes, pelicans	99	3.2	22	1.4	n/c	0
Rails, Coot etc	47	1.5	20	1.3	n/c	0
Waders	715	23.4	508	32.0	n/c	25

Gulls and terns	2	0.1	2	0.1	n/c	0
TOTAL	3060	100	1588	100	-	296

SW: Shuen Wan, SI: Starling Inlet; n/c: not counted.

Table 10. August Waterbird Counts 1999-2003.

August	1999	2000	2001	2002	2003	Average	Std. Dev.
Deep Bay area	2784	3178	4124	4096	3060	3448	621
Ramsar Site	2287	2232	2858	2463	1588	2286	461

A comparison with previous years' count and the average for the month is provided in Table 10. It can be seen that this year's count was lower than average, and is the second lowest August count since monthly waterbird counts began.

September

The September waterbird count was scheduled on 14th. The coverage of the Ramsar Site was complete, except for Deep Bay C, D and E (Tsim Bei Tsui intertidal area) and San Tin. For the whole Deep Bay area, surveys were not undertaken at Ma Tso Lung (Shenzhen River B) and Lau Fau Shan to Nim Wan. A total of 5,032 waterbirds was counted in the Deep Bay area, including Futian National Nature Reserve, of which 3,001 (60%) were present in the Ramsar Site. The largest group comprised ardeids at 2,950 (59%), and the second largest was migrant waders at 1,883 (37%). The results of the count are summarized in Table 11, while Table 12 compares the total for the Deep Bay area and the Ramsar Site to previous years.

Table 11. Summary of waterbird count for September 2003.

	Deep Bay Area	%	Ramsar Site	%	SW	SI
Cormorants	0	0.0	0	0.0	0	0
Ardeids etc	2950	58.6	1104	36.8	63	264
Ducks, grebes, pelicans	123	2.4	63	2.1	0	0
Rails, Coot etc	48	1.0	25	0.8	2	3
Waders	1883	37.4	1785	59.5	3	55
Gulls and terns	28	0.5	24	0.8	0	0
TOTAL	5032	100	3001	100	68	322

SW: Shuen Wan, SI: Starling Inlet

Table 12. September Waterbird Counts 1998 - 2003. (Note: Count in year 2002 was incomplete due to thunderstorm.)

April	1998	1999	2000	2001	2003	Average	Std. Dev.
Deep Bay area	5,303	3,499	5,689	4,566	5,032	4,818	843
Ramsar Site	4,705	2,994	3,580	3,087	3,001	3,743	730

A comparison with previous years' count and the average for the month is provided in Table 10. It can be seen that this year's count was slightly higher than average, but the number in Ramsar Site is lower than the average.

Migrant waders

Each year, large numbers of waders pass through Mai Po and Deep Bay in spring and smaller numbers also stop over during autumn. Waders constitute the largest or second largest among different groups of waterbirds in these months. Table 11 summarizes the numbers of waders in the Ramsar Site in summer counts and compares these with previous years. It should be noted that these are single day counts that may not reflect accurately the real number of individuals present during the course of any season (especially in spring).

Table 13. Summary of numbers of waders in the Ramsar Site during summer waterbird counts.

	1999	2000	2001	2002	2003
April	10474	7350	10386	7152	6410
May	2363	1000	1232	5869	1949
June	78	n/c	243	54	139
July	165	439	n/c	429	669
August	1363	1331	1835	1317	508
September	1889	2121	2379	n/c	1785

Table 13 shows that highest number of waders is recorded in April, followed by a drop from May to the lowest in June and a rise from July and September. Counts in peak passage time (April, May, August and September) during summer months of 2003 were generally lower than the counts in the same time of year 2002, but counts in mid-summer 2003 were higher than in 2002.

Ardeids

Egrets and herons are the main components of waterbirds during summer in the Deep Bay area and Ramsar Site. A summary of numbers of ardeids in summer counts 2003 and the previous years is shown in Table 12.

Table 14. Summary of ardeids numbers in both Deep Bay area and Ramsar Site during summer waterbird counts.

