

**BIRDS AND HUMANS IN HARMONY:
A SUSTAINABLE MANAGEMENT SCHEME IN LONG VALLEY**

BIRD MONITORING PROGRAMME

Programme 2006/07

Summer

June - August 2007

Summary Report - Summer 2007 (June to August)

Y.T. Yu¹

1. Background

- 1.1. The Environmental and Conservation Fund (ECF) supports a Hong Kong Bird Watching Society's project: Birds and Human in Harmony - A Sustainable Management Scheme in Long Valley, which aim to enhance the conservation value of this freshwater wetland especially for birds through a management agreement (MA) scheme between the Hong Kong Bird Watching Society (HKBWS) and a local farming community since December 2005.
- 1.2. The aim of this project is to demonstrate that conventional farming operation could benefit wildlife in particular to wild birds with specific management practices and adoptions. Effectiveness of the management practices is reflected by utilization of birds in the area and the regular Bird Monitoring Programme records this data.
- 1.3. This report presents results of the bird monitoring programme conducted in summer 2007 (i.e. June to August).

2. Methodology

- 2.1. The Bird Monitoring Programme consists of regular bird surveys in the Long Valley area. The study area covers the whole Long Valley area confined by a drainage channel lying on west, north and east and Yin Kong Village on the south.

¹ Yu Yat Tung
The Hong Kong Bird Watching Society Limited
Postal address: G.P.O. Box 12460, Hong Kong
Tel: (852) 2377 4387 Fax: (852) 2314 3687 E-mail: hkbws@hkbws.org.hk

- 2.2. The survey was conducted by following a standard transect to obtain comparables and complete coverage of all farmlands in the shortest time. Total surveying time maintains at about 3.5 hours in the morning.
- 2.3. One survey per week was scheduled in summer 2007. A total of 13 surveys were conducted and the schedule is as follows:

2007 June: 7, 16, 21, 30;
 2007 July: 5, 13, 18, 25;
 2007 August: 2, 11, 16, 23, 30.

3. Results

Overview

- 3.1. Total numbers of birds present in Long Valley area reached to the lowest count of 152 birds on 16 June and then the highest count in the summer is 592 on 11 August. Comparing to the figures of the 2006 summer, there was more birds present in the Long Valley area in summer 2007 than in 2006 and it is in statistically significant (t-test, $t = -3.079$, $df = 25$, $P = 0.005$). Counts and other details are shown in figure 1 and table 1.

Table 1. Numbers in each count, monthly average figures with SD of birds counted at Long Valley, summer 2007 and average figures (with SD) in summer 2006.

	June	July	August
Numbers of bird counted	166, 152, 197, 164	207, 280, 291, 301	325, 592, 403, 433, 396
Summer 2007: Mean (SD)	170 (19)	270 (43)	430 (99)
Summer 2006: Mean (SD)	268 (79)	96 (66)	161 (34)
	Summer 2006	Summer 2007	
All counts lumped	169 (91, n = 14)	301 (130, n =13)	$t = -3.079$, $df = 25$, $P = 0.005$

- 3.2. Besides, comparison is also made to assess the difference of the species richness and abundance with using the Shannon index H' ($H' = -\sum p_i \ln p_i$). Detailed results are shown in Appendix 1. The average figure of the Shannon index in

summer 2006 and 2007 is 2.38 (SD = 0.33) and 2.58 (SD = 0.39) respectively and the difference between two means is not significant (Mann-Whitney Rank Sum Test, $T = 217.000$, $P = 0.09$, n.s.). Although the numbers of bird presented in the Long Valley area is higher than in summer 2007, the numbers of bird species are similar and this is unsurprising because only some resident bird species still utilize the Long Valley over the summer.

