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Cover photo: Great Egret *Casmerodius albus* and Little Egret *Egretta garzetta*
(Photo by: Henry LUI)

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Abstract: Watefowl count data were analysed to investigate the potential effect of overhead wires on ardeids utilising fishponds in the Deep Bay area. There was no statistically significant difference in abundance of Little Egrets, Chinese Pond Herons or Great Egrets between unwired and wired ponds with wires at 5-m or 10-m spacings. Due to the observed harmful effect of overhead wires on birds in other parts of the world and the fact that there may be more wired ponds with time, the potential effect of overhead wires on local ardeids could not be ruled out. It is recommended that study be carried out focusing on the potential effect of overhead wires on ardeids and other waterbirds.

BACKGROUND

Great Cormorant *Phalacrocorax carbo* is an abundant winter visitor in Hong Kong and are mainly found in Deep Bay. The highest count of 8076 birds was recorded on 13 January 1996 (Carey *et al*. 2001) but numbers averaged around 5000 birds in recent winters (1997-2003) (data from Carey 1998, 1999, 2001, 2002, Yu 2003). Deep Bay regularly supports at least 6.3% of the regional population, or 0.9% of the northern hemisphere population of this species (Rose and Scott 1994 in Carey and Young 1999). Great Cormorant is piscivorous and mainly feeds in Deep Bay. However, 12% of the population in the Deep Bay area is reported to forage in commercial fishponds (Anon. 1997). Fish farmers started to complain of severe fish loss to cormorants in 1994. Scarecrows and sound have been used as

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deterrents but were shown to be ineffective (*ibid*.). Because cormorants need a take-off length of at least 8-12 m, use of wiring 2 m above the pond surface as a physical barrier was suggested (*ibid*.). Wires, ropes, strings and nylon lines have been suspended over aquaculture facilities to exclude piscivorous birds in North America (Mott and Boyd 1995). Experiments to test the effectiveness of such device were funded by The Agriculture, Fisheries and Conservation Department (AFCD). Plastic fishing wires (1.5 mm in diameter) spaced at 5 m in fishponds in the Deep Bay area were carried out between February and October 2002. Ten-metre spacing was used between December 2002 and December 2003. Although cormorant is a winter visitor in Hong Kong, the wires were left in place all year.

Fishponds have been shown to be important feeding habitats for ardeids (e.g., Wong 1991, Young and Chan 1997, Young 1998, City University of Hong Kong 2001). The hazard of netting or wire barriers to target and non-target species, including Osprey *Pandion haliaetus* (wingspan: 1.35 m) and swallows (Hirundininae), has been reported in North America (D.F. Mott, unpubl. data in Mott and Boyd 1995). The potential adverse effect to local ardeids of wires above fishponds was raised by members of conservation committee of The Hong Kong Bird Watching Society. In the absence of empirical study to address this potential issue, the waterfowl counts of the Hong Kong Bird Watching Society were the best dataset available for this investigation. Waterbirds (e.g., ardeids, ducks, waders) in fishponds in the Deep Bay area were counted annually beginning in January 1979, and monthly since November 1997. Abundance of waterbirds was recorded for each pond and areas representing the majority of fishponds in Hong Kong were covered synchronously. The presence of overhead wires in individual fishponds was recorded during waterfowl counts.

STUDY AREA

Forty ponds were wired at 5 m spacing between February and October 2002, and 80 ponds at 10 m spacing between December 2002 and December 2003 in the experiment funded by AFCD. This together made up around 10% of total ponds in the Deep Bay area. A subset of these ponds was selected for analysis of wires impacts on birds. The wired fishponds of 5-m and 10-m spacing chosen for analysis scattered over large area (900 ha) including Hoo Hok Wai, San Tin, Mai Po San Tsuen, Tam Kon Chau, Lut Chau, Tai Sang Wai and Tsim Bei Tsui. These areas represented the majority of

fishponds in Hong Kong, and were covered by waterfowl counts.

