and the Natural History Museum, London, and proven to be *Meimuna silhetana*, a new record for Hong Kong.

In September 2002, Country Park staff went to the island again for an ecological survey. A few calling male *Meimuna silhetana* were first found on *Celtis sinensis* close to Cham Keng Chau and the call is distinct. According to the intensity and presence of the call, *Meimuna silhetana* shows a scattered distribution on the island, mainly on *Celtis sinensis*. Three male specimens were collected during that field trip.

Information on *Meimuna silhetana* is scarce. It was not even included in the book, The Cicadidae of China (Chou & Lei, 1997). According to the List of Chinese Insects (Hua, 2000), *Meimuna silhetana* occurs in India and China (Fujian, Guangdong, Sichuan and Yunnan). Chen (1992) reported a record in Yunnan, China (Lijiang, 2400m, 1974. VII. 23).

Including *Meimuna silhetana*, 20 species of cicada have been recorded in Hong Kong.

Bibliography

Chen, S.C. (1992). *Insects of the Hengduan Mountains Region* Vol. 1. Science Press. Beijing.

Chou, I. & Lei, Z.R. (1997). *The Cicadidae of China* (Homoptera: Cicadoidea). Tianze Eldoneio. Hong Kong.

Hua, L. (2000). *List of Chinese Insects* Vol. 1. Zhongshan University Press. Guangzhou.

VERTEBRATES

Feral/stray dogs and civet mortality on Kau Sai Chau, 2001-2

by Thomas D. Dahmer
Ecosystems Ltd., 2/F Kingsun Computer Bldg., 40 Shek Pai Wan Road, Aberdeen, Hong Kong, ecosys@pacific.net.hk

Introduction

Mortality of Small Indian (*Viverricula indica*) and Masked Palm (*Paguma larvata*) Civets between May 1998 and May 2001 on Kau Sai Chau was documented by Dahmer (2001). Five dead Small Indian Civets and one dead Masked Palm Civet were reported on a ±6 km^2 island in Port Shelter of eastern Hong Kong. The cause of death in each case was determined to be attack by feral/stray dogs (*Canis lupus familiaris*). Between June 2001 and November 2002 six additional Small Indian Civet fatalities were recovered from Kau Sai Chau, raising the total to 12 civets over a period of four years and eight months. The cause of death in each of the latter cases was also determined to be attack by feral/stray dogs. Based upon recovered carcasses the rate of civet mortality due to dog attack on Kau Sai Chau has averaged one civet every 4-5 months since May 1998. Most of the attacked civets were sub-adult males that appeared to be dispersing from litters.

Many feral/stray dogs were removed from Kau Sai Chau between 1998 and 2002, but the population was seldom, if ever, reduced to zero for more than a few weeks at a time. At almost all times the island was occupied by >2 feral/stray dogs.

The purpose of this manuscript is to document the frequency of dog attacks on Small Indian Civets in a situation that is uniquely suited to monitoring this relationship. It is hoped that this report will encourage a more aggressive feral/stray dog removal and control programme in Hong Kong in the interests of reducing civet mortality. One additional Small Indian Civet fatality is included in this report to document a death caused by vehicle collision.

Methods

Methods reported in Dahmer (2000) were used in the 18-month follow-on period from June 2001 through November 2002. All dead civets were reported by the golf course greenskeeping staff. One vehicle-killed Small Indian Civet was recovered by the author from Clearwater Bay Road on 4 July 2001. Nomenclature used in this report follows Wilson and Reeder (1992).

Results

Over a period of 18 months from June 2001 through November 2002, six dead Small Indian Civets were recovered from northern Kau Sai Chau. These are listed in Table 1 together with the fatalities reported in Dahmer (2001). All fatalities were discovered shortly after sunrise when the greenskeeping staff spread out over the golf courses to mow grass and tend to facilities. Only the two March 2002 fatalities were inspected in detail prior to disposal of the carcasses. No flesh or internal organs of the two inspected civets had been eaten, and none of the body cavities had been opened (except by tooth punctures through skin and underlying flesh).

