

Feature Article

A Review of the Local Restrictedness of Hong Kong Butterflies

Angela Chan, Joseph Cheung, Phoebe Sze,
Alfred Wong, Eric Wong and Eva Yau
Butterfly Working Group

漁農自然護理署蝴蝶工作小組自2002年進行全港性的蝴蝶生態調查，收集有關香港蝴蝶的基線資料。本文回顧本港236種蝴蝶的分佈情況，根據其出現頻率分為「十分稀有」、「稀有」、「不常見」、「常見」和「十分常見」，其中51種具保育價值。名錄所載的236種蝴蝶當中，超過99%在本港的保護區有記錄。

Introduction

Despite the small size of Hong Kong (approximate land area 1,104 km²), over 230 butterfly species have been recorded in the territory. A checklist of Hong Kong butterflies dating back to 1895 included 113 butterfly species, which was collected by Skertchly on Hong Kong Island (Bascombe, Johnston & Bascombe, 1999). The number of butterfly species recorded has increased progressively to 146 (Kershaw, 1907), 179 (Eliot, 1953), 184 (Marsh, 1960), 190 (Tang, 1970) and 199 (Johnston & Johnston, 1980). Since then, individual butterfly species new to Hong Kong have been reported from time to time, which has continuously expanded the local butterfly checklist. By now, the long list of butterfly species ever recorded in Hong Kong covers more than 280 species, including vagrant species and historical records.

With a view to establishing a comprehensive territory-wide biodiversity database for Hong Kong, the Agriculture, Fisheries and Conservation Department (AFCD) has been conducting a long-term biodiversity survey programme, including butterflies, since 2002. The main objectives of the programme are to undertake a systematic survey of local flora and fauna and to formulate conservation action plans based on the data collected. The geographically comprehensive butterfly survey covers major sections of the Hong Kong land area, but excludes areas which are expected to be of negligible interest to butterflies, such as highly urbanised and/or disturbed areas and barren land.

Based on the data collected by the AFCD in the butterfly surveys from 2002 to 2010, as well as other available information on butterflies in Hong Kong, including publications and verified photographic records, the checklist and the local restrictedness of butterflies as well as their representation in protected areas in Hong Kong are reviewed in this article.

Contents

Feature Article:

A Review of the Local Restrictedness of Hong Kong Butterflies page 1

Working Group Column:

The First Record of the Dung Beetle *Onitis excavatus* (掘凹蜣螂) in Hong Kong page 13

Rare Snakes Found: Mountain Keelback (*Amphisma atemporale*, 無鬚鱗游蛇) and Northern Reed Snake (*Calamaria septentrionalis*, 鈍尾兩頭蛇) page 15

Division Column:

Public Support Results in the Successful Rescue of a Juvenile Green Turtle (*Chelonia mydas*, 綠海龜) page 16

A Short Note on a Rare Bird Record: Bulwer's Petrel (*Bulweria bulwerii*, 褐燕鷗) page 19

What's New:

Latest News on the New Species of *Pteroptyx* Firefly page 20

Subscribing Hong Kong Biodiversity

If you would like to have a copy, or if you know anyone who is interested in receiving a copy of this newsletter, please send the name, organisation, and email (soft copy) or postal addresses (hard copy) to the Article Editor.

Chief Editor : Simon K.F. CHAN
(kf_chan@afcd.gov.hk)

Article Editor : Aidia S.W. CHAN
(aidia_sw_chan@afcd.gov.hk)

© All rights reserved.

Methodology

Transect Count

The butterfly surveys were conducted using the transect count method, modified from Pollard (1977), in order to suit the survey design and the subtropical climate of Hong Kong. Although transect count is essentially a relative method which does not provide an exact population estimate it is valuable in showing numerical trends through the years and differences between localities (New, 1997). This method has been used extensively in surveying and monitoring butterfly populations and communities elsewhere, including the British Butterfly Monitoring Scheme (Pollard, 1977; Pollard and Yates, 1993).

At each survey site, the observers walked along a fixed transect, typically 1 to 4 km in length. Butterflies observed either in flight or settled on vegetation within 5 m on either side of the transect were recorded. The information recorded included species, abundance, sex (if possible) and the type of habitat where each individual butterfly was observed. The presence of butterfly eggs, larvae or pupae, and observations about the behaviour of butterflies, such as feeding, courtship, mating and hill-topping, were also recorded. The surveys were undertaken between 09:30 and 16:30 on rainless days from March to November each year, which covers the active period of most local butterfly species (Law, 1998). Where individual butterflies flew in and out of sight of the observers along the transect, only one entry would be made unless there was no doubt that this was another individual. Given the high butterfly diversity in Hong Kong, there were occasions when particular species could not be distinguished from similar species in the field. To avoid over-estimation of rare species, the more common species among the look-alike candidates would be recorded.

To analyse the restrictedness of local butterfly species and their representation in the protected areas of Hong Kong better, areas covered by the transects were divided into sections corresponding to 1-km grid squares. Based on the Hong Kong Metric Grid, the land area of Hong Kong, including all reservoirs and islands, is covered by 1,595 1-km grid squares. As at 2010, the butterfly survey programme covered 582 grid squares.

Review of Local Restrictedness

The local restrictedness of butterflies in Hong Kong was reviewed and updated based on the data collected under the survey programme and other available information, with a scale of five cohorts, ranging from 'Very Rare', 'Rare', 'Uncommon', 'Common' to 'Very Common', as defined by Walthew (1997). The local restrictedness of each species was determined from their frequency of occurrence in the surveyed 1-km grid squares (Table 1). Wanderers which are outside their normal geological range of distribution and whose food plant is absent from Hong Kong are considered as 'Vagrant' and their status is not assessed.

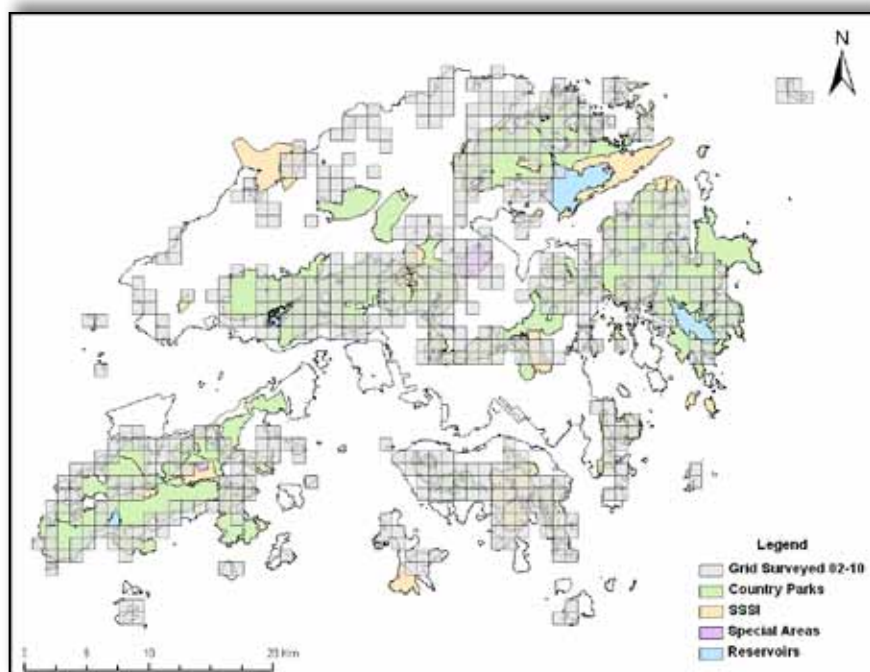
Table 1. Categories of local restrictedness of butterflies in Hong Kong.

Local Restrictedness	% Cover of Grids	No. of Grids (1 km squares)
Very Rare	<1%	5
Rare	1–3%	6–17
Uncommon	3–10%	18–58
Common	10–33%	59–192
Very Common	>33%	193–582

Results and Discussion

From 2002 to 2010, a total of 679 surveys were conducted, covering 582 accessible 1-km grid squares in 246 localities, which account for approximate 56% of land area in Hong Kong, excluding the highly urbanised and/or disturbed areas and barren land. Among the surveyed grid squares, about 92% fall within protected areas including Country Parks, Restricted Areas, Special Areas and Sites of Special Scientific Interest (SSSI) (Fig. 1).

Fig 1. Land area surveyed from 2002 to 2010.



According to the survey results and other available information, 31 butterfly species new to Hong Kong have been recorded since 2002, including three vagrant species (Table 2). There were also seven species likely introduced from outside Hong Kong. In addition, 10 other species require further monitoring in the longer term to confirm their establishment of local populations. Thirteen species which occurred regularly were included in the active butterfly checklist.

Table 2. New butterfly species recorded in Hong Kong from 2002 to 2011.

Family	Subfamily	Species	Year of First Record	Family	Subfamily	Species	Year of First Record
Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	<i>Halpe paupera</i> 珀酣弄蝶	2002	Nymphalidae 蛺蝶科	Charaxinae 螫蛺蝶亞科	<i>Polyura eudamippus</i> 大二尾蛺蝶*	2007
Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	<i>Thoressa monastyrskyi</i> 黑斑陀弄蝶	2002	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	<i>Euripus nycltelius</i> 芒蛺蝶	2007
Nymphalidae 蛺蝶科	Acraeinae 珍蝶亞科	<i>Acraea issoria</i> 苧麻珍蝶	2002	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	<i>Ypthima tappana</i> 大波矇眼蝶*	2007
Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	<i>Chilasa agestor</i> 褐斑鳳蝶	2002	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	<i>Lexias pardalis</i> 小豹律蛺蝶*	2008
Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	<i>Taractrocera maevius</i> 薇黃弄蝶	2004	Pieridae 粉蝶科	Coliadinae 黃粉蝶亞科	<i>Colias erate</i> 斑緣豆粉蝶*	2008
Lycaenidae 灰蝶科	Lycaeninae 灰蝶亞科	<i>Eliotia jalindra</i> 伊灰蝶屬	2004	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	<i>Aeromachus jhora</i> 寬鐮弄蝶	2009
Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	<i>Sinthusa nasaka</i> 娜生灰蝶	2004	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	<i>Everes argiades</i> 藍灰蝶*	2009
Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	<i>Neptis miah</i> 彌環蛺蝶	2004	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	<i>Zizula hylax</i> 長腹灰蝶	2009
Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	<i>Papilio machaon</i> 金鳳蝶	2004	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	<i>Chliaria kina</i> 蘭灰蝶@	2009
Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	<i>Papilio taiwanus</i> 台灣鳳蝶#@	2004	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	<i>Idea leuconoe</i> 大帛斑蝶@	2009
Pieridae 粉蝶科	Coliadinae 黃粉蝶亞科	<i>Catopsilia scylla</i> 鑄黃遷粉蝶*	2004	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	<i>Prosotas dubiosa</i> 疑波灰蝶*	2010
Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	<i>Tongeia potanini</i> 波太玄灰蝶#	2006	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	<i>Tongeia filicaudis</i> 點玄灰蝶@	2010
Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	<i>Nacaduba berenice</i> 百娜灰蝶	2006	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	<i>Inachis io</i> 孔雀蛺蝶#@	2010
Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	<i>Cephrenes acalle</i> 金斑弄蝶@	2007	Nymphalidae 蛺蝶科	Libytheinae 喙蝶亞科	<i>Libythea myrrha</i> 棒紋喙蝶@	2011
Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	<i>Potanthus lydia</i> 鋸紋黃室弄蝶*	2007	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	<i>Euthalia niepelti</i> 綠裙邊翠蛺蝶*	2011
				Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	<i>Lethe chandica</i> 曲紋黛眼蝶*	2011

* Species that require further monitoring to confirm the establishment of a local population

Vagrant species

@ Species likely to have been introduced

The active checklist of Hong Kong butterflies contains 236 species (Annex 1). *Polygonia c-aureum* (黃鈎蛺蝶), a species of temperate regions that was first recorded in Hong Kong in 1990, was once considered a vagrant. Since 2008, the species has constantly appeared in the northern New Territories. It is believed to have established a local population and is therefore included in the active checklist. About 40 out of the around 280 butterfly species were excluded from the active butterfly checklist, including vagrants, those found in historical records which have not been observed in recent decades, and newly recorded species which require further monitoring. Eight species found in historical records may have been sighted in recent years but such sighting records were not verifiable and do not justify the species' continuous inclusion in the checklist (Table 3).