METHODS

Mean abundance of Little Egrets *Egretta garzetta*, Chinese Pond Herons *Ardeola bacchus* and Great Egrets *Casmerodius albus* was compared in fishponds with and without wires. These three species were chosen in part because they frequently forage in fishponds (Young 1998) and their numbers are typically large enough to enable statistical analysis. Great Egrets have long wingspans (1.38 m), and so are potentially susceptible to injury by overhead wires. Little Egret and Chinese Pond Heron are the two most widespread breeding ardeid species in Hong Kong (Wong and Kwok 2002, Wong 2003). Their susceptibility to overhead wires in fishponds is therefore of interest.

Ponds without wires served as "controls" for the investigation. Control ponds were chosen as those with similar size and shape, which were also located near the corresponding wired ponds. Data from wired ponds were ignored when no control pond could be selected, or when the wired ponds were not included in the survey areas of waterfowl counts. Control ponds were selected as 14 ponds with 5-m wire spacing and 26 ponds with 10-m wire spacing. The effect of wiring on use of drained ponds by ardeids could not be investigated due to the limited sample size. When a wired or control pond was drained or not counted due to a shortage of surveyors, data from the corresponding control or wired pond in the same month were also ignored. This ensured equality of sample sizes (number of surveys) between paired wired and control ponds. Waterfowl count data for the period between February and October 2002 were analyzed to investigate the potential effect of 5-m wire spacing, data from December 2002 to November 2003 were analyzed to investigate the potential effect of 10-m wire spacing.

Even when the overhead wires have no effect on ardeids, mean ardeid abundance in sampled wired and control ponds would not be exactly the same due to chance. In order to indicate the probability that observed difference were due to chance. Wilcoxon’s test for matched pairs (Fowler and Cohen 1996) was used to identify difference between wired and unwired ponds.

The statistic hypotheses are:

H_o: Abundance of Little Egrets/Chinese Pond Herons/Great Egrets in wired and unwired ponds were similar (i.e., observed difference was due to chance);

H_1: Abundance of Little Egrets/Chinese Pond Herons/Great Egrets in wired and unwired ponds were not similar (i.e., overhead wires may have effect on ardeids).

RESULTS

Counts of Little Egrets, Chinese Pond Herons and Great Egrets in wired ponds and corresponding control ponds are shown in Appendices 1-6. Pond number follows Carey (2002). Counts of Little Egrets, Chinese Pond Heron and Great Egrets were greater at control ponds than wired ponds of both 5-m and 10-m wire spacing. This was due to high numbers of birds in a single or a few ponds. Since Wilcoxon's test ranks medians, it is resistant to extreme data. In all comparisons the differences were statistically insignificant (Table 1). H_o was not rejected under any circumstance, even though bird counts were higher in all cases of control ponds.

Table 1. Results of statistical analysis (WP = wired ponds, CP = control ponds)

	Little Egret		Great Egret		Chinese Pond Heron	
5-m wire spacing						
Number of birds	**WP**	**CP**	**WP**	**CP**	**WP**	**CP**
	44	59	17	29	21	48
Smaller Rank Sum	43.5		23.5		14.0	
P-value	0.59		0.24		0.10	
10-m wire spacing						
Number of birds	**WP**	**CP**	**WP**	**CP**	**WP**	**CP**
	173	208	35	69	73	97
Smaller Rank Sum	115.5		48.5		102.5	
P-value	0.21		0.11		0.94	

DISCUSSION

This analysis showed that the differences between abundance of Little Egrets, Chinese Pond Herons and Great Egrets in wired and un-wired ponds were not statistically significant. However, because of several aspects of the design of the waterfowl count it cannot be concluded that overhead wires pose no disturbance to ardeids.

