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

BIRD MONITORING PROGRAMME

Programme 2005/06	Autumn	September - November 2006

Summary Report – Autumn 2006 (September to November)

Y.T. Yu[1]

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 conservation value especially for birds through a public-private partnership (PPP) 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 autumn 2006 (i.e. September to November).

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 Villlage 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. Two surveys per week were scheduled in autumn 2006 in order to capture a more detailed pattern of bird utilization in Long Valley area during this migration season. A total of 26 surveys were conducted and the schedule is as follows:

2006 September: 4, 7, 11, 14, 18, 21, 25, 28;
2006 October: 2, 5, 9, 12, 16, 19, 23, 26, 30;
2006 November: 2, 6, 9, 13, 16, 20, 23, 27, 30.

2.4. One surveyor who accredited by HKBWS recorded all wild birds in numbers and species with the specific number to each field in the whole study area.

3. Results

3.1. Number rose dramatically in early September with a monthly peak count of 500 birds recorded on 14 September. Subsequently, total number of birds dropped in late September and remained relatively lower numbers in early October. However, it increased again to 704 birds on 26 October and reached to another peak count of 756 birds on 13 November. This figure is also a new high count since the commencement of this project. Then numbers decreased gradually toward the end of November. Details are shown in Figure 1.

Table 1. Numbers in each count, monthly average figures with SD of birds counted at Long Valley, autumn 2006.

	September	October	November
Numbers of bird counted	406, 328, 393, 500, 303, 321, 281, 282	356, 403, 314, 366, 349, 534, 593, 704, 568	478, 536, 504, 756, 643, 553, 449, 525, 585
Mean (SD)	352 (76)	465 (137)	559 (94)

3.2. The following analysis is focused on finding out differences between agricultural land which are managed under pilot conservation management agreement projects by both HKBWS and Conservancy Association (CA) and the rest of other fields which are not managed for these projects in the Long Valley.

3.3. The total study area is approximate 2,500,000 sq.ft. and total area of fields managed by HKBWS and CA is 189,500 sq.ft. and 493,000 sq.ft. respectively. Therefore, the total area of remaining fields is 1,817,500 sq.ft.. Due to difference in size, the total numbers of bird in managed and unmanaged in each counting days are also transferred with unit area before completing the analysis. Details are shown in appendix 1.

3.4. The total number of birds in managed fields per unit area (Median: 24.47) is significantly higher than in the remaining fields (Median: 14.86) (Mann-Whitney Rank Sum Test, $T = 927.000$, $P < 0.001$, more details in appendix 2). Hence, this result indicates that more birds are attracted to utilize the managed fields.

3.5. From this project, the HKBWS mainly creates and manages four types of habitats, namely Dry Agricultural Lands (DAL), Wet Agricultural Lands (WAL), Shallow Water Habitat (SWH) and Farmland Margins (FM). Some more analysis regarding to these habitats are shown as follows.

Dry Agricultural Lands

3.6. Dry Agricultural Lands mainly provide dry fallow habitats with planting flowering Chinese Cabbage and the crop was uncut and used for attracting birds. All corps died out in late August and these lands were largely covered by dead cabbages in the autumn.

3.7. In this autumn, the mean number per unit area in DAL fields (i.e. field 101 and 110) is significantly higher than in their control fields (i.e. field 74 and 102) (Mann-Whitney Rank Sum Test, $T = 807.500$, $P = 0.031$; mean (SD) in managed field = 4.2 (5.1), mean (SD) in control fields = 1.1 (2.5), $N = 26$). Details are shown in figure 2. Therefore, the dry agricultural fields could increase bird utilization than their control fields which the crops were harvest for market and fallow period is shorter.

Wet Agricultural Lands

3.8. Wet Agricultural Lands are the area with actively planting with rice and water chestnut. Field 242 and 257 are selected to conduct this practice in spring and summer 2006. Rice in field 242 and water chestnut in field 257 grew in good form over the summer.