Table 3. Butterfly species from historical records with non-verifiable sightings in recent years.

Family	Subfamily	Species
Lycaenidae 灰蝶科	Polyommatinae 眼灰蝶亞科	<i>Castalius rosimon</i> 豹灰蝶
Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	<i>Arhopala paramuta</i> 小燒灰蝶
Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	<i>Arhopala rama</i> 齒翅燒灰蝶
Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	<i>Flos asoka</i> 鎖鑰花灰蝶
Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	<i>Hypolimnys anomala</i> 崎紋紫斑蛺蝶
Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	<i>Euthalia monina</i> 暗斑翠蛺蝶
Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	<i>Neptis nata</i> 娜環蛺蝶
Pieridae 粉蝶科	Pierinae 粉蝶亞科	<i>Talbotia naganum</i> 飛龍粉蝶

In consultation with local non-government organisations which are concerned with butterfly conservation, the sighting records of butterflies, in particular those in their larval stages, were provided to supplement the AFCD's database. Taking into account the supplementary information, a total of 51 species were identified as of conservation concern. They include 48 species evaluated as 'Very Rare' in the present review¹, the two *Troides* species (*T. helena*, 裳鳳蝶 and *T. aeacus*, 金裳鳳蝶; Fig. 2) which are protected in the local context, and *Thoressa monastyrskyi* (黑斑陀弄蝶) which was evaluated as 'Rare' in the present review but only recorded in Vietnam and Hong Kong globally. It was also found that 234 butterfly species (>99% of the 236 butterfly species regarded as active in Hong Kong) had been recorded within the protected area system.



Fig 2. *Troides helena*

The natural population of fauna in a region may change over time due to a number of environmental, biological and anthropogenic factors, including habitat modification, the spread or establishment of species, human disturbance and management efforts. Given that it is almost impossible to trace how the abundance of a species varies in the natural environment, the local restrictedness of a fauna group serves as an important indicator for conservation management and ecological assessment, though such status only silhouettes the distribution of natural populations, and its objectivity largely depends on the assessment method. Evaluation of local restrictedness by means of the percentage of occurrence of individual species in the surveyed areas is a simple and repeatable assessment of the population status for butterflies. This method is believed to be independent of the survey method in that the assessment only takes into account the observation of any butterfly species in a particular grid square. Comparison of the butterfly restrictedness status in Walthew (1997) and the present review would give some insights into the changes in commonness or restrictedness of individual butterfly species in Hong Kong in the past two decades. The butterfly status in Young and Yiu (2002), which was based on Walthew (1997) and supplemented with personal records, also served as a reference for changes between the two studies.

Among the 225 butterfly species evaluated in Walthew (1997), 80 species have their restrictedness status changed in the present review, 43 of them towards the rarer cohort (6 from VC to C, 6 from C to UC, 1 from C to R, 11 from UC to R, 4 UC to VR and 15 from R to VR.); while the other 37 have moved towards the commoner cohort (5 from VR to R, 13 from R to UC, 1 from R to C, 12 from UC to C and 6 from C to VC). It is worth noting that the surveyed area has more than trebled, from 170 grid squares to 582. Given the fact that no fauna are evenly distributed, the status of a butterfly species tends to shift towards the rarer side the greater the coverage of the surveyed area. For example, a butterfly which occurred in five grid squares was evaluated as 'Rare' by Walthew (1997) but now would be categorized as 'Very Rare'. Such a shift is more often observed in species of the families HesperIIDae and Lycaenidae, and other butterflies which have strong habitat preference, weaker flight, or whose larval food plant has restricted distribution (e.g. *Kallima inachus*, 枯葉蛺蝶). This also reflects that the records of Walthew (1997) may have already covered major sites of these species which have only extended their local distribution to a limited extent, if at all, in the last two decades.

Five butterfly species became rarer by two cohorts. Among them, *Parnara bada* (么紋稻弄蝶; R in the present review), *Potanthus pava* (寬紋黃室弄蝶; VR) and *Phalanta phalantha* (珉蛺蝶; VR) are typically fast-moving and have

¹ Following the criteria in Table 1, 72 species were categorised as 'Very Rare', 40 species as 'Rare', 48 species as 'Uncommon', 58 species as 'Common' and 18 species as 'Very Common'. These statuses reflected the local restrictedness of butterfly species based on the AFCD's data which is largely focused on the distribution of adult butterflies. After evaluation of records of butterfly larvae supplemented by local non-government organizations, 24 'Very Rare' butterfly species were found to occur in more than five 1-km grids and thus were not regarded as of conservation concern.

similar species co-existing in the same habitats. It was not always possible to identify these species in flight to the species level accurately. When a particular species could not be distinguished from its similar species in the field, the more common species among the look-alike candidates was recorded. Therefore, the restrictedness of these three species might have been over-rated. The other two butterfly species, namely *Udara albocaerulea* (白斑嫵灰蝶; VR) and *Eurema laeta* (尖角黃粉蝶; VR), are relatively easy to capture for close examination in the field. In particular, the surveyors of this survey programme had been proactively capturing *Eurema* species for on-site identification. With a characteristic pointed tip in the forewing, *Eurema laeta* was not mistakable if there was chance to closely examine a captured individual. However, the presence of a wet-season form whose pointed tip is largely reduced would render on-site identification difficult. Although *Udara albocaerulea* and *Eurema laeta* were classified as 'Uncommon' by both Walthew (1997) and Young and Yiu (2002), the results of the present review concurred with Lo and Hui (2004), who documented only limited records of these two species. In order to give a fair and accurate account of their local restrictedness, continuous monitoring is necessary. Butterfly surveyors would make extra efforts in future monitoring to distinguish these species and their similar candidates.

Eurema hecabe (寬邊黃粉蝶; 414 grid squares; 71% coverage; Fig. 3), *Papilio polytes* (玉帶鳳蝶) (376; 65%) and *Mycalesis mineus* (小眉眼蝶) (349; 60%) are the most widely distributed butterflies in the survey programme. They generally have different habitat preferences, ranging from agricultural fields, the open fringes of vegetated areas, shrubland to well wooded areas. Their occurrence in a high number of surveyed grid squares strongly indicated that there is large land area of diverse habitats suitable for butterflies in general, which is attributable to the high coverage of protected areas.

Fig 3. *Eurema hecabe*



Among the 37 species whose status moved towards the more common cohorts, 28 had already been evaluated as in a more common cohort in Young and Yiu (2002). The consistent change in commonness over time could be due to spread of butterfly species, in particular those woodland associated species, to unexploited sites as the

quality of habitats continuously improves, especially in the protected areas. *Eurema blanda* (孳黃粉蝶) is the only species that became more common by two cohorts, from 'Rare' to 'Common'.

As regards the representation of butterfly species in the protected areas in Hong Kong, a total of 234 butterfly species have been recorded in the 'protected' grid squares. The two species not recorded in the protected areas, namely *Catochrysops panormus* (藍咖灰蝶) and *Euploea sylvester* (雙標紫斑蝶), accounted for less than 1% of the active butterfly checklist. The last record of *Euploea sylvester* in Hong Kong was taken in 1999, according to Young and Yiu (2002); while there were only a few records of *Catochrysops panormus*. Further survey is required to confirm their existence in Hong Kong and review their inclusion in the checklist.

Although the protected area system in Hong Kong has been shown to support the absolute majority of the local butterfly species, additional areas for butterfly conservation should be identified when the need/opportunity arises, to improve our conservation efforts. The introduction/reintroduction of butterflies to an unexploited/restored habitat may be more successful than other taxa since the presence of a butterfly species at a particular locality largely depends on the availability and quality of suitable larval food plants and nectar plants. For example, with a view to safeguarding the population of certain flagship butterfly species in Hong Kong, the AFCD have been planting larval food plants in suitable habitats which were within the protected areas and had no previous record of the species. For instance, with the planting of *Passiflora moluccana* (蛇王藤; Fig. 4) and vegetation management efforts in the Hong Kong Wetland Park, populations of *Cethosia biblis* (紅鋸蛺蝶; Fig. 5) were eventually established in 2011. While its 'Uncommon' status still remains, *Cethosia biblis* is now recorded in 29 grid squares with good representation in the protected areas, whereas in the 1990s the species only occurred in 5–17 grid squares, i.e., 3–15% of 170 grid squares (Walthew, 1997). This management work has proved effective in conserving butterflies. The experience gained would be conducive to the management and conservation of other butterfly species in the local context.

