



# Hong Kong Biodiversity

Agriculture, Fisheries and Conservation Department Newsletter

## Issue No. 4 January 2003

### From the Editor

One of the most common and difficult situations we face in our work is giving advice to individuals or organizations about the ecological and conservation value of sites.

Whether or not a site is ecologically important if, say, *N* species of one group of animals has been recorded there, is difficult to answer without detailed and comprehensive information on the status, distribution and abundance of members of that particular species group throughout Hong Kong.

As conservation professionals, we are expected to answer such questions straight away. Yet comprehensive information often has not yet been collected, compiled or analyzed – and so the essential data is not readily available. You have probably been asked a similar question – or, if you haven't yet faced this situation, you are lucky!

The articles in this collection help to fill some gaps in our knowledge. In our feature article, *Butterflies of Hong Kong*, members of the Butterfly Working Group, after summarizing their preliminary findings, propose a 'preliminary' yardstick of 52 butterfly species for determining whether a site is ecologically important for butterflies. I hope this figure will assist your work, such as vetting EIA reports, commenting on planning applications, or selecting sites for enhanced protection. Of course, professional judgment still has to be exercised in using this figure on a case by case basis. The figure will also be revised when more data are collected.

This issue also has articles and notes from members of other working groups, including an introduction of freshwater fishes of conservation value in Hong Kong and a short report on a constructed wetland in Taiwan.

P.M. So

### Contents

	page
From the Editor	1
<b>What's New:</b>	
Biodiversity Seminars	1
Biodiversity Information Centre	1
<b>Feature Article:</b>	
Butterflies of Hong Kong	2
<b>Working Group Columns:</b>	
Satellite Tracking of the Post-nesting Migration of a Green Turtle <i>Chelonia mydas</i> from Hong Kong	5
具保育價值的淡水魚類 (Freshwater Fish of Conservation Value, in Chinese)	7
Constructed Wetland for Freshwater Fish Conservation	10
Raptors of Hong Kong	11

### What's New

#### Biodiversity Information Centre

A trial version of the Biodiversity Information Centre, an intranet website for sharing information related to the Biodiversity Survey Programme, has been set up and is open for comments. The website aims to provide a framework where working groups may share their findings with other colleagues. Other information includes photos, species checklists and fact sheets, circulars from bureaux and departments, and links to websites related to nature conservation. You are most welcome to visit:

<http://gisweb:8031>

The site is accessible from all networked computers in AFCD headquarters. Your comments and suggestions for additional information would be much appreciated.

#### Seminar on Biodiversity Survey Programme, 21 January 2003

A seminar on the Biodiversity Survey Programme was held on 21 January 2003. At the seminar all working groups had the chance to share their experiences and report findings from the Biodiversity Survey Programme during 2002.

Eric Liu

## Feature Article

### Butterflies of Hong Kong

Eric Wong, PC Leung, Phoebe Sze, Alfred Wong  
Butterfly Working Group

曾在本港記錄的蝴蝶有十科共 233 種，其中較受關注的有裳鳳蝶、金裳鳳蝶、紅珠鳳蝶、燕鳳蝶和紅鋸蛺蝶。本文介紹了一些蝴蝶的主要生境，並嘗試利用物種數量作為評估生態價值的準則。

#### Introduction

Hong Kong lies on the south coast of Mainland China and has close geographical connections with Guangdong Province. As with many other flora and fauna, Hong Kong shares its butterfly species assemblages with those of the South China region.

In spite of its small size, Hong Kong has a peak record of 247 butterfly species. Among them, 14 species are considered as vagrant or have no recent records. After removing these 14 species, the checklist of butterflies in Hong Kong has 233 species, including two species newly recorded by AFCD in 2002. This is a surprisingly high number, especially when compared with the 1,223 species in China (Chou, 1994), 85 in Macau (Easton and Pun, 1999), or 377 in Taiwan (李俊延及王效嶽, 2002).

#### Hong Kong Butterfly Families

There are 17 butterfly families in the world, of which 12 are found in China (Chou, 1994). Treating Acraeidae as a separate family, Hong Kong has 10 butterfly families (Table 1).

#### Some Species of Interest

**Common Birdwing and Golden Birdwing:** Described as uncommon species, Common Birdwing (裳鳳蝶 *Troides helena*) and Golden Birdwing (金裳鳳蝶 *T. aeacus*) are the largest butterflies in Hong Kong. They share similar habits and are generally restricted to localities where the larval food plant Indian Birthwort (印度馬兜鈴 *Aristolochia tagala*), a climber that grows in woodland, is found. Both species have



Common Rose 紅珠鳳蝶 *Pachliopta aristolochiae*

been recorded in Shan Liu, Tong Fuk and at AFCD's Tai Lung Experimental Station. Sighting records suggest that Common Birdwing has a wider distribution than Golden Birdwing. The former has also been seen in Tai Tam Country Park, Fung Yuen Valley and Po Lo Che.

Common Birdwing is protected under the Wild Animals Protection Ordinance, Cap. 170 and all Birdwings (*Troides spp.*) are listed under Schedule 1 to the Animals and Plants (Protection of Endangered Species) Ordinance, Cap. 187, to regulate the trading and possession of these butterflies. In addition, Indian Birthwort is protected under the Forestry Regulations of the Forests and Countryside Ordinance, Cap. 96.

**Common Rose:** *Pachliopta aristolochiae* (紅珠鳳蝶) is a Swallowtail (family Papilionidae) found mainly in well-vegetated valleys. It was common in the 1960s but is now regarded as uncommon. It appears sporadically. In years of abundance, it can be found in relatively large number at localities with its larval food plants, but it may be completely absent in other years. Key sites include Ngong Ping, Fung Yuen Valley and Po Lo Che. The larvae feed on Indian Birthwort and Ford's Birthwort (福氏馬兜鈴 *A. fordiana*).