3.9. The mean number per unit area in these fields is significantly higher than their control fields (i.e. field 241 and 245) in this autumn. Details are shown in figure 3. (Mann-Whitney Rank Sum Test, T = 799.000, P = 0.045; mean (SD) in managed field = 5.0 (4.9), mean (SD) in control fields = 2.5 (2.5), N = 26)

3.10. However, the mean number per unit area has no significant difference when analysis is separately done on these two different kinds of management. (Rice paddy (field 242): mean (SD) = 7.1 (7.9), Control (field 241): mean (SD) = 3.7 (4.8), N = 26, Mann-Whitney Rank Sum Test, T = 788.000, P = 0.07, N.S. ; Water Chestnut (field 257): mean (SD) = 1.4 (1.7), Control (field 245): mean (SD) = 1.5 (3.0), N = 26, Mann-Whitney Rank Sum Test, T = 738.500, P = 0.369, N.S.).

3.11. On the other hand, mean number of birds per unit area in rice paddy is significantly higher than in the water chestnut field. (Mann-Whitney Rank Sum Test, T = 880.000, P < 0.001). Our observations suggest that some birds, especially waders, would prefer the open shallow water area in the rice paddy, while the water chestnut was planted in high density and there has no suitable open area for waterbird's utilization. Therefore, it strongly suggests that the water chestnut should be planted in lower density for next spring/summer management exercises.

3.12. HKBWS managed an additional 50,000 sq.ft. agricultural land in Long Valley (field 238q, 280, 281, 284, 285a, 288) for wet agricultural farmland during this autumn and the main crops are water chestnut and water spinach. Control fields are in total of 51,500 sq.ft (field 282, 283, 285b and 289) and filled up with water over this autumn. The water spinach is the only crop in these fields.

3.13. The mean total number of birds per unit area in this additional WAL is in significantly difference to the total numbers in control fields (WAL: mean (SD) = 1.19 (1.47), Control: mean (SD) = 0.25 (0.41), N = 26, Mann-Whitney Rank Sum Test, T = 893.000, P < 0.001). This result differs to the other two WAL mentioned above. Possible reasons would be that crops are in lower density in this newly managed land and birds would prefer to choose the newly managed fields.

Shallow Water Habitat

3.14. Shallow Water Habitat is the most successful case of this project so far and the result is straightforward. Many birds could be attracted to utilize this habitat since implementation of field management in the spring 2006. During late summer of 2006, the HKBWS acquired another 41,000 sq.ft. of agricultural land (field 238e, 238l and 238p) into this habitats for 3 months and the total area of this habitat reaches to 109,200 sq.ft. (i.e. 43,200 sq.ft. (field 224, 225 and 226) + 25,000 sq.ft. (field 176 and 177) + 41,000 sq.ft. (field 238e, 238l and 238p)) The total area of 'control' field is also increased to 98,700 sq.ft. for comparing the effectiveness of this management exercise and all the control fields places adjacent or very nearby to the managed fields and in similar farming practice (i.e. cultivating water spinach with shallow water).

3.15. The mean total number of birds in managed SWH per unit area is significantly different to the same mean of control fields (SWH: mean (SD) = 7.76 (5.46), Control: mean (SD) = 2.09 (1.77), N = 26, Mann-Whitney Rank Sum Test, T = 958.000, $P < 0.001$). Details are shown in figure 4.

Farmland Margin

3.16. Some farmland margins (FM) are planned to plant with some crops which are thought to provide additional food and micro-habitat to land birds such as pipits, buntings and munias. However, wet climate in first half of the year caused tomatoes, the main crop of this practice, could not grow well in the summer and this management practice has not been well implemented in the beginning stage of this project.

3.17. The total area of fields with planting crops on margin is 252,000 sq.ft. Some of these fields are also managed for other habitat enhancement and these fields are not included in the following analysis because it would be difficult to consider the result which is brought from the margins or the fields. By excluding these fields, the total area is 162,000 sq. ft. Adjacent fields or nearby ones which have not been specific managed for enhancing their ecological value are chosen as 'Control' and the total area of control is 130,000 sq.ft.