Fig 4. *Passiflora moluccana*



Fig 5. *Cethosia biblis*



Way Forward

The AFCD will continue to carry out monitoring of sites that are important to butterflies in Hong Kong to keep in view their condition and the butterfly species present therein. When additional and compatible data is available, the checklist and restrictedness status will be reviewed. The

References

- Bascombe, M.J., G. Johnston and F.S. Bascombe. 1999. The butterflies of Hong Kong. Academic Press, London. 422 pages.
- Chou, I. 1994. Monographia rhopalocerorum sinensium. Henan Science and Technology Press, Henan. 852 pages. (In Chinese only)
[周堯。1994。中國蝶類志。河南科學技術出版社。共852頁]
- Easton, E.R., and W.W. Pun. 1999. Butterflies in Macau. University of Macau, Publications Center, Macau. 36 pages.
- Eliot, J.N. 1953. New records and a check list of butterflies from Hong Kong. Memoirs of the Hong Kong Biological Circle. Hong Kong Natural History Society, Hong Kong. 14 pages.
- Johnston, G., and B. Johnston. 1980. This is Hong Kong: butterflies. Hong Kong Government, Hong Kong. 224 pages.
- Kershaw, J.C.W. 1907. Butterflies of Hongkong. Kelly & Walsh, Hong Kong. 147 pages.
- Law, J.W.Y. 1998. The use of butterflies for conservation evaluation in Hong Kong. University of Hong Kong, Hong Kong. 74 pages.
- Lee, J.Y., and H.Y. Wang. 1997. Illustrations of butterflies in Taiwan. Volume 4. The Taiwan Museum, Taipei. 317 pages. (In Chinese only)

present review also identified several species that warrant more monitoring efforts, such as *Catochrysops panormus*, *Euploea sylvester* and *Eurema laeta*. Regarding the 51 species of conservation concern, appropriate measures would be considered to safeguard their continuous existence, including but not limited to habitat protection, monitoring to prevent incompatible land use and active management work.

Acknowledgements

The authors gratefully acknowledge the constructive comments and supplementary butterfly records provided by Green Power, the Hong Kong Lepidopterists' Society, Kadoorie Farm and Botanic Garden and the Tai Po Environmental Association in reviewing the present article.

We would also like to express our wholehearted appreciation to Ms Ester Y.T. Cheung and Ms Winnie S.Y. Wong of the Biodiversity Conservation Division of the AFCD for their excellent logistical support in fieldwork and their assistance in analysing the enormous amount of survey data in the review.

- [李俊延及王效岳。1997。臺灣蝶類圖說(四)。臺灣省立博物館。共317頁]
- Lo, P.Y.F., and W.L. Hui. 2004. Hong Kong butterflies. Friends of the Country Parks and Cosmos Books Ltd., Hong Kong. 565 pages.
- Marsh, J.C.S. 1960. Hong Kong butterflies. The Shell Company of Hong Kong Ltd., Hong Kong. 113 pages.
- New, T.R. 1997. Butterfly conservation. Oxford University Press, Melbourne. 248 pages.
- Pollard, E. 1977. A method for assessing the abundance of butterflies. *Biological Conservation* **12**: 115-34.
- Pollard, E., and T.J. Yates. 1993. Monitoring butterflies for ecology and conservation. Chapman & Hall, London. 274 pages.
- Tang, K.T. 1970. On a Collection of Hong Kong butterflies. New Asia College, Hong Kong. 105 pages.
- Walthew, G. 1997. The status and flight periods of Hong Kong butterflies. *Porcupine!* **16**: 34-37.
- Young, J.J., and V. Yiu. 2002. Butterfly watching in Hong Kong. Wan Li Book Co., Hong Kong. 342 pages. (In Chinese only)
[楊建業及饒戈，2002。香江蝶影。萬里機構萬里書店出版。共342頁]

Annex 1. Active checklist of butterfly species in Hong Kong, with local restrictedness and records within protected areas.

No.	Family	Subfamily	Chinese Common Name	Scientific Name	Local Restrictedness ^a			Record(s) in protected areas
					Walthev (1997) ^b	Young & Yiu (2002) ^c	AFCD (2011)	
1	Hesperiidae 弄蝶科	Coeliadinae 豎翅弄蝶亞科	尖翅弄蝶	<i>Badamia exclamationis</i>	VR	R	VR	Y
2	Hesperiidae 弄蝶科	Coeliadinae 豎翅弄蝶亞科	白傘弄蝶	<i>Bibasis gomata</i>	UC	C	UC	Y
3	Hesperiidae 弄蝶科	Coeliadinae 豎翅弄蝶亞科	黑斑傘弄蝶	<i>Bibasis oedipodea</i>	R	UC	VR	Y
4	Hesperiidae 弄蝶科	Coeliadinae 豎翅弄蝶亞科	綠弄蝶	<i>Choaspes benjaminii</i>	R	UC	VR	Y
5	Hesperiidae 弄蝶科	Coeliadinae 豎翅弄蝶亞科	半黃綠弄蝶	<i>Choaspes hemixanthus</i>	R	UC	VR	Y
6	Hesperiidae 弄蝶科	Coeliadinae 豎翅弄蝶亞科	無趾弄蝶	<i>Hasora anura</i>	VR	VR	VR	Y
7	Hesperiidae 弄蝶科	Coeliadinae 豎翅弄蝶亞科	三斑趾弄蝶	<i>Hasora badra</i>	R	UC	VR	Y
8	Hesperiidae 弄蝶科	Coeliadinae 豎翅弄蝶亞科	雙斑趾弄蝶	<i>Hasora chromus</i>	VR	UC	R	Y
9	Hesperiidae 弄蝶科	Coeliadinae 豎翅弄蝶亞科	銀針趾弄蝶	<i>Hasora taminatus</i>	VR	VR	VR	Y
10	Hesperiidae 弄蝶科	Coeliadinae 豎翅弄蝶亞科	緯帶趾弄蝶	<i>Hasora vitta</i>	VR	R	VR	Y
11	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	寬鐮弄蝶	<i>Aeromachus jhora</i>	N/A	N/A	R	Y
12	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	侏儒鐮弄蝶	<i>Aeromachus pygmaeus</i>	N/A	VR	VR	Y
13	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	黃斑弄蝶	<i>Ampittia dioscorides</i>	UC	UC	UC	Y
14	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	鉤形黃斑弄蝶	<i>Ampittia virgata</i>	N/A	VR	VR	Y
15	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	脛翅弄蝶	<i>Astictopterus jama</i>	C	C	C	Y
16	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	刺脛弄蝶	<i>Baoris farri</i>	VR	UC	R	Y
17	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	袖弄蝶	<i>Borbo cinnara</i>	UC	C	C	Y
18	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	無斑珂弄蝶	<i>Caltoris bromus</i>	R	R	VR	Y
19	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	放踵珂弄蝶	<i>Caltoris cahira</i>	N/A	UC	R	Y
20	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	金斑弄蝶	<i>Cephrenes acalle</i>	N/A	N/A	VR	Y
21	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	黃斑蕉弄蝶	<i>Erionota torus</i>	UC	C	UC	Y
22	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	珀酣弄蝶	<i>Halpe paupera</i>	N/A	N/A	VR	Y
23	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	雙子酣弄蝶	<i>Halpe porus</i>	VR	R	VR	Y
24	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	希弄蝶	<i>Hyarotis adrastus</i>	UC	UC	UC	Y
25	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	雅弄蝶	<i>Iambrix salsala</i>	UC	UC	UC	Y
26	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	旃弄蝶	<i>Isoteinon lamprospilus</i>	VR	VR	VR	Y
27	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	瑪弄蝶	<i>Matapa aria</i>	UC	UC	UC	Y
28	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	曲紋袖弄蝶	<i>Notocrypta curvifascia</i>	UC	C	UC	Y
29	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	么紋稻弄蝶	<i>Parnara bada</i>	C	C	R	Y
30	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	曲紋稻弄蝶	<i>Parnara ganga</i>	R	UC	UC	Y
31	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	直紋稻弄蝶	<i>Parnara guttata</i>	C	C	C	Y
32	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	南亞穀弄蝶	<i>Pelopidas agna</i>	C	C	UC	Y
33	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	印度穀弄蝶	<i>Pelopidas assamensis</i>	UC	UC	R	Y
34	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	古銅穀弄蝶	<i>Pelopidas conjunctus</i>	UC	UC	R	Y
35	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	隱紋穀弄蝶	<i>Pelopidas mathias</i>	R	UC	UC	Y
36	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	近赭穀弄蝶	<i>Pelopidas subochraceus</i>	R	VR	VR	Y
37	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	黃紋孔弄蝶	<i>Polytremis lubricans</i>	C	C	C	Y
38	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	孔子黃室弄蝶	<i>Potanthus confucius</i>	C	C	UC	Y

No.	Family	Subfamily	Chinese Common Name	Scientific Name	Local Restrictedness ^a			Record(s) in protected areas
					Walthew (1997) ^b	Young & Yiu (2002) ^c	AFCD (2011)	
39	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	寬紋黃室弄蝶	<i>Potanthus pava</i>	UC	UC	VR	Y
40	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	木黃室弄蝶	<i>Potanthus pseudomaesa</i>	R	R	R	Y
41	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	斷紋黃室弄蝶	<i>Potanthus trachala</i>	R	C	R	Y
42	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	擬袖弄蝶	<i>Pseudoborbo bevani</i>	UC	UC	UC	Y
43	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	素弄蝶	<i>Suastus gremius</i>	UC	C	UC	Y
44	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	草黃弄蝶	<i>Taractrocera ceramas</i>	VR	VR	R	Y
45	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	薇黃弄蝶	<i>Taractrocera maevius</i>	N/A	N/A	VR	Y
46	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	紅翅長標弄蝶	<i>Telicota ancilla</i>	R	C	UC	Y
47	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	黑脈長標弄蝶	<i>Telicota besta</i>	VR	UC	VR	Y
48	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	長標弄蝶	<i>Telicota colon</i>	R	C	R	Y
49	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	黃紋長標弄蝶	<i>Telicota ohara</i>	R	UC	R	Y
50	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	黑斑陀弄蝶	<i>Thoressa monastyrskyi</i>	N/A	N/A	R	Y
51	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	薑弄蝶	<i>Udaspes folus</i>	R	UC	R	Y
52	Hesperiidae 弄蝶科	Hesperiinae 弄蝶亞科	黃裳腫脈弄蝶	<i>Zographetus satwa</i>	N/A	VR	R	Y
53	Hesperiidae 弄蝶科	Pyrginae 花弄蝶亞科	白弄蝶	<i>Abraximorpha davidii</i>	R	UC	R	Y
54	Hesperiidae 弄蝶科	Pyrginae 花弄蝶亞科	白彩弄蝶	<i>Caprona alida</i>	R	R	VR	Y
55	Hesperiidae 弄蝶科	Pyrginae 花弄蝶亞科	白觸星弄蝶	<i>Celaenorhinus leucocera</i>	R	R	VR	Y
56	Hesperiidae 弄蝶科	Pyrginae 花弄蝶亞科	匪夷捷弄蝶	<i>Gerosis phisara</i>	UC	UC	R	Y
57	Hesperiidae 弄蝶科	Pyrginae 花弄蝶亞科	角翅弄蝶	<i>Odontoptilum angulatum</i>	C	C	C	Y
58	Hesperiidae 弄蝶科	Pyrginae 花弄蝶亞科	沾邊裙弄蝶	<i>Tagiades litigiosus</i>	C	C	C	Y
59	Hesperiidae 弄蝶科	Pyrginae 花弄蝶亞科	黑邊裙弄蝶	<i>Tagiades menaka</i>	N/A	VR	UC	Y
60	Lycaenidae 灰蝶科	Curetinae 銀灰蝶亞科	尖翅銀灰蝶	<i>Curetis dentata</i>	UC	C	UC	Y
61	Lycaenidae 灰蝶科	Lycaeninae 灰蝶亞科	伊灰蝶屬	<i>Eliotia jalindra</i>	N/A	N/A	VR	Y
62	Lycaenidae 灰蝶科	Lycaeninae 灰蝶亞科	斜斑彩灰蝶	<i>Heliophorus epicles</i>	UC	C	C	Y
63	Lycaenidae 灰蝶科	Miletinae 雲灰蝶亞科	中華雲灰蝶	<i>Miletus chinensis</i>	VR	R	VR	Y
64	Lycaenidae 灰蝶科	Miletinae 雲灰蝶亞科	蛭灰蝶	<i>Taraka hamada</i>	VR	R	R	Y
65	Lycaenidae 灰蝶科	Polyommatae 眼灰蝶亞科	鈕灰蝶	<i>Acytolepis puspa</i>	C	C	C	Y
66	Lycaenidae 灰蝶科	Polyommatae 眼灰蝶亞科	藍喇灰蝶	<i>Catochrysops panormus</i>	VR	VR	VR	N
67	Lycaenidae 灰蝶科	Polyommatae 眼灰蝶亞科	喇灰蝶	<i>Catochrysops strabo</i>	R	VR	VR	Y
68	Lycaenidae 灰蝶科	Polyommatae 眼灰蝶亞科	薰衣草琉璃灰蝶	<i>Celastrina lavendularis</i>	R	R	VR	Y
69	Lycaenidae 灰蝶科	Polyommatae 眼灰蝶亞科	紫灰蝶	<i>Chilades lajus</i>	VC	VC	C	Y
70	Lycaenidae 灰蝶科	Polyommatae 眼灰蝶亞科	曲紋紫灰蝶	<i>Chilades pandava</i>	R	UC	UC	Y
71	Lycaenidae 灰蝶科	Polyommatae 眼灰蝶亞科	棕灰蝶	<i>Euchrysops cnejus</i>	C	C	UC	Y
72	Lycaenidae 灰蝶科	Polyommatae 眼灰蝶亞科	長尾藍灰蝶	<i>Everes lacturnus</i>	C	C	C	Y
73	Lycaenidae 灰蝶科	Polyommatae 眼灰蝶亞科	珉灰蝶	<i>Famegana alsulus</i>	C	C	UC	Y
74	Lycaenidae 灰蝶科	Polyommatae 眼灰蝶亞科	普福來灰蝶	<i>Freyeria putli</i>	VR	VR	VR	Y
75	Lycaenidae 灰蝶科	Polyommatae 眼灰蝶亞科	素雅灰蝶	<i>Jamides alecto</i>	VR	VR	VR	Y