**White Dragontail:** *Lamproptera curius* (燕鳳蝶) is the smallest Swallowtail seen in Hong Kong. Its characteristic dragonfly-like flying style, transparent wing patterns and tailed hind wings distinguish it from other butterflies. The butterfly has a close association with its larval food plant Illigera (寬藥青藤 *Illigera celebica*), which is protected under the Forestry Regulations of the Forests



Common Birdwing 裳鳳蝶 *Troides helena*



White Dragontail 燕鳳蝶 *Lamproptera curius*



Golden Birdwing 金裳鳳蝶 *Troides aeacus*

**Table 1** Number and status of the species, their preferred habitats and local examples of the ten butterfly families in Hong Kong

Family	No. of Species	Status			Preferred habitat	Local Example
		C	UC	R		
Acraeidae 珍蝶科	1	0	0	1	Abandoned agricultural fields	<i>Acraea issoria</i> 苧麻珍蝶
Amathusiidae 環蝶科	2	2	0	0	Shaded woodlands	<i>Faunis eumeus</i> 串珠環蝶
Danaidae 斑蝶科	12	6	4	2	Open woodlands and scrublands	<i>Euploea core</i> 幻紫斑蝶 <i>Ideopsis similis</i> 擬旖斑蝶
Hesperiidae 弄蝶科	54	15	23	16	Grasslands and agricultural fields	<i>Astictopterus jama</i> 腌翅弄蝶 <i>Tagiades litigiousus</i> 沾邊裙弄蝶
Lycaenidae 灰蝶科	51	14	17	20	Grasslands and agricultural fields	<i>Chilades lajus</i> 紫灰蝶 <i>Zizeeria maha</i> 酢漿灰蝶
Nymphalidae 蛺蝶科	50	21	17	12	Various habitats	<i>Neptis hylas</i> 中環蛺蝶 <i>Charaxes bernardus</i> 白帶螯蛺蝶
Papilionidae 鳳蝶科	21	11	6	4	Open woodlands and scrublands	<i>Papilio paris</i> 巴黎翠鳳蝶 <i>Graphium sarpedon</i> 青鳳蝶
Pieridae 粉蝶科	22	7	9	6	Grasslands and agricultural fields	<i>Delias pasithoe</i> 報喜斑粉蝶 <i>Pieris canidia</i> 東方菜粉蝶
Riodinidae 蛻蝶科	3	2	1	0	Scrublands	<i>Abisara echerius</i> 蛇目褐蛻蝶
Satyridae 眼蝶科	17	9	2	6	Shaded woodlands	<i>Melanitis leda</i> 暮眼蝶 <i>Mycalesis mineus</i> 小眉眼蝶
Total	233	87	79	67		

C = common, UC = uncommon, R = rare (adopted and modified from Young and Yiu, 2002)

and Countryside Ordinance, Cap. 96. Although considered an uncommon species in Hong Kong, White Dragontail has relatively stable populations in Fung Yuen Valley and Po Lo Che.

**Red Lacewing:** *Cethosia biblis* (紅鋸蛺蝶) is a locally rare species whose larvae feed on a vine of restricted distribution, *Passiflora moluccana* (蛇王藤). The species used to have a wider distribution. During the 1960-70s, it lived widely across the New Territories and has been recorded on Hong Kong Island, including Stanley (Marsh, 1960). Today it is mostly restricted to scrublands in the coastal areas of the north-west New Territories, such as Lung Kwu Tan and some outlying islands like Lung Kwu Chau and Pui O. Lung Kwu Tan and Po Toi are the key sites of the butterfly.

### Key Butterfly Sites

**Fung Yuen Valley:** Designated as a Site of Special Scientific Interest (SSSI) in 1980, Fung Yuen Valley is a forested ravine behind the village of Fung Yuen. This SSSI is recognized as an important breeding site for some uncommon butterflies, such as Common Birdwing and White Dragontail. Despite being located along the urban fringe, more than half of the Hong Kong butterfly species have been recorded here (Young & Yiu, 2002).

**Wu Kau Tang and Lai Chi Wo:** Partly within the Plover Cove Country Park, these two sites and the areas between them cover a variety of different habitats including woodlands, scrublands, abandoned agricultural fields and coastal areas. Some uncommon Blues (family Lycaenidae) and Skippers (family Hesperiidae) such as Club Silverline (豆粒銀線灰蝶 *Spindasis syama*), Plains

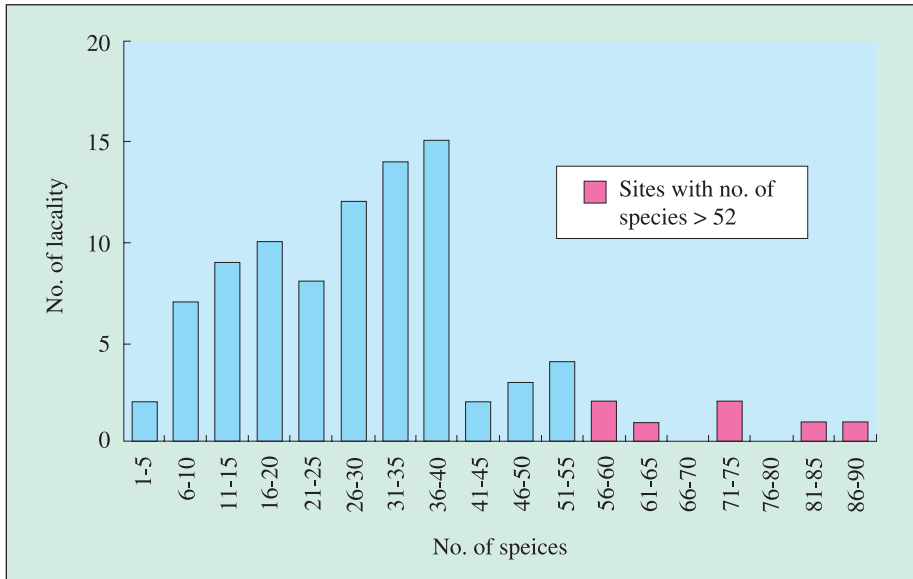
Cupid (曲紋紫灰蝶 *Chilades pandava*), Common Awl (三斑趾弄蝶 *Hasora badra*) and Great Swift (印度谷弄蝶 *Pelopidas assamensis*) are frequently seen here. In addition, Yellow Coster (苧麻珍蝶 *Acraea issoria*), which is newly recorded in Hong Kong, was recently discovered in abandoned agricultural fields here.

