
SHEUNG SHUI TO LOK MA CHAU SPUR LINE

Environmental Committee Meeting

Minutes of Meeting No. 34 held at 2:00pm

on Tuesday, 23rd January 2018,

at Room 17A, 17/F, MTR Headquarters Building, Telford Plaza, Kowloon Bay

| Present: | | |
|-----------------------------|-------------------------------------|---------------------|
| Dr. Xianji Wen | WWF Hong Kong | Member (NGO) |
| Mr. Michael Kilburn | The Hong Kong Bird Watching Society | Member (NGO) |
| Dr. Ng Cho-nam | The University of Hong Kong | Member (NGO) |
| Ms. Karen Barretto | Friends of the Earth (Hong Kong) | Member (NGO) |
| Mr. Liston Szeto | 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) |
| Absent with apology: | | |
| Ms. Catherine Leung | Environmental Engineering Manager | Member (MTR) |
| | | |

| Attachments | |
|--------------------|--|
| Annex A | Presentation Material of EC Meeting No. 34 |

| <u>Item/Description</u> | <u>Action By</u> |
|--|--|
| 1. Welcomed Members to the EC Meeting No. 34. | Noted |
| <p data-bbox="204 465 737 501"><u>Confirmation of minutes of Meeting No. 33</u></p> <p data-bbox="204 542 1241 680">2. There was no comment on the minutes of Meeting No. 33 and the minutes were confirmed. A site visit to the LMC EEA was suggested in the Meeting No. 33 and would be arranged in February 2018. MTR Corporation would circulate the proposed dates to the EC members after the meeting.</p> <p data-bbox="272 703 1066 739">[PMN: EC members visited the LMC wetland on 7 February 2018.]</p> | MTR |
| <p data-bbox="204 779 1241 846"><u>Ecological Enhancement Works and Monitoring – an Update on Management Works and Look Ahead</u></p> <p data-bbox="204 891 1241 1025">3. <u>A Member (consultant)</u> reported on the major habitat enhancement and modification works, ecological monitoring and management works undertaken during January to December 2017 at the LMC EEA (detailed in Annex A) as follows:</p> <p data-bbox="272 1070 1241 1173">3.1 <u>A Member (consultant)</u> reported that Pond 19 was reprofiled to form a ridge-and-furrow system and was also transplanted with <i>Persicaria</i> spp. which is good for Greater Painted-snipe.</p> <p data-bbox="272 1218 1241 1890">3.2 <u>A Member (consultant)</u> reported that Ponds 20 – 22 were reprofiled in 2016 to create a large lily pond, mainly to be beneficial to Pheasant-tailed Jacanas. Lilies had regenerated; removal of other vegetation in these ponds has been carried out. The northern cells, which were formed from marine sand, were found to be leaking before, but seemed not a problem in the dry season. One Pheasant-tailed Jacana was found wintering in these ponds this winter; this species was not recorded for wintering in Hong Kong since 1990s. A number of scarce/rare ducks were recorded in these ponds, including Lesser Whistling Duck, Cotton Pygmy Goose, Falcated Duck, Ferruginous Duck, Gadwall and Chinese Spot-billed Duck; these records showed that lily pond is good for ducks. <u>A Member (NGO)</u> enquired if the Apple Snails were a problem to the lilies. <u>A Member (consultant)</u> replied that Apple Snail is not a problem so far but would become a problem (especially in the summer when the Apple Snails are more active). However, routine removal has been carried out. The design of the large lily pond is that individual cell could be drained for Apple Snail removal. In addition, there are deeper areas in each cells such that Apple Snail would aggregate in these areas when water level drops and facilitate collection.</p> <p data-bbox="272 1935 1241 2031">3.3 <u>A Member (consultant)</u> reported that Tilapia and Oriental Weatherfish were stocked in the winter period. Oriental Weatherfish, which is native, was a new stocking species; the size stocked (about 10cm) is suitable for</p> | <p data-bbox="1265 1070 1345 1106">Noted</p> <p data-bbox="1265 1218 1345 1254">Noted</p> <p data-bbox="1265 1935 1345 1971">Noted</p> |