No.	Family	Subfamily	Chinese Common Name	Scientific Name	Local Restrictedness ^a			Record(s) in protected areas
					Walthew (1997) ^b	Young & Yiu (2002) ^c	AFCD (2011)	
76	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	雅灰蝶	<i>Jamides bochus</i>	C	C	C	Y
77	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	錫冷雅灰蝶	<i>Jamides celeno</i>	UC	UC	R	Y
78	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	亮灰蝶	<i>Lampides boeticus</i>	C	C	C	Y
79	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	細灰蝶	<i>Leptotes plinius</i>	N/A	VR	VR	Y
80	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	美姬灰蝶	<i>Megisba malaya</i>	VR	R	VR	Y
81	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	百娜灰蝶	<i>Nacaduba berenice</i>	N/A	N/A	VR	Y
82	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	古樓娜灰蝶	<i>Nacaduba kurava</i>	C	C	C	Y
83	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	一點灰蝶	<i>Neopithecops zalmora</i>	UC	UC	UC	Y
84	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	黑丸灰蝶	<i>Pithecops corvus</i>	N/A	VR	VR	Y
85	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	酢漿灰蝶	<i>Pseudozizeeria maha</i>	C	VC	VC	Y
86	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	白斑嫵灰蝶	<i>Udara albocaerulea</i>	UC	UC	VR	Y
87	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	珍貴嫵灰蝶	<i>Udara dilecta</i>	VR	VR	VR	Y
88	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	吉灰蝶	<i>Zizeeria karsandra</i>	R	UC	UC	Y
89	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	毛眼灰蝶	<i>Zizina otis</i>	UC	C	C	Y
90	Lycaenidae 灰蝶科	Polyommatainae 眼灰蝶亞科	長腹灰蝶	<i>Zizula hylax</i>	N/A	N/A	VR	Y
91	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	安灰蝶	<i>Ancema ctesia</i>	VR	VR	VR	Y
92	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	百燒灰蝶	<i>Arhopala bazalus</i>	UC	UC	R	Y
93	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	緬甸燒灰蝶	<i>Arhopala birmana</i>	R	UC	VR	Y
94	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	銀鏈燒灰蝶	<i>Arhopala pseudocentaurus</i>	VR	R	VR	Y
95	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	綠灰蝶	<i>Artipe eryx</i>	UC	C	UC	Y
96	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	克灰蝶	<i>Creon cleobis</i>	VR	R	VR	Y
97	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	玳灰蝶	<i>Deudorix epijarbas</i>	R	UC	R	Y
98	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	白斑灰蝶	<i>Horaga albimacula</i>	VR	N/A	VR	Y
99	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	斑灰蝶	<i>Horaga onyx</i>	R	UC	R	Y
100	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	鐵木菜異灰蝶	<i>Iraota timoleon</i>	UC	UC	UC	Y
101	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	瑪灰蝶	<i>Mahathala ameria</i>	R	UC	UC	Y
102	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	珀灰蝶	<i>Pratapa deva</i>	R	UC	VR	Y
103	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	燕灰蝶	<i>Rapala manea</i>	UC	C	C	Y
104	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	萊灰蝶	<i>Remelana jangala</i>	UC	UC	C	Y
105	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	生灰蝶	<i>Sinthusia chandrana</i>	R	UC	R	Y
106	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	娜生灰蝶	<i>Sinthusia nasaka</i>	N/A	N/A	VR	Y
107	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	銀線灰蝶	<i>Spindasis lohita</i>	UC	UC	C	Y
108	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	豆粒銀線灰蝶	<i>Spindasis syama</i>	UC	UC	UC	Y
109	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	雙尾灰蝶	<i>Tajuria cippus</i>	R	UC	R	Y
110	Lycaenidae 灰蝶科	Theclinae 線灰蝶亞科	豹斑雙尾灰蝶	<i>Tajuria maculata</i>	VR	VR	VR	Y
111	Lycaenidae 灰蝶科	Riodininae 蜆蝶亞科	蛇目褐蜆蝶	<i>Abisara echerius</i>	VC	VC	VC	Y
112	Lycaenidae 灰蝶科	Riodininae 蜆蝶亞科	大斑尾蜆蝶	<i>Dodona egeon</i>	R	UC	R	Y
113	Lycaenidae 灰蝶科	Riodininae 蜆蝶亞科	波蜆蝶	<i>Zemeros flegyas</i>	C	C	C	Y
114	Nymphalidae 蛺蝶科	Acraeinae 珍蝶亞科	芋麻珍蝶	<i>Acraea issoria</i>	N/A	N/A	R	Y
115	Nymphalidae 蛺蝶科	Amathusiinae 環蝶亞科	鳳眼方環蝶	<i>Discophora sondaica</i>	UC	C	UC	Y
116	Nymphalidae 蛺蝶科	Amathusiinae 環蝶亞科	串珠環蝶	<i>Faunis eumeus</i>	C	C	C	Y
117	Nymphalidae 蛺蝶科	Charaxinae 螯蛺蝶亞科	白帶螯蛺蝶	<i>Charaxes bernardus</i>	C	C	C	Y
118	Nymphalidae 蛺蝶科	Charaxinae 螯蛺蝶亞科	螯蛺蝶	<i>Charaxes marmax</i>	R	UC	UC	Y

No.	Family	Subfamily	Chinese Common Name	Scientific Name	Local Restrictedness ^a			Record(s) in protected areas
					Walthew (1997) ^b	Young & Yiu (2002) ^c	AFCD (2011)	
119	Nymphalidae 蛺蝶科	Charaxinae 螯蛺蝶亞科	窄斑鳳尾蛺蝶	<i>Polyura athamas</i>	UC	UC	UC	Y
120	Nymphalidae 蛺蝶科	Charaxinae 螯蛺蝶亞科	忘憂尾蛺蝶	<i>Polyura nepenthes</i>	UC	UC	UC	Y
121	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	金斑蝶	<i>Danaus chrysippus</i>	UC	UC	UC	Y
122	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	虎斑蝶	<i>Danaus genutia</i>	VC	VC	C	Y
123	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	幻紫斑蝶	<i>Euploea core</i>	VC	VC	C	Y
124	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	藍點紫斑蝶	<i>Euploea midamus</i>	VC	VC	VC	Y
125	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	異型紫斑蝶	<i>Euploea mulciber</i>	UC	UC	UC	Y
126	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	雙標紫斑蝶	<i>Euploea sylvester</i>	N/A	VR	VR	N
127	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	擬矯斑蝶	<i>Ideopsis similis</i>	VC	VC	VC	Y
128	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	絹斑蝶	<i>Parantica aglea</i>	C	VC	C	Y
129	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	大絹斑蝶	<i>Parantica sita</i>	R	UC	R	Y
130	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	史氏絹斑蝶	<i>Parantica swinhoei</i>	VR	VR	VR	Y
131	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	青斑蝶	<i>Tirumala limniace</i>	C	C	C	Y
132	Nymphalidae 蛺蝶科	Danainae 斑蝶亞科	靑青斑蝶	<i>Tirumala septentrionis</i>	VR	UC	VR	Y
133	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	斐豹蛺蝶	<i>Argyreus hyperbius</i>	VC	C	C	Y
134	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	波蛺蝶	<i>Ariadne ariadne</i>	C	C	C	Y
135	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	雙色帶蛺蝶	<i>Athyma cama</i>	VR	VR	VR	Y
136	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	相思帶蛺蝶	<i>Athyma nefte</i>	C	C	C	Y
137	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	玄珠帶蛺蝶	<i>Athyma perius</i>	C	C	UC	Y
138	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	離斑帶蛺蝶	<i>Athyma ranga</i>	R	UC	UC	Y
139	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	新月帶蛺蝶	<i>Athyma selenophora</i>	C	C	C	Y
140	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	紅鋸蛺蝶	<i>Cethosia biblis</i>	UC	R	UC	Y
141	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	幸運轆蛺蝶	<i>Cirrochroa tyche</i>	VR	N/A	VR	Y
142	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	黃襟蛺蝶	<i>Cupha erymanthis</i>	VC	VC	VC	Y
143	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	網絲蛺蝶	<i>Cyrestis thyodamas</i>	UC	C	C	Y
144	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	電蛺蝶	<i>Dichorragia nesimachus</i>	UC	UC	R	Y
145	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	芒蛺蝶	<i>Euripus nyctelius</i>	N/A	N/A	VR	Y
146	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	矛翠蛺蝶	<i>Euthalia aconthea</i>	R	UC	UC	Y
147	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	紅斑翠蛺蝶	<i>Euthalia lubentina</i>	R	UC	UC	Y
148	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	尖翅翠蛺蝶	<i>Euthalia phemius</i>	UC	C	C	Y
149	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	黑脈蛺蝶	<i>Hestina assimilis</i>	C	C	C	Y
150	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	幻紫斑蛺蝶	<i>Hypolimnys bolina</i>	C	VC	C	Y
151	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	金斑蛺蝶	<i>Hypolimnys misippus</i>	R	UC	UC	Y
152	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	美眼蛺蝶	<i>Junonia almana</i>	C	C	C	Y
153	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	波紋眼蛺蝶	<i>Junonia atlites</i>	C	C	C	Y
154	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	黃裳眼蛺蝶	<i>Junonia hierta</i>	UC	UC	R	Y
155	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	鉤翅眼蛺蝶	<i>Junonia iphita</i>	UC	UC	C	Y
156	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	蛇眼蛺蝶	<i>Junonia lemonias</i>	UC	UC	C	Y
157	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	翠藍眼蛺蝶	<i>Junonia orithya</i>	UC	UC	UC	Y
158	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	枯葉蛺蝶	<i>Kallima inachus</i>	R	R	VR	Y
159	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	琉璃蛺蝶	<i>Kaniska canace</i>	C	C	C	Y
160	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	穆蛺蝶	<i>Moduza procris</i>	VR	R	VR	Y
161	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	珂環蛺蝶	<i>Neptis clinia</i>	C	C	C	Y