**Tai Po Kau Nature Reserve:** The site is a well-protected woodland with a special assemblage of butterflies. The uncommon Painted Jezebel (優越斑粉蝶 *Delias hyparete*) and the rare Orange Oakleaf (枯葉蛺蝶 *Kallima inachus*) are regularly seen along the shaded footpath. At the Fire Lookout, some uncommon species such as White Commodore (丫紋俳蛺蝶 *Parasarpa dudu*) and Constable (電蛺蝶 *Dichorragia nesimachus*) can be found hill-topping over the tree canopy. Chocolate Mime (褐斑鳳



Red Lacewing 紅鋸蛺蝶 *Cethosia biblis*

**Figure 1** Number of butterfly species recorded per locality.



Crows 斑蝶 aggregating at Siu Lang Shui

蝶 *Chilasa agestor*), another new record of Hong Kong, was discovered at this site.

**Pak Tam Chung:** Within the Sai Kung East Country Park, Pak Tam Chung is a well-vegetated area with high butterfly diversity. Quite a number of uncommon species are found along the footpaths. These include White-banded Flat (匪夷捷弄蝶 *Gerosis phisara*), Tailed Sulphur (檀方粉蝶 *Dercas verhuelli*), Gaudy Baron (紅斑翠蛺蝶 *Euthalia lubentina*) and Muirhead's Labyrinth (蒙鏈蔭眼蝶 *Neope muirheadii*).

**Lung Kwu Tan and Siu Lang Shui:** The *fung shui* woodland and the adjoining scrubland on the hillside in the vicinity of Lung Kwu Tan village are renowned for their diverse butterfly assemblages. The site is also recognised as an important breeding site of the locally rare Red Lacewing. Other uncommon butterflies found here include Striped Blue Crow (異型紫斑蝶 *Euploea mulciber*), Danaid Egg-fly (金斑蛺蝶 *Hypolimnas misippus*), and Plain-banded Awl (緯帶趾弄蝶 *Hasora vitta*).

To the east of Lung Kwu Tan is the Siu Lang Shui closed landfill where public access is restricted. Although the site has been planted almost entirely with exotic species such as *Eucalyptus* and *Acacia*, it is an important overwintering site for Crows and Tigers (family Danaidae), mainly Common Indian Crow (幻紫斑蝶 *Euploea core*) and Blue-spotted Crow (藍點紫斑蝶 *E. midamus*) with small numbers of the uncommon Striped Blue Crow and Dark Blue Tiger (靑青斑蝶 *Tirumala septentrionis*). During the winter of 2001–2002, the Hong Kong Lepidopterists' Society estimated that more than 30,000 Crows aggregated at the site.

Other key sites for butterflies include **Ngong Ping, Po Lo Che, San Tau, Victoria Peak, Tai Tam and Kau Lung Hang Hill.**

## Our Survey and Preliminary Results

In assessing butterfly assemblages, the standard transect count method has been proven practicable in Hong Kong. At each site, we would walk a transect of between 1 to 4 kilometres in length and record the numbers and species of butterflies within 5 m of the

recorder. Because butterfly activities are sensitive to temperature, our surveys were mostly undertaken between March and November, to cover the adult stage of most local species – and daily between 9:30 am and 4:30 pm, when the temperature is generally high enough for butterflies to become active. Records were made only on rainless days. This method has been used widely in monitoring butterflies, including by the UK Butterfly Monitoring Scheme.

Between March and November 2002, we surveyed 93 localities, including 53 wholly or partially inside the protected area system<sup>1</sup> and 40 general sites outside protected areas. Many of the 93 localities surveyed are of medium to low butterfly diversity, but some sites have exceptionally high butterfly diversity (Figure 1). The numbers of butterfly species recorded per locality range from 2 to 89 (Mean = 30.4, 90<sup>th</sup> percentile = 52).

## Preliminary yardstick for assessing conservation value

Detailed and comprehensive information about the distribution and species composition of Hong Kong's butterflies, territory wide, has yet to be collected and analyzed. But based on our field studies to date, we propose adopting the 90<sup>th</sup> percentile as a **preliminary** yardstick to assess the ecological value of sites for butterfly conservation. We will continue to monitor sites with more than 52 species recorded in 1–2 typical surveys. Similarly, special attention will be given to vetting development proposals and planning applications concerning, or in the vicinity of, sites with more than 52 butterfly species. The potential ecological impacts should be prudently assessed for such developments / applications, with special reference to butterfly conservation. This percentile value will be revised when more survey data has been collected in the future.

If the 90<sup>th</sup> percentile value is applied as a yardstick, 7 of the 93 localities surveyed would be considered to

<sup>1</sup> The protected area system includes country parks, special areas, restricted areas and sites of special scientific interest.

**Table 2** Butterfly species of conservation concern\* which are not represented in the protected area system

Species	Level of Concern*	Locality	Remarks
Brown Onyx (白斑灰蝶) <i>Horaga albimacula</i>	Local	Ho Sheung Heung and Lam Tsuen Valley	First recorded in 1976 (Hill, Johnston and Bascombe, 1978). Rare throughout its range. Larvae probably feed on Oblong-leaf Litsea (豺皮樟 <i>Litsea rotundifolia</i> var. <i>oblongifolia</i> ) (Bascombe <i>et al.</i> , 1999).
Lesser Forest Blue (蚬灰蝶) <i>Taraka hamada</i>	Local	Lam Tsuen Valley, Kadoorie Farm and Botanic Garden, Tsung Pak Long	First recorded in 1952 (Hill, Johnston and Bascombe, 1978). Larvae feed on Bamboo and are associated with aphids (Bascombe <i>et al.</i> , 1999).

\* Level of concern as indicated by Fellowes *et al.* (2002).

have high conservation value for butterflies. These sites are Wu Kau Tang (89 species), Pak Tam Chung (82), Lung Kwu Tan (72), Fung Yuen Valley (71), Sha Lo Tung (63), Tai Po Kau (60) and Ngong Ping (57). Among these sites, all except one (Lung Kwu Tan) are protected wholly or partially by the Hong Kong protected area system.

