

Nature Conservation Management for Long Valley 2012-2015

BIRD MONITORING PROGRAMME

Programme 2012/15

March 2013 to February 2014

Summary Report – March 2013 to February 2014

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1. Background

- 1.1. The Environment and Conservation Fund (ECF) supports a joint project: Nature Conservation Management for Long Valley 2012-2015, 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), The Conservancy Association (CA) and the local farming community since March 2012.
- 1.2. The aim of this project is to conserve and enhance the agricultural freshwater wetland and habitat diversity for avifauna and other freshwater wetland-dependent species in Long Valley. The effectiveness of the management practices is reflected by the utilization in the area by birds and the regular Bird Monitoring Programme gathers such data.
- 1.3. This report presents the results of the bird monitoring programme conducted in the period from March 2013 to February 2014 which covers spring, summer, autumn and winter.

2. Methodology

Transect Counts

- 2.1. The bird monitoring programme in both the core and northern parts of Long Valley was conducted by regular transect counts following routes shown in Fig. 1, Fig. 2 and Fig. 3 in order to obtain comparable results and complete coverage of all farmlands in the shortest time. All birds encountered in the transects, including seen and heard, were recorded with the species (common) name and field (i.e. farming plot) number, following Fig. 1, 2 and 3, where the birds were located. Birds flying in the sky were also marked down but not allocated to any specific field. Bird calls heard which could not be exactly located to a field number was marked as 'Heard'. Transect count was also done in Ho Sheung Heung *feng-shui* wood area (Fig. 3). Surveys were separated into two parts: (1) The core part of Long Valley and (2) The northern part of Long Valley and Ho Sheung Heung *feng-shui* wood. Total surveying times for each of the two parts were maintained at about 3.0 hours and they were conducted simultaneously in the morning.
- 2.2. Surveys in the core part and northern part of Long Valley were done once a week in except that they were conducted once per two weeks in June and July. A total of 48

surveys were conducted for the core area and northern part of Long Valley (in parenthesis if not conducted on the same day with the surveys conducted in the core area) respectively as shown below:

- 2013 March: 4, 11, 18, 24
- 2013 April: (1) 2, (8) 11, (15) 16, 22, 29
- 2013 May: 6, (13) 14, 20, 27
- 2013 June: (2) 3, (17) 18
- 2013 July: (1) 2, 1(15) 16, 29
- 2013 August: 5, 12, (19) 20, 26
- 2013 September: (2) 1, (9) 10, 16, (23) 24
- 2013 October: 7, (14) 15, (21) 22, 28
- 2013 November: 4, (11) 12, (18) 19, 25
- 2013 December: (2) 3, (9) 10, (16) 17, 23, (30) 31
- 2014 January: (6) 7, (13) 14, 20, (27) 28
- 2014 February: (3) 5, (10) 11, 17, 24

2.3. Each survey was conducted by two surveyors accredited by HKBWS. One surveyor would cover the core part of Long Valley (Fig. 1) and the other would survey the northern part of Long Valley (Fig. 2) and the *feng-shui* wood at Ho Sheung Heung (Fig.3).

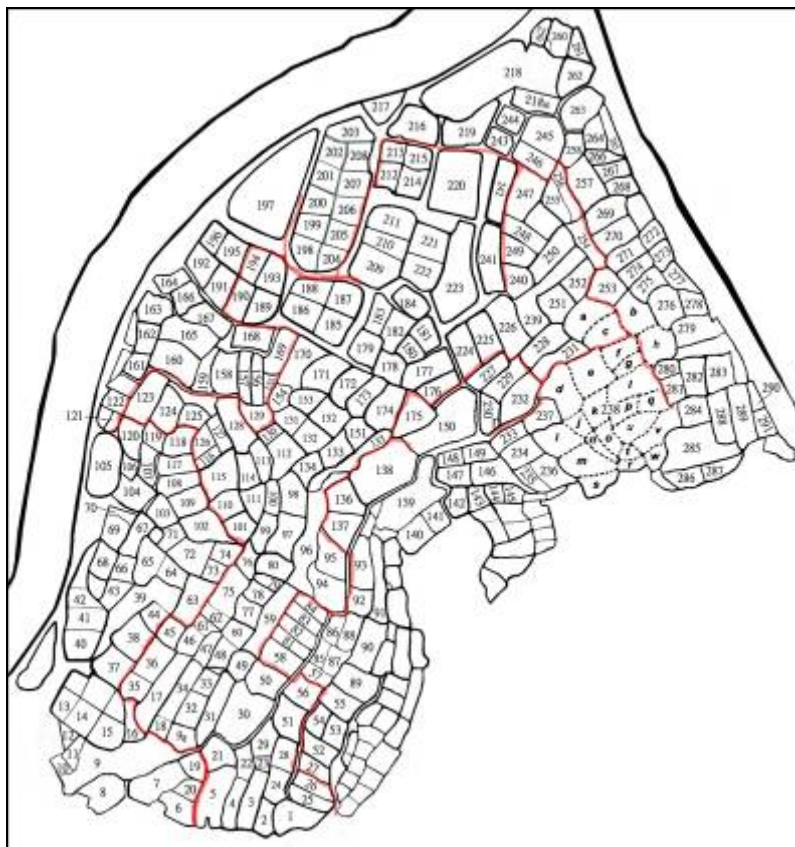


Figure 1. The transect (red line) and field numbers at the core part of Long Valley in this study.

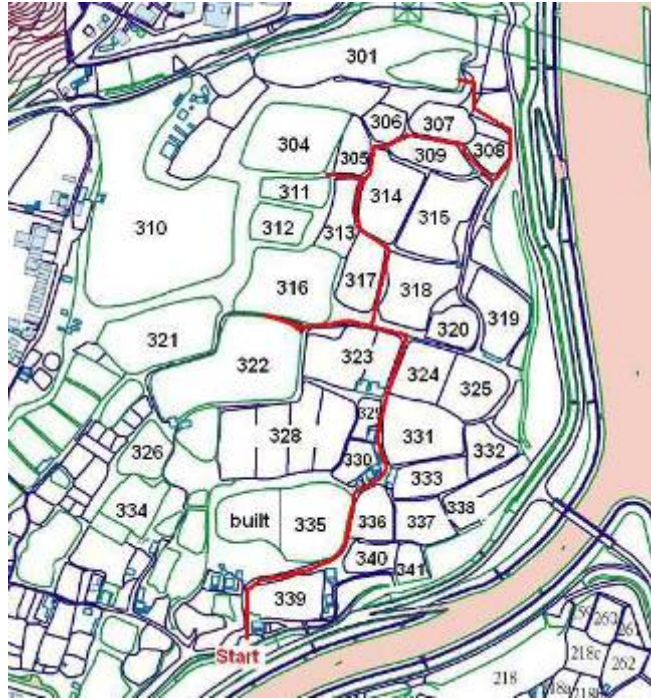


Figure 2. The transect (red line) and field numbers at the northern part of Long Valley in Ho Sheung Heung.



Figure 3. The transect (red line) at the Ho Sheung Heung *feng-shui* wood.

3. Results

Overview

- 3.1. Three bird species were first recorded in Long Valley during the reporting period. They are Eurasian Curlew, Terek Sandpiper and Common Chiffchaff. The total

number of species recorded in the whole project site is 295.

- 3.2. For the core part of Long Valley, the peak counts of number of birds in this report period (i.e. March 2013 to February 2014) in four seasons were 547 on 18 March, 369 on 16 July, 934 on 19 November and 1027 on 31 December respectively. The lowest abundances recorded were 174 on 27 May, 123 on 3 June, 425 on 10 September and 330 on 11 February respectively.