Managed area

- 3.3. The total area of Long Valley is 2,500,000 sq.ft.. The HKBWS managed a total of 337,200 sq. ft. in the summer period of 2007 and The Conservancy Association (CA) has increased to manage in total of 608,960 sq.ft. Therefore, the total managed area in Long Valley area is 946,160 sq.ft. while the unmanaged fields is in total of 1,553,840 sq.ft.
- 3.4. Although the mean number of birds in the managed fields is higher than the unmanaged field in summer 2007 (Table 2), they were not in significant difference (Mann-Whitney Rank Sum Test, $T = 138.000$, $t = 0.058$, n.s.).

Table 2. Mean (SD) of the numbers of birds in all managed and unmanaged fields per unit area in autumn 2006, winter 2006-07, spring 2007, summer 2007.

	Autumn 2006	Winter 2006-07	Spring 2007	Summer 2007
Managed fields	26.9 (12.1)	17.2 (8.1)	9.3 (6.4)	6.7 (3.5)
Unmanaged fields	14.7 (4.3)	18.0 (4.1)	14.4 (5.9)	4.1 (2.2)

Dry agricultural land (DAL)

- 3.5. Choi Sum were planted in field 101 and 110 in the spring time, but all dried up since mid May and then wilted Choi Shum was removed in early June and these fields remained fallow in this summer. However, there were flooded from the rainfall in the summer. Field 74 and 102 used as control for the comparison of the bird's abundance before were also flooded over the summer. For the analysis of bird's abundance, we used field 80 and 97 instead of field 74 and 102 because these two fields remained drier over the summer period.
- 3.6. The mean numbers per unit area in DAL fields in summer 2007 were not in significant difference to the mean numbers in control fields (Mann-Whitney

Rank Sum Test, $T = 192.500$, $t = 0.627$, n.s.) and also in DAL fields in summer 2006 (Mann-Whitney Rank Sum Test, $T = 205.500$, $t = 0.129$, n.s.). Mean and SD are shown in Table 3.

Table 3. Mean (SD) of the counts of the birds in the dry agricultural land and its control per unit area.

	Summer 2007	Summer 2006
Managed fields	1.6 (2.6)	1.3 (2.4)
Control fields	0.2 (0.2)	0.8 (1.9)

- 3.7. From our previous experience, it is difficult to grow Choi Sum in the summer time because of wet climate. So, the effectiveness of this management practice in this summer was low.

Wet agricultural land (WAL)

- 3.8. Chinese Arrow-head corms planted in both field 242 and 257 in last winter grew well in the summer period. Paddy rice flowered in late June and grains were produced in mid July and soon wilted in late August. But Water Chestnut in field 257 grew slowly over the summer and part of this field was bare in the first half of the summer.
- 3.9. The mean number of birds in the WAL fields has increased more than four times from the previous year and nine times comparing to the figure from control in this summer. Both are statistically significant (Mann-Whitney Rank Sum Test, 2006 summer VS 2007 summer, $T = 227.500$, $P = 0.03$; 2007 summer managed VS control, $T = 225.000$, $P = 0.012$). These results indicate that this management practices could have positive effect on increasing bird abundance. Please refer to Table 4 for details.

Table 4. Mean (SD) of the counts of the birds in the wet agricultural land and its control per unit area.

	Summer 2007	Summer 2006
Managed fields	9.3 (11.3)	2.0 (2.0)
Control fields	1.0 (0.8)	0.3 (0.5)

Shallow water habitat (SWH)

- 3.10. In summer 2007 all the fields (field 176, 177, 224, 225, 226, 227, 229, 238e, 2238l, 238p) managed as Shallow Water Habitat (SWH) still kept a thin layer of water (mostly less than 5cm) and weeds were removed from the fields. Management exercises in SWH fields were therefore same as those conducted in the previous months. The total area of managed fields is also in 127,200 sq.ft and the area of control fields used for this data analysis is set at 77,100 sq.ft (i.e. field 173, 174 and 232).
- 3.11. There was a significantly higher mean numbers of birds per unit area in managed fields than in control fields in summer 2007 (Mann-Whitney Rank Sum Test, $T = 220.000$, $P = 0.02$), but the mean numbers were just similar compared to the mean numbers in the previous summer (Mann-Whitney Rank Sum Test, $T = 185.000$, $P = 0.90$, n.s.) and in fact the mean number in summer 2007 is lower than the 2006 figure (table 5).