Table 1. Civet fatalities documented on Kau Sai Chau between May 1998 and November 2002.

Species	Material Recovered		Month and Year Recovered
	Type	No.	
Small Indian Civet	fresh carcass	1	May 1998
Small Indian Civet	skeleton	1	May 1998
Small Indian Civet	fresh carcass	1	October 1998
Small Indian Civet	fresh carcass	1	October 1998
Small Indian Civet	fresh carcass	1	May 2001
Masked Palm Civet	fresh carcass	1	May 2001
Small Indian Civet	fresh carcass	1	4 March 2002
Small Indian Civet	fresh carcass	1	6 March 2002
Small Indian Civet	fresh carcass	1	27 May 2002
Small Indian Civet	fresh carcass	2	July 2002
Small Indian Civet	fresh carcass	1	16 October 2002

Similar to the fatalities reported in 1998-2001, those during 2001-2 were on the golf fairways and practice areas. The civet recovered on 4 March 2002 had suffered numerous bites to the dorsal lumbar region. The bites penetrated the skin and flesh to the spine and pelvis. The civet recovered on 6 March 2002 had suffered one bite on the left thorax that penetrated the rib cage, and one bite on the right groin that penetrated the abdominal cavity. The locations of recovery of both civet carcasses are areas frequented by feral/stray dogs at night. Weights and measurements of the two civets recovered in March 2002 are listed in Table 2 together with those of a vehicle-killed Small Indian Civet recovered from Clearwater Bay Road on 4 July 2001. The latter fatality is not discussed further in this report.

Table 2. Sex, age class, and morphometrics of one vehicle-killed civet recovered from Clearwater Bay Road and two dog-killed civet carcasses recovered on Kau Sai Chau.

Measurement	Small Indian Civet		
date of death	4 July 2001	4 March 2002	6 March 2002
cause of death	vehicle collision*	dog attack	dog attack
sex	male	male	male
age class	sub-adult	sub-adult	sub-adult
body weight (kg)	2.45	2.2 (est)	2 (est)
total length (cm)	94.0	85.0	79.0
tail length (cm)	38.2	33.0	31.0
body length (cm)	55.8	52.0	48.0
hind foot length (cm)	9.9	9.5	9.3
ear length (cm)	3.9	3.2	3.7

*This record is included in this report for the purpose of documentation only.

Discussion

For several reasons Kau Sai Chau is a unique situation in which to monitor the frequency of dog attacks on civets. Firstly, dogs do not appear to eat the civets they kill or remove the civet carcasses to remote locations where discovery would be unlikely. Dogs do not eat civets possibly because the dogs are often fed by visitors to the island or part-time owners living or working on the island. Secondly, dead civets are readily visible on the short-grass fairways of the golf courses at Kau Sai Chau. Thirdly, the golf courses are closely inspected at sunrise every day of the year by the greenskeeping staff who cover the entire course maintaining turfgrass and tending to facilities. This combination of highly visible evidence and intensive monitoring at a consistent level of effort means that any civet killed on the golf course is likely to be seen.

Two of the six recovered carcasses were examined and both bore bite wounds that penetrated thoracic or abdominal body cavities and caused blood loss. These results are similar to the results reported earlier of six civet fatalities attributable to dog attacks over 37 months (Dahmer 2001). The 2001-2 mortality rate due to dog attack averaged one kill every three months compared to a rate approximately half that in 1998-2001 (one kill every 6 months). The two time periods combined yield a rate of one kill every 4.7 months. This might be a minimum estimate of the rate of civet mortality attributable to dog attack because some attacks may take place outside the golf course where they would go undetected. The population biology of Small Indian Civets on Kau Sai Chau has not been studied, so it is not possible to calculate the population impacts of the estimated loss to dog attack of 2.6 civets per year. However, because the portion of the island occupied by the golf course is approximately 2.2 km^2, the rate of civet mortality due to dog attack can be estimated as 1.2 deaths/km^2/year. If this rate of mortality is applied to the Small Indian Civet's estimated range throughout Hong Kong (estimated from Suen Kai-yuen 2002:264-265 at >200 km^2), the annual losses could well exceed 240 civets.