The primary aims of waterfowl counts are to quantify the wintering population and monitor annual trends (Chalmers 1983). Waterfowl count report bird abundance by species at each pond, but do not distinguish between roosting versus feeding birds, or birds on pond bunds (roosting) versus on pond shore (feeding). No account of behavior is recorded. Birds may roost at wired ponds and feed at un-wired ponds. Birds can land on the bunds of nearby wired ponds, and then walk and feed at the shores or exposed bottoms of wired ponds. The waterfowl count data might only show a difference in ardeid abundance when the problem is severe, i.e. when birds avoid going near the wires or poles holding wires. Therefore, the potential of overhead wires as obstacles to birds cannot be ruled out even when the differences in ardeid abundance between wired and unwired ponds was insignificant. The author once saw Great Egrets taking off from the bottom of drained fishponds and immediately making sharp turns to avoid overhead wires in Tam Kon Chau. Waterfowl counts do not indicate the effect of wires on flight behavior and is not a thermometer sensitive enough to detect any potential effect.

The number of wired ponds between February 2002 and November 2003 made up a small proportion (10.4%) of total ponds in the Deep Bay area. In this situation an adverse impact of wiring could be masked because ardeids could choose to land on ponds without wires and then walk to wired ponds. The problem may become acute when more ponds are wired because it might be difficult for ardeids to land on the narrow pond bunds between two wired ponds. A further 120 ponds were proposed to be wired in winter 2003-04. Other waterbirds such as the endangered species Black-faced Spoonbill *Platalea minor* also frequently feed in drained fishponds (Anon. 2001), and may be affected by the wires. In addition, if most fishponds in the Deep Bay area are wired, this might increase the hazard for nocturnal feeding waterbirds (e.g., Black-crowned Night Heron *Nycticorax nycticorax*, Grey Heron *Ardea cinerea*) may fly into wires will be higher. It is recommended field study be carried out in future to

address the potential effect of overhead wires on waterbirds as they land or take flight.

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APPENDICES

Appendix 1. Abundance of Little Egrets in 5-m wire spaced ponds and corresponding control ponds. No data were collected in Sept 2002. “nc” = not counted.

Wired ponds	pond no.	Feb 02	Mar 02	Apr 02	May 02	Jun 02	Jul 02	Aug 02	Oct 02	Mean
Shenzhen River B	391	nc	nc	0	0	1	0	0	1	0.33
	389	nc	nc	1	0	0	0	0	0	0.17
	349	nc	nc	0	4	0	0	0	0	0.67
San Tin	235	nc	nc	0	1	0	nc	0	1	0.40
Mai Po San Tsuen	187	0	0	0	0	0	0	0	0	0.00
Tam Kon Chau	164	0	3	0	0	0	0	0	0	0.38
Lut Chau	105	0	0	0	0	0	0	1	0	0.13
	106	3	0	0	0	0	1	0	0	0.50
	94/92	2	0	0	0	0	0	0	0	0.25
Tai Sang Wai	113b	0	0	0	0	1	1	0	0	0.25
	119a	0	0	0	0	0	0	0	0	0.00
Tsim Bei Tsui (Deep Bay F)	53	0	0	-	0	0	2	0	1	0.43
	48	0	0	0	1	0	3	0	2	0.75
	4	1	0	7	0	0	3	0	3	1.75
Control ponds	pond no.									
Shenzhen River B	390	nc	nc	0	0	1	1	0	1	0.50
	388	nc	nc	1	0	1	4	1	1	1.33
	347	nc	nc	0	0	0	0	0	0	0.00
San Tin	236	nc	nc	2	0	0	nc	2	0	0.80
Mai Po San Tsuen	186	3	7	0	0	0	0	0	0	1.25
Tam Kon Chau	165	0	0	0	0	0	0	0	0	0.00
Lut Chau	107	1	0	0	2	0	1	0	0	0.50
	97	0	0	1	0	0	0	2	0	0.38
	86/87	0	0	0	0	0	3	0	0	0.38
Tai Sang Wai	116	2	0	0	2	1	2	4	2	1.63
	133	0	0	0	0	0	0	1	0	0.13
Tsim Bei Tsui (Deep Bay F)	59	0	0	d	0	0	0	0	1	0.14
	47	0	4	0	0	1	0	0	0	0.63
	25	2	2	0	0	0	0	0	0	0.50

Appendix 2. Abundance of Great Egrets in 5-m wire spaced ponds. No data were collected in Sept 2002. “nc” = not counted.