No.	Family	Subfamily	Chinese Common Name	Scientific Name	Local Restrictedness ^a			Record(s) in protected areas
					Walthew (1997) ^b	Young & Yiu (2002) ^c	AFCD (2011)	
162	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	中環蛺蝶	<i>Neptis hylas</i>	VC	VC	VC	Y
163	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	彌環蛺蝶	<i>Neptis miah</i>	N/A	N/A	VR	Y
164	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	娑環蛺蝶	<i>Neptis soma</i>	R	R	VR	Y
165	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	金蟠蛺蝶	<i>Pantoporia hordonia</i>	C	C	UC	Y
166	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	丫紋俳蛺蝶	<i>Parasarpa dudu</i>	UC	UC	C	Y
167	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	殘鏢線蛺蝶	<i>Parathyma sulphitia</i>	C	C	C	Y
168	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	柱菲蛺蝶	<i>Phaedyma columella</i>	C	UC	C	Y
169	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	玳蛺蝶	<i>Phalanta phalantha</i>	UC	UC	VR	Y
170	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	黃鉤蛺蝶	<i>Polygonia c-aureum</i>	N/A	VR	VR	Y
171	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	羅蛺蝶	<i>Rohana parisatis</i>	C	C	C	Y
172	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	帥蛺蝶	<i>Sephisa chandra</i>	VR	VR	VR	Y
173	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	散紋盛蛺蝶	<i>Symbrenthia lilaea</i>	C	C	C	Y
174	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	彩蛺蝶	<i>Vagrans egista</i>	VR	VR	VR	Y
175	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	小紅蛺蝶	<i>Vanessa cardui</i>	R	UC	R	Y
176	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	大紅蛺蝶	<i>Vanessa indica</i>	UC	C	UC	Y
177	Nymphalidae 蛺蝶科	Nymphalinae 蛺蝶亞科	瑤蛺蝶	<i>Yoma sabina</i>	VR	VR	VR	Y
178	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	翠袖鋸眼蝶	<i>Elymnias hypermnestra</i>	C	C	C	Y
179	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	白帶黛眼蝶	<i>Lethe confusa</i>	C	VC	C	Y
180	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	長紋黛眼蝶	<i>Lethe europa</i>	UC	C	UC	Y
181	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	波紋黛眼蝶	<i>Lethe rohria</i>	UC	UC	UC	Y
182	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	玉帶黛眼蝶	<i>Lethe verma</i>	VR	VR	VR	Y
183	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	暮眼蝶	<i>Melanitis leda</i>	C	VC	C	Y
184	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	睇暮眼蝶	<i>Melanitis phedima</i>	UC	C	UC	Y
185	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	小眉眼蝶	<i>Mycalesis mineus</i>	VC	VC	VC	Y
186	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	平頂眉眼蝶	<i>Mycalesis zonata</i>	C	C	C	Y
187	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	蒙鍾陰眼蝶	<i>Neope muirheadii</i>	UC	UC	UC	Y
188	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	矍眼蝶	<i>Ypthima baldus</i>	C	VC	VC	Y
189	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	擬四眼矍眼蝶	<i>Ypthima imitans</i>	N/A	R	VR	Y
190	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	黎桑矍眼蝶	<i>Ypthima lisandra</i>	VC	C	C	Y
191	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	東亞矍眼蝶	<i>Ypthima motschulskyi</i>	VR	R	VR	Y
192	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	小三矍眼蝶	<i>Ypthima norma</i>	VR	VR	VR	Y
193	Nymphalidae 蛺蝶科	Satyrinae 眼蝶亞科	前霧矍眼蝶	<i>Ypthima praenubila</i>	R	R	VR	Y
194	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	翳鳳蝶	<i>Byasa alcinous</i>	VR	VR	VR	Y
195	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	褐斑鳳蝶	<i>Chilasa agestor</i>	N/A	VR	VR	Y
196	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	斑鳳蝶	<i>Chilasa clytia</i>	C	C	C	Y
197	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	統帥青鳳蝶	<i>Graphium agamemnon</i>	VC	VC	C	Y
198	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	寬帶青鳳蝶	<i>Graphium cloanthus</i>	R	R	UC	Y
199	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	木蘭青鳳蝶	<i>Graphium doson</i>	UC	UC	C	Y
200	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	青鳳蝶	<i>Graphium sarpedon</i>	VC	VC	VC	Y
201	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	燕鳳蝶	<i>Lamproptera curius</i>	R	UC	R	Y
202	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	紅珠鳳蝶	<i>Pachliopta aristolochiae</i>	UC	UC	R	Y

No.	Family	Subfamily	Chinese Common Name	Scientific Name	Local Restrictedness ^a			Record(s) in protected areas
					Walthew (1997) ^b	Young & Yiu (2002) ^c	AFCD (2011)	
203	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	碧鳳蝶	<i>Papilio bianor</i>	C	C	C	Y
204	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	達摩鳳蝶	<i>Papilio demoleus</i>	C	C	C	Y
205	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	穹翠鳳蝶	<i>Papilio dialis</i>	N/A	VR	VR	Y
206	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	玉斑鳳蝶	<i>Papilio helenus</i>	VC	VC	VC	Y
207	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	金鳳蝶	<i>Papilio machaon</i>	N/A	N/A	VR	Y
208	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	美鳳蝶	<i>Papilio memnon</i>	VC	VC	VC	Y
209	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	巴黎翠鳳蝶	<i>Papilio paris</i>	VC	VC	VC	Y
210	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	玉帶鳳蝶	<i>Papilio polytes</i>	VC	VC	VC	Y
211	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	藍鳳蝶	<i>Papilio protenor</i>	C	VC	VC	Y
212	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	柑橘鳳蝶	<i>Papilio xuthus</i>	UC	UC	R	Y
213	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	綠鳳蝶	<i>Pathysa antiphates</i>	C	C	C	Y
214	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	金裳鳳蝶	<i>Troides aeacus</i> ^d	R	UC	R	Y
215	Papilionidae 鳳蝶科	Papilioninae 鳳蝶亞科	裳鳳蝶	<i>Troides helena</i> ^e	UC	UC	UC	Y
216	Pieridae 粉蝶科	Coliadae 黃粉蝶亞科	遷粉蝶	<i>Catopsilia pomona</i>	C	C	C	Y
217	Pieridae 粉蝶科	Coliadae 黃粉蝶亞科	梨花遷粉蝶	<i>Catopsilia pyranthe</i>	C	C	VC	Y
218	Pieridae 粉蝶科	Coliadae 黃粉蝶亞科	檀方粉蝶	<i>Dercas verhuelli</i>	UC	UC	R	Y
219	Pieridae 粉蝶科	Coliadae 黃粉蝶亞科	槩黃粉蝶	<i>Eurema blanda</i>	R	UC	C	Y
220	Pieridae 粉蝶科	Coliadae 黃粉蝶亞科	無標黃粉蝶	<i>Eurema brigitta</i>	UC	UC	R	Y
221	Pieridae 粉蝶科	Coliadae 黃粉蝶亞科	寬邊黃粉蝶	<i>Eurema hecabe</i>	VC	VC	VC	Y
222	Pieridae 粉蝶科	Coliadae 黃粉蝶亞科	尖角黃粉蝶	<i>Eurema laeta</i>	UC	UC	VR	Y
223	Pieridae 粉蝶科	Pierinae 粉蝶亞科	白翅尖粉蝶	<i>Appias albina</i>	VR	R	R	Y
224	Pieridae 粉蝶科	Pierinae 粉蝶亞科	靈奇尖粉蝶	<i>Appias lycida</i>	VR	VR	VR	Y
225	Pieridae 粉蝶科	Pierinae 粉蝶亞科	黑脈圍粉蝶	<i>Cepora nerissa</i>	C	C	C	Y
226	Pieridae 粉蝶科	Pierinae 粉蝶亞科	紅腋斑粉蝶	<i>Delias acalis</i>	R	UC	R	Y
227	Pieridae 粉蝶科	Pierinae 粉蝶亞科	艷婦斑粉蝶	<i>Delias belladonna</i>	VR	N/A	VR	Y
228	Pieridae 粉蝶科	Pierinae 粉蝶亞科	優越斑粉蝶	<i>Delias hyparete</i>	R	UC	UC	Y
229	Pieridae 粉蝶科	Pierinae 粉蝶亞科	報喜斑粉蝶	<i>Delias pasithoe</i>	C	VC	VC	Y
230	Pieridae 粉蝶科	Pierinae 粉蝶亞科	鶴頂粉蝶	<i>Hebomoia glaucippe</i>	C	C	C	Y
231	Pieridae 粉蝶科	Pierinae 粉蝶亞科	橙粉蝶	<i>Ixias pyrene</i>	UC	UC	UC	Y
232	Pieridae 粉蝶科	Pierinae 粉蝶亞科	纖粉蝶	<i>Leptosia nina</i>	Vagrant	VR	VR	Y
233	Pieridae 粉蝶科	Pierinae 粉蝶亞科	東方菜粉蝶	<i>Pieris canidia</i>	C	VC	VC	Y
234	Pieridae 粉蝶科	Pierinae 粉蝶亞科	菜粉蝶	<i>Pieris rapae</i>	R	UC	R	Y
235	Pieridae 粉蝶科	Pierinae 粉蝶亞科	紅肩鋸粉蝶	<i>Prioneris philonome</i>	VR	N/A	VR	Y
236	Pieridae 粉蝶科	Pierinae 粉蝶亞科	鋸粉蝶	<i>Prioneris thestylis</i>	R	UC	R	Y

^a VR: Very Rare; R: Rare; UC: Uncommon; C: Common; VC: Very Common; N/A: not applicable as the species was not recorded or its status not evaluated; butterfly species of conservation concern are in bold type

^b Walthew, G. 1997. The status and flight periods of Hong Kong butterflies. Porcupine! 16: 34-37.