Table 5. Mean (SD) of the counts of the birds in the shallow water habitat and its control per unit area, summer 2006 and 2007.

Spring	2007	2006
Managed fields	1.1 (1.2)	1.4 (1.9)
Control fields	0.4 (0.7)	0.1 (0.2)

Farmland margin (FM)

- 3.12. Although the mean number of birds per unit area in the fields with managing farmland margin is significantly higher than the control fields (Mann-Whitney Rank Sum Test, $T = 236.000$, $P = 0.002$, details in table 6), the effectiveness of this management practice is less clear because most of the tomatoes, the crop planted for this practice, grew less well in the summer and many farmland margin areas actually remained fallow in this summer.

Table 6. Mean (SD) of the number of the birds in Farmland Margin and its control per unit area, summer 2007

Managed	Control
10.6 (9.5)	4.1 (7.9)

- 3.13. Therefore, the higher utilization of the bird in these fields with managing margin might not be caused by this practice. Bird species recorded in these managed fields were in high variety including common species such as

Black-collared Starlings, Crested Mynas and Chinese Bulbuls and also some wetland species like Chinese Pond Herons, Wood Sandpipers and even Greater Painted-snipes. Therefore, many of these species were not the targeted species for this management practice. No obvious reason could be spotted for the high utilization of birds and the overall wetness and openness of the fields might be a factor of it.

Discussion

- 4.1. The total number of bird species recorded in the Long Valley area has increased to 133 in which Hair-crested Drongo is the first record since the commencement of the project.
- 4.2. The mean number of birds present in this summer is almost a double from the previous summer's mean number. With considering the results of other seasons, the management practices are likely to increase bird's utilization in the Long Valley area. In winter time more migratory bird species were attracted to the Long Valley area, while the area is also attractive to the resident bird species in the summer time.
- 4.3. Among all the habitat management practices, only the one of SWH had a decreasing number comparing to the previous year's figure. We found that the newly created habitats could attract more birds. The SWH is the habitat we firstly created in the Long Valley area in the first year period and so bird's utilization in this habitat seemed decrease since the winter 2006-07. In addition, three fields (field 238e, 238l and 238p) were changed into SWH in the previous summer and more birds were found in the fields soon after the habitat enhancement exercise. No new SWH habitat has been created in this summer.