Wired ponds	pond no.	Feb 02	Mar 02	Apr 02	May 02	Jun 02	Jul 02	Aug 02	Oct 02	Mean
Shenzhen River B	391	nc	nc	1	1	1	1	0	0	0.67
	389	nc	nc	1	1	0	1	0	0	0.50
	349	nc	nc	0	0	0	0	0	0	0.00
San Tin	235	nc	nc	0	0	1	nc	0	2	0.60
Mai Po San Tsuen	187	0	0	0	1	0	0	0	0	0.13
Tam Kon Chau	164	0	0	0	0	0	0	0	0	0.00
Lut Chau	105	0	0	0	0	0	0	0	0	0.00
	106	0	0	0	0	0	0	0	0	0.00
	94/92	0	0	0	0	0	0	0	0	0.00
Tai Sang Wai	113b	0	0	0	0	1	0	0	0	0.13
	119a	0	0	0	0	0	0	0	0	0.00
Tsim Bei Tsui (Deep Bay F)	53	1	0	-	1	0	1	0	0	0.43
	48	0	0	0	0	0	0	0	1	0.13
	4	0	0	0	0	0	1	0	0	0.13
Control ponds	pond no.									
Shenzhen River B	390	nc	nc	1	0	1	1	0	0	0.50
	388	nc	nc	1	1	1	3	0	0	1.00
	347	nc	nc	0	1	0	0	0	0	0.17
San Tin	236	nc	nc	0	0	0	nc	0	0	0.00
Mai Po San Tsuen	186	1	1	0	0	0	0	0	0	0.25
Tam Kon Chau	165	0	0	0	0	0	0	0	0	0.00
Lut Chau	107	0	0	1	1	0	0	0	0	0.25
	97	0	0	1	0	0	0	1	0	0.25
	86/87	0	0	0	0	0	1	0	0	0.13
Tai Sang Wai	116	0	0	0	0	1	0	0	0	0.13
	133	1	0	0	0	0	0	0	0	0.13
Tsim Bei Tsui (Deep Bay F)	59	0	0	d	0	0	0	0	0	0.00
	47	0	0	1	0	1	0	0	0	0.25
	25	3	5	0	0	0	0	0	0	1.00

Appendix 3. Abundance of Chinese Pond Herons in 5-m wire spaced ponds. No data were collected in Sept 2002. “nc” = not counted.

Wired ponds	pond no.	Feb 02	Mar 02	Apr 02	May 02	Jun 02	Jul 02	Aug 02	Oct 02	Mean
Shenzhen River B	391	nc	nc	1	1	0	2	0	0	0.67
	389	nc	nc	1	0	0	0	0	0	0.17
	349	nc	nc	1	0	0	0	0	0	0.17
San Tin	235	nc	nc	0	0	0	nc	1	1	0.40
Mai Po San Tsuen	187	0	0	0	0	0	0	0	0	0.00
Tam Kon Chau	164	0	0	0	1	0	0	0	0	0.13
Lut Chau	105	0	0	0	0	0	0	0	0	0.00
	106	0	0	0	0	0	0	0	0	0.00
	94/92	0	0	1	0	3	3	1	0	1.00
Tai Sang Wai	113b	0	0	0	0	0	0	0	0	0.00
	119a	0	0	0	0	0	0	1	0	0.13
Tsim Bei Tsui (Deep Bay F)	53	1	0	-	0	0	0	0	0	0.14
	48	0	0	0	1	0	0	0	1	0.25
	4	0	0	0	0	0	0	0	0	0.00
Control ponds	pond no.									
Shenzhen River B	390	nc	nc	0	0	1	0	0	1	0.33
	388	nc	nc	1	1	1	0	1	6	1.67
	347	nc	nc	0	0	0	0	0	0	0.00
San Tin	236	nc	nc	0	0	0	nc	3	0	0.60
Mai Po San Tsuen	186	0	1	0	0	0	0	3	1	0.63
Tam Kon Chau	165	0	0	1	0	0	0	0	0	0.13
Lut Chau	107	0	0	1	0	0	1	1	0	0.38
	97	0	0	0	1	0	0	5	0	0.75
	86/87	0	0	2	0	1	1	0	0	0.50
Tai Sang Wai	116	0	0	0	3	0	0	4	0	0.88
	133	1	0	0	0	2	0	0	0	0.38
Tsim Bei Tsui (Deep Bay F)	59	1	0	d	0	0	0	0	1	0.29
	47	0	0	1	0	1	0	0	0	0.25
	25	0	0	0	0	0	0	0	0	0.00