### Protected areas for *in-situ* conservation

Fellowes *et al.* (2002) identified 74 butterfly species of local conservation concern. Based on existing information about their distribution, we have assessed the effectiveness of Hong Kong's protected area system for conserving these 74 species. It was found that 72 of the 74 species have at least one locality inside the protected area system. Only two species, which account less than one percent of the total number of butterfly recorded in Hong Kong, are not represented in our protected areas (Table 2). This clearly demonstrates the importance of the protected areas for *in-situ* conservation of butterflies in Hong Kong.

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## Working Group Column

### Satellite Tracking of the Post-nesting Migration of a Green Turtle *Chelonia mydas* from Hong Kong

Simon Chan

為更有效地存護在本港產卵的綠海龜，本署在一隻綠海龜身上繫上衛星發訊器以追縱其遷徙路線。其後發現該綠海龜沿華南海岸遷徙到海南島萬寧市附近的沿岸淺水區。這是本港首次以衛星追蹤海龜的研究。

#### Introduction

Four species of sea turtles have been recorded in the waters of Hong Kong but only the Green Turtle *Chelonia mydas* (綠海龜) nests locally. The 0.5 hectare beach at Sham Wan, Lamma Island, is now the only site in Hong Kong where a small population of Green Turtles is known to nest regularly.

To protect the nesting turtles, in 1999 the beach at Sham Wan was designated as a Restricted



Figure 2 A satellite transmitter being attached to a female Green Turtle.

Area under the Wild Animals Protection Ordinance (Cap. 170). Entry to the area during the breeding season from June to October is prohibited. Nature Wardens of the Agriculture, Fisheries and Conservation Department (AFCD) patrol the beach regularly during the nesting season.

While dedicated efforts have been put in place for the protection of this population of Green Turtles, there was no information on their migratory pathways or the locations of their resident foraging grounds. The lack of such information makes it difficult if not impossible to offer comprehensive protection to this population of Green Turtles.

This note reports a study by AFCD to track the migratory pathway of a Green Turtle from Sham Wan, and to locate its resident foraging ground. This used the U.S./France Argos satellite-based system.

The study was the first application of satellite telemetry for sea turtle tracking in Hong Kong.

## Results and Discussion

On 9 August 2002, after laying the final clutch of her eggs for the season, a female Green Turtle measuring 100cm in straight carapace length was temporarily captured to allow the attachment of a satellite transmitter (ST-2400 PTT, Telonics Inc.) (Figure 2). The turtle was released the same day, after the transmitter had been safely attached to the carapace (Figure 3).

After release, the turtle immediately headed offshore and began its migration some 80 km offshore along the coastline of South China. It travelled at an average speed of 1.5 to 2 km/hr, until reaching Qiongzhou Gulf (瓊州海峽) off Hainan Island, about 10 days later. From Qiongzhou Gulf the turtle changed its migratory behaviour. It travelled at a slower speed, about 0.5 km/hr, staying close to the coastline and finally arrived at the shallow coastal waters off Wanning City (萬寧市), Hainan Island – about 500km away from Hong Kong (Figure 4).

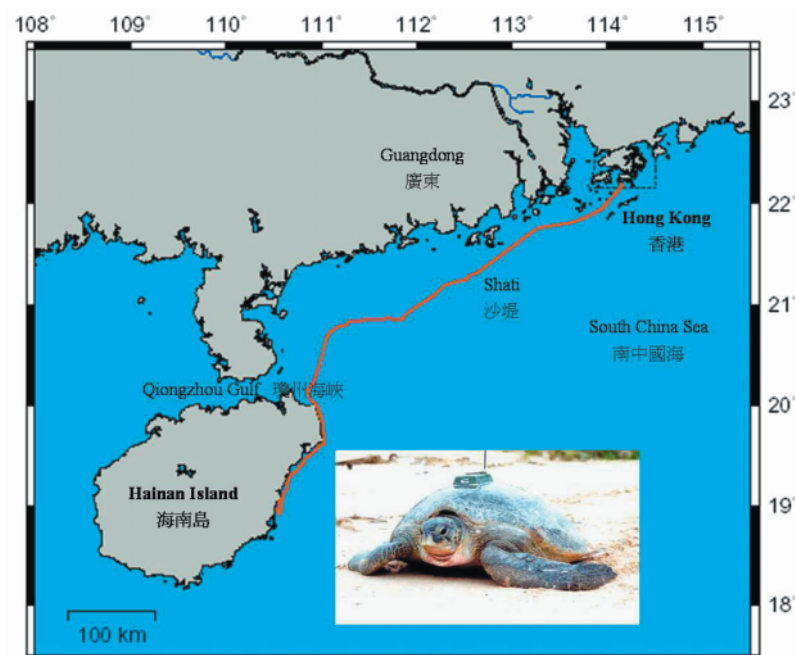


Figure 4 The migratory pathway of a Green Turtle from Hong Kong.

The Green Turtle stopped migrating on 30 August 2002. Satellite data showed that, from then on, the female usually moved within a range of two to three kilometres around the resident foraging ground. In late December 2002, about five months after its attachment, the transmitter was still sending out signals which indicated that the turtle remained foraging near Wanning City.

Studies in the South China region indicate that post-nesting females have more than one migratory pathway and foraging ground. Song *et al.* (2002) found that nesting females from Gangkou National Nature Reserve for Sea Turtles, in Huidong, either travelled along the South China coastline or out towards open waters. Their foraging grounds were found to be the shallow waters around Hainan Island or near Okinawa Island, Japan. Turtles from Taiwan showed a more diverse migratory pattern, and their foraging grounds included Taiwan itself, Hainan Island, the Ryukyu Archipelago and other areas of coastal Japan (Cheng, 2000).

The post-nesting migratory pathways and the resident foraging grounds for the Hong Kong population of Green Turtles were unknown until now. However, as only a single individual was tracked in this study, it is impossible to know whether other individuals of the local population would have the same or different migratory pathways and foraging grounds. Nevertheless, this study revealed that the South China coastline and Hainan Island were at least one (or possibly the only one) of their migratory pathways and foraging grounds. Further studies involving more individuals nesting in Hong Kong would be required to find out if other individuals would take the same migratory pathway and utilize Hainan Island as their foraging ground. Such information will be important in terms of gene exchange between turtles from Sham Wan and other populations of Green Turtles in South China region.

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Figure 3 The female Green Turtle, with a satellite transmitter attached to its carapace.

