

SHEUNG SHUI TO LOK MA CHAU SPUR LINE

Environmental Committee Meeting

Minutes of Meeting No. 38 held at 2:00pm
on Monday, 20th January 2020,
at Room 420, 4/F, MTR Kam Tin Building, Kam Tin, New Territories.

| Present: | | |
|-----------------------------|-------------------------------------|---------------------|
| Dr. Xianji Wen | WWF Hong Kong | Member (NGO) |
| Ms. Karen Barretto | Friends of the Earth (Hong Kong) | Member (NGO) |
| Mr. Matthew Wong | Maintenance Manager | Member (MTR) |
| Ms. Kenny Yiu | Manager-Environmental Engineering | Member (MTR) |
| Mr. Peter Choi | Environmental Engineer | Member (MTR) |
| Mr. Paul Leader | Ecological Consultant | Member (consultant) |
| Ms. Elizabeth Wu | Ecological Consultant | Member (consultant) |
| Ms. Zoe Ho | Ecological Consultant | Member (consultant) |
| | | |
| | | |
| | | |
| Absent with apology: | | |
| Mr. Michael Kilburn | The Hong Kong Bird Watching Society | Member (NGO) |
| Ms. Catherine Leung | Environmental Engineering Manager | Member (MTR) |

| Attachments | |
|--------------------|--|
| Annex A | Presentation Material of EC Meeting No. 38 |

| <u>Item/Description</u> | <u>Action By</u> |
|---|---|
| 1. Welcomed Members to the EC Meeting No. 38. | Noted |
| 2. <i>A member (MTR)</i> raised the sad news that Dr. Ng Cho-nam had passed away in December 2019. <i>The member (MTR)</i> expressed the gratitude to Dr. Ng for his long-term supports, advices and contributions given to the management of LMC EEA. A replacement will be considered in due course. | MTR |
| <u>Confirmation of minutes of Meeting No. 37</u> | |
| 4. There were no comments on the minutes of Meeting No. 37 and the minutes were confirmed. | Noted |
| <u>Ecological Enhancement Works and Monitoring – an Update on Management Works and Look Ahead</u> | |
| 5. <i>A member (consultant)</i> reported on the major habitat enhancement and modification works, ecological monitoring and management works undertaken in 2019 (detailed in Annex A) as follows: 5.1 <i>A member (consultant)</i> reported that the Habitat Creation and Management Plan (HCMP) was revised based on the five-yearly review for 2012 – 2016. It was approved by the Environmental Protection Department in October 2019. The main changes adopted (from November 2019) include three new target species (Yellow Bittern, Wood Sandpiper and Reeves’ Turtle), recording only pH of ponds (this is the only parameter being managed and there exists a huge dataset of other parameters), and increasing the frequency of grass cutting in Compartment C to benefit wildlife. 5.2 <i>A member (consultant)</i> reported the access to the eastern part of the site was restricted during the beginning of May to early July to reduce disturbance to Pheasant-tailed Jacanas. Breeding was not recorded but two pairs were observed displaying. 5.3 <i>A member (consultant)</i> reported that 791 Grass Carps were stocked into Ponds 3, 4, 5, 6 and 7 to control the emergent vegetation. 5.4 <i>A member (consultant)</i> reported that great effort has been put to maintain the lily ponds in Compartment C in a condition suitable for Pheasant-tailed Jacana. 5.5 <i>A member (consultant)</i> reported that fewer dogs were recorded and that the number of Red Imported Fire Ant nests treated decreased, as this had become less of a problem in recent years. 5.6 <i>A member (consultant)</i> reported that Apple Snails were controlled by the application of Camellia seed and hand-picking. Camellia seed is effective in | Noted Noted Noted Noted Noted |