| <u>Item/Description</u> | <u>Action By</u> |
|---|------------------|
| <p>Little Egret consumption. It is planned to stock this species in the spring for breeding, as a trial, and hopefully it will produce fingerlings for next winter. <u>A Member (NGO)</u> commented that Tilapia grows fast and the size of the young maybe too large for bird consumption in the winter. <u>A Member (NGO)</u> enquired if this species predated on dragonfly. <u>A Member (consultant)</u> pointed out that fish are not stocked in the marsh ponds.</p> | |
| <p>3.4 <u>A Member (consultant)</u> reported on the performance of the numerical bird target species. Most of the target species met the target level in 2017. Little Egret and Black-winged Stilt did not meet the target level, although LMC EEA had higher density. In the latest five-yearly review, it was suggested to include the number of Little Egret recorded in the winter roost count into calculating the target performance. <u>A Member (NGO)</u> enquired where the Little Egret roosted. <u>A Member (consultant)</u> replied that they mainly roosted on the island of Pond 2. More Black-winged Stilts were noted in the drainage channel to the east of the LMC Station. The lower number of this species in the LMC EEA may simply due to a more attractive habitat nearby. <u>A Member (NGO)</u> enquired on the performance of Red-billed Starling in the LMC EEA. <u>A Member (consultant)</u> replied that the number increased in the last five years.</p> | Noted |
| <p>3.5 <u>A Member (consultant)</u> further reported on the performance of the non-numerical bird target species. The density of Little Grebe at LMC EEA did not quite reach twice that at the Control Areas, however the number of this species in the LMC EEA increased steadily.</p> | Noted |
| <p>3.6 <u>A Member (consultant)</u> reported on the bird winter roost count results at LMC EEA, and concluded that LMC EEA provided a secure roosting site to large waterbirds.</p> | Noted |
| <p>3.7 <u>A Member (consultant)</u> reported almost all surveyed nest boxes were occupied by White-shouldered Starlings. <u>A Member (NGO)</u> enquired if White-shouldered Starlings out-competed Mynas/Oriental Magpie Robin for the nest boxes. <u>A Member (consultant)</u> confirmed the nest boxes were mainly occupied by the White-shouldered Starlings, even for the nest boxes with bigger holes. He added that all nest boxes will be gathered to the south of Pond 14 in the coming breeding season, as currently there are some nest boxes located under power lines, where tree trimming works may be undertaken in the breeding season. <u>A Member (NGO)</u> enquired if the White-shouldered Starlings nested in the CLP electricity box. <u>A Member (consultant)</u> replied that there is no CLP electricity box on site. <u>A Member (NGO)</u> enquired if snake could get into the nest boxes. <u>A Member (consultant)</u> replied that the nest boxes are installed on tall trees and the LMC EEA does not have high numbers of snakes.</p> | Noted |
| <p>3.8 <u>A Member (consultant)</u> reported a number of breeding birds were recorded in the LMC EEA, including Greater Painted-snipe, Little Grebe,</p> | Noted |