## 具保育價值的淡水魚類

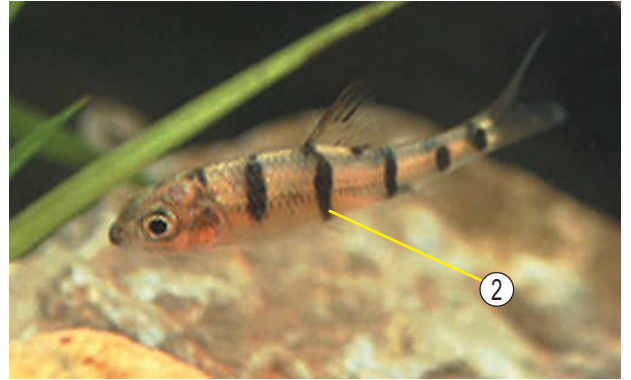
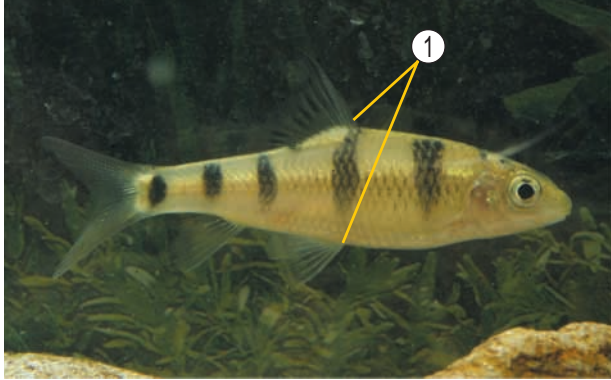
淡水魚類工作小組 李麗芬

過去兩年，我們在全港的郊野公園進行了淡水魚的基線普查。承蒙各郊野公園管理站同事的協助，我們對郊野公園內淡水魚的種類、數量和分佈，已掌握了初步

的資料。唯有些同事向我們反映在辨認一些外表較相似的品種時，遇到一定的困難。以下列舉了一些具保育價值而較難辨別的淡水魚類，供各同事參考。如仍有疑問或困難，可取少量標本，交淡水魚專家小組成員鑑定。

如你發現這些具保育價值的淡水魚的蹤影，歡迎致電21507144或電郵致lf\_lee@afcd.gov.hk與淡水魚類工作小組聯絡。

### ● 北江光唇魚 *Acrossocheilus beijiangensis* 最大體長: 14 厘米



### ● 側條光唇魚 *Acrossocheilus parallens* 最大體長: 15 厘米



**生境：**生活於水流湍急、清澈、底層多沙粒礫石的溪流。

**相同特徵：**北江光唇魚與側條光唇魚在體形上極為相似。兩者沿口角有兩對觸鬚，身體延長；背部稍隆起，腹圓無稜。腹鰭起點與背鰭起點相約<sup>(1)</sup>，尾鰭深叉形。

**分辨特徵：**最直接分辨這兩尾魚就是從其體側上黑色直間的數目。北江光唇魚體側有 5 條粗黑色垂直條紋<sup>(2)</sup>，而側條光唇魚具 6-7 條較幼的黑色直間<sup>(3)</sup>。除此之外，前者背側呈淺金黃色，腹部銀白色；後者背側為灰黑色，腹部灰白；沿體側中軸有一不明顯縱帶。

### ● 香港黑鬥魚 (黑鬥魚、鵬枇婆) *Macropodus hongkongensis* 最大體長: 10 厘米



**生境：**棲息於水流緩慢的池塘、荒田及沼澤。成魚亦可居於山澗溪流。它們喜歡在水草多的水面附近活動，雄魚能吐泡沫於水草上作巢產卵。

**特徵：**身體呈長卵形而側扁。背鰭及腹鰭基長，後部鰭條延長；尾鰭深叉形。

**近似品種：**叉尾鬥魚

## 叉尾鬥魚 (中國鬥魚、鵬批婆)

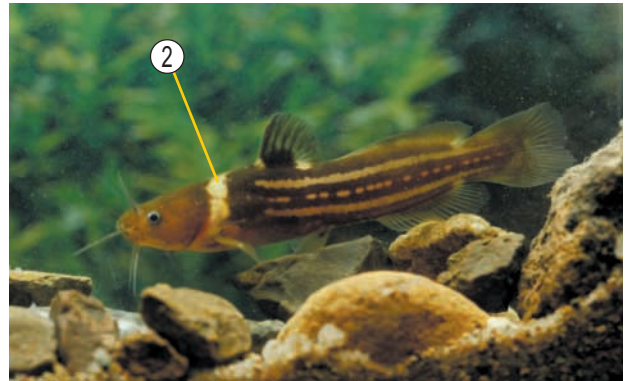
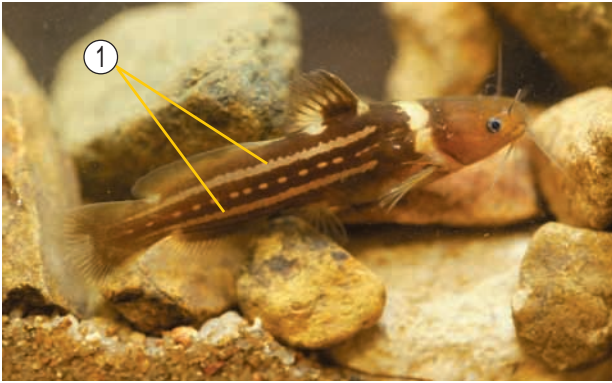
*Macropodus opercularis* (Paradise Fish)

**分辨特徵：**香港黑鬥魚和叉尾鬥魚可靠身體顏色分辨出來。香港黑鬥魚體色暗黑或深灰，體側有數條深色橫帶。背鰭、腹鰭及尾鰭邊緣紅色，腹鰭第一鰭條為白色。鰓蓋後上方有一黃褐色圓點。叉尾鬥魚體身主要為棕紅及金藍色，體側有十多條藍綠色橫帶，橫帶之間為淺紅色。鰓蓋後上方有一暗藍綠色圓斑。腹鰭後半部之軟條和尾鰭為紅色<sup>(1)</sup>。