As in the earlier report other possible agents of civet mortality at Kau Sai Chau could be shuttle buses, other civets, or Eagle Owls (*Bubo bubo*). Buses are again ruled out because the

recovered carcasses were found distant from roads, examined carcasses showed no sign or trauma suggestive of vehicle collision, and there was little overlap between shuttle bus operating schedules (diurnal) and civet activity patterns (nocturnal). Other civets were ruled out because there is no indication that civet density is so high that intra-specific aggression over territories or mates could lead to civets killing civets. Further, there is no indication in the literature that intraspecific agression is an agent of civet mortality. Eagle Owls were ruled out because of the location and type of wounds, and because civet carcasses were not fed upon. Finally, attack by dogs was strongly suggested by the pattern of bites to the lower back, hind legs, and groin, that is characteristic of the canid attack strategy (Brown undated).

Predation on civets in Hong Kong is only one of the many reasons for eliminating feral/stray dogs from the countryside. Other researchers have suggested that Indian Muntjac (*Muntiacus muntjak*) may be attacked by feral/stray dogs (Pei Jai-Chyi *et al*. 2002, Suen Kai-yuen 2002). Given that there are no other extant mammals that prey on Indian Muntjac in Hong Kong and that Muntjacs are neither abundant nor is their local population irruptive (as are other deer populations in the absence of canid and felid predators), the hypothesis that feral/stray dogs limit population numbers of Muntjacs is credible. Thus conservation of Indian Muntjac is a second justification for eliminating feral/stray dogs. Public sanitation and human health and safety are additional good reasons for eliminating feral/stray dogs from Hong Kong's wild lands (see Dahmer *et al*. 2000).

Acknowledgements

Civet carcasses and other wildlife observations were often reported by personnel at The Jockey Club Kau Sai Chau Public Golf Course Ltd. Their cooperation and assistance are greatly appreciated. Studies reported here were funded by The Jockey Club Kau Sai Chau Public Golf Course Ltd., whose support is gratefully acknowledged. AFCD assisted frequently in capture of feral/stray dogs on Kau Sai Chau.

Bibliography

Brown, D.E. (undated). *The wolf in the southwest: The making of an endangered species*. Univ. Arizona Press, Tuscon, 195p.

Dahmer, T.D. (2001). Feral dogs and civet mortality on Kau Sai Chau, Sai Kung, Hong Kong. *Porcupine!* 24: 16-18.

Dahmer, T., Coman, B. & Robinson, J. (2000). *Ecology, behaviour and persistence of packs of stray/feral dogs with implications and practical recommendations for control*. Final report. Dept. Agriculture, Fisheries & Conservation, Government of Hong Kong Special Administrative Region, 10 March 2000, 30pp +app.

Pei, J.C., Lai, Y.C. & Suen, K.Y. (2002). *Present status of larger mammals in Hong Kong's country parks and their conservation concerns*. Wildlife Conservation Foundation Workshop, October 2002, Hong Kong. Wildlife Conservation Foundation Ltd., Chai Wan, Hong Kong.

Sue, K.Y. (2002). *Lost Mammals*. Guo Liang Hui Xin Shiye Co. Ltd., Hong Kong.

Wilson, D.E. & Reeder, D.M. (eds.). (1992). *Mammal species of the world: a taxonomic and geographic reference*. 2nd ed. Smithsonian Institution Press, Washington, D.C. 1206pp.

Sightings of 'overseas' colour-ringed Black-faced Spoonbills in Hong Kong

by Y.T. Yu

The Black-faced Spoonbill (*Platalea minor*) is a globally endangered species and its known population is less than 1000 individuals (BirdLife International 2000). Studies for discovering its migration route were conducted in 1998 and 1999 (Ueta *et al*. 2002). A total of 34 Black-faced Spoonbills (22 from Hong Kong and 12 from Taiwan) were trapped and given colour rings.