| <u>Item/Description</u> | <u>Action By</u> |
|---|------------------|
| <p>Yellow Bittern, White-breasted Waterhen, Little Ringed Plover and Common Moorhen; Cinnamon Bittern was recorded in the summer without sign of breeding and juvenile of Red-billed Starling was recorded. <u>A Member (NGO)</u> enquired if Cinnamon Bittern breeds in reedbed. <u>A Member (consultant)</u> suggested that the breeding habitat should be similar to that of Yellow Bittern.</p> | |
| <p>3.9 <u>A Member (consultant)</u> reported the globally threatened species recorded and suggested that the LMC EEA consistently attract Black-faced Spoonbill, Greater Spotted Eagle and Eastern Imperial Eagle. <u>A Member (NGO)</u> suggested the number of Eastern Imperial Eagle recorded was surprisingly low. <u>A Member (consultant)</u> pointed out that the table in the presentation material showed the peak count per month. <u>A Member (NGO)</u> thought that this number is about normal. He further enquired if Collared Crow was the target species. <u>A Member (consultant)</u> replied that this is not a target species, but its number recorded can be reviewed in next EC meeting.</p> | AEC |
| <p>3.10 <u>A Member (consultant)</u> reported that one of the target species, Eurasian Otter, was recorded in the LMC EEA in 2017. Leopard Cat, another mammal target species, was continuously recorded in good number in the LMC EEA.</p> | Noted |
| <p>3.11 <u>A Member (consultant)</u> reported Burmese Python was not recorded in 2017, however, there were three records of another target species, Chinese Soft-shelled Turtle, in 2017. <u>A Member (NGO)</u> enquired if Chinese Soft-shelled Turtle recorded was escaped individuals. <u>A Member (consultant)</u> believed that they are from the wild population. <u>A Member (NGO)</u> enquired the size of the Chinese Soft-shelled Turtle recorded. <u>A Member (consultant)</u> replied that they are about 15 – 20cm of carapace.</p> | Noted |
| <p>3.12 <u>A Member (consultant)</u> reported the records of Chinese Bullfrog recovered from bad years in 2015 and 2016 and equaled to that recorded in 2010. <u>A Member (NGO)</u> enquired why it was not recorded in 2015 and 2016. <u>A Member (consultant)</u> was not sure about the reason and suggested that they could not be recorded if they do not vocalize.</p> | Noted |
| <p>3.13 <u>A Member (consultant)</u> reported there were 25 dragonfly species recorded in 2017 and was equaled to that recorded in 2012. <u>A Member (NGO)</u> enquired if Ponds 20 – 22 recorded highest number of dragonfly species. <u>A Member (consultant)</u> reported that Ponds 20 – 22 recorded 15 species, and all of the other ponds recorded at least 10 species, in which highest number of species (16) was recorded at Pond 8.</p> | Noted |
| <p>3.14 <u>A Member (consultant)</u> analysed the number of ducks recorded in the LMC EEA between October and December declined in the past five years; however, the habitat management in the LMC EEA did not change. <u>A Member (NGO)</u> enquired if peanut residue was used to attract duck. <u>A</u></p> | Noted |

| <u>Item/Description</u> | <u>Action By</u> |
|--|-------------------------|
| <p><u>Member (consultant)</u> replied that it was used in 2016 and not much in 2017.</p> <p>3.15 <u>A Member (consultant)</u> suggested that Pond 17, as one of the marsh ponds, was not performing very well and proposed to plant rice in the pond, as paddy field works well elsewhere in Hong Kong (e.g. Long Valley where Yellow-breasted Bunting is attracted). It is suggested to plant rice in the coming wet season. Water management is easy to be dealt with – overflow pipes were already in place and can be used when flooded or fill with water from fish ponds nearby. Rice could attract a variety of wildlife, such as, Greater Painted-snipe, Bluethroat, Rails, etc. and dragonfly. <u>A Member (NGO)</u> enquired if the soil is saline. <u>A Member (consultant)</u> replied that it is not. <u>A Member (NGO)</u> pointed out that rice is planted in two seasons in Long Valley. <u>A Member (consultant)</u> added that advices will be sought from the Hong Kong Bird Watching Society and believed that the second crop was to attract Yellow-breasted Bunting. The existing wetland maintenance contractor would help in rice planting. The location of rice planting could be shown to the EC members on site during the coming site visit.</p> | Noted |
| <p><u>Any Other Business</u></p> <p>4. <u>A Member (consultant)</u> reported the draft 5-yearly Management Review Report (MRR) was submitted to EC members in July 2017 and EPD, AFCD in August 2017 for comment. The revised MRR is submitted to all parties on 11th Jan 2018. LMC Habitat Creation and Management Plan would be revised according to the findings of the MRR.</p> <p>5. EC members noted MTR has recently launched a short video of LMC EEA and appreciated the publicity activities of LMC EEA. EC members enquired if MTR will put any updates of LMC wetland via social media like Facebook. <u>A Member (MTR)</u> replied there were videos and stories about LMC EEA on MTR’s Facebook and will share the links with EC members for reference.</p> <p>[PMN: <u>A Member (MTR)</u> shared the links with EC members on 23 January 2018.]</p> <p>6. <u>A Member (MTR)</u> thanked the EC members for their time and valuable suggestions.</p> | Noted |
| <p><u>Date of Next Meeting</u></p> <p>7. The date of the next meeting is to be advised.</p> | MTR |