3.18. The mean total number of birds in fields with crops on margin per unit area has no significant difference to the same figure of control fields (FM: mean (SD) = 9.81 (5.1), Control: mean (SD) = 18.34 (17.83), Mann-Whitney Rank Sum Test, T = 603.000, P = 0.118. N.S.).

3.19. As crops are only planted on the margin, the effective area of the crops is very limited and so the effectiveness of this practice is low with comparing to other management practices that are conducted with the whole fields. In addition, this farmland margin habitat could only be arranged to scatter widely on several parts in the study area. Serious fragmentation to this habitat causes this practice to have less satisfactory performance.

3.20. This practice aims to enhance bird's utilization and diversity of both birds and habitats in Long Valley. It is recommended that this practice should be improved by planting the crops altogether on a portion of one or a few nearby fields to reduce the extent of the habitat fragmentation and hence to bring meaningful results.

4. Discussion

4.1. Frequency of bird survey has been increased to twice per week in this autumn. The increase of the observing frequency is to avoid overlooking presences of some migratory birds which would stay in a short time that the weekly survey might miss to record them.

4.2. At present, more data collected in this autumn could bring more confident results on showing that the management practices have moderate effectiveness to enhance the bird diversity of Long Valley.

Other notable records

4.3. Schrenck's Bittern *Ixobrychus eurhythmus* – single was noted on 12 October. This species is a scarce passage migrant. Long Valley is one of the few suitable sites for this species in Hong Kong.

4.4. Manchurian Reed Warbler *Acrocephalus tangorum* – listed as globally vulnerable species, single bird was claimed on 5 October. This species is a scarce passage migrant with most records in autumn in Hong Kong. This species requires written substantiation and the HKBWS's Record Committee will decide the final acceptance of this record.