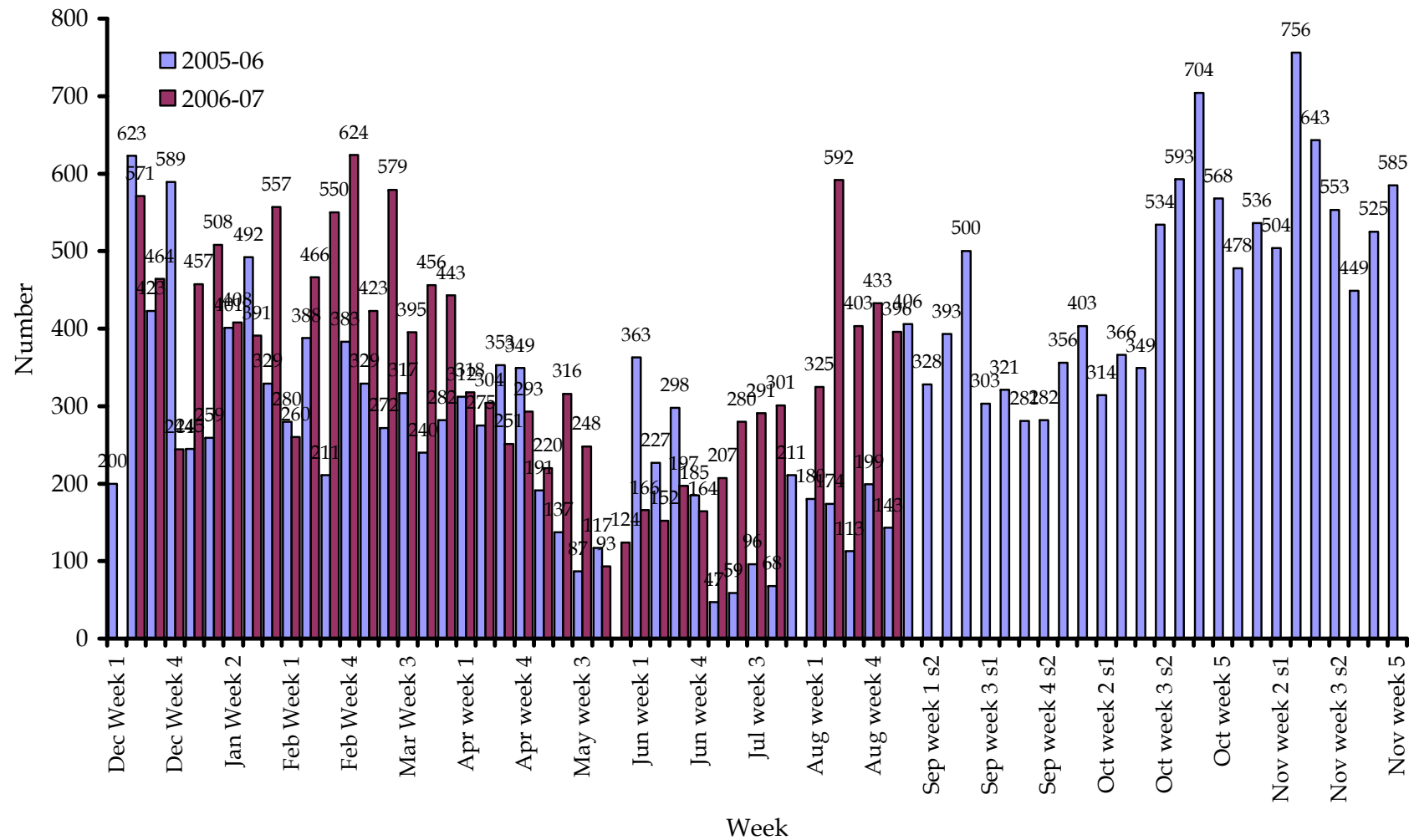


Figure 1. Total numbers of birds recorded in Long Valley, December 2005 to August 2007. Note: Survey was conducted once per week from December 2005 to August 2006, and December 2006 to August 2007 and twice per week in September to November 2006.

