

## Appendix 12-11 Methodology and Results of Aquatic Fauna Surveys

### Methodology

For this fauna group, surveys mainly relied on direct observation from the water's edge with the aid of binoculars, since most natural water bodies within the study area are polluted to varying degrees. Species observed were counted and recorded. If considered helpful and subject to water quality, hand-netting was also carried out at certain places.

In the marshes of Ma Tso Lung and Hoo Hok Wai, fish-traps were used. Traps were set in late afternoon and checked the subsequent morning.

As the Shenzhen River is highly polluted and access to the water is problematic, direct observation only was carried out along the bank. Binoculars were used to aid identification.

For LMC Meander, besides direct observation and hand-netting, fyke-nets and gill-nets were also used to capture fish. These nets were set up in late afternoon and checked the subsequent day.

In general, aquatic surveys were conducted once within the wet season (between August and October) and once within the dry season (between November and February) during daytime. But fyke-netting, gill-netting and trapping were conducted once in the wet season.

In addition, water quality measurements were taken at six points around LMC Meander, once in the dry season and once in the wet season. Three measurements were taken at each point.

### Results

**Table A12-23** provides a list of all aquatic fauna recorded in each area. **Figure 12-4** illustrates locations of aquatic fauna of conservation significance.

#### *LMC Meander*

Once a section of the original Shenzhen River, this meander remains largely natural, although its eastern end has been disconnected from the man-made Shenzhen River Channel and thus it is no longer a true lotic water body. However, it still contains ecological resources, which serve as food for many fauna at higher trophic levels (i.e. Eurasian Otter, birds).

Nine species of fish and five of invertebrate were observed. Although most are exotic, such as *Tilapia* sp., and none are of particular conservation concern, these organisms do constitute important prey to other fauna of conservation concern, including Eurasian Otter.

Data collected from water quality measurements are provided in **Table A12-22**.

**Table A12-22** Water quality measurements from LMC Meander: mean values of three readings taken at six locations.

Date	Temp. (°C)	pH	Salinity (ppt)	Turb (mg/L)	DO (mg/L)
31 <sup>st</sup> July 2009	31.6	7.30	0.46	19.27	2.74
3 <sup>rd</sup> Feb. 2010	22.3	7.60	4.21	23.27	7.82

These data indicate that water quality in LMC Meander is not poor, and confirms visual assessment. Differences between water quality in the Meander and that at the fish pond-like conditions at LMC WMA (the only site for which comprehensive data are available) are relatively minor. Temperature and turbidity readings are very similar. At LMC WMA pH is

4-5 due to the high level of sulphates present naturally in fish pond soils. Salinity levels of the two sites are similar in the wet season but differ in the dry season, with much higher values in the Meander. Dissolved oxygen levels are also similar in the wet season, but higher than LMC WMA in the dry season.

#### ***Area of Western Connection Road***

A total of ten fish species were recorded. Among these, the most significant is Rose Bitterling *Rhodeus ocellatus*, which was found in a semi-natural stream between fish ponds to the south of Lung Hau Road, as well as in one of these ponds connected to the stream. Once common in HK, this species has only been found at two sites recently (Lee *et al.* 2004). The stream and the fish pond to the south of Lung Hau Road thus represent the third site for this species in Hong Kong.

Two individuals of *Somanniathelphusa zanklon*, a species of freshwater crab, were observed in a polluted stream at Chau Tau. This crab species is considered to be endangered by IUCN (2010) and of global conservation concern by Fellowes *et al.* (2002), although it is widespread and fairly common in Hong Kong (AEC unpubl. data).

Other species found in this area are of no conservation concern, and all streams/ channels in the area are polluted. Other water bodies observed in this area are mainly fish ponds.

#### ***Hoo Hok Wai***

Only six fish species were observed in HHW area. Although Chan (2001) considered that the status of Paradise Fish is “conservation dependent”, it appears to be widespread in HK, including in protected areas (AFCD *in litt.*). Several Paradise Fish were observed in a stream flowing from Ping Hang, along the Border Fence Road.

A single *Somanniathelphusa zanklon* was observed in another stream along the same road. Although only observed in one stream, other streams in this area are likely to provide suitable conditions for this species.

Streams located along the Boundary Fence Road are largely natural and relatively free of pollution. They provide freshwater to the LMC Meander and also constitute habitats for species of conservation concern (i.e. *Somanniathelphusa zanklon*); thus, these water bodies are of conservation importance.

No aquatic fauna were observed or captured in the marshes of Hoo Hok Wai.

#### ***Tse Koo Hang and Ma Tso Lung***

Only eight fish species were observed and most are exotic. *Nicholsicypris normalis*, a fish species usually found in eastern Hong Kong (Lee *et al.* 2004), was observed in Tse Koo Hang Stream. Although this species is fairly common in Hong Kong, this finding is of some significance.