| <u>Item/Description</u> | <u>Action By</u> |
|---|----------------------|
| <p>quickly killing large numbers of snails. It is now being used regularly in smaller quantities rather than single large applications to reduce issues with water quality and odour.</p> | |
| <p>5.7 <u>A member (consultant)</u> reported on the performance of the numerical bird target species; most had met the target level during the year. Japanese Yellow Bunting was not recorded at all, the Black-winged Stilt target was almost met, whereas the density of Little Egret and Japanese Quail in the Control Areas was higher.</p> | Noted |
| <p>5.8 <u>A member (consultant)</u> further reported on the non-numerical bird target species, noting that these are not required to specified levels as they were not affected by the development of the Spur Line. Of note is the decline of White-cheeked Starling in Hong Kong elsewhere from the LMC EEA. LMC EEA is now the most important site for this species in Hong Kong. This is thought to be related to the extensive <i>Melia</i> trees on site which produce fruit favoured by this species.</p> | Noted |
| <p>5.9 <u>A member (consultant)</u> reported the performance of some numerical bird target species following the incorporation of winter roost count data in 2019 as recommended in the 2012 – 2016 five-yearly review. Roosting habitat within the LMC EEA is an important ecological resource and the incorporation of the roost data into the calculation of targets recognizes this importance. Accordingly the density of Little Egret in LMC EEA increased (over a hundred of Little Egret roosting on site fairly regularly in the winter). The target ratio with the incorporation of roost data will be presented to the EC members hereafter.</p> | Noted |
| <p>5.10 <u>A member (consultant)</u> reported the winter roost count data. Over 3,000 Great Cormorants recorded which LMC EEA exceeded those in Mai Po. Eastern Cattle Egret was recorded regularly in the roost counts; despite being is rarely recorded during day. <u>A member (consultant)</u> concluded LMC EEA is a big night roosting site in terms of the number of birds recorded. As suggested in the 2012 – 2016 five-yearly review, monthly roost counts will be carried out providing additional data for the non-winter months.</p> | Noted |
| <p>5.11 <u>A member (consultant)</u> reported that most of the nest boxes provided on site were occupied by White-shouldered Starlings and that the LMC EEA supports the biggest breeding population of the species in Hong Kong. <u>A member (consultant)</u> assured the provision of nest box is a long-term commitment.</p> | Noted |
| <p>5.12 <u>A member (consultant)</u> reported on breeding birds, the most interesting record was two pairs of Pheasant-tailed Jacanas displaying in May, largely because the conditions were good in Compartment C. Access to the eastern part (marsh area) was restricted during the period. <u>A member (NGO)</u> enquired if the lily pond is too small for the species to breed. <u>A member (consultant)</u> replied that the area of lily pond was increased as suggested in the 2007 – 2011 five-yearly review and the number of Pheasant-tailed Jacana recorded increased following</p> | Noted |

| <u>Item/Description</u> | <u>Action By</u> |
|---|----------------------|
| the increase in the area of lily pond. | |
| 5.13 <u>A member (consultant)</u> reported on the globally threatened bird species recorded on site in the year. The population of Falcated Duck in Hong Kong is declining; however, up to ten were recorded in Compartment C in 2019. Over 100 Black-faced Spoonbills were recorded and the two eagle species were recorded regularly in winter. Collared Crow seemed to be fairly established on site and bred for the first time on site in 2019. However, Yellow-breasted Bunting had a very poor year. | Noted |
| 5.14 <u>A member (consultant)</u> reported on target mammals noting that 2019 was the second best year for Eurasian Otter since 2009 (after 2013). Photos presented showed this species passing through the mammal pass installed at the bottom of the boundary fence. Most records of this species are during the night, highlighting the value of remote cameras for monitoring of this species. Leopard Cat was regularly recorded. | Noted |
| 5.15 <u>A member (consultant)</u> reported on target reptiles noting that Reeves' Turtle was added as recommended in the 2012 – 2016 five-yearly review. This was the only target species recorded in 2019. There were no records of Chinese Soft-shelled Turtle and Burmese Python species that have no numerical target level, occur in low density and are rarely recorded on site. | Noted |
| 5.16 <u>A member (consultant)</u> noted that trapping of the exotic Red-eared Slider was proposed in the 2012 – 2016 five-yearly review. A plan will be formulated later for the proposed trapping. The number and distribution of Red-eared Slider has increased in recent years. <u>A member (NGO)</u> enquired if the surveyors wait the Red-eared Slider to emerge from the water before counting them. <u>A member (consultant)</u> replied that the surveyors can count them when they are basking on floating platforms or floating on water. <u>A member (consultant)</u> further noted that the proposed trapping would be beneficial to Reeves' Turtle. | Noted |
| 5.17 <u>A member (consultant)</u> reported that seven species of amphibian were recorded which was a healthy number. | Noted |
| 5.18 <u>A member (consultant)</u> reported that 24 species of dragonfly were recorded, which was a healthy number and that a new species Common Blue Skimmer was recorded. | Noted |
| 5.19 <u>A member (consultant)</u> reported rice was planted again in 2019, although it was planted a bit late in the year. The area of rice planting increased in 2019 (from 2018). Only one Yellow-breasted Bunting was recorded in the LMC EEA in 2019, and none in the Control Areas indicating a poor year for the species. | Noted |
| 5.20 <u>A member (NGO)</u> expressed that 2019 had been a good year for the LMC EEA. | Noted |