^c Young, J.J., and V. Yiu. 2002. Butterfly watching in Hong Kong. Wan Li Book Co., Hong Kong. 342 pages.

^d Protected under the Protection of Endangered Species of Animals and Plants Ordinance, Cap. 586

^e Protected under the Wild Animals Protection Ordinance, Cap. 170 and the Protection of Endangered Species of Animals and Plants Ordinance, Cap. 586

Working Group Column

The First Record of the Dung Beetle *Onitis excavatus* (掘凹蜚蠊) in Hong Kong

Joseph K.H. Cheung, Angel Y.Y. Au, Rex C.H. Shih and Alex P.L. Li
Beetle Working Group

漁農自然護理署甲蟲工作小組於城門及大帽山一帶發現在香港屬首次記錄的掘凹蜚蠊(*Onitis excavatus*)。本文就其鑒別特徵、生態及分佈等方面作出簡短的描述。

Introduction

The dung beetle is a globally distributed insect group with coprophagous (糞食性) feeding habit. Members of the group consist of at least six coleopteran families. It is often considered as highly beneficial and contributes to a series of ecological functions and services, from secondary seed dispersal to nutrient cycling and parasite suppression through its manipulation and consumption of dung. In January–April 2010, the Beetle Working Group of the Agriculture, Fisheries and Conservation Department conducted dung beetle surveys in the areas of Shing Mun and Tai Mo Shan. Among the dung beetles whose identity was confirmed, and upon checking the literature available, *Onitis excavatus* Arrow, 1931 (掘凹蜚蠊) is recorded as new to Hong Kong.

Taxonomy and Morphology

O. excavatus belongs to the Family Scarabaeidae (金龜科), Subfamily Scarabaeinae (蜚蠊亞科) and Tribe Onitini (凹蜚蠊族). It has a body length of about 22–25 mm. Its body is black and shiny, and is rather oblong and moderately convex. It has a pronotum (前胸背板) with two conspicuous basal impressions which is, in fact, a peculiar feature of the Genus *Onitis* (凹蜚蠊屬). A distinctive feature of *O. excavatus* is the deep transverse excavation behind the middle of its metasternum (後胸腹板) which differentiates it from *O. falcatus* (鑷凹蜚蠊) to which it bears a close resemblance (Figs. 6 and 7).

Fig 6. *Onitis excavatus* (a) dorsal view; and (b) ventral view.

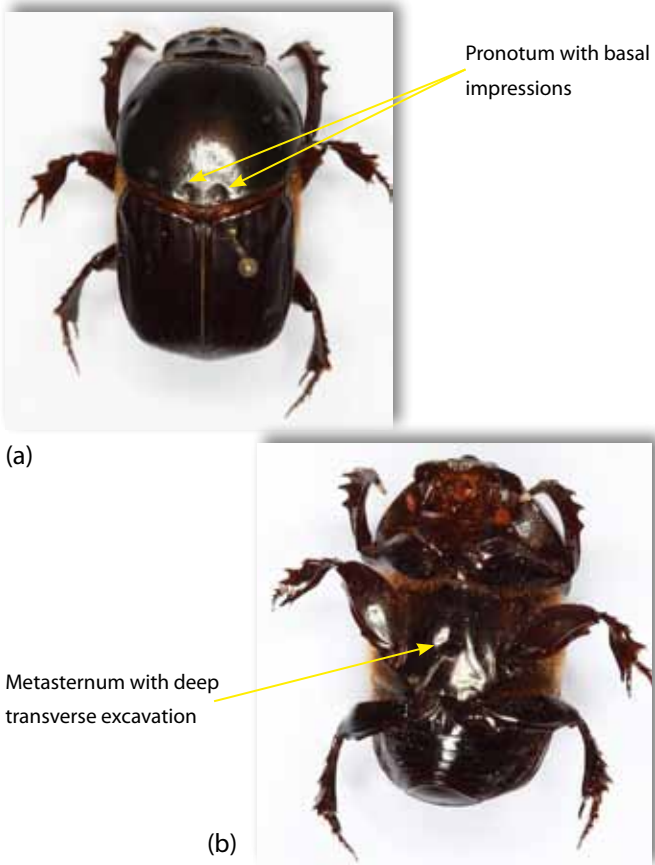
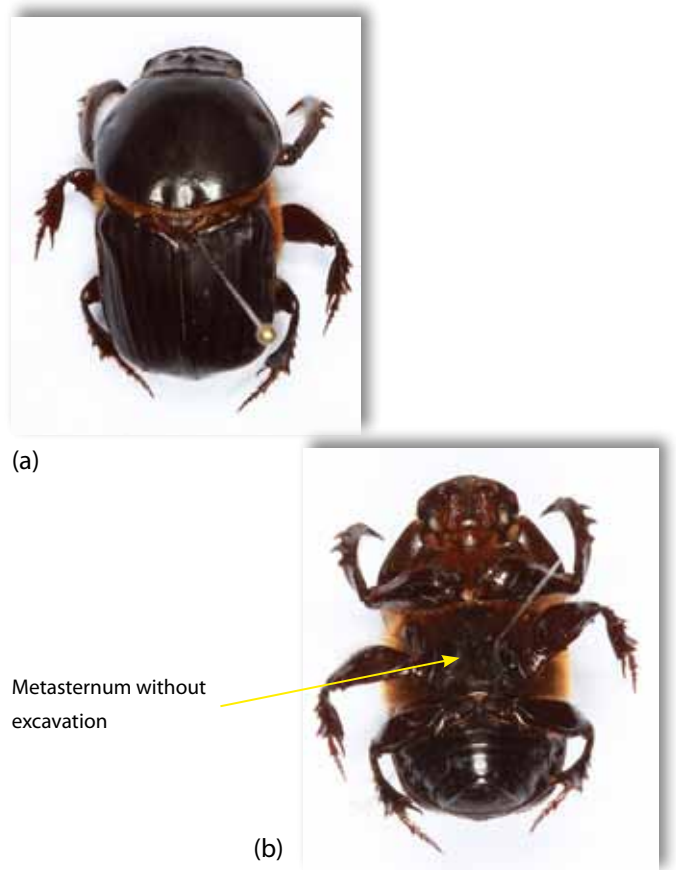


Fig 7. *Onitis falcatus* (a) dorsal view; and (b) ventral view.



Ecology

Like other dung beetles, *O. excavatus* consumes dung for nutrients and water. It has paracoprid or tunneling (直接掘洞型) nesting behaviour, in which it buries dung down into the brood chamber dug beneath a dung pat for larval development. Although fecundity is compromised by the time and energy invested by the adult, this nesting strategy offers a secure food supply and protection to the offspring with lowered mortality. In Hong Kong, cattle dung is the major natural dung source for it as in most other parts of the world.

Fig 8. *Liatongus tridentatus*, pending further taxonomic studies.



Acknowledgements

We would like to express our sincere gratitude to Prof. Yang Xing-ke (楊星科教授) and Dr. Bai Ming (白明博士) of the Chinese Academy of Sciences for their advice on the identification and distribution status of the dung beetles we collected.

References

- Arrow, G.J. 1931. The fauna of British India, including Ceylon and Burma: Coleoptera Lamellicornia Part III (Coprinae). Taylor and Francis, London. 428 pages.
- Bouchard, P. et al. 2011. Family-group names in Coleoptera (Insecta). ZooKeys **88**: 1–972.
- Edwards, P.B., and H.H. Aschenborn. 1987. Patterns of nesting and dung burial in *Onitis* dung beetles: implications for pasture productivity and fly control. Journal of Applied Ecology **24**: 837-851.
- Hanski, I., and Y. Cambefort. 1991. Dung beetle ecology. Princeton University Press, Princeton. 481 pages.

Distribution and Conservation Status

O. excavatus is one of the most widely distributed *Onitis* species in China, with records in the provinces of Jiangsu, Zhejiang, Hubei, Jiangxi, Hunan, Fujian, Guangdong, Guangxi, Sichuan, Guizhou and Yunnan. It has also been found in Vietnam, Thailand, Myanmar and India. There is no protection status for *O. excavatus*.

Further Studies

The Beetle Working Group has also found two dung beetles that are believed to be new records for Hong Kong, known as *Liatongus tridentatus* Boucomont, 1919 (三叉利蜣螂) and *Copris* (s. str.) *bengalensis* Gillet, 1911 (孟加拉糞蜣螂) (Figs. 8 and 9). Further taxonomic studies for these dung beetles are being undertaken.

Fig 9. *Copris* (s. str.) *bengalensis*, pending further taxonomic studies.



- Nichols, E., S. Spector, J. Louzada, T. Larsen, S. Amezcuita, and The Scarabaeinae Research Network. 2008. Ecological functions and ecosystem services provided by Scarabaeinae dung beetles. Biological Conservation **141**: 1461-1474.

白明。2008。中國蜣螂亞科的系統學研究及基於化石、形態和分子數據對金龜子起源與演化的探討(鞘翅目：金龜總科)，博士學位論文。中國科學院，北京。共705頁。(In Chinese only)

黃邦侃主編。2002。福建昆蟲志·第六卷。福建科學技術出版社，福建。共894頁。(In Chinese only)

Rare Snakes Found: Mountain Keelback (*Amphiesma atemporale*, 無鬚鱗游蛇) and Northern Reed Snake (*Calamaria septentrionalis*, 鈍尾兩頭蛇)

Aidia S.W. Chan, T.H. Fung, Connie K.Y. Ng, Azaria K.Y. Wong
Herpetofauna Working Group

David Willott先生於2010年9月26日在新界大帽山發現一條被輾斃的無鬚鱗游蛇 (*Amphiesma atemporale*)；另外，漁農自然護理署兩棲及爬行動物工作小組於2011年5月31日在新界蠔涌發現一條鈍尾兩頭蛇 (*Calamaria septentrionalis*)。這兩個品種皆屬罕見，而鈍尾兩頭蛇更是於蠔涌的首次發現。本文就其特徵及發現記錄作簡短的描述。

Mountain Keelback

The Mountain Keelback (*Amphiesma atemporale*, 無鬚鱗游蛇) is a small, non-venomous snake up to 50 cm in total length. The dorsal side is dark brown with light brown spots while the ventral side is greyish white. The upper labials have a few white spots. This species is characterised by the absence of the temporal scale normally present in snakes, hence the name 'atemporale'. It lives on hillsides at medium to high altitudes. This species was first recorded in Hong Kong in 1966, with only a few local specimens found in the Tai Mo Shan area since then. Due to its rarity, little is known about its habit and ecology. Some information about this species is summarised in table 4 below:

Table 4. Ecological information of Mountain Keel back.