Table 1. Numbers in each count, monthly mean number of birds counted at the core part of Long Valley, spring, summer, autumn 2013 and winter 2013/14, and the mean numbers (SD in parenthesis) in from spring 2006 to winter 2013/14

	<u>Spring 2013</u>			<u>Summer 2013</u>		
	March	April	May	June	July	August
Numbers of bird counted in each survey	424,445, 547,306	317,503, 491,423,372	253,261, 272,174	123,204	325,369, 286	256,326, 353,347
2013: Mean (SD)	431(99)	421(79)	240(45)	164(57)	327(42)	321(45)
2012: Mean (SD)	535(81)	328(108)	136(8)	175(19)	505(302)	388(73)
2011: Mean (SD)	748(36)	560(85)	357(140)	196(19)	209(14)	246(23)
2010: Mean (SD)	387(93)	348(99)	225(93)	314(60)	223(0.71)	438(64)
2009: Mean (SD)	345(25)	286(80)	181(18)	275(54)	392(111)	232(64)
2008: Mean (SD)	458(78)	330(130)	191(101)	73*	199(47)	328(112)
2007: Mean (SD)	459(71)	292(29)	200(91)	170(19)	270(43)	430(99)
2006: Mean (SD)	289(36)	322(37)	133(44)	268(79)	96(66)	161(34)
	<u>Autumn 2013</u>			<u>Winter 2013/14</u>		
	September	October	November	December	January	February
Numbers of bird counted in each survey	451,425,540, 644,778	754,643, 633,668	655,766, 934,602	1009,773, 901,1018, 1027	882,643, 882,575	493,330, 624,432
2013: Mean (SD)	568(146)	675(55)	739(147)	946(109)	746(160)	470(123)
2012: Mean (SD)	604(120)	689(121)	1019(143)	996(270)	731(44)	573(88)
2011: Mean (SD)	398(118)	817(84)	795(113)	697(173)	582(127)	572(82)
2010: Mean (SD)	808(374)	831(119)	807(147)	834(275)	713(159)	589(67)
2009: Mean (SD)	477(200)	648(166)	488(97)	393(92)	445(86)	398(58)
2008: Mean (SD)	367(53)	541(95)	458(96)	656(193)	474(58)	538(133)
2007: Mean (SD)	343(65)	499(88)	634(205)	504(69)	373(110)	407(104)
2006: Mean (SD)	352(76)	468(138)	561(94)	436(136)	470(83)	476(158)

Remarks: * No SD can be provided as only one survey was conducted.

- 3.3. The highest numbers of species recorded in four seasons in the report period were 49 on 11 April, 37 on 326 August, 60 on 25 November and 73 on 3 December respectively.

Table 2. Mean numbers of species (SD in parenthesis) counted in core part of Long Valley, from spring 2007 to winter 2013/14.

	<u>Spring</u>	<u>Summer</u>
	No. of species	No. of species
2013: Mean (SD)	40 (6)	30 (4)
2012: Mean (SD)	42 (9)	35 (3)
2011: Mean (SD)	44 (10)	32 (5)
2010: Mean (SD)	39 (6)	32 (3)
2009: Mean (SD)	40 (5)	27 (3)
2008: Mean (SD)	39 (8)	27 (3)
2007: Mean (SD)	32 (9)	28 (6)
	<u>Autumn</u>	<u>Winter</u>
	No. of species	No. of species
2013: Mean (SD)	46 (7)	50 (8)
2012: Mean (SD)	59 (9)	55 (10)
2011: Mean (SD)	53 (8)	49 (6)

2010: Mean (SD)	54 (6)	50 (4)
2009: Mean (SD)	43 (8)	45 (4)
2008: Mean (SD)	40 (6)	44 (3)
2007: Mean (SD)	42 (6)	43(4)

- 3.4. For the agricultural land in the northern part of Long Valley, the peak counts in four seasons were 737 on 15 April, 365 on 17 June, 463 on 11 November and 542 on 2 December respectively. The number of birds counted in spring 2013 was higher than that counted in previous years (Table 3).
- 3.5. The highest number of species recorded were 58 on 22 April, 32 on 17 June, 54 on 25 November and 59 on 30 December. The mean number of species recorded in agricultural land in the northern part of Long Valley in spring and autumn 2013 was higher than that recorded in previous years (Table 4).

Table 3. Numbers in each count in northern part of Long Valley, in spring, summer and autumn 2013 and winter 2013/14, and the mean numbers (SD in parenthesis) from 2008 to winter 2013/14.

	<u>Spring 2013</u>			<u>Summer 2013</u>		
	March	April	May	June	July	August
Numbers of bird counted	467,573, 583,657	614,610,737, 656,600	580,521, 428,326	308,365	176,159, 132	173,205, 254,284
2013: Mean (SD)	570(78)	634(57)	464(111)	337(40)	156(22)	229(50)
2012: Mean (SD)	297(102)	235(79)	190(36)	236(37)	161(39)	252(44)
2011: Mean (SD)	257(71)	183(49)	186(52)	159(66)	205(50)	168(62)
2010: Mean (SD)	189(23)	163(49)	148(53)	66(21)	94(13)	77(17)
2009: Mean (SD)	148(39)	128(9)	105(9)	141(46)	149(27)	131(40)
2008: Mean (SD)	151(29)	141(44)	117(16)	298*	162(40)	136(16)
	<u>Autumn 2013</u>			<u>Winter 2013/2014</u>		
	September	October	November	December	January	February
Numbers of bird counted	270,391,277 ,366,268	277,375, 318,372	356,463, 369,453	542,505,428, 306,404	439,314, 362,328	385,141, 375,320
2013: Mean (SD)	314(59)	336(47)	410(56)	437(92)	361(56)	305(113)
2012: Mean (SD)	260(19)	326(40)	378(57)	382(84)	430(61)	513(86)
2011: Mean (SD)	231(31)	456(72)	278(114)	346(34)	255(91)	330(69)
2010: Mean (SD)	158(78)	217(55)	362(52)	304(42)	253(30)	295(24)
2009: Mean (SD)	122 (41)	144 (32)	202 (60)	142 (74)	125 (28)	136 (55)
2008: Mean (SD)	155(52)	148(14)	152(43)	140(34)	201(70)	162(36)

Remarks: * No SD can be provided as only one survey was conducted.

Table 4. Mean numbers of species (SD in parenthesis) counted in agricultural lands in the northern part of Long Valley, from spring 2008 to winter 2013/14.

	<u>Spring</u>	<u>Summer</u>
	No. of species	No. of species
2013: Mean (SD)	44 (9)	28 (3)
2012: Mean (SD)	33 (7)	27 (3)
2011: Mean (SD)	31 (6)	25 (5)
2010: Mean (SD)	32 (6)	32 (3)
2009: Mean (SD)	35 (5)	25 (1)
2008: Mean (SD)	32 (4)	29 (4)
	<u>Autumn</u>	<u>Winter</u>
	No. of species	No. of species
2013: Mean (SD)	40 (9)	49 (7)
2012: Mean (SD)	39 (8)	50 (5)
2011: Mean (SD)	37 (5)	41 (5)
2010: Mean (SD)	34 (8)	36 (3)

2009: Mean (SD)	31 (7)	32 (5)
2008: Mean (SD)	34 (6)	35 (6)

- 3.6. For the *feng-shui* wood, the peak count in four seasons were 186 on 15 April, 121 on 26 August, 151 on 25 November and 143 on 30 December respectively (Table 5). The number of birds recorded in spring 2013 was higher than that recorded in previous years (Table 5). The highest number of species richness recorded were 18 on 1 April, 13 on 3 June, 14 on 25 November and 16 on 24 February (Table 6).

Table 5. Numbers in each count in the *feng-shui* wood, from spring 2013 to winter 2013/14 and the mean numbers (SD in parenthesis) from spring 2008 to winter2013/14.

	Spring 2013			Summer 2013		
	March	April	May	June	July	August
Numbers of bird counted	134,124, 154,145	182,117,186, 165,154	104,77, 66,81	74,83	42,37, 39	92,57, 84,121
2013: Mean (SD)	139(13)	161(28)	82(16)	79(6)	39(3)	89(26)
2012: Mean (SD)	80(29)	70(19)	42(11)	39(11)	39(18)	91(24)
2011: Mean (SD)	71(27)	59 (33)	47(14)	33(14)	39(1)	55(25)
2010: Mean (SD)	77(28)	52(14)	51(16)	5(0.71)	8(10)	30(36)
2009: Mean (SD)	85(15)	89(21)	67(32)	40(17)	68(10)	53(17)
2008: Mean (SD)	80(19)	88(13)	65(12)	48	40(17)	55(12)
	Autumn 2013			Winter 2013/2014		
	September	October	November	December	January	February
Numbers of bird counted	114,105,94, 96,116	98,150, 61,119	73,68, 85,151	131,107,103, 133,143	126,111, 81,136	112,63, 112,96
2013: Mean (SD)	105(10)	107(37)	94(39)	123(17)	114(24)	96(23)
2012: Mean (SD)	90(25)	106(25)	109(7)	134(36)	129(19)	136(24)
2011: Mean (SD)	102(12)	141(20)	108(48)	88(15)	67(33)	84 (35)
2010: Mean (SD)	51(13)	71(36)	75(12)	72(27)	74(35)	114(21)
2009: Mean (SD)	54 (3)	60 (21)	81 (31)	56 (24)	58 (5)	72 (16)
2008: Mean (SD)	70(31)	60(16)	83(24)	77(22)	91(39)	116(47)

Table 6. Mean numbers of species (SD in parenthesis) counted in the *feng-shui* wood from spring 2008 to winter2013/2014.