Appendix 4a. Abundance of Little Egrets in 10-m wire spaced ponds. No data were collected in June 2003. “nc” = not counted, “d” = pond drained, “-“ = corresponding control pond drained.

Wired ponds	pond no.	Dec 02	Jan 03	Feb 03	Mar 03	Apr 03	May 03	Jul 03	Aug 03	Sep 03	Oct-03	Nov 03	Dec 03	Mean
Shenzhen River B	356	17	13	12	d	nc	nc	1	0	nc	1	0	nc	6.29
	374	0	0	0	0	nc	nc	0	0	nc	0	0	nc	0.00
	378	1	1	0	0	nc	nc	0	0	nc	0	0	nc	0.25
	386	1	0	0	0	nc	nc	0	0	nc	0	0	nc	0.13
	390	0	3	0	0	nc	nc	1	0	nc	1	2	nc	0.88
San Tin	223	0	0	1	0	0	nc	0	nc	1	6	0	0	0.80
	234	0	0	0	0	1	nc	0	nc	7	0	0	0	0.80
	237	0	0	0	0	0	nc	0	nc	0	2	0	1	0.30
	260	0	0	0	0	0	nc	1	nc	0	0	0	0	0.10
Mai Po San Tsuen	204	1	0	0	0	0	0	0	0	0	nc	0	0	0.09
Tam Kon Chau	148	3	0	0	1	0	0	0	2	2	1	0	nc	0.82
Lut Chau	85	0	0	0	1	1	-	1	4	0	0	2	0	0.82
	101	0	1	0	0	1	1	1	1	0	1	0	0	0.55
	96	0	0	0	d	0	0	0	0	0	0	0	0	0.00
	98	0	0	0	0	2	0	0	5	0	2	2	0	0.92
	91	0	0	0	0	0	d	1	2	0	0	0	2	0.45
	88	0	0	0	1	0	0	0	1	0	0	0	0	0.17
	107	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Tai Sang Wai	110	0	0	0	0	0	1	d	0	0	1	0	0	0.18
	111	0	0	0	0	2	0	0	0	0	0	0	0	0.17
	121	0	0	1	0	0	0	0	1	0	0	0	0	0.17
	131	2	0	0	0	0	0	0	3	4	0	4	0	1.08
Tsim Bei Tsui (Deep Bay F)	47	0	0	0	1	1	nc	0	0	1	0	0	0	0.27
	60	1	0	0	1	0	nc	0	1	0	0	0	0	0.27
	71	2	0	0	0	0	nc	0	0	9	0	10	2	2.09
	77	1	1	0	2	3	nc	0	0	0	0	0	1	0.73

Appendix 4b. Abundance of Little Egrets in control ponds of 10-m wire spaced ponds. No data were collected in June 2003. “nc” = not counted, “d” = pond drained, “-“ = corresponding wired pond drained.