Family	Colubridae
Genus	<i>Amphiesma</i>
Scientific name	<i>Amphiesma atemporale</i>
Common name	Mountain Keelback
Chinese name	無鬚鱗游蛇
Features	Back dark brown with two rows of light brown spots; dorsal scales moderately keeled; a white spot below each eye; normal temporal scale absent; upper labials have a few white spots; a cream-coloured neck collar; ventral scales greyish white; a black dot at both ends of each ventral scale.
Diet	Unknown.
Reproduction	One female is known to carry 11 eggs
Distribution	Distributed in China including Hong Kong, Guangdong, Guangxi, Guizhou and Yunnan ; and northern Vietnam
Status in Hong Kong	Rare. Past records limited to the Tai Mo Shan area only.

Field Notes

On 16 September 2010, Mr David Willott found a road-killed Mountain Keelback at Tai Mo Shan. The snake was about 23 cm in total length. Although it was already dried and damaged when found, the distinctive characteristics of the species, such as the black spots at both ends of the ventral scale, the white spot under the eye, the barred

upper labials and the absence of temporal scale, are still discernible upon close examination. The snake was preserved as a specimen for long-term keeping.

Northern Reed Snake

The Northern Reed Snake (*Calamaria septentrionalis*, 鈍尾兩頭蛇) is also a small, non-venomous snake which is rare in Hong Kong. Past records were limited to Clear Water Bay peninsula and Ma On Shan Country Park. The finding in the Ma On Shan Country Park, together with the species information, was published in Issue 12 of this newsletter.

Field Notes

A new locality record of this species was made on 31 May 2011 when the Herpetofauna Working Group found a live Northern Reed Snake at Ho Chung. The individual was a healthy adult of 33 cm in total length. It was temporarily kept for observation and was later released back to the woodland near the capture point. In captivity, it was provided with sand and moistened leaves as substrate, and fed with small earthworms.

It is encouraging to have an additional record of the rare Mountain Keelback which has not been recorded for at least 10 years; as well as to have a new locality record of the restricted Northern Reed Snake. As the records of both species are very limited, surveys will be continued to ascertain their distribution and status in Hong Kong.

References

- Chan, S.K.F., K.S. Cheung, C.Y. Ho, F.N. Lam, and W.S. Tang. 2006. Rare species highlight: Northern Reed Snake (鈍尾兩頭蛇). *Hong Kong Biodiversity* 12:11.
- Karsen, S.J., M.W.N. Lau, and A. Bogadek. 1998. Hong Kong amphibians and reptiles. Provisional Urban Council, Hong Kong. 186 pages.
- Uetz, P., and J. Hallermann. 2011. *Amphiesma atemporale* (Bourret, 1934). German Herpetological Society, Hamburg. Available from <http://reptile-database.reptarium.cz/species.php?genus=Amphiesma&species=atemporale> (accessed July 2011)

趙爾宓、黃美華、宗愉 等編著。1998。中國動物志 — 爬行綱第三卷〈有鱗目：蛇亞目〉。科學出版社。共522頁。(In Chinese only)

趙爾宓。2006。中國蛇類(上冊)。安徽科學技術出版社。共372頁。(In Chinese only)

Division Column

Public Support Results in the Successful Rescue of a Juvenile Green Turtle (*Chelonia mydas*, 綠海龜)

Connie K.Y. NG and Pamela Y.M. Wan
Wetland and Fauna Conservation Division

多年來，漁農自然護理署收到不少熱心市民提供有關海龜出沒或擱淺的報告，有助我們更有效保護海龜或採取執法行動。本文記述一則關於公眾參與海龜保育的成功例子，及簡介本港的海龜研究工作。如市民發現海龜出沒或擱淺，請致電 1823 電話中心以便跟進。

Over the years, the Agriculture, Fisheries and Conservation Department (AFCD) has received public reports on sea turtle sightings or strandings, which facilitate proper rescue or enforcement action by the AFCD. This article presents a successful example of public engagement in sea turtle conservation.

On 13 April 2010, the AFCD received a report from a fisherman that a Green Turtle (*Chelonia mydas*, 綠海龜) had become accidentally entangled in a fishnet off Mui Wo (梅窩), Lantau Island. As agreed by the AFCD, the fisherman disentangled the turtle from the net and kept it until AFCD staff collected the turtle. The Green Turtle was a juvenile, about 40 cm in carapace length (Fig. 10).

Fig 10. The juvenile Green Turtle found off Mui Wo, Lantau Island.



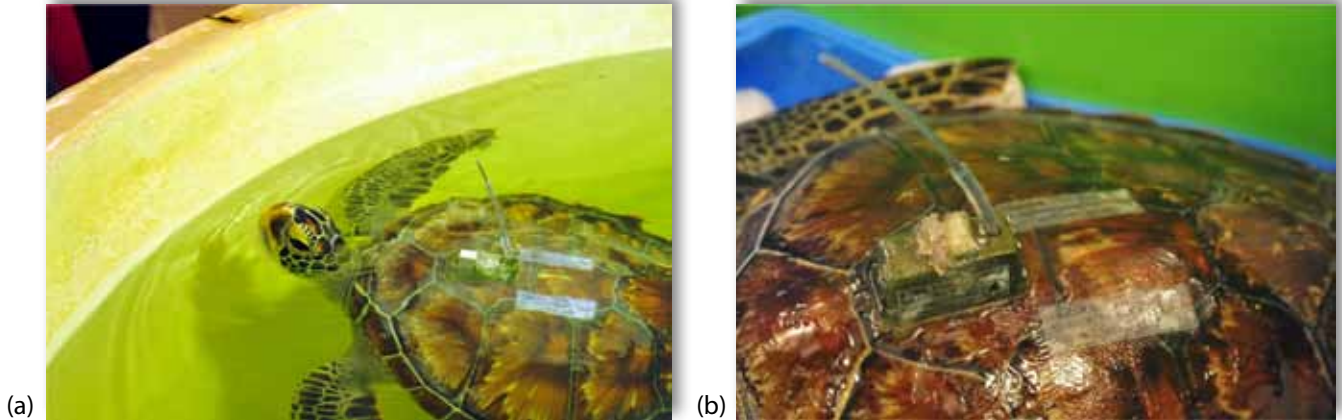
The turtle was delivered to the Hong Kong Ocean Park for instant veterinary assessment. It was then kept at the Hong Kong Wetland Park for constant monitoring and veterinary care. The caretaker fed the turtle squid, shrimp and vegetables. During its three-month rehabilitation, the turtle experienced remarkable growth – its weight increased a third, from 7.8 kg to 10.4 kg and its carapace length from 40 cm to 45 cm. Its healthy condition suggested that it was ready to be returned to the sea.

Prior to its release, the turtle was tagged with an internal microchip, as well as with an inconel tag numbered 'HK-054' on its hindlimb for future identification (Fig. 11). To keep track of the course of this migratory species, a satellite transmitter from Telonics Inc. (Model TAM-2619) was attached to its carapace, using elastomer, polyester resin and fiberglass cloth, following the attachment procedures adopted by Balazs et al. (1996) (Fig. 12). The transmitter, which weighs 90 g, is far less than 5% of the body weight of the juvenile Green Turtle. This is to ensure the transmitter deployment has no significant negative impact on the turtle (Watson and Granger 1998; Hart and Fujisaki, 2010).

Fig 11. Inconel tag 'HK-054' on the hind limb of the Green Turtle.



Fig 12a & b. Satellite transmitter attached to the Green Turtle.



On 6 August 2010, the juvenile Green Turtle was released in the southern waters of Hong Kong (Fig. 13). According to the satellite tracking records, the turtle was determined to be roaming in local waters, and was sighted in the northern waters off Po Toi Island on 14 September 2010 and later in the southeastern waters of Shanwei (汕尾), Guangdong on 27 September 2010. It took around 53 days from its release for the turtle to travel to Shanwei, which is 170 km from the release site. The turtle was subsequently observed in the near-shore waters of Shanwei peninsula before the signal ceased (Fig. 14). Its size, which implies a

shift of diet from primarily carnivorous in its hatchling and early juvenile stages in open water to herbivorous during its juvenile and adult stages along the coastal fringes (Bjorndal, 1997; Musick & Limpus, 1997; Hart and Fujisaki, 2010), and the apparent site fidelity it displayed may both suggest that the coastal habitats of Shanwei are foraging grounds for Green Turtles (Chan et al., 2007). Pinpointing the migratory routes and feeding grounds of Green Turtles allows necessary protection measures to be drawn up, as well as co-operation amongst relevant authorities to better conserve the species.

Fig 13. AFCD officers and the Green Turtle prior to release.



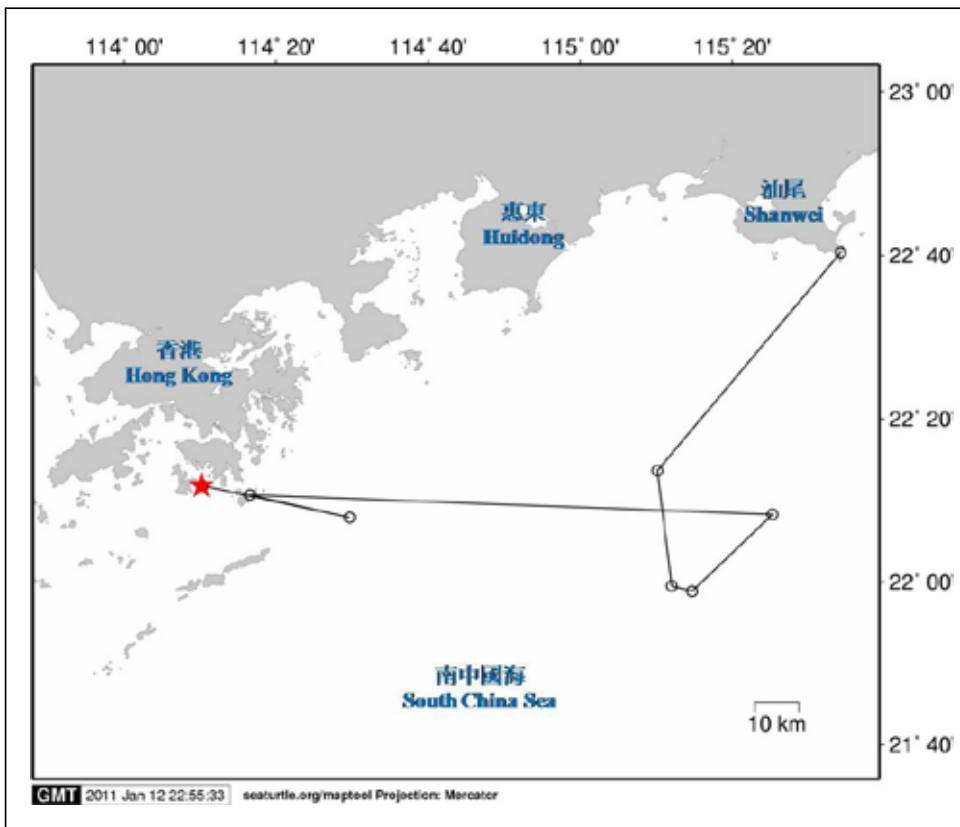


Fig 14. Satellite tracking results* of juvenile Green Turtle 'HK-054'. (Maptool @ seaturtle.org.)