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Report on Ecological Monitoring and Management, and Works Programme
January – December 2017

23rd January 2018



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Management Works from January to December: Pond Reprofilng

Pond 19



Pond 21a



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Report on Ecological Monitoring and Management, January to December 2017

- The following presentation will focus on:
 - the major habitat enhancement and modification works;
 - the most important results and findings from faunal monitoring undertaken.



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Ponds 20 – 22



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Management Works from January to December: Pond Reprofilng

Pond Reprofilng

- Pond 19 (late November 2016 – January 2017);
- Ponds 20 - 22 (early July – early December 2016).



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Management Works from January to December: Pond Reprofilng of Ponds 20 – 22

- Results:
 - Up to 4 Pheasant-tailed Jacanas recorded in May and 3 in November (one over wintering).
 - Nesting of Greater Painted-snipe.
 - Excellent variety of scarce/rare duck: summering of a pair of Lesser Whistling Ducks, male Cotton Pygmy Goose in May (first HK summer record), up to 3 Falcated Duck, 2 Ferruginous Duck, Gadwall, Chinese Spot-billed Duck.
 - Just over 50% of all Chinese Bullfrog records during the year.



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Management Works from January to December 2017: Fish Stocking

Winter Fish Stocking

- Tilapia
 - A total of 19,064 kg stocked during January to March;
 - A total of 17,426 kg stocked during October to December.
- Oriental Weather fish – new fish species for stocking at LMC
 - A total of 1,343 kg stocked during November to December.



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Winter Roost Count in 2017

- Winter roost survey was conducted in January to March, and November and December;
- Winter roost is mainly located at Pond 2, including the island.

| Bird Taxa | Jan-17 | Feb-17 | Mar-17 | Nov-17 | Dec-17 |
|----------------------------------|--------------|--------------|--------------|--------------|--------------|
| Ardeids* | 571 | 538 | 404 | 462 | 324 |
| Great Cormorant | 2,170 | 1,251 | 1,226 | 2,345 | 1,545 |
| Starlings | 154 | 0 | 10 | 0 | 300 |
| Total of Large Waterbirds | 2,741 | 1,789 | 1,630 | 2,807 | 1,869 |

* Chinese Pond Heron, Eastern Cattle Egret, Grey Heron, Great Egret, Intermediate Egret and Little Egret.



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Numerical Bird Target Performance in the Past 5 Years