	Spring	Summer
	No. of species	No. of species
2013 Mean (SD)	14 (2)	10 (2)
2012 Mean (SD)	11 (2)	10 (2)
2011: Mean (SD)	10 (2)	9 (2)
2010: Mean (SD)	10 (3)	6 (5)
2009: Mean (SD)	17 (3)	10 (2)
2008: Mean (SD)	16 (3)	12 (1)
	Autumn	Winter
	No. of species	No. of species
2013 Mean (SD)	11 (2)	13 (2)
2012: Mean (SD)	11 (2)	15 (2)
2011: Mean (SD)	12 (2)	11 (2)
2010: Mean (SD)	9 (3)	11 (2)
2009: Mean (SD)	11 (3)	14 (3)
2008: Mean (SD)	13 (3)	16 (3)

Managed area

- 3.7. The total surveyed area of agricultural fields is about 504,000 m². The total area of agricultural fields in both parts of Long Valley managed by HKBWS and CA were different among months in the current study period (Table 7).

Table 7. Total surveyed area of managed and unmanaged fields in the core and northern part of Long Valley by the HKBWS and CA from March 2013 to February 2014.

Months	Area of managed fields (m ²)	Area of unmanaged fields (m ²)	Total (m ²)	% of fields managed
March	128,446	375,554	504,000	25.5
April	128,446	375,554	504,000	25.5
May	128,446	375,554	504,000	25.5
June	126,248	377,752	504,000	25.0
July	126,248	377,752	504,000	25.0
August	126,144	377,856	504,000	25.0
September	123,500	380,500	504,000	24.5
October	123,500	380,500	504,000	24.5
November	123,500	380,500	504,000	24.5
December	123,500	380,500	504,000	24.5
January	123,500	380,500	504,000	24.5
February	123,500	380,500	504,000	24.5

3.8. The ratio of mean bird density in managed fields to that in unmanaged fields of the same year reflected the utilization of managed fields by birds (Table 8). The mean densities of birds and the ratio in the current study period were similar to that of previous years except that the ratio in winter 2013/14 was the highest among seven years.

Table 8. Mean (SD) bird density (per 10,000 m²) in all managed and unmanaged fields and ratio of mean bird density in managed fields to that in unmanaged fields in from spring 2007 to winter 2013/14

	Spring 2007	Spring 2008	Spring 2009	Spring 2010	Spring 2011	Spring 2012	Spring 2013
Managed fields	8.6 (5.9)	11.5 (10.1)	10.1 (5.2)	12.1 (5.7)	22.2 (12.4)	23.8 (11.6)	29.0 (8.2)
Unmanaged fields	13.4 (5.5)	5.0 (2.4)	5.5 (22.3)	5.7 (2.5)	10.6 (4.3)	7.4 (3.3)	13.9 (2.9)
Ratio	0.64	2.30	1.84	2.12	2.10	3.22	2.09
	Summer 2007	Summer 2008	Summer 2009	Summer 2010	Summer 2011	Summer 2012	Summer 2013
Managed fields	6.2 (3.3)	19.9 (10.7)	11.4 (8.6)	9.4 (5.5)	8.1 (5.4)	26.3 (15.7)	18.4 (5.6)
Unmanaged fields	3.8 (2.0)	3.5 (1.7)	4.6 (2.0)	7.4 (2.1)	5.0 (2.6)	6.8 (1.9)	7.0 (1.3)
Ratio	1.63	5.69	2.48	1.27	1.62	3.87	2.63
	Autumn 2007	Autumn 2008	Autumn 2009	Autumn 2010	Autumn 2011	Autumn 2012	Autumn 2013
Managed fields	17.7 (8.8)	28.4 (9.0)	34.9 (10.0)	29.4 (9.7)	34.7 (14.7)	48.1 (14.1)	42.5 (8.8)
Unmanaged fields	18.9 (5.9)	7.5 (2.6)	9.8 (4.3)	14.2 (5.2)	15.0 (4.9)	12.3 (3.4)	12.0 (2.0)
Ratio	0.94	3.79	3.56	2.07	2.31	3.91	3.54
	Winter 2007/2008	Winter 2008/2009	Winter 2009/2010	Winter 2010/2011	Winter 2011/2012	Winter 2012/2013	Winter 2013/2014
Managed fields	21.3 (10.6)	34.0 (12.2)	20.9 (9.2)	30.7 (10.8)	25.7 (11.6)	50.3 (12.0)	47.0 (16.9)
Unmanaged fields	14.6 (2.8)	10.3 (2.9)	8.5 (3.7)	10.8 (3.8)	14.9 (3.7)	15.2 (2.1)	12.6 (2.9)
Ratio	1.46	3.30	2.46	2.84	1.72	3.31	3.73

Less Intensive Wet agricultural land (LI-WAL)

3.9. In the current study period, the management practices of different LI-WAL fields were started at different months. Therefore, the total areas of managed LI-WAL were different among months (Table 9).

Table 9. Total area of managed LI-WAL in the core and northern part of Long Valley

from March 2013 to February 2014.

Months	Total area of managed fields (m ² .)
March	30,960
April	30,960
May	30,960
June	32,208
July	34,198
August	35,187
September	34,360
October	34,360
November	34,360
December	34,360
January	34,360
February	34,360

3.10. The management practice of LI-WAL from spring 2013 to winter 2013/2014 comprised of planting of Paddy Rice, Water Chestnut, Chinese Arrowhead, Water Bamboo, Canna, Lotus and Water Lily.

3.11. The mean bird density in the managed LI-WAL rose by 76%, 5% and 33% in spring, autumn 2013 and winter 2013/2014 while it dropped by 44% in summer 2013 compared with the seasons in the previous year respectively (Table 10).

Table 10. Mean (SD) bird density (per 10,000 m²) in LI-WAL and its control fields from spring 2007 to winter 2013/2014.

	Spring 2007	Spring 2008	Spring 2009	Spring 2010	Spring 2011	Spring 2012	Spring 2013
Managed fields	47.5 (33.0)	15.0 (13.3)	32.6 (21.1)	14.9 (23.9)	21.8 (17.6)	37.1 (15.6)	65.4 (21.4)
Control fields	36.5 (36.1)	12.4 (15.5)	7.2 (5.0)	15.1 (12.6)	9.5 (7.0)	23.0 (12.4)	18.3 (8.7)
	Summer 2007	Summer 2008	Summer 2009	Summer 2010	Summer 2011	Summer 2012	Summer 2013
Managed fields	86.4 (105.3)	28.2 (18.9)	69.5 (66.9)	24.9 (23.9)	6.9 (0.7)	68.7 (60.0)	38.4 (8.8)
Control fields	9.5 (7.4)	8.8 (6.1)	3.7 (3.4)	8.7 (10.7)	8.8 (0.7)	18.8 (8.6)	5.6 (4.3)
	Autumn 2007	Autumn 2008	Autumn 2009	Autumn 2010	Autumn 2011	Autumn 2012	Autumn 2013
Managed fields	10.4 (5.4)	34.7 (15.0)	60.9 (25.5)	56.1 (39.2)	22.9 (30.9)	76.3 (33.6)	80.0 (18.9)
Control fields	1.2 (1.9)	5.0 (3.0)	15.8 (11.0)	24.7 (19.4)	17.8 (11.5)	38.3 (9.8)	22.3 (15.3)
	Winter 07/08	Winter 08/09	Winter 09/10	Winter 10/11	Winter 11/12	Winter 12/13	Winter 13/14
Managed fields	10.8 (11.9)	38.6 (11.9)	23.3 (10.8)	71.8 (41.4)	48.3 (43.9)	63.8 (14.0)	84.8 (52.0)
Control fields	2.1 (2.4)	7.5 (1.7)	10.8 (7.3)	20.0 (15.3)	17.9 (9.8)	46.8 (14.3)	21.8 (17.2)

Shallow water habitat (SWH)

3.12. The management practice of different fields of SWH started in different months in the current study period (Table 11).

Table 11. Total area of managed SWH in the core and northern part of Long Valley from March 2013 to February 2014.

Months	Total area of managed fields (m ²)
March	36,281
April	36,281
May	36,281
June	36,281
July	34,291
August	33,198
September	33,198
October	33,198
November	33,198
December	33,198
January	33,198
February	33,198

3.13. The management practice of SWH included marsh management, open water habitat management, water level maintenance and plowing and weeding.

3.14. The mean bird density increased by 13% in spring whereas it dropped by 49%, 63% and 42% in summer, autumn and winter respectively compared with the previous year. (Table 12).