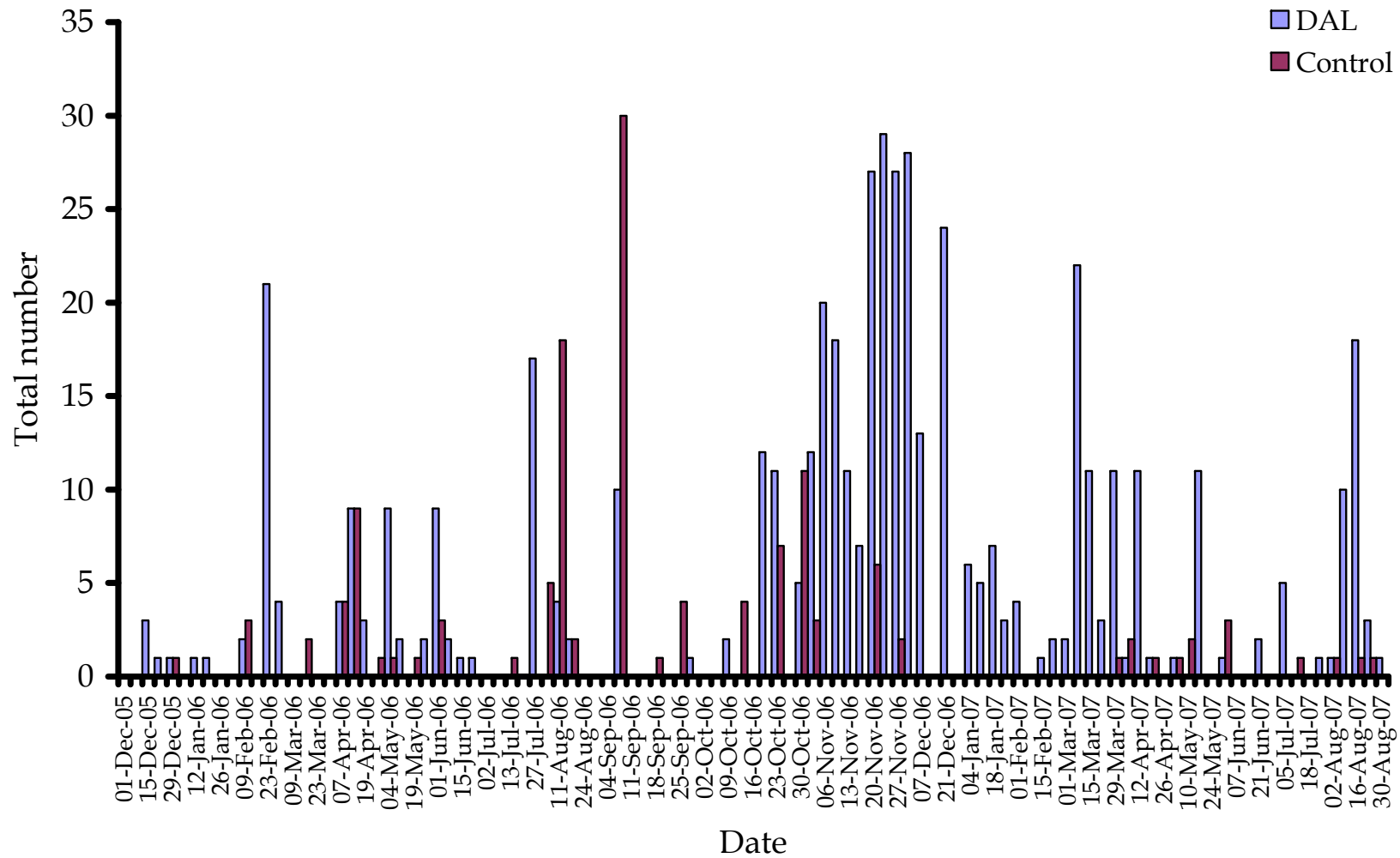


Figure 2. Total numbers of birds recorded in Dry Agricultural Lands (DAL) in Long Valley, December 2005 to August 2007. Note: Survey was conducted once per week from December 2005 to August 2006, and December 2006 to August 2007 and twice per week in September to November 2006.