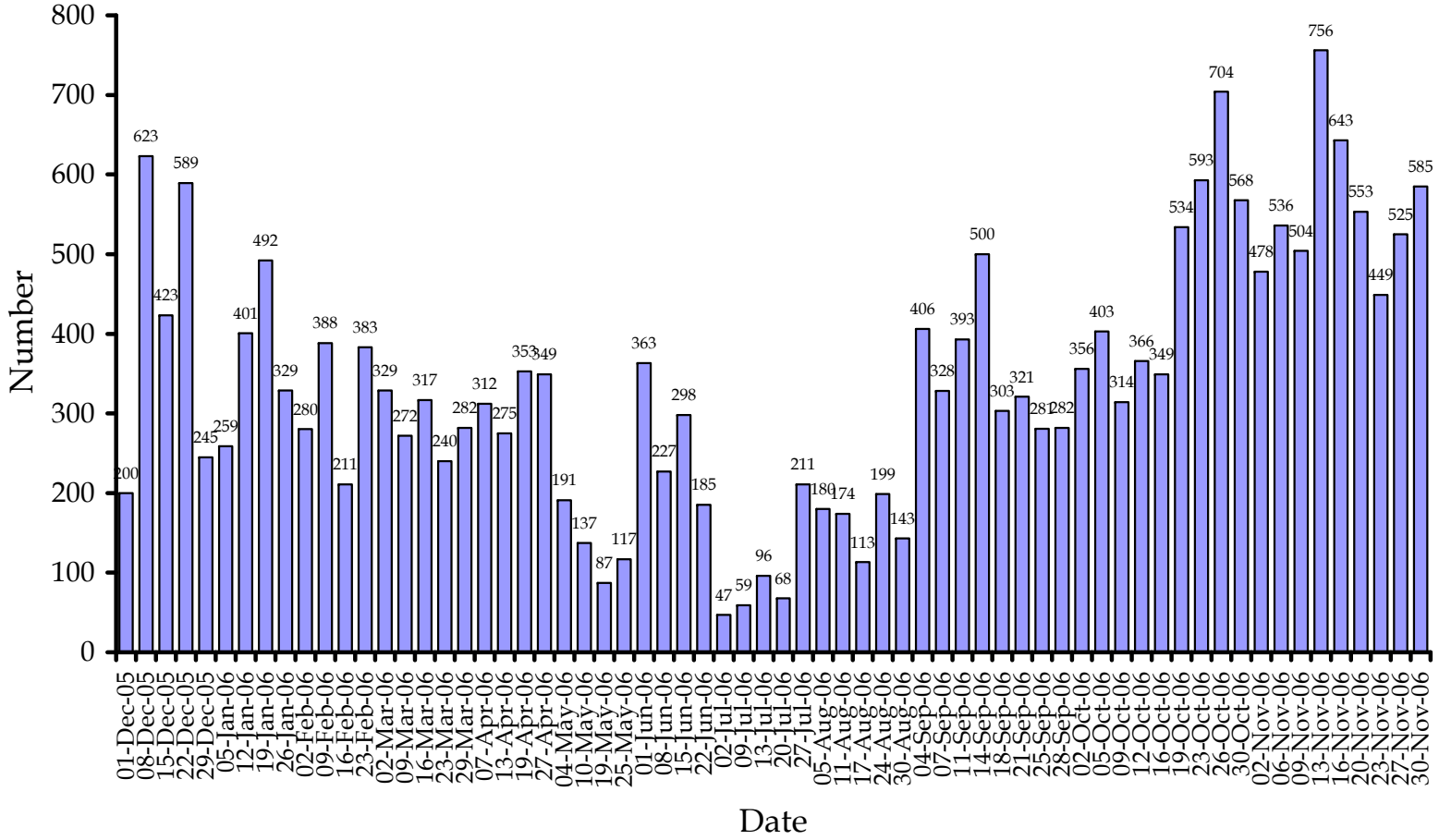

Figure 1. Total numbers of birds recorded in Long Valley, December 2005 to November 2006. Note: Survey was conducted once per week from December 2005 to August 2006 and twice per week in September to November 2006.