Although Ma Tso Lung Stream is moderately polluted (especially in the dry season when water flow is low), it still contains habitats for species of conservation concern. For instance, *Somanniathelphusa zanklon* was recorded, while the most significant record was that of a Three-banded Box Terrapin *Cuora trifasciata*, which is of very high conservation concern, during surveys for the NENT NDA PES. Two Small Snakeheads were observed in a tributary of Ma Tso Lung Stream. This species is considered to be of local concern (Fellowes *et al.* 2002) and uncommon in the wild (Lee *et al.* 2004).

## Shenzhen River

Only Red-eared Slider, *Trachemys scripta*, was observed in surveys of the Shenzhen River. Aquatic fauna observed in this channel during surveys for other fauna comprised Mosquito Fish *Gambusia affinis*, North African Catfish *Clarias gareipinus* and Nile Tilapia *Oreochromis niloticus*. All these are exotic and of no conservation importance. Water quality of Shenzhen River is very poor and unsuitable for aquatic fauna in general.

**Table A12-23** Maximum counts of aquatic fauna in different areas. WCR = Western Connection Road

Scientific Name	Common Name	Conservation Status	LMC Meander	Area of WCR	HHW	Tse Koo Hang and Ma Tso Lung
<b>Fish</b>						
<i>Carassius auratus</i>	Edible Goldfish 鯽魚	-	1	2	0	1
<i>Ctenopharyngodon idellus</i>	Grass Carp 草魚	-	1	0	0	0
<i>Hemiculter leucisculus</i>	Wild Carp 藍刀	-	50	0	0	1
<i>Nicholsicypris normalis</i>	Freshwater Minnow 擬細鯽	-	0	0	0	15
<i>Rhodeus ocellatus</i>	Rose Bitterling 高體鱗鯉	Local Concern (Fellowes <i>et al.</i> 2002); Rare in Hong Kong (Lee <i>et al.</i> 2004)	0	30	0	0
<i>Gambusia affinis</i>	Mosquito Fish 食蚊魚	-	30	100+	0	30
<i>Monopterus albus</i>	Swampy Eel 黃鱝	-	0	0	2	0
<i>Puntius semifasciolatus</i>	Chinese Barb 條紋小	-	0	0	0	100+
<i>Anabas testudineus</i>	Climbing Perch 攀鱸	-	0	1	0	0
<i>Clarias fuscus</i>	White-spotted Walking Catfish 塘虱	-	0	10	0	0
<i>Clarias gareipinus</i>	North African Catfish 北非塘虱	-	30	0	0	1
<i>Oreochromis niloticus</i>	Nile Tilapia 尼羅口孵非鯽	-	100+	100+	20	100+
<i>Tilapia zillii</i>	Redbelly Tilapia 齊氏非鯽	-	100+	50	0	0
<i>Rhinogobius giurinus</i>	Barcheek Goby 子陵吻鰕虎	-	1	30	2	0
<i>Channa asiatica</i>	Small Snakehead 月鯉	Local Concern (Fellowes <i>et al.</i> 2002); Uncommon in the wild (Lee <i>et al.</i> 2004)	0	0	0	2
<i>Channa gachua</i>	Dwarf Snakehead 南鯉	-	0	2	1	100+
<i>Channa striata</i>	Snakehead Murrel 線鯉	-	2	10	1	0

Scientific Name	Common Name	Conservation Status	LMC Meander	Area of WCR	HHW	Tse Koo Hang and Ma Tso Lung
<i>Macropodus opercularis</i>	Paradise Fish 叉尾鬥魚	-	0	0	10	0
<b>Insect</b>						
Chironomidae sp.	Blood Worm 蠓的幼蟲	-	0	100+	0	0
Coenagrionidae sp.	Damselfly (Nymph) 螳的幼體	-	20	0	10	50
Libellulidae sp.	Dragonfly (Nymph) 蜻蜓幼體	-	0	0	0	50
<i>Orthetrum</i> spp.	Skimmer (Nymph) 灰蜻幼體	-	0	0	10	0
<b>Crustacean</b>						
<i>Caridina cantonensis</i>	Atyid Shrimp 廣東米蝦	-	0	0	20	20
<i>Macrobrachium nipponense</i>	Long-armed Shrimp 日本沼蝦	-	100+	0	30	1
<i>Somaniathelphusa zanklon</i>	Freshwater Crab 鎌刀束腰蟹	Endangered (IUCN 2010)	0	2	1	2
<b>Molluscus</b>						
<i>Melanoides tuberculata</i>	Snail 淡水螺	-	100+	100+	100+	100+
<i>Physa acuta</i>	Snail 淡水螺	-	0	100+	0	0
<i>Pomacea canaliculata</i>	Apple Snail 福壽螺	-	100+	100+	100+	60
<i>Sinotaia quadrata</i>	Snail 淡水螺	-	100+	100+	100+	0