| <u>Item/Description</u> | <u>Action By</u> |
|--|------------------|
| <p>5.21 <i>A member (NGO)</i> enquired if there was botulism in 2019. <i>A member (consultant)</i> replied that five dead Black-faced Spoonbills and a sick Eurasian Spoonbill in December were suspected botulism cases. LMC EEA was checked daily in the following two weeks after these were found and that no more dead or sick birds were found. Fish stocking was suspended for a week as a precautionary measure in response to the suspected case of botulism. It was suspected that these birds were picked off-site. The consultant noted that it was subsequently reported that there was an outbreak of botulism in the Hong Kong Wetland Park around the same time. There are usually more suspected cases of botulism during warm periods in the winter. However, the consultant can spot the problem (e.g. suspected botulism) and take prompt action even during this vulnerable period, as the consultant is on site more than once in a week. <i>A member (NGO)</i> enquired about recent cases in Mai Po Nature Reserve in the year. <i>A member (NGO)</i> replied there were several ducks suspected to be suffering from botulism. <i>A member (consultant)</i> added that there were a number of shorebirds in the Hong Kong Wetland Park suspected to be suffering from botulism. He suggested more communications should be made with the Agriculture, Fisheries and Conservation Department (AFCD) on the potential outbreak of diseases.</p> | Noted |
| <p>5.22 <i>A member (NGO)</i> enquired if the Red Imported Fire Ant is also widespread outside the LMC EEA. <i>A member (consultant)</i> replied that it is widespread throughout the lowlands in Hong Kong. <i>A member (NGO)</i> enquired if the Red Imported Fire Ant is found in Mai Po Nature Reserve. <i>A member (NGO)</i> replied it was found in the Reserve. <i>A member (consultant)</i> added that it seems not to affect other wildlife (e.g. ground nesting birds), except other ant species, which are not a conservation priority of the LMC EEA.</p> | Noted |
| <p>5.23 <i>A member (NGO)</i> enquired about the quantity of Camellia seed applied. <i>A member (consultant)</i> replied that 50kg of the seed was generally applied to each cell of the lily pond in any one time. <i>A member (NGO)</i> enquired if there was any problem of sourcing the seed. <i>A member (consultant)</i> replied that there was order under processing. <i>A member (NGO)</i> enquired if there is a minimum amount required. <i>A member (consultant)</i> suggested applying at the edge of the pond, where the Apple Snails usually lay eggs on. Experience of Long Valley management is referenced, where the seed was applied in shallow water. The quantity of seed required can be reviewed later when there is more experience to share. <i>A member (NGO)</i> expressed the interest to use the seed to control Apple Snail in the Mai Po Nature Reserve. <i>Another member (NGO)</i> agreed that it is good to use natural products to control the Snail.</p> | Noted |
| <p>5.24 <i>A member (NGO)</i> enquired if there was any problem with the lotus. <i>A member (consultant)</i> replied that the lotus continuously re-generates and was removed when sighted but that this was suspended during the access restrictions discussed earlier.</p> | Noted |

| <u>Item/Description</u> | <u>Action By</u> |
|--|------------------|
| <p><u>Any Other Business</u></p> <p>7. <i>Members (NGO)</i> were invited to have a site visit to the LMC EEA in the EC Meeting no. 37. The site visit was conducted on 20th January 2020. As one of the EC members, Mr. Michael Kilburn, was unable to join the meeting and the site visit scheduled on 20th January 2020, he subsequently visited the LMC EEA on 29th January 2020.</p> | Noted |
| <p><u>Date of Next Meeting</u></p> <p>8. The date of the next meeting is to be advised.</p> | MTR |

Lok Ma Chau Spur Line 38th Environmental Committee Meeting

Report on Ecological Monitoring and Management, and Works Programme
January – December 2019

20th January 2020



www.aeCHK.hk

Pond 15 – Lily Pond



Lok Ma Chau Spur Line
38th Environmental Committee Meeting
Report on Ecological Monitoring and Management, and
Works Programme (Jan – Dec 2019)

www.aeCHK.hk

Adoption of Latest HCMP

- Approved by EPD on 18th October 2019
- The following key items are adopted since November 2019:
 - Target species: add Yellow Bittern, Wood Sandpiper and Reeves' Turtle;
 - Monthly water quality monitoring: monitor pH only, discontinue monitoring of temperature, salinity and dissolved oxygen (will be measured only under special circumstances);
 - Grass cutting programme: grass cutting in marsh area (Ponds 12, Ponds 14 – 22) will be conducted once per month during the dry season



Lok Ma Chau Spur Line
38th Environmental Committee Meeting
Report on Ecological Monitoring and Management, and
Works Programme (Jan – Dec 2019)

www.aeCHK.hk

Management Works: Pest Management

Dog Trapping

- Dog trapping – none.

Pest Management (Red Imported Fire Ant)

- 254 Red Imported Fire Ant nests were treated with the approved pesticide;
- Red Imported Fire Ant nest treatment using the approved pesticide will be continued.

| Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|----------------------|------|------|--------|------|------|-------|-------|-------|------|------|------|------|
| No. of Nests Treated | 170 | 164 | (n.a.) | 315 | 790 | 1,760 | 1,211 | 1,333 | 939 | 969 | 269 | 254 |

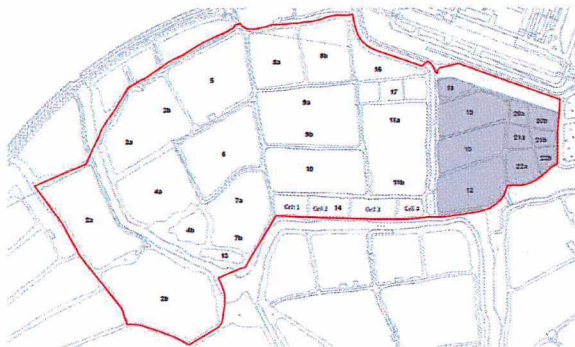


Lok Ma Chau Spur Line
38th Environmental Committee Meeting
Report on Ecological Monitoring and Management, and
Works Programme (Jan – Dec 2019)

www.aeCHK.hk

Management Works: Access Restriction

- From the beginning of May to early July



Lok Ma Chau Spur Line
38th Environmental Committee Meeting
Report on Ecological Monitoring and Management, and
Works Programme (Jan – Dec 2019)

www.aeCHK.hk

Management Works: Pest Management

Pest Management (Apple Snail – hand picking)