Table 12. Mean (SD) bird density (per 10,000 m²) in managed SWH from spring 2007 to winter 2013/14.

	2007 (07/08 for winter)	2008 (08/09 for winter)	2009 (09/10 for winter)	2010 (10/11 for winter)	2011 (11/12 for winter)	2012 (12/13 for winter)	2013 (13/14 for winter)
Spring	21.0 (19.9)	11.4 (12.4)	26.4 (19.2)	14.9 (10.5)	37.3 (20.2)	20.3 (11.7)	23.0 (12.8)
Summer	10.2 (12.0)	15.7 (8.5)	20.4 (14.9)	5.3 (4.7)	18.7 (12.9)	17.3 (10.3)	8.9 (3.6)
Autumn	5.6 (4.6)	24.3 (13.2)	30.7 (11.3)	41.9 (12.5)	58.8 (28.1)	63.9 (27.4)	23.7 (17.4)
Winter	2.1 (1.6)	26.0 (15.7)	18.5 (12.4)	29.2 (19.3)	34.2 (16.7)	79.1 (34.1)	45.5 (26.6)

Fish/Marsh pond (FMP)

3.15. The managed area of FMP remained at 16,995 m² in the current study period. These practices included marsh management and water lily planting.

3.16. The mean bird densities in managed FMP increased by 26% in spring 2013 and decreased by 27%, 32% and 34% in summer 2013, autumn 2013 and winter 2013/2014 compared to the previous year.

Table 14. Mean (SD) bird density (per 10,000 m²) in managed FMP and its control fields from spring 2008 to winter 2013/14.

	Spring 2008	Spring 2009	Spring 2010	Spring 2011	Spring 2012	Spring 2013
Managed fields	1.0 (0.9)	13.3 (7.9)	11.1 (8.4)	7.5 (2.7)	23.0 (12.4)	29.0 (9.9)
Control fields	0.1 (0.1)	4.5 (3.9)	4.8 (4.6)	12.2 (6.2)	3.7 (4.2)	10.1 (11.2)
	Summer 2008	Summer 2009	Summer 2010	Summer 2011	Summer 2012	Summer 2013
Managed fields	1.5 (2.0)	14.6 (8.3)	5.9 (3.1)	5.1 (2.2)	18.8 (8.6)	13.7 (5.4)
Control fields	0.3 (0.2)	3.0 (2.7)	12.4 (13.5)	4.4 (4.9)	1.7 (2.2)	8.5 (10.4)
	Autumn 2008	Autumn 2009	Autumn 2010	Autumn 2011	Autumn 2012	Autumn 2013
Managed fields	10.5 (7.2)	9.4 (10.8)	18.6 (12.3)	9.9 (3.5)	38.3 (9.8)	26.0 (11.3)
Control fields	2.0 (2.8)	0.9 (1.7)	12.7 (15.5)	7.3 (5.2)	4.7 (3.7)	0.7 (1.8)
	Winter 08/09	Winter 09/10	Winter 10/11	Winter 11/12	Winter 12/13	Winter 13/14
Managed fields	23.1 (16.7)	18.2 (16.1)	27.2 (16.9)	8.6 (2.0)	46.8 (14.3)	30.9 (10.5)
Control fields	5.0 (3.1)	1.4 (1.4)	15.7 (13.6)	16.2 (29.8)	6.1 (5.9)	4.5 (9.1)

Water flea pond (WFP)

3.17. The management practice of different fields of WFP started in different months in the current study period (Table 14).

Table 14. Total area of managed water flea pond in the core part of Long Valley in from March 2013 to February 2014.

Months	Total area of managed fields (m ²)
March	5,946
April	5,946
May	5,946
June	2,500
July	2,500
August	2,500
September	2,500
October	2,500
November	2,500
December	2,500
January	2,500
February	2,500

3.18. The mean bird density in managed WFP rose from previous years by 42% and 5% in autumn and winter while the mean density dropped by 9% and 37% in spring and summer (Table 15).

Table 15. Mean (SD) bird density (per 10,000 m²) in WFP from spring to spring 2007 to winter 2013/14.

	2007 (07/08 for winter)	2008 (08/09 for winter)	2009 (09/10 for winter)	2010 (10/11 for winter)	2011 (11/12 for winter)	2012 (12/13 for winter)	2013 (13/14 for winter)
Spring	0.5 (0.4)	0.43 (0.42)	15.0 (9.8)	45.8 (25.7)	26.7 (28.4)	26.4 (27.2)	24.1 (20.7)
Summer	1.1 (1.2)	2.0 (2.6)	5.2 (4.5)	9.5 (6.9)	10.5 (4.7)	12.7 (12.8)	8.0 (11.8)
Autumn	4.6 (2.3)	24.2 (17.7)	26.0 (17.9)	32.4 (21.6)	40.8 (26.2)	55.2 (20.9)	78.2 (66.2)
Winter	4.0 (2.0)	33.1 (16.5)	33.7 (19.6)	47.0 (26.8)	34.7 (18.8)	38.4 (11.7)	40.3 (19.7)

4. Discussion

- 4.1. The management in the agricultural fields of Long Valley was effective in the report period. The most notable result was the increase of both abundance and diversity of bird recorded in agricultural land in the northern part of Long Valley in spring and autumn 2013. The mean number of species recorded in agricultural lands in the northern part of Long Valley in spring increased from 33 to 44, high diversity of passage migrants were recorded including Black-faced Bunting, Cinnamon Bittern, Citrine Wagtail, Common Greenshank, Oriental Pratincole, Temminck's Stint, Yellow Bittern and Yellow-breasted Bunting. This may be attributed to the increase of managed fields in agricultural lands in the northern part of Long Valley. Continued monitoring in the northern part of Long Valley is needed to examine if the increasing trend persists.
- 4.2. Paddy rice planting has been adopted as part of the management in the LI-WAL in Long Valley for a period of time and it remains effective in attracting seed-eating birds. High diversity of bunting were recorded including Black-faced Bunting, Black-headed Bunting, Chestnut-eared Bunting, Crested Bunting, Little Bunting, Rustic Bunting, Yellow-breasted Bunting and Yellow-browed Bunting. Yellow-breasted Bunting was recently uplisted to Endangered owing to unsustainable hunting. Since autumn 2009, Yellow-breasted Bunting were constantly recorded in Long Valley every year. The species became common passage migrants in Long Valley. In addition, a stable number of Yellow-breasted Bunting is also recorded over winter. These indicated Long Valley is probably one of the most important stopover site for this species during migration in Hong Kong. To maximize the attractiveness of Long Valley to buntings, paddy rice planting should be continued and its extent is recommended to be increased, if resources allow.
- 4.3. There are some notable sightings recorded from spring 2013 to winter 2013/14 (Status follows Carey et. al. 2001 unless stated otherwise). They include:

Black-headed Bunting

Only two individuals were recorded before 2002. The species was recorded in Long Valley every year since 2008. One individual was recorded by the survey on 3 Nov and 3 Dec 13.

Black-faced Spoonbill

Common winter visitor to Deep Bay and listed as Endangered in IUCN red list. Ten individual was recorded on 3 Dec 13.

Common Chiffchaff

Only four records before 2002. One individual was first recorded on 1 Jan 14 by bird watchers and then recorded on 7 Jan 14 during the bird survey. This is the first record of this species in Long Valley.

Crested Bunting

This species was once a common resident but now is rare. One individual was detected on 19 Nov 14.

Eurasian Curlew

Abundant in winter and early spring. One individual was recorded on 20 Aug 13. This is the first record of this species in Long Valley.

Terek Sandpiper

Common passage migrant in spring, scarce to common in autumn and summer. One individual was recorded on 16 Aug 13. This is the first record of this species in Long Valley.

Yellow-browed Bunting

Scarce winter visitor and spring passage migrant. Two individual was recorded on 3 Dec 13.

5. References

Carey, G.J., Chalmers, M.L., Diskin, D.A., Kennerley, P.R., Leader, P.J., Leven, M.R., Lewthwaite, R.W., Melville D.S., Turnbull M. and Young, L. (2001): The Avifauna of Hong Kong. Hong Kong Bird Watching Society, Hong Kong.