	1999		2000		2001		2002		2003	
	DB	RS	DB	RS	DB	RS	DB	RS	DB	RS
April	869	506	550	387	n/c	n/c	1519	884	1910	984
May	1353	912	1006	696	2019	1521	1620	874	1762	1113
June	1060	769	n/c	n/c	1056	789	2975	1184	1025	337
July	1684	1061	2459	692	2106	1698	n/c	n/c	2226	1399
August	1298	861	1697	826	1772	1588	2118	950	2197	1036
September	1458	993	2156	1054	1587	1132	1621	504	2950	1104

DB: Deep Bay area, RS: Ramsar Site, n/c: not counted

Table 12 shows that numbers of ardeids in the Deep Bay area reached a peak of 2,950 in September, which may be due to the arrival of some wintering ardeids. Numbers of breeding ardeids in the whole Deep Bay area were lower than summer 2002. High numbers of ardeids still bred in the mangrove at Futian National Nature Reserve in summer 2003, but the area is not easily accessible and actual numbers were probably seen be higher. The June count in particular is lower than other counts that would be resulted by incomplete survey in the whole Deep Bay area.

Discussion

The summer counts covered migration period of the waders in spring and autumn. Numbers of waders were generally lower than the monthly waterbird counts in year 2002. More details of migrant waders can be found in the Shorebird Count Report (Yu *et al.* 2003.). Numbers of ardeids in the whole Deep Bay area were higher toward the late summer, which may relate to the appearance of juvenile birds born in summer 2003. However, the pattern of ardeid numbers in the Ramsar site is still not yet clear in the summer months. Breeding populations of ardeids are a better indication of the condition of the wetland ecosystem in the Deep Bay area, as a varying number of non-breeding birds are present in the summer months. For such information readers are referred to the Egretry Report (Wong and Woo 2003). The monthly waterbird counts provide information on ardeid populations present in the whole Deep Bay area.

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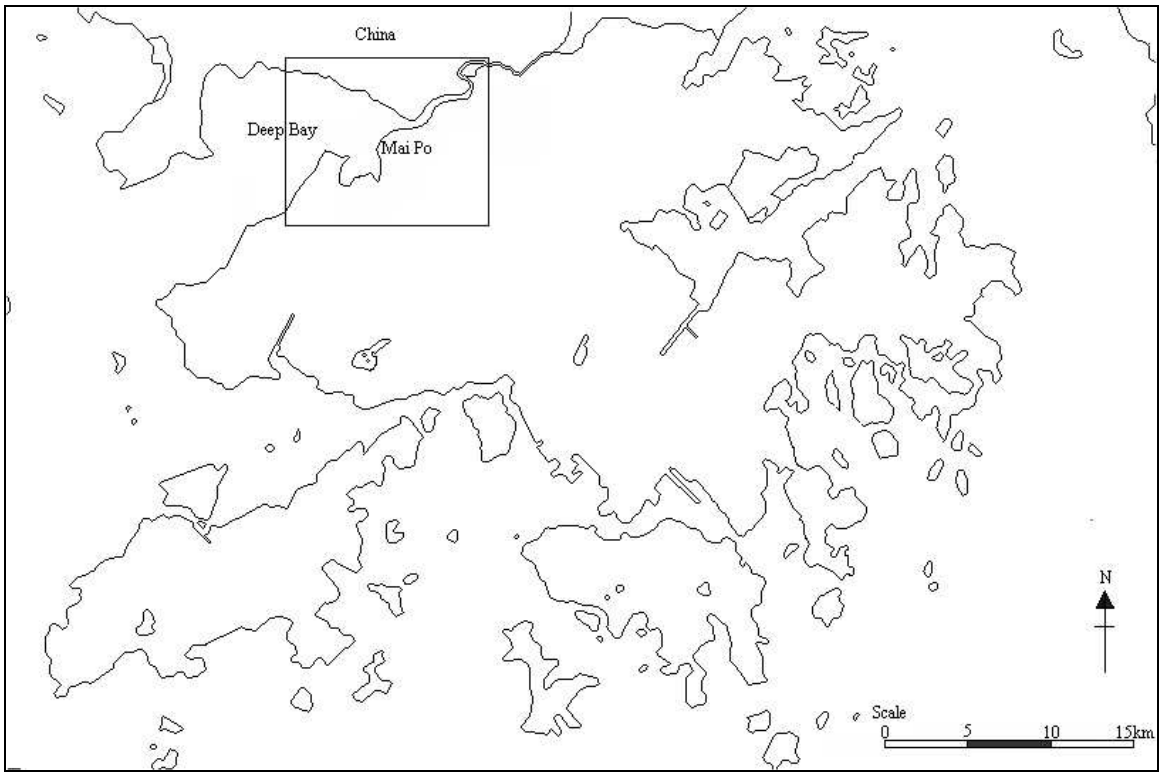
Map 1. Map of Hong Kong showing location of the Mai Po Inner Deep Bay Ramsar Site



Map 2. Locations of count sites of the Waterbird Monitoring Programme