| Species | 2013 | | | 2014 | | | 2015 | | | 2016 | | | 2017 | | |
|--|------|------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|-------|
| | LMC | CA | Ratio | LMC | CA | Ratio | LMC | CA | Ratio | LMC | CA | Ratio | LMC | CA | Ratio |
| Denshy (mean/ha) | 2.8 | 0.5 | 5.2 | 6.8 | 0.5 | 13.3 | 5.8 | 0.4 | 13.6 | 6.2 | 0.5 | 12.7 | 7.4 | 0.6 | 13.2 |
| Great Cormorant | 1.0 | 0.2 | 5.8 | 2.1 | 0.2 | 11.7 | 1.8 | 0.2 | 12.2 | 2.1 | 0.1 | 19.6 | 2.3 | 0.2 | 13.9 |
| Grey Heron | 0.6 | 0.5 | 1.2 | 1.5 | 0.3 | 4.9 | 1.5 | 0.4 | 4.0 | 1.5 | 0.6 | 2.3 | 2.4 | 0.5 | 4.8 |
| Little Egret | 0.0 | 0.5 | 0.0 | 0.9 | 0.4 | 1.9 | 0.9 | 0.5 | 2.0 | 0.6 | 1.7 | 2.6 | 1.1 | 2.4 | 1.5 |
| Chinese Pond Heron | 0.7 | 0.4 | 2.1 | 0.9 | 0.3 | 2.9 | 0.9 | 0.5 | 1.9 | 0.8 | 0.5 | 1.3 | 1.3 | 0.6 | 2.0 |
| Black-faced Spoonbill | 0.4 | <0.1 | 12.5 | 0.4 | 0.1 | 5.8 | 0.5 | <0.1 | 14.2 | 0.5 | <0.1 | 17.2 | 0.7 | 0.1 | 17.3 |
| Eurasian Teal | 1.0 | <0.1 | 22.6 | 1.2 | 0.1 | 10.6 | 1.6 | <0.1 | 170.6 | 2.2 | <0.1 | 374.5 | 0.5 | <0.1 | 24.2 |
| Greater Spotted Eagle | <0.1 | 0.0 | 80.4 | <0.1 | <0.1 | 50.2 | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC |
| Eastern Imperial Eagle | <0.1 | <0.1 | 5.3 | <0.1 | <0.1 | 24.5 | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC |
| Japanese Quail | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | 0.0 | 0.0 | nr | 0.0 | 0.0 | nr | <0.1 | 0.0 | LMC |
| Eurasian Coot | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | 0.1 | <0.1 | 235.9 | <0.1 | <0.1 | 389.9 | <0.1 | <0.1 | 389.9 |
| Pheasant-tailed Jacana | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | 11.3 | <0.1 | 19.7 | <0.1 | 0.0 | LMC | <0.1 |
| Greater Painted-snipe | <0.2 | 0.0 | LMC | <0.1 | 0.0 | LMC | <0.1 | 0.0 | 2.9 | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC |
| Black-winged Stilt | 0.5 | 0.1 | 5.2 | 0.5 | 0.1 | 5.1 | 0.3 | 0.1 | 5.6 | 0.1 | 0.1 | 0.3 | 0.2 | 0.1 | 1.5 |
| Pintail/Twainhoop's Snipe ¹ | 0.1 | <0.1 | 36.3 | <0.1 | <0.1 | 11.0 | <0.1 | <0.1 | 55.1 | <0.1 | <0.1 | 47.7 | <0.1 | <0.1 | 36.2 |
| Common Snipe | <0.1 | <0.1 | 3.8 | 0.1 | 0.1 | 17.9 | 0.1 | <0.1 | 3.0 | 0.1 | <0.1 | 11.6 | <0.1 | <0.1 | 2.8 |
| Black-throated | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC | 0.1 | <0.1 | 22.1 | 0.0 | 0.0 | nr | 0.0 | 0.0 | 0.4 |
| Pallas's Grasshopper Warbler | <0.1 | <0.1 | 10.2 | <0.1 | <0.1 | 4.9 | <0.1 | <0.1 | 11.1 | <0.1 | <0.1 | 2.5 | <0.1 | <0.1 | 19.7 |
| Singing Cisticola | 0.1 | 0.1 | 1.1 | 0.1 | 0.1 | 0.8 | 0.1 | 0.1 | 1.0 | <0.1 | 0.1 | 0.8 | 0.1 | 0.1 | 0.8 |
| Japanese Yellow Bunting | 0.0 | <0.1 | CA | 0.0 | 0.0 | nr | 0.0 | <0.1 | CA | 0.0 | 0.0 | nr | 0.0 | 0.0 | nr |
| Red-billed Starling | 0.5 | 0.5 | 1.0 | 0.7 | 0.1 | 1.8 | 1.2 | 0.6 | 2.0 | 3.0 | 0.4 | 7.2 | 3.0 | 0.4 | 6.8 |