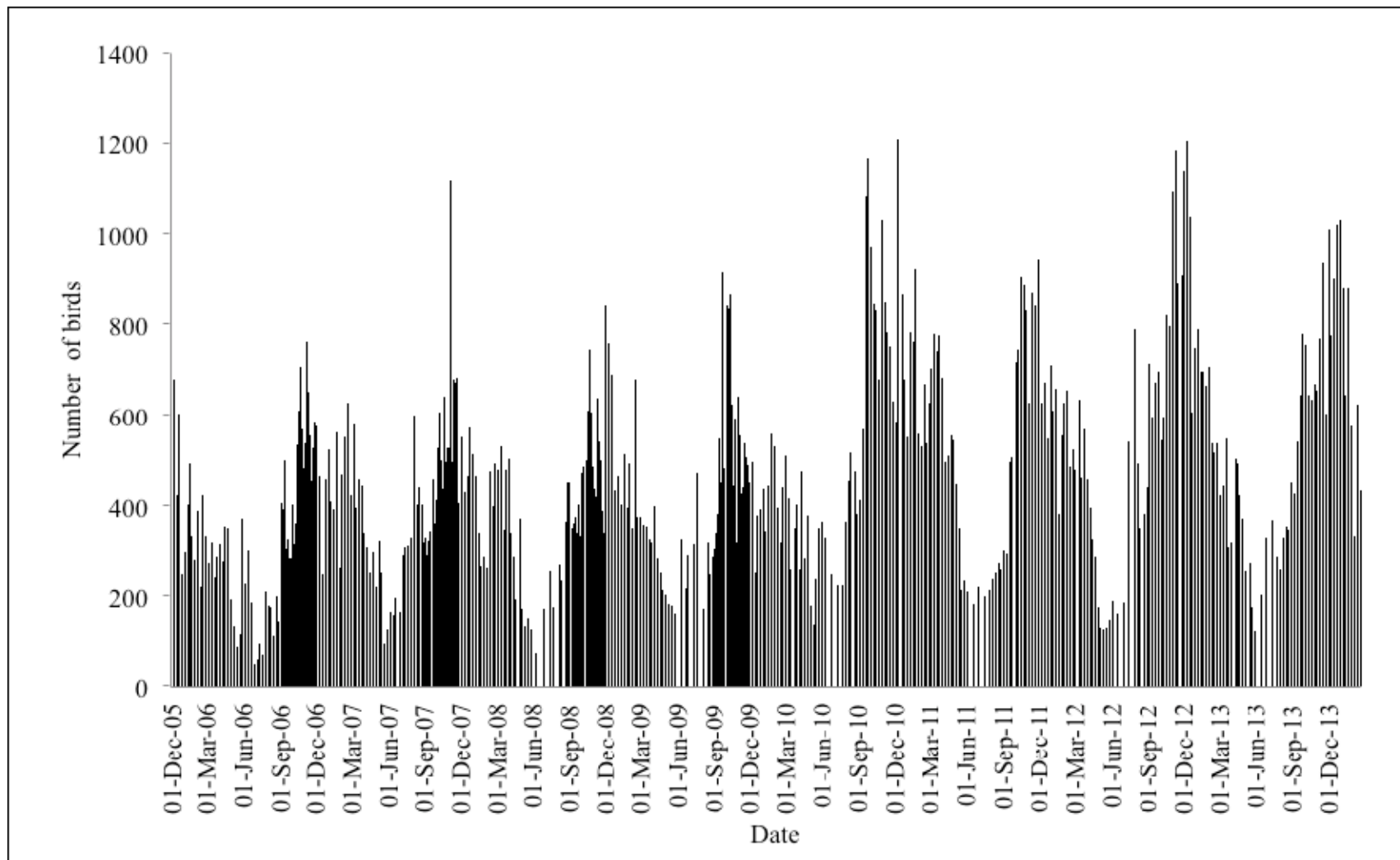


Figure 4. Total numbers of birds recorded in the core part of Long Valley from December 2005 to February 2014.

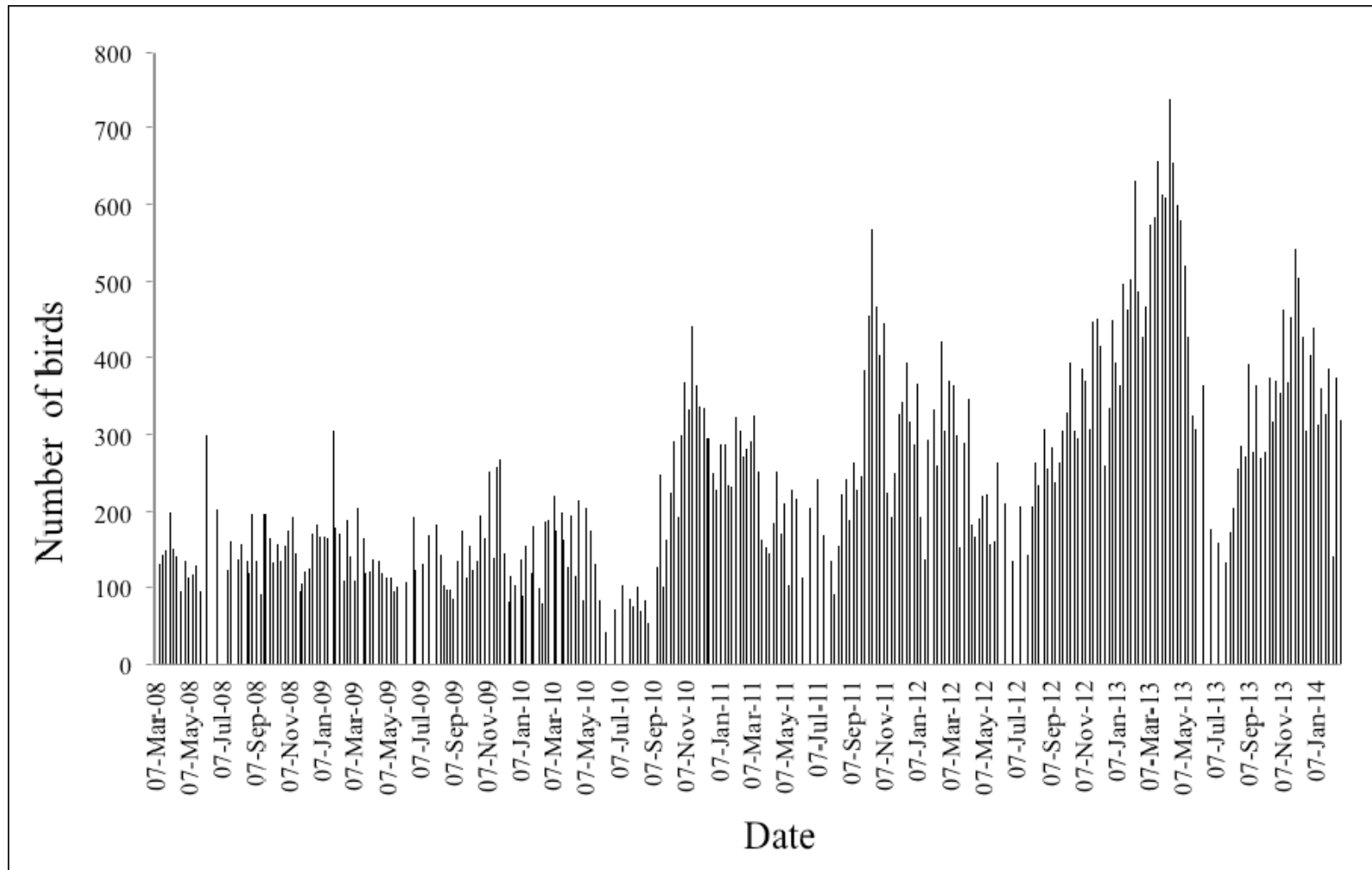


Figure 5. Total number of birds recorded in the northern part of Long Valley from March 2008 to February 2014.