* The star icon denotes the release locality. The lines linking the data points are for easy reference of the course direction only. They do not imply the exact pathway of the Green Turtle.

The success of the rescue of the juvenile Green Turtle is attributed to the prompt action of the fisherman and the cooperative efforts of different parties. You can help protect and conserve this globally endangered species by reporting any sea turtle sightings or strandings via the **1823** Call Centre. Public engagement and cooperation is indispensable in sea turtle conservation!

Acknowledgements

We would like to thank Dr. F. K. Lee and his veterinary team, as well as Mr. David Lai and his aquarium staff of the Hong Kong Ocean Park for their prompt check-up of the turtle. We are also grateful to Dr. Katriona Bradley, and our colleagues at Hong Kong Wetland Park for their care for the turtle during its rehabilitation, as well as those in the Aquaculture Fisheries Division of the AFCD for their logistics support.

References

- Balazs, G.H., R.K. Miya, and S.C. Beavers. 1996. Procedures to attach a satellite transmitter to the carapace of an adult green turtle, *Chelonia mydas*. Pages 21-26 in J.A. Keinath, D.E. Barnard, J.A. Musick, and B.A. Bell (editors). Proceedings of the Fifteenth Annual Symposium on Sea Turtle Biology and Conservation, February 20-25, 1995, Hilton Head, South Carolina. U.S.
- Bjorndal, K.A. 1997. Foraging ecology and nutrition of sea turtles. Pages 199-231 in P.L. Lutz and J.A. Musick, editors. The biology of sea turtle. CRC Press, Boca Raton.
- Chan, S.K.F., I.J. Cheng, T. Zhou, H.J. Wang, H.X. Gu, and X.J. Song. 2007. A Comprehensive overview of the population and conservation status of sea turtles in China. *Chelonian Conservation and Biology* **6(2)**: 185-198.
- Hart, K.M., and I. Fujisaki. 2010. Satellite tracking reveals habitat use by juvenile green sea turtles *Chelonia mydas* in the Everglades, Florida, USA. *Endangered Species Research* **11**: 221-232.
- Musick, J.A., and C.J. Limpus. 1997. Habitat utilization and migration in juvenile sea turtles. Pages 137-163 in P.L. Lutz and J.A. Musick, editors. The biology of sea turtle. CRC Press, Boca Raton.
- Watson, K.P., and R.A. Granger. 1998. Hydrodynamic effect of a satellite transmitter on a juvenile green turtle (*Chelonia mydas*). *The Journal of Experimental Biology* **201**: 2496-2505.

A Short Note on a Rare Bird Record: Bulwer's Petrel (*Bulweria bulwerii*, 褐燕鷗)

Carrie K.W. Ma

Wetland and Fauna Conservation Division

漁農自然護理署職員於2011年6月24日於長灣遊樂場足球場看台旁邊據報檢收到一隻褐燕鷗 (*Bulweria bulwerii*)，可能為香港首個確定記錄。本文就褐燕鷗的特徵、分布、生態環境和保育狀況作簡短的描述。

On 24 June 2011, the 1823 Call Centre received a report that a debilitated bird was found adjacent to the football court bleachers of the Cheung Sha Wan Playground, Kowloon. The bird was later delivered to the New Territories North Animal Management Centre, but it died on 27 June 2011. As standard procedure, the carcass was sent to the Tai Lung Veterinary Laboratory to conduct a test for avian influenza, which was found to be negative. The bird was later identified to be a Bulwer's Petrel (*Bulweria bulwerii*, 褐燕鷗), which was probably the first confirmed record of this species in Hong Kong.

Bulwer's Petrel is a small sea bird in the family Procellariidae. The following description is based on the photographic record of the carcass provided by the Tai Lung Veterinary Laboratory.

Description

Size and structure: The Bulwer's Petrel had a small head and short neck, with a slender body of approximately 30 cm in length and wing span of approximately 80 cm in length. Its wings were long and thin, and quite angled. The tail was long, narrow and pointed. As described by de Hoyo et al. (1992) and Harrison (1996), the tail of this species is diagnostically long and wedge-shaped when fanned during flight.

Plumage: The Bulwer's Petrel had blackish-brown plumage, with pale bars across the median coverts of the upper and lower wings. It had a dark brown head and dark brown iris. Its bill was black and hooked. The feet were blackish-pink and webbed. Its legs and inner webs of feet were dusky pink, with darker outer webs and toes. The underparts, under-wings and belly were also dark brown, but paler in colour.

Distribution

There has been no previous confirmed record of Bulwer's Petrel in Hong Kong. This species is a highly pelagic seabird that usually stays far from land and its breeding grounds during the non-breeding season in which it disperses over tropical and subtropical waters of the Pacific, Atlantic and Indian Oceans. The Pacific populations probably move into the central and east Pacific Ocean, and also the Indian Ocean, as far west as the Maldives (馬爾代夫); while the Atlantic populations mostly move into

the west and south Atlantic Ocean, a few reaching South Africa (de Hoyo et al., 1992). The breeding season starts in April or May. This species forms colonies in a wide variety of habitats including cliffs, boulder scree and sandy shores on barren offshore islands. It breeds at the Pacific ranges from eastern China and the Bonin Islands (小笠原群島) of Japan in the north, east to the Marquesas (馬克薩斯群島) and the Hawaiian Islands (夏威夷群島). In the Atlantic, it breeds in the eastern Atlantic from the Azores (亞速爾群島) to Cape Verde (佛得角) (de Hoyo et al., 1992; Harrison, 1996; BirdLife International, 2011).

As described by de Hoyo et al. (1992), Bulwer's Petrel feeds on fish and squids, occasionally with some crustaceans. It feeds mostly at night on the sea surface by surface seizing. The author also encountered this species at dawn on 21 July 2001 during a boat trip to Matsu (馬祖), Taiwan. For most of the time, the bird made wingbeats followed by a short glide close to the sea surface. Sometimes it moved over the sea surface with wings held forward, twisting close to the water surface, and then dipped through the wave, which was thought to indicate it was feeding on the water surface.

Conservation Status

The global population of mature Bulwer's Petrel was estimated to be 500,000 to 1,000,000 individuals in 2004 (Brooke, 2004). There were several tens of thousands of breeding pairs in the Atlantic; while over 100,000 breeding pairs were found in the Pacific, including over 400,000 in Hawaii, in 1992 (de Hoyo et al., 1992). Globally, the species is categorised as 'Least Concern' as it has a large distribution range and its population is considered stable (BirdLife International, 2011).

Discussion

This specimen enriched the rare bird species record of Hong Kong. Morton and Harper (1995) reported that there were probable observations of Bulwer's Petrel during typhoons Becky (貝姬) and Dot (黛蒂) in September 1993 but these were unconfirmed. Recent records of this species in the region included the report of a group of 50 Bulwer's Petrels on 13 August 2006, brought by typhoon Sangmei (桑美) to an inland area in Hubei (湖北) (China Bird Watch, 2006); and on 14 May 2007, a suspected Bulwer's Petrel recorded at Po Toi Island (Lewthwaite, 2007).

The occurrence of the Bulwer's Petrel in Hong Kong may be due to a typhoon. According to the Hong Kong Observatory, three tropical cyclones were formed in the western North Pacific and the South China Sea in June 2011. Among them, typhoon Haima (海馬) made landfall over the coast of Guangdong on 23 June 2011 (Hong Kong Observatory, 2011), which may have brought this bird to Hong Kong.

Acknowledgements

The author acknowledges the Animal Health Division and Veterinary Laboratory Division of this Department for providing information of the record.

References

- BirdLife International. 2011. Species factsheet: *Bulweria bulwerii*. BirdLife International, Cambridge, UK. Available from <http://www.birdlife.org> (accessed August 2011).
- Brooke, M. de L. 2004. Albatrosses and petrels across the world. Oxford University Press, Oxford. 265 pages.
- de Hoyo, J., A. Elliott, and J. Sargatal, editors. 1992. Handbook of the birds of the world. Volume 1. Lynx Edicions, Barcelona. 250 pages.
- Harrison, P. 1996. Seabirds of the world – a photographic guide. Christopher Helm, London. 205 pages.
- Hong Kong Observatory. 2011. The weather of June 2011. Hong Kong Observatory, Hong Kong. Available from <http://www.hko.gov.hk/wxinfo/pastwx/mws201106.htm> (accessed September 2011).
- Lewthwaite, R. 2007. Hong Kong bird news, February–May 2007. Pages 32 in Hong Kong Bird Watching Society Bulletin. Issue 204. Hong Kong Bird Watching Society, Hong Kong.
- Morton, B., and E. Harper. 1995. An introduction to the Cape d'Aguilar Marine Reserve, Hong Kong. Hong Kong University Press, Hong Kong. 74 pages.
- Wuhan Wild Bird Society. 2006. Updates from the Wuhan Bird Watching Society. in L. Yu et al., editors. China Bird Watch, Issue 51, Beijing, 22 pages.

What's New

Latest News on the New Species of *Pteroptyx* Firefly 曲翅螢²新種的最新消息

Beetle Working Group
甲蟲工作小組

Further to the feature article in Issue 19 of this Newsletter about the discovery of a new species of the *Pteroptyx* firefly, a scientific paper describing the species has been published in the journal *Zootaxa*. Its life stages, special structures, habitat preference and courtship behaviour were detailed in the paper. The species is officially named as *Pteroptyx maipo*. Readers may refer to *Zootaxa* 2931: 8–34 (2011) for the full paper.

繼刊登於本期刊第十九期關於發現一個新螢火蟲品種的文章，一篇描述該品種的學術文章已於 *Zootaxa* 期刊發表。文章詳細記錄了該品種的生命週期、獨特身體結構、生境及交配行為。該螢火蟲品種亦已正式被命名為香港曲翅螢 (*Pteroptyx maipo*)。讀者可於 *Zootaxa* 期刊第2931期8至34頁 (2011年) 閱覽有關文章。

² 前稱「齊燦螢」