1. Includes one species pair, Pintail/Twainhoop's Snipe, not distinguishable in the field
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



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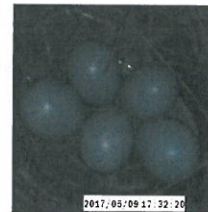


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Nest Box Occupation in 2017

- 103 out of 118 bird nest boxes are accessible for survey (the others are too high, outside the boundary fence etc.);
- All of these 103 nest boxes were occupied by White-shouldered Starling: 85 with eggs and/or chicks recorded, 18 with nesting materials only.



Non-numerical Bird Target Performance since 2014

| Species | 2014 | | | 2015 | | | 2016 | | | 2017 | | |
|---------------------------|------|------|-------|------|------|--------|------|------|-------|------|------|-------|
| | LMC | CA | Ratio | LMC | CA | Ratio | LMC | CA | Ratio | LMC | CA | Ratio |
| Eurasian Wigeon | 0.4 | <0.1 | 13.7 | 1.2 | <0.1 | 1009.9 | 1.5 | 0.0 | LMC | <0.1 | 0.0 | LMC |
| Little Grebe | 0.9 | 0.5 | 1.8 | 1.1 | 0.9 | 1.3 | 1.3 | 0.7 | 1.7 | 1.3 | 0.7 | 1.7 |
| Cinnamon Bittern | <0.1 | 0.0 | LMC | <0.1 | <0.1 | 10.8 | <0.1 | 0.0 | LMC | <0.1 | 0.0 | LMC |
| Black-crowned Night Heron | 0.2 | <0.1 | 3.4 | 0.1 | <0.1 | 2.6 | 0.1 | <0.1 | 10.1 | 0.4 | <0.1 | 23.4 |
| Intermediate Egret | <0.1 | <0.1 | 12.5 | <0.1 | <0.1 | 1.4 | 0.1 | <0.1 | 10.6 | 0.2 | <0.1 | 10.1 |
| White-cheeked Starling | 0.1 | 0.1 | 1.1 | 0.4 | <0.1 | 20.3 | 0.4 | <0.1 | 17.9 | 0.2 | 0.1 | 3.7 |
| White-shouldered Starling | 0.7 | 0.1 | 11.5 | 1.2 | 0.1 | 15.8 | 1.2 | 0.1 | 15.5 | 1.2 | 0.1 | 12.3 |
| Yellow-breasted Bunting | 0.0 | 0.0 | nr | 0.0 | <0.1 | CA | <0.1 | <0.1 | 9.9 | <0.1 | <0.1 | 9.2 |

The 48-use species became target species from October 2014
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



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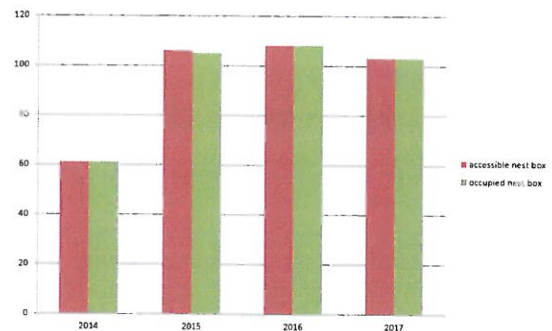
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Nest Box Occupation (by White-shouldered Starling) from 2014



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Breeding Birds

- A nest of Greater Painted-snipe in April (but flooded by unexpected heavy rain);
- Chicks of Little Grebe were recorded at 5 ponds with a maximum of 12 chicks recorded on any one date;
- 3 juveniles, with a male adult, of Yellow Bittern were recorded at Pond 4 in August;
- Cinnamon Bittern recorded on four dates over summer but no evidence of breeding;
- Chicks of White-breasted Waterhen were recorded at 10 ponds with a maximum of 12 chicks recorded on any one date;
- 2 juveniles Little Ringed Plover in May;
- Common Moorhen chick was recorded in June;
- A Red-billed Starling juvenile was recorded in August;
- Other juveniles recorded include Eurasian Collared Dove, Chinese Blackbird and Black-collared Starling.