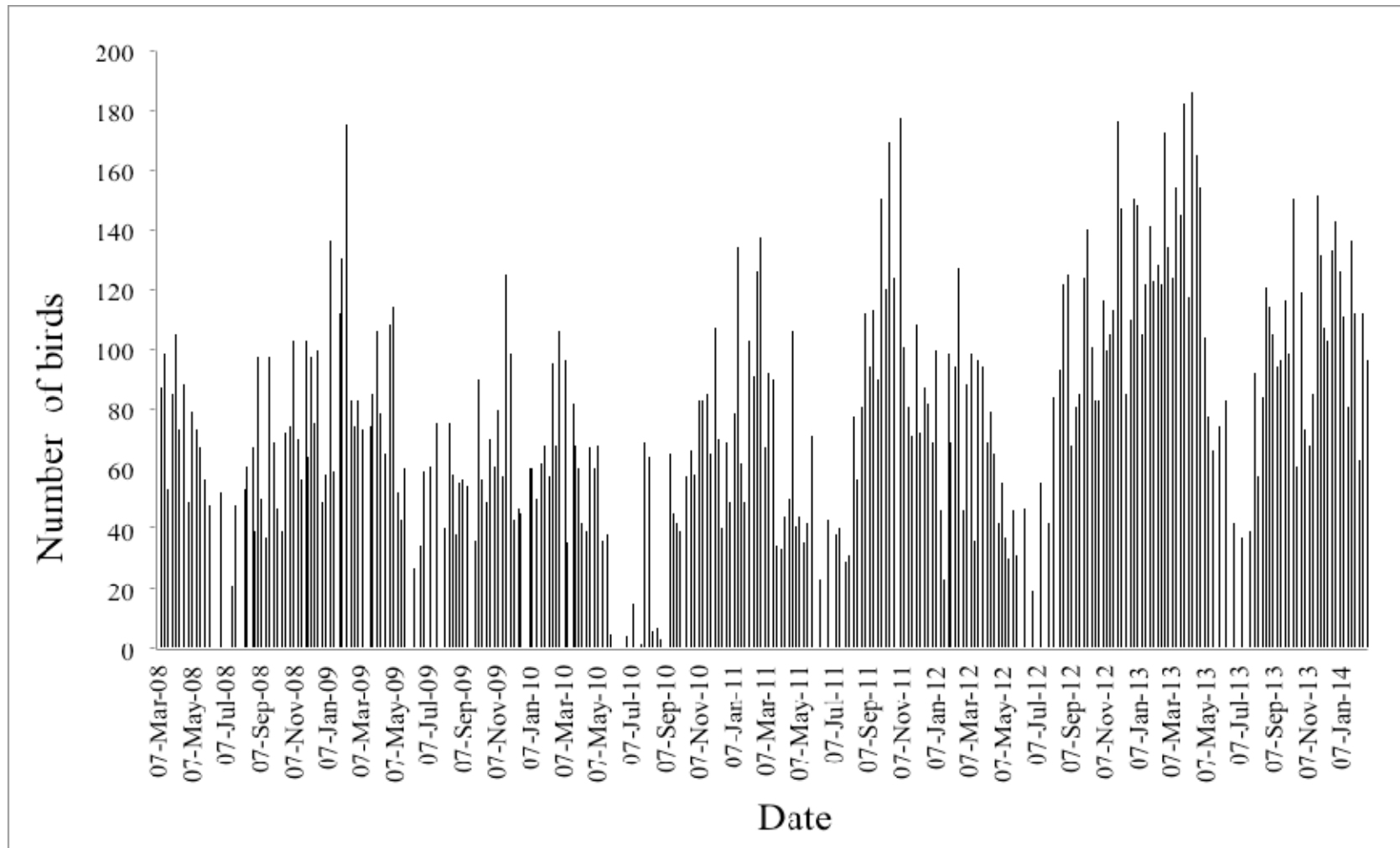


Figure 6. Total number of birds recorded in the *feng-shui* Wood of the northern part of Long Valley from March 2008 to February 2014.

Appendix

Appendix 1. List of bird species and their average abundance recorded in regular bird survey in the core part of Long Valley during March 2013 to February 2014.

Number	English Name	Scientific name	Average abundance
2	Japanese Quail	<i>Coturnix japonica</i>	0.19
14	Eurasian Wigeon	<i>Anas penelope</i>	0.04
19	Northern Shoveler	<i>Anas clypeata</i>	0.31
20	Northern Pintail	<i>Anas acuta</i>	0.02
21	Garganey	<i>Anas querquedula</i>	0.17
23	Eurasian Teal	<i>Anas crecca</i>	5.17
41	Little Grebe	<i>Tachybaptus ruficollis</i>	0.71
42	Great Egret	<i>Podiceps cristatus</i>	1.08
51	Black-faced Spoonbill	<i>Platalea minor</i>	0.02
53	Yellow Bittern	<i>Ixobrychus sinensis</i>	0.04
55	Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	0.13
59	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	0.04
61	Chinese Pond Heron	<i>Ardeola bacchus</i>	14.81
63	Grey Heron	<i>Ardea cinerea</i>	0.29
66	Intermediate Egret	<i>Egretta intermedia</i>	0.15
67	Little Egret	<i>Egretta garzetta</i>	6.19
81	Crested Honey Buzzard	<i>Pernis ptilorhynchus</i>	0.02
83	Black Kite	<i>Milvus migrans</i>	0.48
87	Crested Serpent Eagle	<i>Spilornis cheela</i>	0.06
90	Crested Goshawk	<i>Accipiter trivirgatus</i>	0.02
92	Japanese Sparrowhawk	<i>Accipiter gularis</i>	0.04
93	Besra	<i>Accipiter virgatus</i>	0.13
94	Eurasian Sparrowhawk	<i>Accipiter nisus</i>	0.02
96	Eastern Buzzard	<i>Buteo japonicus</i>	0.19
100	Bonelli's Eagle	<i>Aquila fasciata</i>	0.02
102	Common Kestrel	<i>Falco tinnunculus</i>	0.02
105	Peregrine Falcon	<i>Falco peregrinus</i>	0.02
111	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	4.98
112	Baillon's Crake	<i>Porzana pusilla</i>	0.02
113	Ruddy-breasted Crake	<i>Porzana fusca</i>	0.02
117	Common Moorhen	<i>Gallinula chloropus</i>	4.31
125	Black-winged Stilt	<i>Himantopus himantopus</i>	22.54
126	Pied Avocet	<i>Recurvirostra avosetta</i>	2.58
128	Grey-headed Lapwing	<i>Vanellus cinereus</i>	0.02
129	Pacific Golden Plover	<i>Pluvialis fulva</i>	0.25
133	Little Ringed Plover	<i>Charadrius dubius</i>	9.50
138	Greater Painted-Snipe	<i>Rostratula benghalensis</i>	5.29
140	Eurasian Woodcock	<i>Scolopax rusticola</i>	0.02

141	Pintail Snipe	<i>Gallinago stenura</i>	3.19
142	Swinhoe's Snipe	<i>Gallinago megala</i>	0.02
143	Common Snipe	<i>Gallinago gallinago</i>	14.90
150	Eurasian Curlew	<i>Numenius arquata</i>	0.02
152	Spotted Redshank	<i>Tringa erythropus</i>	0.23
154	Marsh Sandpiper	<i>Tringa stagnatilis</i>	0.02
155	Common Greenshank	<i>Tringa nebularia</i>	0.29
158	Green Sandpiper	<i>Tringa ochropus</i>	0.77
159	Wood Sandpiper	<i>Tringa glareola</i>	45.77
161	Terek Sandpiper	<i>Xenus cinereus</i>	0.02
162	Common Sandpiper	<i>Actitis hypoleucos</i>	0.48
168	Little Swift	<i>Calidris minuta</i>	13.98
170	Long-toed Stint	<i>Calidris subminuta</i>	1.13
172	Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	0.02
178	Red-necked Phalarope	<i>Phalaropus lobatus</i>	0.33
180	Oriental Pratincole	<i>Glareola maldivarum</i>	0.04
198	Cattle Egret	<i>Hydroprogne caspia</i>	2.04
207	Whiskered Tern	<i>Chlidonias hybrida</i>	0.02
214	Domestic Pigeon	<i>Columba livia</i>	0.90
215	Oriental Turtle Dove	<i>Streptopelia orientalis</i>	0.25
218	Spotted Dove	<i>Spilopelia chinensis</i>	13.27
226	Greater Coucal	<i>Centropus sinensis</i>	0.58
229	Asian Koel	<i>Eudynamys scolopaceus</i>	0.75
230	Plaintive Cuckoo	<i>Cacomantis merulinus</i>	0.19
232	Large Hawk Cuckoo	<i>Hierococcyx sparverioides</i>	0.08
236	Indian Cuckoo	<i>Cuculus micropterus</i>	0.04
258	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	0.56
261	Common Kingfisher	<i>Alcedo atthis</i>	0.44
263	Pied Kingfisher	<i>Ceryle rudis</i>	0.08
264	Blue-tailed Bee-eater	<i>Merops philippinus</i>	0.25
276	Black-winged Cuckooshrike	<i>Coracina melaschistos</i>	0.02
283	Brown Shrike	<i>Lanius cristatus</i>	0.04
285	Long-tailed Shrike	<i>Lanius schach</i>	4.63
288	Black Drongo	<i>Dicrurus macrocercus</i>	1.73
295	Azure-winged Magpie	<i>Cyanopica cyanus</i>	0.13
296	Red-billed Blue Magpie	<i>Urocissa erythrorhyncha</i>	0.02
298	Eurasian Magpie	<i>Pica pica</i>	1.02
302	Collared Crow	<i>Corvus torquatus</i>	1.73
303	Large-billed Crow	<i>Corvus macrorhynchos</i>	0.21
305	Yellow-billed Grosbeak	<i>Periparus venustulus</i>	0.02
308	Chinese Penduline-Tit	<i>Remiz consobrinus</i>	0.23
310	Eurasian Skylark	<i>Alauda arvensis</i>	0.38
312	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	3.83
313	Chinese Bulbul	<i>Pycnonotus sinensis</i>	4.10