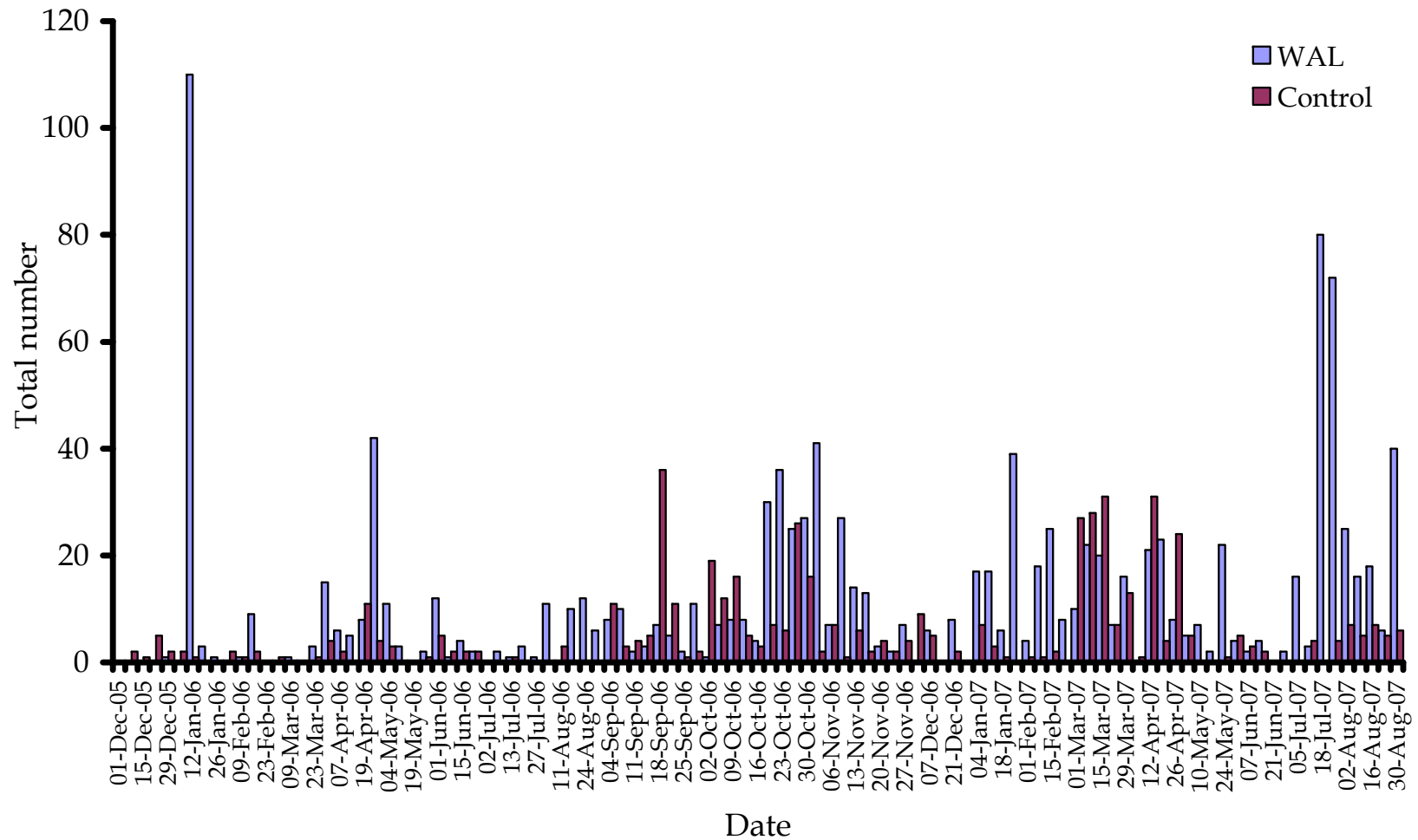


Figure 3. Total numbers of birds recorded in Wet Agricultural Lands (WAL) Long Valley, December 2005 to August 2007. Note: Survey was conducted once per week from December 2005 to August 2006, and December 2006 to August 2007 and twice per week in September to November 2006.