Control ponds	pond no.	Dec 02	Jan 03	Feb 03	Mar 03	Apr 03	May 03	Jul 03	Aug 03	Sep 03	Oct-03	Nov 03	Dec 03	Mean
Shenzhen River B	355	1	1	2	-	nc	nc	0	0	nc	0	1	nc	0.71
	373	0	0	0	0	nc	nc	0	0	nc	4	0	nc	0.50
	354	0	2	1	0	nc	nc	1	0	nc	1	0	nc	0.63
	394	4	0	0	0	nc	nc	1	0	nc	0	0	nc	0.63
	388	8	2	0	0	nc	nc	0	1	nc	5	1	nc	2.13
San Tin	224	0	0	0	0	7	nc	0	nc	0	0	0	1	0.80
	236	0	1	0	0	0	nc	1	nc	0	3	0	4	0.90
	225	1	0	0	0	0	nc	0	nc	0	0	0	0	0.10
	255	3	1	1	1	1	nc	0	nc	0	0	0	0	0.70
Mai Po San Tsuen	209	0	0	0	0	0	0	3	1	0	nc	0	0	0.36
Tam Kon Chau	164	0	0	0	0	0	1	0	1	0	0	0	nc	0.18
Lut Chau	89	0	0	0	0	0	d	1	1	0	0	0	0	0.18
	83	1	1	0	0	0	1	0	5	1	0	1	0	0.83
	100	0	0	0	-	0	0	3	1	0	0	0	0	0.36
	106	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	90	1	0	0	0	0	-	0	0	0	0	42	0	3.91
	99	0	0	1	0	1	0	0	0	0	0	1	0	0.25
	105	0	0	0	1	0	0	0	0	0	0	0	0	0.08
Tai Sang Wai	112	0	2	0	0	0	0	-	0	0	1	0	0	0.27
	94	0	0	0	2	0	0	0	0	0	2	0	0	0.33
	120	0	0	0	0	1	0	0	3	0	2	3	0	0.75
	127	1	0	0	0	0	0	0	1	1	0	0	0	0.25
Tsim Bei Tsui (Deep Bay F)	48	3	1	0	3	2	nc	0	6	2	0	0	0	1.55
	13	0	7	0	0	1	nc	0	0	1	3	1	0	1.18
	7A	15	0	0	0	2	nc	0	1	2	0	2	0	2.00
	78	1	1	1	1	0	nc	0	1	2	0	0	0	0.64

Appendix 5a. Abundance of Great Egrets in 10-m wire spaced ponds. No data were collected in June 2003. “nc” = not counted, “d” = pond drained, “-“ = corresponding control pond drained.

Wired ponds	pond no.	Dec 02	Jan 03	Feb 03	Mar 03	Apr 03	May 03	Jul 03	Aug 03	Sep 03	Oct-03	Nov 03	Dec 03	Mean
Shenzhen River B	356	0	3	8	d	nc	nc	0	0	nc	1	0	nc	1.71
	374	0	0	0	0	nc	nc	0	0	nc	0	0	nc	0.00
	378	1	0	0	0	nc	nc	0	1	nc	0	0	nc	0.25
	386	0	0	0	0	nc	nc	0	0	nc	0	0	nc	0.00
	390	1	0	0	3	nc	nc	0	0	nc	0	0	nc	0.50
San Tin	223	0	0	0	6	0	nc	1	nc	1	0	0	0	0.80
	234	0	0	0	0	0	nc	0	nc	0	0	0	0	0.00
	237	0	0	0	0	0	nc	0	nc	0	0	0	0	0.00
	260	0	0	0	0	0	nc	0	nc	0	0	0	0	0.00
Mai Po San Tsuen	204	0	0	0	0	0	0	0	0	0	nc	0	0	0.00
Tam Kon Chau	148	0	0	0	0	0	0	0	0	0	0	5	nc	0.45
Lut Chau	85	0	0	0	0	0	-	0	0	0	0	0	0	0.00
	101	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	96	0	0	0	d	0	0	0	0	0	0	0	0	0.00
	98	0	0	0	0	0	1	0	0	0	0	0	0	0.08
	91	0	0	0	0	0	d	0	0	0	0	0	0	0.00
	88	0	0	0	0	0	1	0	0	0	0	0	0	0.08
	107	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Tai Sang Wai	110	0	0	0	0	0	0	d	0	0	0	0	0	0.00
	111	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	121	0	0	0	0	0	0	0	0	0	0	0	1	0.08
	131	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Tsim Bei Tsui (Deep Bay F)	47	0	0	0	0	0	nc	0	0	0	0	0	0	0.00
	60	0	0	0	0	0	nc	0	0	0	0	0	0	0.00
	71	0	0	0	0	0	nc	0	0	0	0	0	1	0.09
	77	0	0	0	0	0	nc	0	0	0	0	0	0	0.00

Appendix 5b. Abundance of Great Egrets in control ponds of 10-m wire spaced ponds. No data were collected in June 2003. “nc” = not counted, “d” = pond drained, “-“ = corresponding wired pond drained.