- A total of 700kg Camellia seed was applied to Ponds 20 – 22;
- Manual removal of Apple Snails in Compartment C continued;
- Apple Snails removed in Compartment C in 2019:

| Month | Apple Snail Removed (kg) | | | | | | | Total |
|-------|--------------------------|---------|---------|---------|---------|---------------|----|-------|
| | Pond 15 | Pond 16 | Pond 17 | Pond 18 | Pond 19 | Ponds 20 – 22 | | |
| Jan | - | - | - | - | - | - | - | 0 |
| Feb | - | - | - | - | - | - | - | 0 |
| Mar | - | - | - | - | - | 3 | 51 | 54 |
| Apr | - | - | - | - | - | - | 8 | 8 |
| May | - | - | - | - | - | - | - | 0 |
| Jun | - | - | - | - | - | - | - | 0 |
| Jul | - | - | - | - | - | - | - | 0 |
| Aug | - | - | - | - | - | - | - | 0 |
| Sep | - | - | - | - | - | - | - | 0 |
| Oct | - | - | - | - | - | - | - | 0 |
| Nov | - | - | - | - | - | - | - | 0 |
| Dec | - | - | - | - | - | - | - | 0 |
| Total | 0 | 0 | 0 | 0 | 3 | 59 | 62 | |

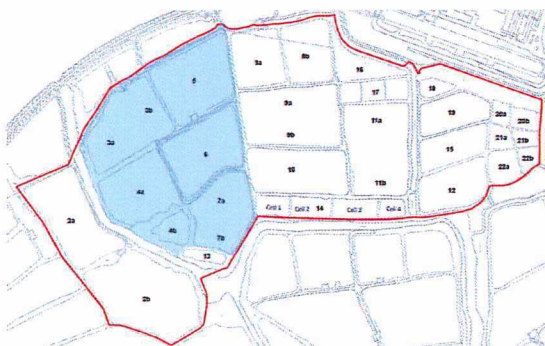


Lok Ma Chau Spur Line
38th Environmental Committee Meeting
Report on Ecological Monitoring and Management, and
Works Programme (Jan – Dec 2019)

www.aeCHK.hk

Management Works: Grass Carp Stocking

- 791 individuals were stocked



Lok Ma Chau Spur Line
38th Environmental Committee Meeting
Report on Ecological Monitoring and Management, and
Works Programme (Jan – Dec 2019)