● 三線擬鱨 *Pseudobagrus trilineatus* 最大體長: 15 厘米

**生境：**棲息於水流緩慢的溪流、水潭、池塘及沼澤。

**特徵：**頭大扁平，體粗壯、側扁；無鱗片。長有4對頗長觸鬚。第二背鰭及腹鰭鰭基頗長，尾鰭略圓。



**身體顏色：**身體黃褐色；腹鰭和尾鰭淡白色至透明。體側有數條暗黃色短縱帶紋成虛線狀，在其上下方各有一條實綫紋<sup>(1)</sup>。「頸部」有一黃褐色「頸環」<sup>(2)</sup>。

● 弓背青鱒 (米魚) *Oryzias curvinotus* (Rice Fish) 最大體長: 4 厘米

**生境：**棲息於水稻田，水潭、水塘及流速緩慢的溪流。

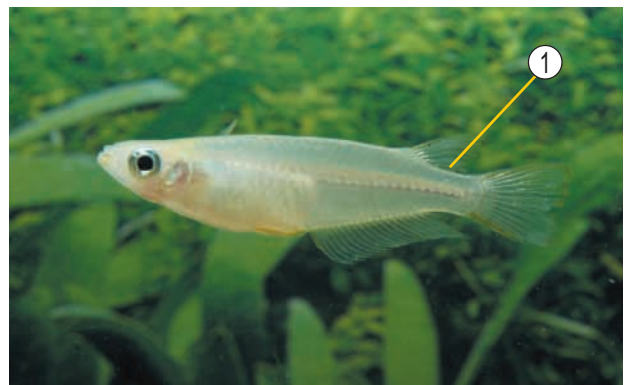
**特徵：**體形細小延長，側扁。頭及體背平直，胸部圓凸。

**近似品種：**食蚊魚

**分辨特徵：**弓背青鱒與食蚊魚外形上最大的分別在於背鰭起點的位置及身體顏色。弓背青鱒的背鰭位於體後部(接近尾鰭)<sup>(1)</sup>，較臀鰭基短，尾鰭平。食蚊魚的背鰭位於臀鰭後方，長度相約，尾鰭圓形。另外弓背青鱒的背部為淡黃色，體側與腹部銀白色，體旁有一道暗灰條。而食蚊魚的背部暗灰色，側端黃色，腹部白色；每片鱗片均有黑邊。



## 食蚊魚 (大肚魚、山坑魚)

*Gambusia affinis* (Mosquito Fish)



● 高體鰱魮 (牛屎鯽、鬼打扁) *Rhodeus ocellatus* (Rose Bitterling) 最大體長: 9 厘米

生境：居於水潭和水塘中，也見於泥沙較多、水流緩慢的河溪。雌魚會在淡水蚌（二枚貝）的鰓瓣中作巢產卵。

特徵：身體側扁而薄，呈橢圓形；背部隆起。頭細，口小而無觸鬚。側線不完全。

身體顏色：體色為銀色及淡橙紅色，身體後半部至尾柄中央有一條藍綠色縱帶。



### 雌魚辨別

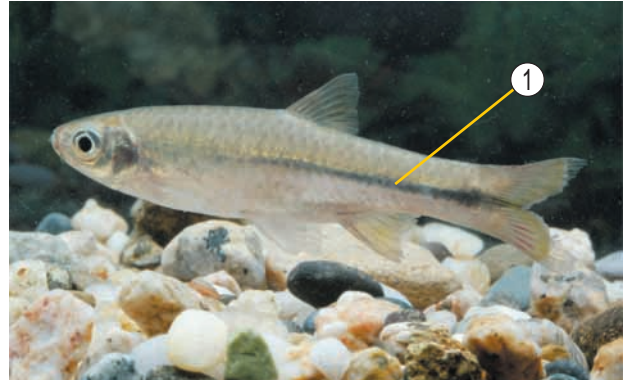
幼魚在背鰭後方長有黑點，成魚則漸退。在繁殖季節時候，肛門後端長出細長之紅色產卵管<sup>(1)</sup>。



### 雄魚辨別

背呈淺藍綠色，頭頂及背鰭根部閃綠色；尾柄上有一紅斑<sup>(2)</sup>。繁殖季節時體色特別鮮艷，眼睛周圍紅色。

● 斯氏波魚 (頭條波魚) *Rasbora steineri* (Chinese Rasbora) 最大體長: 8 厘米



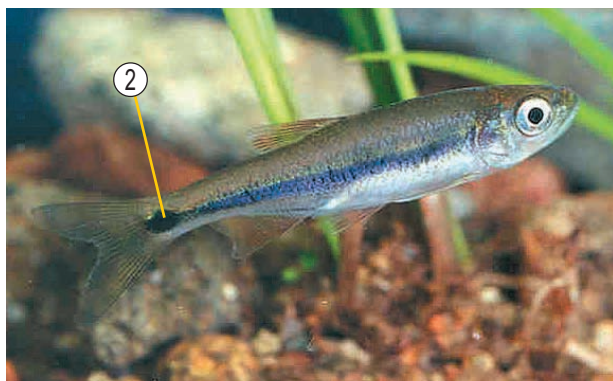
生境：棲息於山溪及沙質小石底層的溪澗下游。

特徵：軀體扁長，側扁，呈流線形。頭尖，口裂微微向上斜裂。體被大圓鱗。

近似品種：異鱧

分辨特徵：斯氏波魚與異鱧的幼魚頗為相似。斯氏波魚體側有一寬縱黑帶從鰓蓋後方一直伸展至尾柄端，末端無黑斑<sup>(1)</sup>。異鱧的幼魚體側有一條深藍線由鰓蓋伸展至尾柄，尾鰭基部有一深黑色斑點<sup>(2)</sup>。另外，斯氏波魚身體上的鱗片亦較異鱧的為大。

### 異鱧 (餓鬼) *Parazacco spilurus* (Predaceous Chub)



## Constructed Wetland for Freshwater Fish Conservation

P.M. So

台北動物園成功地將高體鯿鰕和青鱒引入一片人工濕地中，為這兩種淡水魚類提供安全的生境。香港或可以此為借鏡，針對個別受關注的魚類的需要，在郊野公園範圍內製造適合的人工濕地，並在其中建立穩定的淡水魚族群，有效地存護這些淡水魚類。

In August 2002, I attended an APEC Workshop on safety assessments for agricultural biotechnology in Taipei. While immersed in the workshop theme, protecting biodiversity against potential impacts of genetically modified organisms, I took the opportunity to also pursue a related area of my work. During the weekend break I visited the Taipei Zoo to see if there is anything relevant to the Hong Kong ecological survey programme.