314	Sooty-headed Bulbul	<i>Pycnonotus aurigaster</i>	1.29
319	Pale Martin	<i>Riparia diluta</i>	0.06
320	Barn Swallow	<i>Hirundo rustica</i>	10.42
323	Red-rumped Swallow	<i>Cecropis daurica</i>	1.27
331	Common Chiffchaff	<i>Phylloscopus collybita</i>	0.02
332	Dusky Warbler	<i>Phylloscopus fuscatus</i>	4.56
337	Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	0.23
350	Oriental Reed Warbler	<i>Acrocephalus orientalis</i>	0.13
351	Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>	0.35
362	Pallas's Grasshopper Warbler	<i>Locustella certhiola</i>	0.08
366	Zitting Cisticola	<i>Cisticola juncidis</i>	3.02
367	Golden-headed Cisticola	<i>Cisticola exilis</i>	0.13
368	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	6.77
369	Plain Prinia	<i>Prinia inornata</i>	7.75
370	Common Tailorbird	<i>Orthotomus sutorius</i>	1.19
376	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	6.13
388	Japanese White-eye	<i>Zosterops japonicus</i>	2.71
390	Crested Myna	<i>Acridotheres cristatellus</i>	26.17
391	Common Myna	<i>Acridotheres tristis</i>	0.10
392	Red-billed Starling	<i>Spodiopsar sericeus</i>	3.17
393	White-cheeked Starling	<i>Spodiopsar cineraceus</i>	2.21
394	Black-collared Starling	<i>Gracupica nigricollis</i>	8.98
397	White-shouldered Starling	<i>Sturnia sinensis</i>	0.58
400	Common Starling	<i>Sturnus vulgaris</i>	0.02
407	Common Blackbird	<i>Turdus merula</i>	0.42
417	Bluethroat	<i>Luscinia svecica</i>	0.19
418	Siberian Rubythroat	<i>Luscinia calliope</i>	0.15
421	Red-flanked Bluetail	<i>Tarsiger cyanurus</i>	0.02
422	Oriental Magpie Robin	<i>Copsychus saularis</i>	2.88
425	Daurian Redstart	<i>Phoenicurus auroreus</i>	0.50
428	Siberian Stonechat	<i>Saxicola maurus</i>	5.96
447	Red-throated Flycatcher	<i>Ficedula albicilla</i>	0.02
458	Schrenck's Bittern	<i>Dicaeum cruentatum</i>	0.02
460	Fork-tailed Sunbird	<i>Aethopyga christinae</i>	0.02
462	Eurasian Tree Sparrow	<i>Passer montanus</i>	70.29
464	White-rumped Munia	<i>Lonchura striata</i>	50.13
465	Scaly-breasted Munia	<i>Lonchura punctulata</i>	49.13
468	Eastern Yellow wagtail	<i>Motacilla tschutschensis</i>	25.04
469	Citrine Wagtail	<i>Motacilla citreola</i>	0.69
470	Grey Wagtail	<i>Motacilla cinerea</i>	0.29
471	White Wagtail	<i>Motacilla alba</i>	22.83
472	Richard's Pipit	<i>Anthus richardi</i>	2.27
474	Olive-backed Pipit	<i>Anthus hodgsoni</i>	4.27

477	Red-throated Pipit	<i>Anthus cervinus</i>	7.42
478	Buff-bellied Pipit	<i>Anthus rubescens</i>	0.08
482	Grey-capped Greenfinch	<i>Carduelis sinica</i>	0.04
487	Crested Bunting	<i>Emberiza lathami</i>	0.02
490	Chestnut-eared Bunting	<i>Emberiza fucata</i>	0.29
491	Little Bunting	<i>Emberiza pusilla</i>	0.19
492	Yellow-browed Bunting	<i>Emberiza chrysophrys</i>	0.04
493	Rustic Bunting	<i>Emberiza rustica</i>	0.02
495	Yellow-breasted Bunting	<i>Emberiza aureola</i>	0.63
497	Black-headed Bunting	<i>Emberiza melanocephala</i>	0.04
499	Black-faced Bunting	<i>Emberiza spodocephala</i>	0.21
505	Tundra Bean Goose	<i>Anser rossicus</i>	0.08
	Alexandrine Parakeet	<i>Psittacula eupatria</i>	0.21
	Palm Cockatoo	<i>Probosciger aterrimus</i>	0.02

Appendix 2. List of bird species recorded in regular bird survey in the northern part of Long Valley during March 2013 to February 2014.

Number	English ame	Scientific name	Average abundance
2	Japanese Quail	<i>Coturnix japonica</i>	0.02
21	Garganey	<i>Anas querquedula</i>	0.13
23	Eurasian Teal	<i>Anas crecca</i>	2.33
41	Little Grebe	<i>Tachybaptus ruficollis</i>	1.00
42	Great Egret	<i>Podiceps cristatus</i>	0.67
53	Yellow Bittern	<i>Ixobrychus sinensis</i>	0.27
55	Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	0.02
59	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	0.65
60	Striated Heron	<i>Butorides striata</i>	0.06
61	Chinese Pond Heron	<i>Ardeola bacchus</i>	8.42
62	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	5.60
63	Grey Heron	<i>Ardea cinerea</i>	1.71
64	Purple Heron	<i>Ardea purpurea</i>	0.04
67	Little Egret	<i>Egretta garzetta</i>	3.19
77	Great Cormorant	<i>Phalacrocorax carbo</i>	1.06
83	Black Kite	<i>Milvus migrans</i>	0.35
92	Japanese Sparrowhawk	<i>Accipiter gularis</i>	0.02
93	Besra	<i>Accipiter virgatus</i>	0.02
96	Eastern Buzzard	<i>Buteo japonicus</i>	0.31
102	Common Kestrel	<i>Falco tinnunculus</i>	0.15
111	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	5.54
113	Ruddy-breasted Crake	<i>Porzana fusca</i>	0.02
117	Common Moorhen	<i>Gallinula chloropus</i>	2.42
125	Black-winged Stilt	<i>Himantopus himantopus</i>	0.94
128	Grey-headed Lapwing	<i>Vanellus cinereus</i>	0.04
129	Pacific Golden Plover	<i>Pluvialis fulva</i>	0.15
133	Little Ringed Plover	<i>Charadrius dubius</i>	2.63
138	Greater Painter-snipe	<i>Rostratula benghalensis</i>	0.56
139	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	0.08
141	Pintail Snipe	<i>Gallinago stenura</i>	0.92
143	Common Snipe	<i>Gallinago gallinago</i>	2.04
154	Marsh Sandpiper	<i>Tringa stagnatilis</i>	1.50
155	Common Greenshank	<i>Tringa nebularia</i>	0.35
158	Green Sandpiper	<i>Tringa ochropus</i>	1.23
159	Wood Sandpiper	<i>Tringa glareola</i>	7.35
162	Common Sandpiper	<i>Actitis hypoleucos</i>	0.75
168	Little Swift	<i>Calidris minuta</i>	0.42
169	Temminck's Stint	<i>Calidris temminckii</i>	0.10
170	Long-toed Stint	<i>Calidris subminuta</i>	0.19