www.aeCHK.hk

Numerical Bird Target Performance in the Past 5 Years

| Density (mean/ha) | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | | | | | | |
|--------------------------------------|------|------|-------|------|------|-------|------|------|-------|------|------|------|------|------|------|
| | LMC | CA | LMC | CA | LMC | CA | LMC | CA | LMC | CA | | | | | |
| Great Cormorant | 5.8 | 0.4 | 13.6 | 6.2 | 0.5 | 12.7 | 7.4 | 0.6 | 13.2 | 8.9 | 0.5 | 18.7 | 8.4 | 0.3 | 28.8 |
| Grey Heron | 1.8 | 0.2 | 12.2 | 2.1 | 0.1 | 19.6 | 2.3 | 0.2 | 13.9 | 2.2 | 0.1 | 15.3 | 1.7 | 0.1 | 11.8 |
| Great Egret | 1.5 | 0.4 | 4.0 | 1.5 | 0.6 | 2.3 | 2.4 | 0.5 | 4.6 | 1.9 | 0.4 | 4.6 | 1.2 | 0.4 | 2.9 |
| Little Egret | <0.1 | <0.1 | 2.0 | 0.6 | 1.0 | 0.6 | 1.1 | 0.1 | 1.5 | 0.7 | 0.7 | 1.0 | 0.5 | 0.6 | 0.8 |
| Chinese Pond Heron | 0.9 | 0.5 | 1.9 | 0.8 | 0.5 | 1.3 | 1.3 | 0.6 | 2.0 | 1.6 | 0.7 | 2.4 | 0.9 | 0.4 | 2.2 |
| Black-faced Spoonbill | 0.5 | <0.1 | 14.2 | 0.5 | <0.1 | 17.2 | 0.7 | 0.1 | 12.3 | 0.5 | 0.1 | 7.8 | 0.4 | <0.1 | 65.9 |
| Eurasian Teal | 1.6 | <0.1 | 170.6 | 2.2 | <0.1 | 374.5 | 0.5 | <0.1 | 24.2 | 0.3 | <0.1 | 51.3 | 3.0 | <0.1 | 63.1 |
| Greater Spotted Eagle | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC |
| Eastern Imperial Eagle | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC |
| Japanese Quail | 0.0 | 0.0 | nr | 0.0 | 0.0 | nr | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | <0.1 | 0.8 |
| Eurasian Coot | <0.1 | 0.0 | LMC | <0.1 | <0.1 | 295.9 | <0.1 | <0.1 | 189.9 | <0.1 | 0.0 | LMC | <0.1 | <0.1 | 3.8 |
| Pheasant-tailed Jacana | <0.1 | <0.1 | 11.3 | <0.1 | <0.1 | 19.7 | <0.1 | 0.0 | LMC | <0.1 | <0.1 | 51.8 | <0.1 | <0.1 | 60.4 |
| Greater Painted-snipe | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC |
| Black-winged Stilt | 0.3 | 0.1 | 5.5 | 10.1 | 0.1 | 0.9 | 0.2 | 0.1 | 1.5 | 0.1 | 0.2 | 0.5 | 0.4 | 0.2 | 1.9 |
| Pintail/Swinhoe's Snipe ¹ | <0.1 | <0.1 | 35.1 | <0.1 | <0.1 | 47.7 | <0.1 | <0.1 | 36.2 | 0.1 | <0.1 | 70.7 | <0.1 | <0.1 | 14.0 |
| Common Snipe | 0.1 | <0.1 | 9.0 | 0.1 | <0.1 | 11.6 | <0.1 | <0.1 | 2.8 | <0.1 | <0.1 | 2.0 | 0.1 | <0.1 | 7.5 |
| Bluethroat | <0.1 | <0.1 | 22.1 | 0.0 | 0.0 | nr | <0.1 | <0.1 | 0.4 | <0.1 | <0.1 | 1.1 | <0.1 | <0.1 | 12.3 |
| Pallas's Grasshopper Warbler | <0.1 | <0.1 | 13.1 | <0.1 | <0.1 | 2.5 | <0.1 | <0.1 | 19.7 | <0.1 | <0.1 | 46.9 | <0.1 | <0.1 | 28.8 |
| Zitting Cisticola | 0.1 | 0.1 | 1.0 | <0.1 | <0.1 | 0.8 | <0.1 | 0.1 | 0.8 | 0.1 | <0.1 | 2.0 | 0.1 | <0.1 | 7.4 |
| Japanese Yellow Bunting | 0.0 | <0.1 | CA | 0.0 | 0.0 | nr | 0.0 | 0.0 | nr | 0.0 | <0.1 | CA | 0.0 | 0.0 | nr |
| Red-billed Starling | 1.2 | 0.6 | 1.0 | 3.0 | 0.4 | 7.2 | 3.0 | 0.4 | 6.8 | 3.2 | 0.2 | 16.9 | 2.9 | 0.1 | 30.3 |

nr – Not recorded within LMC EA or Control Areas during the period
Blue – Target met (i.e. density in EA at least twice that in Control Areas)
Yellow – Target not met, although density higher than in Control Areas
Red – Target not met and density lower than in Control Areas.



Lok Ma Chau Spur Line
38th Environmental Committee Meeting
Report on Ecological Monitoring and Management, and
Works Programme (Jan – Dec 2019)

www.aeCHK.hk

Non-numerical Bird Target Performance in the Past 5 Years

| Species/Density (mean/ha) | 2015 | | | 2016 | | | 2017 | | | 2018 | | | 2019 | | |
|---------------------------|------|------|--------|------|------|-------|------|------|-------|------|------|-------|------|------|-------|
| | LMC | CA | Ratio | LMC | CA | Ratio | LMC | CA | Ratio | LMC | CA | Ratio | LMC | CA | Ratio |
| Eurasian Wigeon | 1.2 | <0.1 | 1009.9 | 1.5 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 7.1 | 0.2 | <0.1 | 83.4 | |
| Little Grebe | 1.1 | 0.9 | 1.3 | 1.3 | 0.7 | 1.7 | 1.7 | 1.0 | 0.9 | 1.1 | 0.9 | 0.7 | 1.3 | | |
| Yellow Bittern | - | - | - | - | - | - | - | - | - | - | - | <0.1 | <0.1 | 4.0 | |
| Cinnamon Bittern | <0.1 | <0.1 | 20.8 | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 4.9 | 0.0 | <0.1 | CA | |
| Black-crowned Night Heron | 0.1 | <0.1 | 2.6 | 0.1 | <0.1 | 10.1 | 0.4 | <0.1 | 23.4 | 0.4 | <0.1 | 8.8 | 0.2 | <0.1 | 7.4 |
| Intermediate Egret | <0.1 | <0.1 | 1.4 | 0.1 | <0.1 | 10.6 | 0.2 | <0.1 | 10.1 | 0.1 | <0.1 | 11.4 | <0.1 | <0.1 | 6.5 |
| Wood Sandpiper | - | - | - | - | - | - | - | - | - | - | - | - | 0.4 | <0.1 | 8.9 |
| White-cheeked Starling | 0.4 | <0.1 | 20.3 | 0.6 | <0.1 | 17.9 | 0.2 | 0.1 | 3.7 | 0.3 | <0.1 | 10.8 | 0.6 | <0.1 | 161.2 |
| White-shouldered Starling | 1.2 | 0.1 | 15.8 | 1.2 | 0.1 | 15.5 | 1.2 | 0.1 | 12.3 | 1.1 | 0.1 | 10.7 | 1.1 | 0.1 | 14.7 |
| Yellow-breasted Bunting | 0.0 | <0.1 | CA | <0.1 | <0.1 | 9.9 | <0.1 | <0.1 | 9.2 | <0.1 | <0.1 | 23.4 | <0.1 | 0.0 | LMC |