Control ponds	pond no.	Dec 02	Jan 03	Feb 03	Mar 03	Apr 03	May 03	Jul 03	Aug 03	Sep 03	Oct-03	Nov 03	Dec 03	Mean
Shenzhen River B	355	0	3	1	-	nc	nc	0	0	nc	0	0	nc	0.57
	373	0	0	0	0	nc	nc	0	0	nc	3	0	nc	0.38
	354	0	0	0	0	nc	nc	0	0	nc	0	0	nc	0.00
	394	5	0	0	0	nc	nc	1	0	nc	0	0	nc	0.75
	389	2	0	0	1	nc	nc	0	1	nc	5	0	nc	1.13
San Tin	224	0	0	0	0	7	nc	0	nc	0	0	0	0	0.70
	236	1	0	0	0	0	nc	0	nc	1	1	0	0	0.30
	225	0	0	0	0	0	nc	0	nc	0	0	0	0	0.00
	255	7	2	0	0	0	nc	0	nc	0	0	0	0	0.90
Mai Po San Tsuen	209	0	0	0	0	0	0	0	1	0	nc	0	0	0.09
Tam Kon Chau	164	0	0	0	0	0	0	0	0	0	0	0	nc	0.00
Lut Chau	89	0	0	0	0	0	d	0	0	0	0	0	0	0.00
	83	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	100	0	0	0	-	0	0	0	0	0	0	0	0	0.00
	106	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	90	0	0	0	0	1	-	0	0	0	0	5	0	0.55
	99	0	0	0	0	0	0	1	0	0	0	1	0	0.17
	105	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Tai Sang Wai	112	0	1	0	0	0	0	-	0	0	0	0	0	0.09
	94	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	120	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	127	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Tsim Bei Tsui (Deep Bay F)	48	1	0	0	1	0	nc	0	1	1	0	0	0	0.36
	13	0	0	0	0	0	nc	0	0	0	1	0	0	0.09
	7A	1	0	0	0	0	nc	1	0	7	0	1	3	1.18
	78	0	0	0	0	0	nc	0	0	0	0	0	0	0.00

Appendix 6a. Abundance of Chinese Pond Herons in 10-m wire spaced ponds. No data were collected in June 2003. “nc” = not counted, “d” = pond drained, “-“ = corresponding control pond drained.

Control ponds	pond no.	Dec 02	Jan 03	Feb 03	Mar 03	Apr 03	May 03	Jul 03	Aug 03	Sep 03	Oct-03	Nov 03	Dec 03	Mean
Shenzhen River B	355	0	0	0	-	nc	nc	0	0	nc	1	0	nc	0.14
	373	0	0	0	0	nc	nc	0	1	nc	5	4	nc	1.25
	354	1	0	0	0	nc	nc	0	0	nc	1	0	nc	0.25
	394	0	0	0	1	nc	nc	0	0	nc	0	0	nc	0.13
	389	2	3	0	0	nc	nc	0	1	nc	2	0	nc	1.00
San Tin	224	1	0	0	0	0	nc	0	nc	8	0	0	0	0.90
	236	1	0	1	0	0	nc	1	nc	0	2	0	0	0.50
	225	1	0	0	1	0	nc	1	nc	0	0	0	0	0.30
	255	1	0	3	1	0	nc	0	nc	0	0	0	0	0.50
Mai Po San Tsuen	209	0	0	0	0	0	0	0	0	0	nc	0	0	0.00
Tam Kon Chau	164	0	0	0	0	0	0	0	3	2	1	0	nc	0.55
Lut Chau	89	0	0	0	0	0	d	0	0	0	1	0	0	0.09
	83	1	0	0	1	4	1	0	0	0	0	0	0	0.58
	100	0	0	0	-	0	1	0	1	0	0	0	0	0.18
	106	0	0	0	0	0	0	1	0	0	0	0	0	0.08
	90	0	0	0	0	0	-	0	0	0	0	0	0	0.00
	99	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	105	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Tai Sang Wai	112	0	0	0	0	0	0	d	0	0	0	0	0	0.00
	94	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	120	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	127	0	0	0	0	0	0	2	0	2	0	0	0	0.33
Tsim Bei Tsui (Deep Bay F)	48	0	0	0	2	0	nc	0	1	0	0	0	0	0.27
	13	0	0	0	0	0	nc	1	0	0	0	0	0	0.09
	7A	2	0	0	0	0	nc	0	1	1	0	0	0	0.36
	78	0	0	0	0	0	nc	0	0	0	0	0	0	0.00