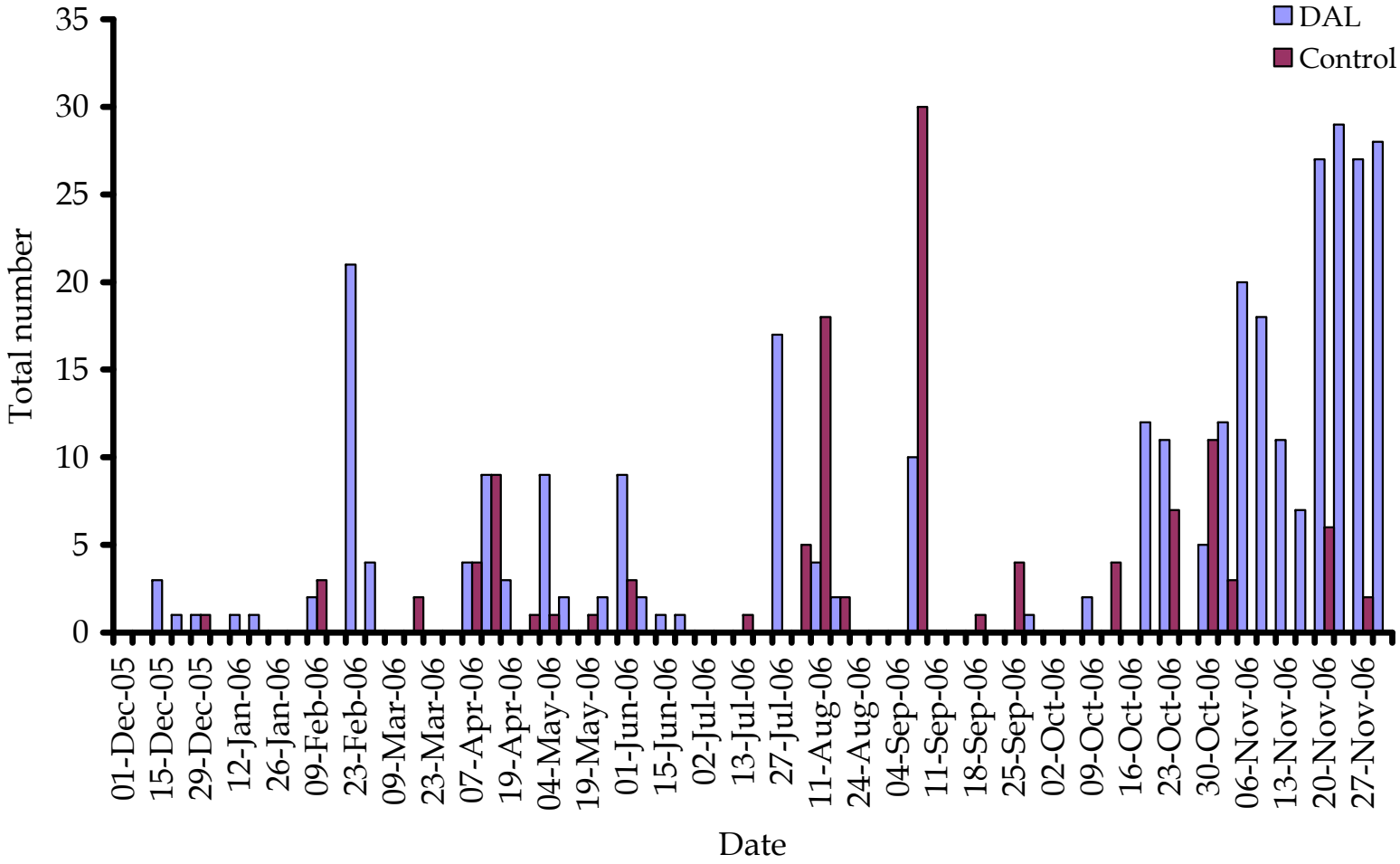

Figure 2. Total numbers of birds recorded in Dry Agricultural Lands (DAL) in Long Valley, December 2005 to November 2006. Note: Survey was conducted once per week from December 2005 to August 2006 and twice per week in September to November 2006.