The above species became target species from October 2014, except Yellow Bittern and Wood Sandpiper which became target from November 2019.

nr – Not recorded within LMC EEA or Control Areas during the period.
 Blue – Density in LMC EEA at least twice that in Control Areas
 Yellow – Density higher in LMC EEA than in Control Areas
 Red – Density in LMC EEA lower than in Control Areas.

Nesting Birds (in addition to nest box)

- Number of pair recorded:

| | |
|-------------------------|---|
| Little Grebe | Approximately 20 |
| White-breasted Waterhen | Approximately 10 |
| Common Moorhen | Min. 3 pairs |
| Little Ringed Plover | 1 |
| Pheasant-tailed Jacana | Did not breed but two pairs noted displaying in May |

Numerical Bird Target Performance in 2019 when Taking Winter Roost Data into Account

| Scenario | Using Tower and Transect Counts Data Only | | | Taking Winter Roost Data into Account | | |
|-----------------------------|---|------|------|---------------------------------------|------|------|
| | Density (mean/ha) | LMC | CA | Ratio | LMC | CA |
| Great Cormorant | 8.4 | 0.3 | 28.8 | 12.1 | 0.3 | 41.5 |
| Great Egret | 1.2 | 0.4 | 2.9 | 1.6 | 0.4 | 3.9 |
| Little Egret | 0.5 | 0.6 | 0.8 | 0.9 | 0.6 | 1.5 |
| Chinese Pond Heron | 0.9 | 0.4 | 2.2 | 1.0 | 0.4 | 2.3 |
| Black-faced Spoonbill | 0.4 | <0.1 | 65.9 | 0.5 | <0.1 | 70.6 |
| Black-crowned Night Heron * | 0.2 | <0.1 | 7.4 | 0.2 | <0.1 | 7.5 |
| White-shouldered Starling * | 1.1 | 0.1 | 14.7 | 1.1 | 0.1 | 15.6 |

Blue – Target met (i.e. density in EEA at least twice that in Control Areas) * Non-numerical Bird Target.
 Yellow – Target not met, although density higher than in Control Areas
 Red – Target not met and density lower than in Control Areas.
 Bold – Ratio is higher when taking the winter roost data into account.

Globally Threatened Bird Species

| Species | IUCN | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Falcat Duck | NT | - | 1 | - | - | - | - | - | - | - | - | 3 | 8 |
| Common Pochard | VU | 2 | 1 | - | - | - | - | - | - | - | - | - | - |
| Ferruginous Duck | NT | 2 | - | - | - | - | - | - | - | - | - | - | - |
| Japanese Quail | NT | - | - | - | - | - | - | - | - | - | 1 | - | - |
| Black-faced Spoonbill | EN | 84 | 103 | 90 | - | - | - | - | - | - | 15 | 110 | 68 |
| Greater Spotted Eagle | VU | 1 | - | 1 | - | - | - | - | - | - | 1 | 2 | 2 |
| Eastern Imperial Eagle | VU | 3 | - | - | - | - | - | - | - | - | - | 1 | 1 |
| Collared Crow | VU | 3 | 6 | 4 | 2 | 2 | 3 | 1 | 5 | 2 | 2 | 4 | 3 |
| Manchurian Reed Warbler | VU | - | - | 1 | - | - | - | - | - | - | - | - | - |
| Styan's Grasshopper Warbler | VU | - | - | - | - | - | - | - | - | 1 | - | - | - |
| Yellow-breasted Bunting | CR | - | - | - | - | - | - | - | - | - | - | 1 | - |

Winter Roost Count in the Year

- Winter roost is mainly located at Pond 2, including the island and the northern bund.

| Bird Taxa | Jan | Feb | Mar | Oct | Nov | Dec |
|--|--------------|--------------|------------|--------------|--------------|--------------|
| Black-crowned Night Heron | 6 | - | - | - | - | - |
| Chinese Pond Heron | 62 | 19 | 16 | 44 | 49 | 59 |
| Eastern Cattle Egret | 61 | 101 | 72 | 13 | 3 | 1 |
| Grey Heron | 2 | - | - | 33 | - | 10 |
| Great Egret | 94 | 54 | 20 | 530 | 207 | 171 |
| Intermediate Egret | 4 | 2 | - | - | - | - |
| Little Egret | 210 | 136 | 43 | 190 | 103 | 247 |
| Great Cormorant | 1,921 | 1,935 | - | 490 | 2,135 | 3,153 |
| Black-faced Spoonbill* | 72 | 43 | - | 8 | 30 | 34 |
| Starlings | - | - | 164 | - | - | - |
| Total of Large Waterbirds[^] | 2,432 | 2,290 | 151 | 1,308 | 2,527 | 3,675 |

* The species occurred on site or recorded dropping into the main site during the surveys.
[^] Excluding starlings/mynas.