Besides normal zoo animals and visitor facilities, I found a newly completed artificial wetland. About half a hectare in size, it was sited on a hill slope near an access road inside the zoo.

The wetland was created by re-directing water from a nearby stream into an artificial stream course (boulder bottom with impermeable lining underneath) and over an artificial cliff which created a waterfall. The water dropped into a water body impounded by a wall of concrete and reinforced glass, about 2m high (Figures 5 and 6).

There was a boardwalk on one side of the wetland and a "hidden" pumping room on the other. The waterfall overlooked the wetland and fed the wetland with aerated water. The water depth varied, with the deepest parts being about 1.5 metres. Reeds, sedges, water lily and other water or bankside species were planted to simulate a pond environment (Figure 7).

What interested me most were the large populations of Rose Bitterling *Rhodeus ocellatus* (高體鯿鰕) and Ricefish *Oryzias* sp. (米魚) in the water. Since neither species is found in the upper reaches of streams like the one providing water to the wetland, it seems unlikely that the fish could have colonized the artificial wetland naturally.

A keeper of the Zoo later confirmed this. He told me that the fish were introduced to safeguard their species, by establishing sustainable populations in a secure habitat. Guided tours to the wetland will be



Figure 7 A simulated bankside pond environment.



Figure 5 Overview of the artificial wetland at the Taipei Zoo.



Figure 6 Concrete and reinforced glass wall of the artificial wetland.

conducted for visitors, as part of the zoo's conservation education programme.

In Hong Kong, Rose Bitterling and Ricefish (the local species is *O. curvinotus* 弓背青鱒) occur naturally but are uncommon.

Rose Bitterling is restricted to a few localities with still water and sandy bottom in the central New Territories. The species depends on its egg host freshwater mussel *Anodonta woodiana* (二枚貝) for breeding. Both the fish and mussels are sensitive to water pollution (Lam, 2002).

Ricefish can be found in isolated places in Sai Kung, North District and on Lantau (Lam, 2002). This species is commonly found in waterlogged agricultural land (in particular paddy field), which is becoming scarce in Hong Kong. It is also believed that Ricefish are being locally challenged by the exotic Mosquito Fish *Gambusia affinis* (食蚊魚) at a number of localities.

The Freshwater Fish Working Group is now drafting species action plans for these two species. One option under consideration is to establish new viable populations at suitable sites within the protected area system in Hong Kong. To better manage the conservation of freshwater fish, we should perhaps consider conducting trials on the effectiveness of artificial wetlands in the country parks for freshwater fish. Facilities may also be provided in such wetlands for photo taking and guided interpretative tours. These are in line with the objectives of managing our country parks for nature conservation, outdoor recreation and countryside education.

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Lam, K.S., 2002. *Freshwater Fish in Hong Kong*. Agriculture, Fisheries and Conservation Department. Friends of the Country Parks. Cosmos Books Ltd., 76pp.

## Raptors of Hong Kong

Chow Ka-lai, Bird Working Group

曾在香港有記錄的26種猛禽中，多數為冬季季候鳥或途徑本港的遷徙鳥。其中，較常見的有麻鷹、白腹海鵰、普通鵟、鵟等。本文簡述香港猛禽的狀況。

Raptor is the collective description for Falconiformes, birds which are characterized by a hooked bill, sharp, curved claws and also powerful legs and feet. Among the 26 species of raptor recorded in Hong Kong, the majority are winter visitors or passage migrants. Located on a major bird migration route, Hong Kong is a good locality to observe migratory raptors.

Table 3 lists all the 26 local raptors and their conservation status. Further information on some of them is given in the following paragraphs.

Hong Kong's most common and best known raptor is Black Kite (黑鷹/麻鷹) *Milvus migrans*. In Hong Kong, Black Kites cover a wide range of habitat including offshore islands, coastal areas, fishponds, reservoirs, landfills and grassy hillsides. The most important roosting sites of the wintering population are Magazine Gap (馬己仙峽) and on Stonecutters Island (昂船洲). Around 30 pairs of resident Black Kites breed in Hong Kong, and the wintering population can reach 2,000 between December and January.

Another celebrated raptor, White-bellied Sea Eagle (白腹海鵰) *Haliaeetus leucogaster*, is a specialist in coastal areas and offshore islands. There are about five pairs of White-bellied Sea Eagle adults and about 11 solitary individuals in Hong Kong. The males and females usually form permanent pairs, building nests on trees or on sheltered rocky ledges above cliffs. The nests are used for several years. Well-known and regularly monitored nesting sites in Hong Kong are Pa Tau Kwu (扒頭鼓), Green Island (青洲), Yeung Chau (羊洲), Sham Chung (深涌) and Bluff Head (黃麻角).

Crested Serpent Eagle (蛇鵰) *Spilornis cheela* and Bonelli's Eagle (白腹山鵰) *Hieraetus fasciatus* are both uncommon Hong Kong resident birds. In China the Red Data Book lists them as vulnerable or rare. Their population in Hong Kong has increased, but their breeding status is still little known.



Osprey 鵟/魚鷹 *Pandion haliaetus*



Black Kite 黑鷹/麻鷹 *Milvus migrans*

Raptor winter visitors usually start arriving here from October, and occasionally as early as September. Large raptors such as *Aquila sp.* and *Circus sp.* are frequently sighted in the Inner Deep Bay area and its adjacent marshes, fishponds and hillsides. Eastern Marsh Harrier (白腹鵞) *Circus spilonotus*, Common Buzzard (普通鵟) *Buteo buteo* and Osprey (鵟) *Pandion haliaetus* are among the commonest winter visitors. Another two regularly sighted raptors, Greater Spotted Eagle (烏鵰) *Aquila clanga* and Imperial Eagle (白肩鵰) *Aquila heliaca* are listed in IUCN red list as vulnerable species with a declining worldwide population. Eurasian Black Vulture (禿鵟) *Aegypius monachus*, another raptor listed in IUCN red list, is an occasional visitor and is the largest raptor recorded in Hong Kong.