Mammal Targets Recorded in the Past 10 Years

- Eurasian Otter was recorded in November and December at Pond 2;
- Leopard Cat was recorded on 51 days with an OI of 24.1;
- A PhD study on Eurasian Otter is on-going.

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--|------|------|------|------|------|-----------------|----------------|---------------------|---|--|
| Eurasian Otter <i>Lutra lutra</i> | | | | | | | | | | |
| Maximum Count | 2 | 1 | 3* | 0 | 1 | 1 | 2 | 0 | 1 | 1 |
| No. of Records ¹ | 2 | 1 | 2 | 0 | 1 | 13 [#] | 5 [^] | 0 | 1 | 2 |
| Leopard Cat <i>Prionailurus bengalensis</i> | | | | | | | | | | |
| No. of Records ¹ /OI ² | 51 | 91 | 201 | 121 | 11 | 111 | 871 | 114 ^{1, %} | 65 ^{1, %} 25.2 ² | 51 ¹ , 24.1 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 LME: EEA
^ Including direct observation of one individual at Pond 12
% Footprints were recorded.

Other species in appendix for reference.



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Globally Threatened Birds

11 Globally threatened species recorded during the year

| Common Name | IUCN Status | Maximum Count | | | | | | | | | | | | |
|-------------------------|-------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Falcated Duck | NT | - | - | - | - | - | - | - | - | - | - | 3 | 3 | - |
| Ferruginous Duck | NT | - | - | - | - | - | - | - | - | - | - | 1 | 2 | - |
| Japanese Quail | NT | - | - | - | - | - | - | - | - | - | - | 2 | - | - |
| Oriental Stork | EN | - | - | - | - | - | - | - | - | - | - | 1 | 1 | - |
| Black-faced Spoonbill | EN | 305 | 150 | 164 | 4 | 6 | - | - | - | - | 20 | 186 | 170 | - |
| Greater Spotted Eagle | VU | 2 | 1 | 1 | - | - | - | - | - | - | 1 | 3 | 3 | - |
| Eastern Imperial Eagle | VU | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - |
| Red-necked Stint | NT | - | - | - | 3 | - | - | - | - | 14 | - | - | - | - |
| Curlew Sandpiper | NT | - | - | - | - | - | - | - | - | 1 | - | - | - | - |
| Collared Crow | NT | 2 | 3 | 2 | - | 1 | - | 1 | 5 | - | 13 | 2 | 2 | - |
| Yellow-breasted Bunting | EN | - | - | - | 14 | - | - | - | - | - | - | 1 | - | - |

Mammal Targets

- Eurasian Otter was recorded in November and December at Pond 2;
- Leopard Cat was recorded on 51 days.

Pond 2b, 22nd November



Pond 2a, 6th September



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Unusual Bird Species Recorded

- Unusual records:
 - Cotton Pygmy Goose (♂, May in Pond 22)
 - Lesser Whistling Duck (a pair, May and June largely in Ponds 20 -22)
 - Oriental Stork (from 27th November)
 - Ferruginous Duck (from 13th November)

Lesser Whistling Duck (Pond 12, 17th May)



Oriental Stork (Pond 6, 5th December)



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Reptile Targets Recorded in the past 10 years

- Burmese Python was not recorded in 2017.
- Three records of Chinese Soft-shelled Turtle:
 - 3rd April at Pond 7
 - 8th May at Pond 3a (by infra-red camera)
 - 18th May at Pond 19



| Species | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|--------|--------|-------|-------|-------|-------|-------|--------|-------|-------|
| Burmese Python <i>Python bivittatus</i> | 1 (1) | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 1 (1) | 3 (1) | 1* (1) | 1 (1) | 0 (0) |
| Chinese Soft-shelled Turtle <i>Pelodiscus sinensis</i> | 1* (1) | 2* (1) | 1 (1) | 1 (1) | 1 (1) | 2 (1) | 2 (1) | 2* (1) | * | 3 (1) |

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

Other species in appendix for reference.