Globally Threatened Bird Species



Nest Box Occupation in the Year

- All of 122 nest boxes were occupied: 88 nest boxes with eggs/chicks, 34 with nesting materials only, whereas 3 were broken;
- 87 boxes with eggs/chicks were occupied by White-shouldered Starling (one was occupied by Oriental Magpie Robin).



Mammal Targets Recorded in the Past 10 Years

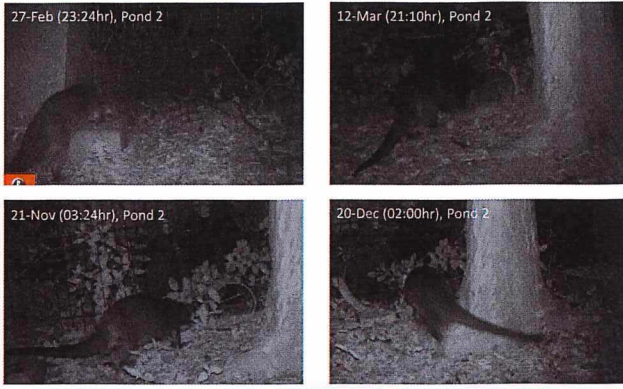
- Eurasian Otter was recorded on 6 days in this reporting period;
- Leopard Cat was recorded on 70 days with an OI of 31.2;
- A PhD study on Eurasian Otter is on-going.

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--|------|------|------|------|-----------------|----------------|-------------------|-------------------|-----------------|-----------------|-------------------------------------|
| Eurasian Otter <i>Lutra lutra</i> | | | | | | | | | | | |
| Maximum Count | 1 | 3* | 0 | 1 | 1 | 2 | 0 | 1 | 1 | 1 | 1 |
| No. of Records ¹ | 1 | 2 | 0 | 1 | 13 ⁸ | 5 [^] | 0 | 1 | 2 | 5 | 6 |
| Leopard Cat <i>Prionailurus bengalensis</i> | | | | | | | | | | | |
| No. of Records ² /OI ² | 91 | 201 | 121 | 11 | 111 | 871 | 114 ^{1%} | 65 ^{1/2} | 51 ¹ | 54 ¹ | 70 ¹ , 31.2 ² |

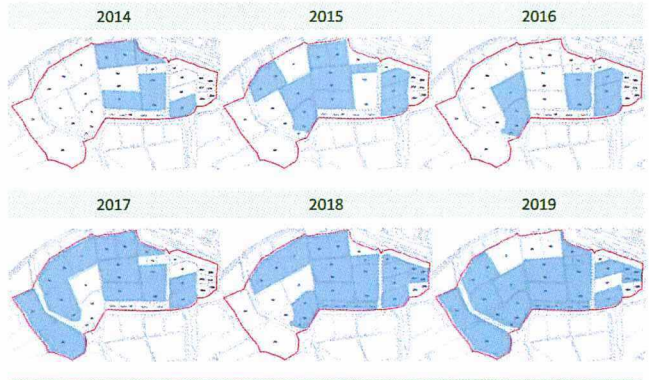
Note:
 1. Number of dates recorded by all installed cameras plus direct observations.
 2. Occurrence Index.

Key:
 * Up to 3 individuals recorded between Ponds 1 and 2 by AFCD
[^] Including one dead individual found at LMC EEA
¹ Including direct observation of one individual at Pond 12
² Footprints were recorded

Mammal Targets - Eurasian Otter



Red-eared Slider Recorded since 2014



Mammal Targets - Leopard Cat



Maximum Number of Red-eared Slider Recorded in Each Pond since 2014

| Pond | Year | | | | | Total |
|-------|------|------|------|------|------|-------|
| | 2014 | 2015 | 2016 | 2017 | 2018 | |
| 2 | - | - | - | 2 | - | 3 |
| 3 | - | 1 | - | 1 | 3 | 7 |
| 4 | - | - | - | 1 | - | 2 |
| 5 | - | - | - | 2 | 1 | 3 |
| 6 | - | 1 | 1 | - | - | 4 |
| 7 | - | 1 | 1 | - | 3 | 6 |
| 8 | 2 | 1 | - | 1 | 1 | 5 |
| 9 | - | 2 | - | 1 | 3 | 8 |
| 10 | 4 | 1 | - | 1 | 1 | 9 |
| 11 | 1 | - | 1 | 4 | 17 | 26 |
| 12 | 2 | 2 | 1 | 7 | 2 | 18 |
| 13 | - | - | 1 | - | 1 | 3 |
| 14 | - | - | - | - | 6 | 7 |
| 15 | - | 6 | 1 | 1 | 1 | 9 |
| 16 | 1 | - | - | 1 | - | 3 |
| 17 | - | 1 | - | - | 1 | 4 |
| 18 | - | - | - | - | 1 | 1 |
| 19 | - | 1 | 1 | - | 7 | 10 |
| 20 | - | - | - | - | 3 | 6 |
| 21 | - | - | - | - | 1 | 2 |
| 22 | - | - | - | - | - | 0 |
| Total | 10 | 17 | 7 | 22 | 52 | 136 |