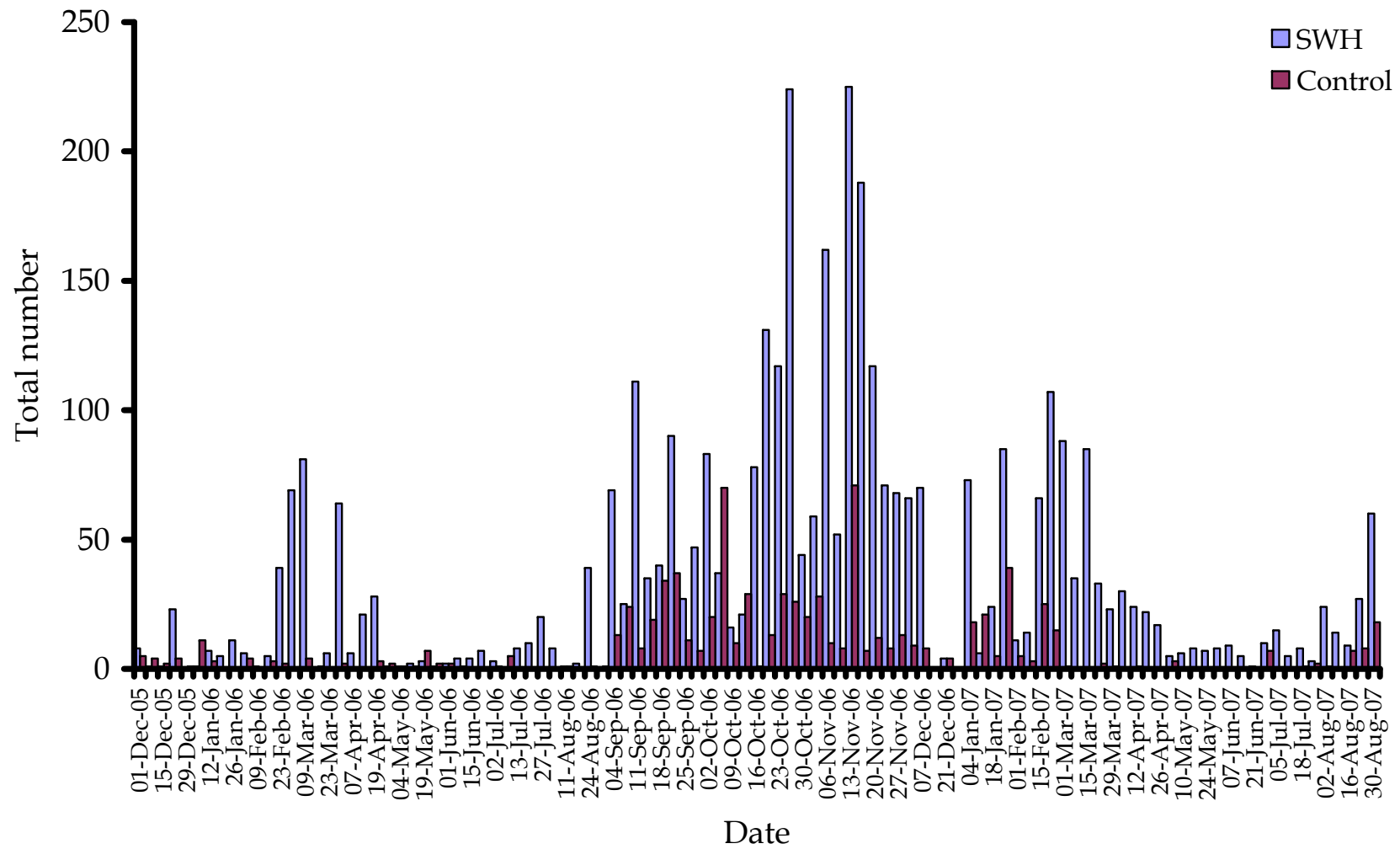


Figure 4. Total numbers of birds recorded in Shallow Water Habitat (SWH) Long Valley, December 2005 to August 2007. Note: Survey was conducted once per week from December 2005 to August 2006, and December 2006 to August 2007 and twice per week in September to November 2006.

Appendix 1. Total numbers, numbers of species and diversity indices (Shannon index) of birds counted in Long Valley, summer 2006 and 2007.

Summer 2006				Summer 2007			
Date	Total number	Number of species	Index	Date	Total number	Number of species	Index
1 Jun	365	25	1.83	7 Jun	166	18	2.04
8 Jun	227	18	1.93	16 Jun	152	19	1.78
15 Jun	298	26	1.80	21 Jun	197	21	2.08
22 Jun	185	20	2.32	30 Jun	164	22	2.41
2 Jul	47	14	2.38	5 Jul	207	25	2.76
9 Jul	59	16	2.60	13 Jul	280	27	3.01
13 Jul	96	22	2.77	18 Jul	291	32	2.69
20 Jul	68	20	2.73	25 Jul	301	32	3.07
27 Jul	211	20	2.18	---	---	---	---
5 Aug	180	27	2.61	2 Aug	325	31	2.71
11 Aug	174	25	2.65	11 Aug	592	32	2.70
17 Aug	113	21	2.41	16 Aug	403	29	2.69
24 Aug	202	25	2.40	23 Aug	433	38	2.88
30 Aug	143	26	2.70	30 Aug	396	31	2.72
Mean (SD)			2.38 (0.33)	Mean (SD)			2.58 (0.39)