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Amphibian Findings since 2006

- Chinese Bullfrog was recorded in 4 occasions in 2017 with a maximum of 4 individuals recorded.

| Species/ Maximum Total Number of Individuals Recorded in All Ponds in LMC EEA | 2006 - 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Asian Common Toad <i>Bufo melanostictus</i> | 3 | 1 | 2 | 4 | 3 | 1 | 2 | 7 | 1 | 7 |
| Asiatic Painted Frog <i>Kaloula pulchra</i> | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 0 |
| Buller's Pigmy Frog <i>Microhyla butleri</i> | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| Ornate Pigmy Frog <i>Microhyla ornata</i> | 13 | 46 | 128 | 25 | 5 | 7 | 4 | 0 | 0 | 0 |
| Marbled Pigmy Frog <i>Microhyla pulchra</i> | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Paddy Frog <i>Fejervarya limncharis</i> | 35 | 14 | 12 | 7 | 20 | 6 | 1 | 10 | 35 | 19 |
| Chinese Bullfrog <i>Hoplobatrachus chinensis</i> | 1 | 2 (2) | 4 (9) | 2 (5) | 2 (8) | 1 (2) | 1 (2) | 0 (0) | 0 (0) | 4 (9) |
| Günther's Frog <i>Rana guntheri</i> | 157 | 74 | 137 | 86 | 132 | 108 | 293 | 115 | 82 | 342 |
| Two-striped Grass Frog <i>Rana taiwanensis</i> | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 2 | 0 | 0 |
| Brown Tree Frog <i>Polypedates megacephalus</i> | 32 | 33 | 27 | 33 | 12 | 14 | 7 | 3 | 6 | 6 |
| No. of species recorded | 6 | 7 | 8 | 8 | 8 | 9 | 7 | 5 | 4 | 5 |

Maximum count (per survey) is indicated in the table; for Chinese Bullfrog, from 2009, the numbers in brackets are the total number of individuals recorded in the year.



Additional Adaptive Management Measures in 2018

- The following measures are proposed:
 - Planting rice in Pond 17;
 - Installing nest boxes for ducks.

Dragonfly Findings since 2006

- Red-faced Skimmer was newly recorded.

| Dragonfly recorded as adults or exuviae at LMC EEA | 2006 - 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015* | 2016* | 2017* |
|--|-------------|------|------|------|------|------|------|-------|-------|-------|
| Number of Species Recorded | 22 | 22 | 24 | 21 | 25 | 24 | 21 | 17 | 21 | 25 |
| Total Number of Species Recorded | 34 | | | | | | | | | |

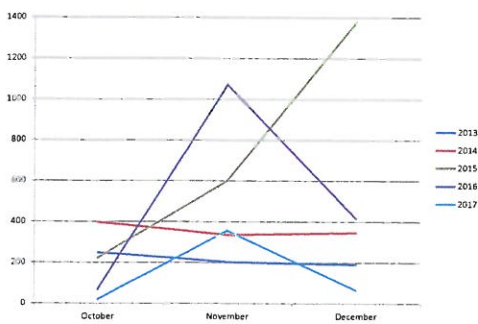
Key: * A Midget species was also recorded.
Other species in Appendix for reference.

Management Review Report (Second Five-yearly Review 2012 - 2016) – Update

- Submitted to EPD and AFCD in August 2017;
- No comment received from EPD;
- Minor comments received from AFCD;
- Revised Management Review Report submitted to EPD on 11 January 2018;
- Habitat Creation and Management Plan will be revised according to the findings of the Management Review Report.

Abundance of Duck in the Last Five Years

- Maximum count of ducks from October to December during 2013 to 2017.



Thank You