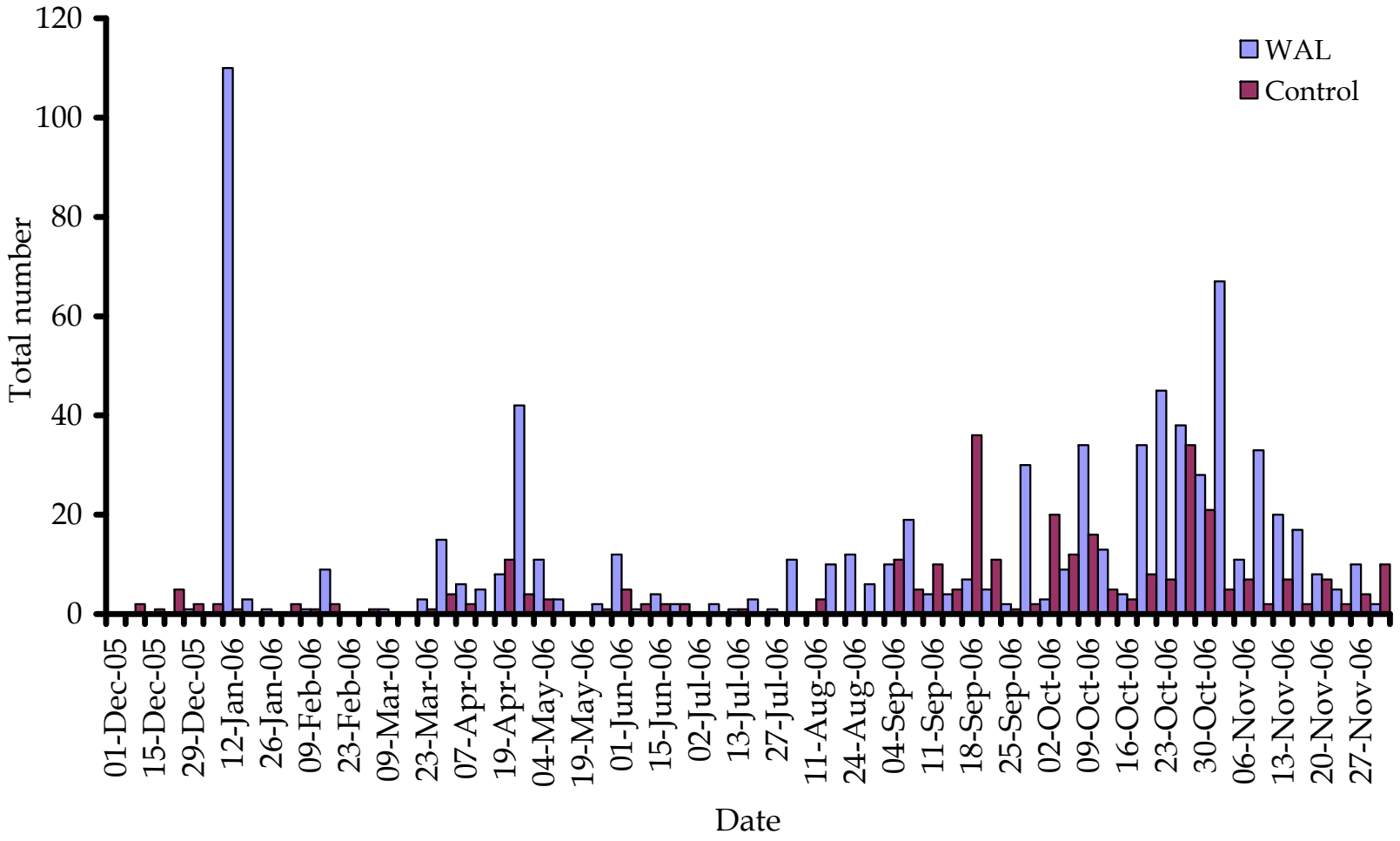

Figure 3. Total numbers of birds recorded in Wet Agricultural Lands (WAL) Long Valley, December 2005 to November 2006. Note: Survey was conducted once per week from December 2005 to August 2006 and twice per week in September to November 2006.