Apart from the open areas, Hong Kong's secondary forests also host several species of raptor, including the uncommon residents Crested Goshawk (鳳頭鷹) *Accipiter trivirgatus* and Besra (松雀鷹) *Accipiter virgatus*. Crested Goshawk is a woodland specialist and Besra can be found utilizing woodland, marshes, fishponds, mangroves and agricultural land. During autumn and spring, several species of passage migrants such as Grey-faced Buzzard (灰臉鵟) *Butastur indicus*, Chinese Goshawk (赤腹鷹) *Accipiter soloensis* and Japanese Sparrowhawk (日本松雀鷹) *Accipiter gularis*, sometimes in flocks of several dozen, can be sighted. They usually occur in spring from April to May, and in autumn from October to November.

Another family of raptors in Hong Kong, Falconidae, is characterized by pointed wings, strong hooked bills, sharp curved talons and great powers of flight and sight. Four species had been recorded in Hong Kong, namely Peregrine Falcon (遊隼) *Falco peregrinus*, Eurasian Hobby (燕隼) *Falco subbuteo*, Common Kestrel (紅隼) *Falco tinnunculus* and Amur Falcon (紅腳隼) *Falco amurensis*. Except for a small resident population of Peregrine Falcons and Kestrels, these birds are mainly winter visitors in Hong Kong. They occur in widespread area, utilizing a variety of open habitats in both rural and urban area. Race *streichi* of Eurasian Hobby occurs in Southern China and winters as far south as Burma, passing Hong Kong annually in autumn and spring. Amur Falcon, an extraordinary migratory species, travels from East Asia to South Africa for wintering. It was firstly recorded in 2000 and added to the checklist of Hong Kong birds.

**Table 1 List of Hong Kong Raptors**

Species Name	Common Name	Chinese Name	Status	Conservation Status*			Habitat in Hong Kong
				1	2	3	
<i>Accipiter gularis</i>	Japanese Sparrowhawk	日本松雀鷹	M	-	-	-	Wooded area
<i>Accipiter nisus</i>	Eurasian Sparrowhawk	雀鷹	W	-	-	-	Wooded area
<i>Accipiter soloensis</i>	Chinese Goshawk	赤腹鷹	SpM	-	-	-	Wooded area
<i>Accipiter trivirgatus</i>	Crested Goshawk	鳳頭鷹	R	-	R	-	Wooded area
<i>Accipiter virgatus</i>	Besra	松雀鷹	R	-	-	-	Wooded area
<i>Aegypius monachus</i>	Eurasian Black Vulture	禿鷲	W	-	V	LR/nt	Wooded area
<i>Aquila clanga</i>	Greater Spotted Eagle	烏鵂	W	VU	R	GC	Open area
<i>Aquila heliaca</i>	Imperial Eagle	白肩鵂	W	VU	V	GC	Open area
<i>Aviceda leuphotes</i>	Black Baza	黑冠鵂隼	M, Su	-	-	-	Forest
<i>Butastur indicus</i>	Grey-faced Buzzard	灰臉鵂鷹	SpM	-	R	-	Wooded areas
<i>Buteo buteo</i>	Common Buzzard	普通鵂	W	-	-	-	Open area
<i>Circus melanoleucos</i>	Pied Harrier	鵂鵂	AM	-	-	LC	Open ground
<i>Circus spilonotus</i>	Eastern Marsh Harrier	白腹鵂	W	-	-	LC	Marsh
<i>Elanus caeruleus</i>	Black-winged Kite	黑翅鵂	O	-	V	-	Open ground
<i>Falco amurensis</i>	Amur Falcon	紅腳隼	----	-	-	-	Open wooded zones
<i>Falco peregrinus</i>	Peregrine Falcon	遊隼	R, W	-	-	-	Variable
<i>Falco subbuteo</i>	Eurasian Hobby	燕隼	M, Su	-	-	(LC)	Open wooded area
<i>Falco tinnunculus</i>	Common Kestrel	紅隼	AM, W	-	-	-	Open ground
<i>Haliaeetus leucogaster</i>	White-bellied Sea Eagle	白腹海鵂	R	-	I	(RC)	Inshore area
<i>Haliastur indus</i>	Brahminy Kite	栗鵂	----	-	R	-	Variable
<i>Hieraetus fasciatus</i>	Bonelli's Eagle	白腹山鵂	R	-	R	(RC)	Hills or broken terrain
<i>Milvus migrans</i>	Black Kite	黑鵂	W, R	-	-	(RC)	Variable
<i>Pandion haliaetus</i>	Osprey	鵂	W	-	R	RC	Wetland
<i>Pernis ptilorhynchus</i>	Crested Honey Buzzard	鳳頭蜂鷹	AM	-	V	LC	Wooded area
<i>Spilornis cheela</i>	Crested Serpent Eagle	蛇鵂	R, M	-	V	(LC)	Wooded area
<i>Spizaetus nipalensis</i>	Mountain Hawk Eagle	鷹鵂	----	-	-	-	Wooded area

\*Conservation Status: 1 = IUCN; 2 = China Red Data Book; 3 = Fellowes *et al.* (2002)

### Key to abbreviations and symbols:

Status:	R = Resident; AM = Autumn Migrant; W = Winter Visitor; SpM = Spring Migrant; Su = Summer Visitor; O = Occasional Visitor; Va = Vagrant, “-” = The species has been recorded too infrequently to allow an assessment of its status to be made.
IUCN:	CR = Critically Endangered; EN = Endangered; VU = Vulnerable; LR = Lower Risk; nt = Near-threatened.
China Red Data Book:	E = Endangered; V = Vulnerable; R = Rare; I = Indeterminate
Fellowes <i>et al.</i> (2002)	GC = Global Concern; RC = Regional Concern; LC = Local Concern; PGC = Potential Global Concern; PRC = Potential Regional Concern. Letters in brackets indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.

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Do you have any views, findings, and observations to share with your colleagues on the Biodiversity Survey Programme? Write to us! Articles should be prepared in MS Word format, and sent as attachment files by email to the Article Editor.

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