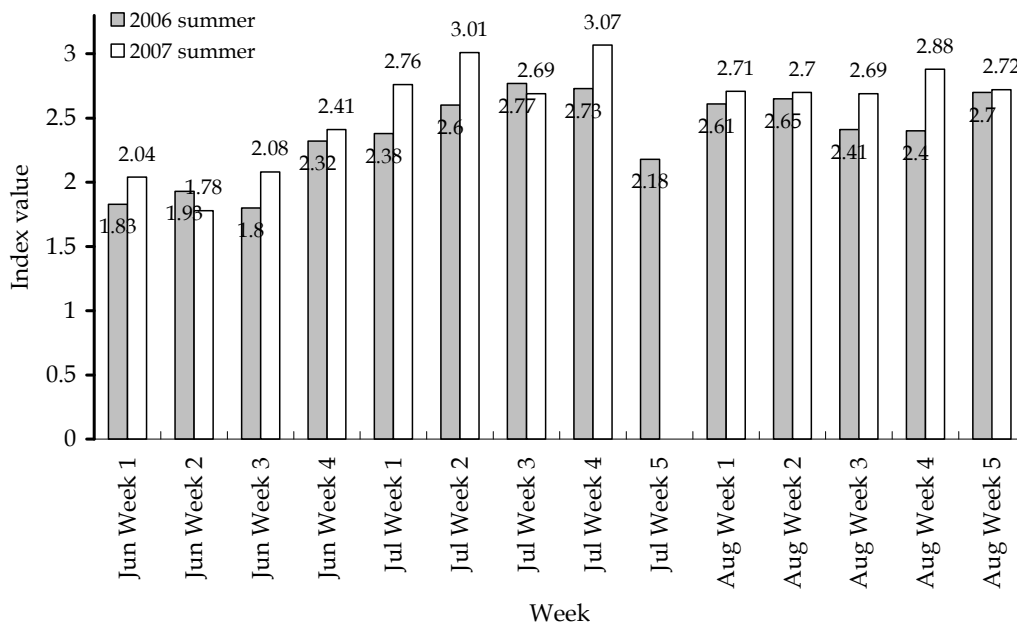


Figure 5. A weekly trend of Shannon Index of birds recorded in the Long Valley area in summers 2006 and 2007. This figure is derived from the data shown in Appendix 1.

Appendix 2. Total numbers of birds in fields adopted with pilot conservation management agreement projects by HKBWS and CA ('Managed' fields - 946,160 sq.ft.) and in the remaining fields ('Unmanaged' fields - 1,553,840 sq.ft.), summer 2007.

Date	Total bird numbers in Managed field	Total bird numbers in Managed field per 10 ⁵ sq.ft.	Total bird numbers in Unmanaged field	Total bird numbers in Unmanaged field per 10 ⁵ sq.ft.
7 Jun	42	4.44	124	2.70
16 Jun	21	2.22	131	1.35
21 Jun	11	1.16	186	0.71
30 Jun	28	2.96	136	1.80
5 Jul	43	4.54	164	2.77
13 Jul	52	5.50	228	3.35
18 Jul	97	10.25	194	6.24
25 Jul	93	9.83	208	5.99
2 Aug	80	8.46	245	5.15
11 Aug	104	10.99	488	6.69
16 Aug	72	7.61	331	4.63
23 Aug	64	6.76	369	4.12
30 Aug	115	12.15	281	7.40
	Mean (SD)	6.68 (3.54)	Mean (SD)	4.07 (2.16)