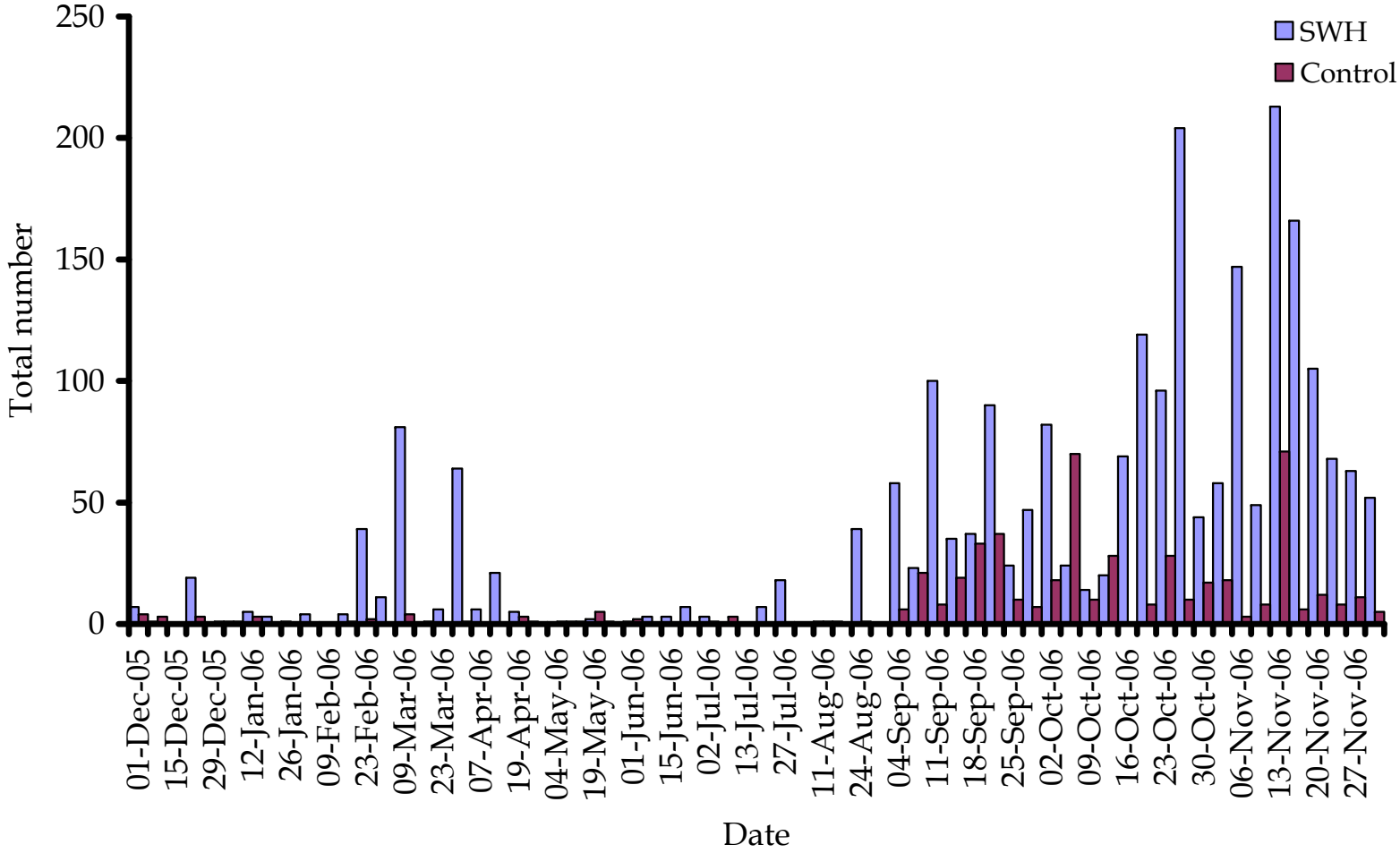

Figure 4. Total numbers of birds recorded in Shallow Water Habitat (SWH) Long Valley, December 2005 to November 2006. Note: Survey was conducted once per week from December 2005 to August 2006 and twice per week in September to November 2006.

Appendix 1. Total numbers of birds in fields adopted with pilot conservation management agreement projects by HKBWS and CA ('Managed' fields – 682,500 sq.ft.) and in the remaining fields ('Unmanaged' fields – 1,817,500 sq.ft.), autumn 2006.

Date	Total bird numbers in Managed field	Total bird numbers in Managed field per unit area (x 10^{-5} sq.ft.)	Total bird numbers in Unmanaged field	Total bird numbers in Unmanaged field per unit area (x 10^{-5} sq.ft.)
4 Sep	148	21.68	238	13.09
7 Sep	106	15.53	190	10.45
11 Sep	177	25.93	167	9.19
14 Sep	98	14.36	360	19.81
18 Sep	140	20.51	161	8.86
21 Sep	171	25.05	150	8.25
25 Sep	88	12.89	193	10.62
28 Sep	116	17.00	166	9.13
2 Oct	158	23.15	198	10.89
5 Oct	103	15.09	296	16.29
9 Oct	126	18.46	188	10.34
12 Oct	69	10.11	297	16.34
16 Oct	151	22.12	198	10.89
19 Oct	215	31.50	317	17.44
23 Oct	246	36.04	266	14.64
26 Oct	324	47.47	378	20.80
30 Oct	163	23.88	321	17.66
2 Nov	181	26.52	296	16.29
6 Nov	264	38.68	272	14.97
9 Nov	195	28.57	301	16.56
13 Nov	388	56.85	367	20.19
16 Nov	373	54.65	268	14.75
20 Nov	234	34.29	316	17.39
23 Nov	195	28.57	249	13.70
27 Nov	201	29.45	318	17.50
30 Nov	134	19.63	415	24.81
	Mean (SD)	26.85 (12.07)	Mean (SD)	14.65 (4.30)