Reptile Targets Recorded in the past 10 years

- Burmese Python and Chinese Soft-shelled Turtle were not recorded in 2019.
- Reeves' Turtle was recorded twice in 2019, with one individual recorded each time.

| Species | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--|--------|-------|-------|-------|-------|-------|--------|-------|-------|---------|-------|
| Reeves' Turtle <i>Mauremys reevesii</i> | - | - | - | - | - | - | 2 (1) | 4 (2) | 8 (2) | - | 2 (1) |
| Chinese Soft-shelled Turtle <i>Pelodiscus sinensis</i> | 2* (1) | 1 (1) | 1 (1) | 1 (1) | 2 (1) | 2 (1) | 2* (1) | * | 3 (1) | 1 (1) | 0 (0) |
| Burmese Python <i>Python bivittatus</i> | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 1 (1) | 3 (1) | 1* (1) | 1 (1) | 0 (0) | 0 (0) # | 0 (0) |

Reeves' Turtle became target species from November 2019.
 Number of surveys recorded is indicated in the table, whereas the numbers in brackets are the maximum count per survey.
 Key: % Sighting reported by the reprofiling contractor
 * Include one record of track
 # It was recorded in the Clean-up Reedbed

Amphibian Findings since 2006

- Target species, Chinese Bullfrog, was recorded twice this year.

| Species/ Maximum Total Number of Individuals Recorded in All Ponds in LMC EEA | 2006 - 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Asian Common Toad <i>Bufo melanostrictus</i> | 3 | 4 | 3 | 1 | 2 | 7 | 1 | 7 | 15 | 6 |
| Asiatic Painted Frog <i>Kaloula pulchra</i> | - | 2 | 2 | 1 | - | - | - | - | 1 | 2 |
| Butler's Pigmy Frog <i>Microhyla butleri</i> | 2 | - | - | 2 | - | - | - | - | 45 | - |
| Ornate Pigmy Frog <i>Microhyla ornata</i> | 128 | 25 | 5 | 7 | 4 | - | - | - | 20 | 18 |
| Marbled Pigmy Frog <i>Microhyla pulchra</i> | - | - | - | - | 1 | - | - | - | 50 | - |
| Paddy Frog <i>Fejervarya limnocharis</i> | 35 | 7 | 20 | 6 | 1 | 10 | 35 | 19 | 13 | 6 |
| Chinese Bullfrog <i>Hoplobatrachus chinensis</i> | 4 (9) | 2 (5) | 2 (8) | 1 (2) | 1 (2) | 0 (0) | 0 (0) | 4 (9) | 0 (0) | 1 (2) |
| Günther's Frog <i>Rana guentheri</i> | 157 | 86 | 132 | 108 | 293 | 115 | 82 | 342 | 172 | 127 |
| Two-striped Grass Frog <i>Rana talpehensis</i> | 2 | 1 | 1 | 1 | - | 2 | - | - | - | - |
| Brown Tree Frog <i>Polypedates megacephalus</i> | 33 | 33 | 12 | 14 | 7 | 3 | 6 | 6 | 1 | 5 |
| Number of species recorded | 8 | 8 | 8 | 9 | 7 | 5 | 4 | 5 | 8 | 7 |

Maximum count (per survey) is indicated in the table; for Chinese Bullfrog, the number in brackets are the total number of individuals recorded in the year.

Red-eared Slider Recorded since 2014

- A maximum of 7 individuals were recorded on one day (in July);
- Recorded in all compartments;
- Maximum number recorded in the past years:
 - 2018 – 19, egg laying also noted;
 - 2017 – 14, mating also noted;
 - 2016 – 2, egg laying also noted;
 - 2015 – 7;
 - 2014 – 4.

Dragonfly Findings since 2006

One new species, Common Blue Skimmer, was recorded

| Dragonfly Recorded as Adults or Exuviae at LMC EEA | 2006 - 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016* | 2017* | 2018 | 2019 |
|--|-------------|------|------|------|------|------|-------|-------|------|------|
| Number of Species Recorded | 25 | 21 | 25 | 22 | 21 | 17 | 21 | 25 | 21 | 24 |
| Total Number of Species Recorded | 35 | | | | | | | | | |

Key: * A Midget species was also recorded.
 Species recorded are presented in Appendix for reference.

Yellow-breasted Bunting recorded:

- 2019: a total of 1 individual
 - 17th Nov – 1 (Pond 8)
- 2018: a total of 19 individuals



Total Number of Yellow-breasted Bunting Recorded

| 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 4 | 12 | 1 | 6 | 3 | 6 | 0 | 0 | 4 | 14 | 19 | 1 |

Thank You