180	Oriental Pratincole	<i>Glareola maldivarum</i>	0.06
215	Oriental Turtle Dove	<i>Streptopelia orientalis</i>	2.23
218	Spotted Dove	<i>Spilopelia chinensis</i>	8.38
220	Common Emerald Dove	<i>Chalcophaps indica</i>	0.04
226	Greater Coucal	<i>Centropus sinensis</i>	0.54
229	Asian Koel	<i>Eudynamys scolopaceus</i>	1.25
230	Plaintive Cuckoo	<i>Cacomantis merulinus</i>	0.81
232	Large Hawk Cuckoo	<i>Hierococcyx sparverioides</i>	0.04
236	Indian Cuckoo	<i>Cuculus micropterus</i>	0.15
258	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	1.33
261	Common Kingfisher	<i>Alcedo atthis</i>	1.29
263	Pied Kingfisher	<i>Ceryle rudis</i>	0.85
267	Great Bittern	<i>Megalaima virens</i>	0.02
268	Eurasian Wryneck	<i>Jynx torquilla</i>	0.06
283	Brown Shrike	<i>Lanius cristatus</i>	0.02
285	Long-tailed Shrike	<i>Lanius schach</i>	2.15
287	Black-naped Oriole	<i>Oriolus chinensis</i>	0.02
288	Black Drongo	<i>Dicrurus macrocercus</i>	1.38
291	Black-naped Monarch	<i>Hypothymis azurea</i>	0.04
296	Eurasian Magpie	<i>Pica pica</i>	1.44
303	Large-billed Crow	<i>Corvus macrorhynchos</i>	0.40
305	Yellow-billed Grosbeak	<i>Periparus venustulus</i>	0.29
306	Great Tit	<i>Parus major</i>	1.52
310	Eurasian Skylark	<i>Alauda arvensis</i>	0.06
312	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	35.83
313	Chinese Bulbul	<i>Pycnonotus sinensis</i>	47.92
314	Sooty-headed Bulbul	<i>Pycnonotus aurigaster</i>	6.83
320	Barn Swallow	<i>Hirundo rustica</i>	29.17
326	Manchurian Bush Warbler	<i>Cettia canturians</i>	0.06
332	Dusky Warbler	<i>Phylloscopus fuscatus</i>	3.13
336	Pallas's Leaf Warbler	<i>Phylloscopus proregulus</i>	0.29
337	Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	1.42
350	Oriental Reed Warbler	<i>Acrocephalus orientalis</i>	0.19
351	Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>	0.15
360	Russet Bush Warbler	<i>Bradypterus mandelli</i>	0.02
361	Lanceolated Warbler	<i>Locustella lanceolata</i>	0.02
362	Pallas's Grasshopper Warbler	<i>Locustella certhiola</i>	0.04
366	Zitting Cisticola	<i>Cisticola juncidis</i>	2.21
368	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	4.10
369	Plain Prinia	<i>Prinia inornata</i>	1.50
370	Common Tailorbird	<i>Orthotomus sutorius</i>	1.60
376	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	14.46
388	Japanese White-eye	<i>Zosterops japonicus</i>	22.54

390	Crested Myna	<i>Acridotheres cristatellus</i>	18.63
391	Common Myna	<i>Acridotheres tristis</i>	0.48
392	Red-billed Starling	<i>Spodiopsar sericeus</i>	8.23
393	White-cheeked Starling	<i>Spodiopsar cineraceus</i>	4.35
394	Black-collared Starling	<i>Gracupica nigricollis</i>	15.81
397	White-shouldered Starling	<i>Sturnia sinensis</i>	1.65
405	Grey-backed Thrush	<i>Turdus hortulorum</i>	0.96
406	Japanese Thrush	<i>Turdus cardis</i>	0.17
407	Common Blackbird	<i>Turdus merula</i>	1.46
417	Bluethroat	<i>Luscinia svecica</i>	0.10
418	Siberian Rubythroat	<i>Luscinia calliope</i>	0.48
421	Red-flanked Bluetail	<i>Tarsiger cyanurus</i>	0.02
422	Oriental Magpie Robin	<i>Copsychus saularis</i>	7.21
425	Daurian Redstart	<i>Phoenicurus auroreus</i>	0.60
428	Siberian Stonechat	<i>Saxicola maurus</i>	2.75
437	Asian Brown Flycatcher	<i>Muscicapa dauurica</i>	0.19
447	Red-throated Flycatcher	<i>Ficedula albicilla</i>	0.06
460	Fork-tailed Sunbird	<i>Aethopyga christinae</i>	0.04
462	Eurasian Tree Sparrow	<i>Passer montanus</i>	29.88
464	White-rumped Munia	<i>Lonchura striata</i>	0.42
465	Scaly-breasted Munia	<i>Lonchura punctulata</i>	8.96
468	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	6.23
469	Citrine Wagtail	<i>Motacilla citreola</i>	0.25
471	White Wagtail	<i>Motacilla alba</i>	8.23
472	Richard's Pipit	<i>Anthus richardi</i>	3.90
474	Olive-backed Pipit	<i>Anthus hodgsoni</i>	14.21
477	Red-throated Pipit	<i>Anthus cervinus</i>	2.79
490	Chestnut-eared Bunting	<i>Emberiza fucata</i>	0.10
491	Little Bunting	<i>Emberiza pusilla</i>	2.73
495	Yellow-breasted Bunting	<i>Emberiza aureola</i>	0.40
496	Chestnut Bunting	<i>Emberiza rutila</i>	0.15
499	Black-faced Bunting	<i>Emberiza spodocephala</i>	1.40

Appendix 3. List of bird species recorded in regular bird survey in *Feng-shui* Wood of the northern part of Long Valley during March 2013 to February 2014.

Number	English name	Scientific name	Average abundance
1	Chinese Francolin	<i>Francolinus pintadeanus</i>	0.04
93	Besra	<i>Accipiter virgatus</i>	0.02
168	Little Swift	<i>Calidris minuta</i>	3.13
215	Oriental Turtle Dove	<i>Streptopelia orientalis</i>	0.27
218	Spotted Dove	<i>Spilopelia chinensis</i>	2.83
220	Common Emerald Dove	<i>Chalcophaps indica</i>	0.25
226	Greater Coucal	<i>Centropus sinensis</i>	0.15
229	Asian Koel	<i>Eudynamys scolopaceus</i>	0.77
230	Plaintive Cuckoo	<i>Cacomantis merulinus</i>	0.10
232	Large Hawk Cuckoo	<i>Hierococcyx sparverioides</i>	0.29
236	Indian Cuckoo	<i>Cuculus micropterus</i>	0.02
245	Asian Barred Owlet	<i>Glaucidium cuculoides</i>	0.08
254	Pacific Swift	<i>Apus pacificus</i>	0.42
290	Hair-crested Drongo	<i>Dicrurus hottentottus</i>	0.21
291	Black-naped Monarch	<i>Hypothymis azurea</i>	0.02
306	Great Tit	<i>Parus major</i>	2.25
312	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	19.25
313	Chinese Bulbul	<i>Pycnonotus sinensis</i>	21.40
314	Sooty-headed Bulbul	<i>Pycnonotus aurigaster</i>	4.35
320	Barn Swallow	<i>Hirundo rustica</i>	2.00
332	Dusky Warbler	<i>Phylloscopus fuscatus</i>	0.44
336	Pallas's Leaf Warbler	<i>Phylloscopus proregulus</i>	0.46
337	Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	1.02
339	Arctic Warbler	<i>Phylloscopus borealis</i>	0.04
341	Pale-legged Leaf Warbler	<i>Phylloscopus tenellipes</i>	0.02
368	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	0.31
370	Common Tailorbird	<i>Orthotomus sutorius</i>	1.48
376	Masked Laughingthrush	<i>Garrulax perspicillatus</i>	2.60
380	White-browed Laughingthrush	<i>Garrulax sannio</i>	0.46
388	Japanese White-eye	<i>Zosterops japonicus</i>	20.69
405	Grey-backed Thrush	<i>Turdus hortulorum</i>	1.06
406	Japanese Thrush	<i>Turdus cardis</i>	0.19
407	Common Blackbird	<i>Turdus merula</i>	1.56
418	Siberian Rubythroat	<i>Luscinia calliope</i>	0.17
420	Rufous-tailed Robin	<i>Luscinia sibilans</i>	0.02
422	Oriental Magpie Robin	<i>Copsychus saularis</i>	2.65
435	Grey-streaked Flycatcher	<i>Muscicapa griseisticta</i>	0.02
437	Asian Brown Flycatcher	<i>Muscicapa dauurica</i>	0.35
458	Scarlet-backed	<i>Dicaeum cruentatum</i>	0.48

	Flowerpecker		
460	Fork-tailed Sunbird	<i>Aethopyga christinae</i>	1.85
462	Eurasian Tree Sparrow	<i>Passer montanus</i>	5.69
465	Scaly-breasted Munia	<i>Lonchura punctulata</i>	0.42
474	Olive-backed Pipit	<i>Anthus hodgsoni</i>	6.23
496	Chestnut Bunting	<i>Emberiza rutila</i>	0.06
499	Black-faced Bunting	<i>Emberiza spodocephala</i>	0.17

Appendix 4. The monthly cumulative number of bird species in three areas in Long Valley.

	Core part of Long Valley	Agricultural fields in northern part of Long Valley	<i>Feng-shui</i> wood
March 2013	62	57	23
April 2013	79	76	29
May 2013	51	44	17
June 2013	35	35	16
July 2013	34	34	11
August 2013	48	37	16
September 2013	64	55	18
October 2013	77	68	21
November 2013	81	74	22
December 2013	92	79	22
January 2014	67	70	19
February 2014	67	70	21