Appendix 6b. Abundance of Chinese Pond Herons in control ponds of 10-m wire spaced ponds. No data were collected in June 2003. “nc” = not counted, “d” = pond drained, “-“ = corresponding wired pond drained.

Control ponds	pond no.	Dec 02	Jan 03	Feb 03	Mar 03	Apr 03	May 03	Jul 03	Aug 03	Sep 03	Oct-03	Nov 03	Dec 03	Mean
Shenzhen River B	355	0	0	0	-	nc	nc	0	3	nc	0	0	nc	0.43
	373	0	0	0	0	nc	nc	0	0	nc	2	0	nc	0.25
	354	0	0	0	0	nc	nc	0	0	nc	1	1	nc	0.25
	394	0	0	0	0	nc	nc	1	0	nc	0	0	nc	0.13
	389	0	0	0	0	nc	nc	0	0	nc	4	0	nc	0.50
San Tin	224	5	0	0	0	0	nc	0	nc	0	0	0	2	0.70
	236	0	0	0	1	1	nc	0	nc	0	4	0	32	3.80
	225	0	0	1	0	1	nc	1	nc	0	1	0	0	0.40
	255	1	7	0	0	0	nc	0	nc	0	0	0	0	0.80
Mai Po San Tsuen	209	0	0	0	0	1	1	0	0	1	nc	0	0	0.27
Tam Kon Chau	164	0	0	0	0	0	0	2	0	0	0	0	nc	0.18
Lut Chau	89	1	0	0	0	0	d	2	1	0	0	0	0	0.36
	83	0	0	0	0	1	1	0	4	0	1	0	0	0.58
	100	0	0	0	-	0	1	0	0	0	0	0	0	0.09
	106	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	90	0	0	0	0	2	-	0	0	0	0	0	0	0.18
	99	0	0	0	0	0	0	1	1	0	0	0	0	0.17
	105	0	0	0	0	0	0	1	0	0	0	0	0	0.08
Tai Sang Wai	112	0	0	0	0	0	0	-	0	0	0	0	0	0.00
	94	0	0	0	0	0	0	0	0	0	0	0	0	0.00
	120	0	0	0	0	1	0	0	0	0	1	0	0	0.17
	127	0	0	0	0	0	0	1	0	1	0	0	0	0.17
Tsim Bei Tsui (Deep Bay F)	48	0	0	0	0	0	nc	0	0	0	0	0	0	0.00
	13	0	0	0	0	0	nc	0	0	0	0	0	0	0.00
	7A	0	0	0	0	0	nc	0	0	0	2	0	0	0.20
	78	0	0	0	0	0	nc	0	0	0	0	0	0	0.00

The Hong Kong Bird Watching Society Ltd.
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The Hong Kong Bird Watching Society founded in 1957, is one of the oldest non-governmental organizations in Hong Kong. It is committed to research, education and conservation related to birds and their habitats. The Society organizes long-term bird monitoring schemes, conducts research and education programmes, and promotes appreciation and understanding of birds within the community. It was incorporated in 2002 as a limited company and was at the same time approved as a charitable organization of a public character. The specific objectives of the HKBWS are:

(a) To promote the study of birds to understand their biology and ecology;
(b) To promote the appreciation and understanding of birds;
(c) To promote the conservation of birds, wildlife and their habitat; and
(d) To promote awareness and observance of laws protecting birds and in particular the Wild Animals Protection Ordinance.

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