On 5 and 6 November 2002, I found two colour-ringed Black-faced Spoonbills in Mai Po, which did not carry Hong Kong rings. One spoonbill carried a short blue ring on the left leg and a long blue ring with white words 'T11' on the right leg on 5 November. The bird also carried a transmitter on the back as the antenna was visible. The other bird was seen on 6 November and carried a small yellow ring on the left leg and two short rings on the right leg, which were red above and green below.

From various references, the 'T11' bird received the rings from Taiwan in December 1998 (Ueta *et al*. 1999) and the 'three-ringed' bird was ringed as a chick in the nest in North Korea in July 1995. These are the first recorded sightings of 'overseas' Black-faced Spoonbills in Hong Kong. Spoonbills ringed in Mai Po have been seen again in Mai Po (Anon. 2001), in the Tsengwen Estuary of Taiwan (Yu *pers. obs*.) and at Liaoning (Lei 2002). The three-ringed spoonbill was first found in Japan, in December 1995. I then saw it in Xuan Thuy, Vietnam in December 1999 (Yu and Swennen *pers. obs*.). This is therefore the first record of an individual of this species visiting three different wintering sites. In addition, this bird, which is now 7 years old, provides the first longevity record for this species.

Acknowledgements

I thank Mr. Simba Chan, from the Wild Bird Society of Japan, for providing information on the colour-ringed Black-faced Spoonbills.

Bibliography

Anon. (2001). *Preparation of a Conservation Plan of the Black-faced Spoonbill Platalea minor in Hong Kong*. Technical Report 2 – Additional Works. Unpublished report by WWF Hong Kong to the Agriculture, Fisheries and Conservation Department, Hong Kong SAR Government, 55 pp.

BirdLife International. (2000). *Threatened Birds of the World*. Lynx Ediciones and BirdLife International, Barcelona and Cambridge, UK. 852 pp.

Lei, F.M. (2002). The Black-faced Spoonbill and its conservation status. In: *Proceedings of the 2nd Conference on the status and conservation of Hong Kong Wild Animals and Plants*: 9-20. Wildlife Conservation Foundation, Hong Kong.

Ueta, M., Kurosawa, R. & Allen, D. (eds.). (1999). Conservation and Research of the Black-faced Spoonbills and their habitats. *Proceedings of the international workshop in Tokyo*, 12-16 June 1997. Wild Bird Society of Japan, Tokyo.

Ueta, M.J., Melville, D.S., Wang, Y., Ozaki, K., Kanai, Y., Leader, P.J., Wang, C.C. & Kuo, C.Y. (2002). Discovery of the breeding sites and migration route of Black-faced Spoonbills *Platalea minor*. *Ibis* 144: 340-343.

Pipistrelles use bat roost boxes on Kau Sai Chau

by Thomas D. Dahmer
Ecosystems Ltd., 2/F Kingsun Computer Bldg., 40 Shek Pai Wan Road, Aberdeen, Hong Kong, ecosys@pacific.net.hk

Introduction

Two species of bats have been identified foraging over northern Kau Sai Chau, *Pipistrellus* sp. and *Hipposideros armiger*. The numbers of foraging bats are often large, particularly in spring, summer and autumn when flying insects are abundant (see Ades 1994). Although foraging bats are numerous, no bat roosts were discovered on the island prior to December 2000. This was in part because there were no buildings, abandoned or occupied, on the northern part of the island until 1994, when golf course construction began. Also, over much of the island the tree cover had been either felled or burned decades ago, leaving few mature trees on the island. Finally, there are no caves on the island where bats might roost. Ades (1994) observed that the availability of suitable roost sites could be a factor limiting bat numbers or species representation in Hong Kong, but availability of forage was probably not limiting for insectivorous bats. Based upon that observation I was interested to learn if increasing the availability of suitable bat roosts would lead to increased numbers of roosting bats and ultimately greater numbers of foraging bats. I was interested to increase the numbers of insectivorous bats foraging over the northern third of the island to reduce flying insect populations (particularly mosquitoes) to the extent possible through bat predation. Provision of roost boxes for bats has been undertaken on a continental scale by the North American Bat House Research Project coordinated by Bat Conservation International (Tuttle & Hensley 1993a). Many bat box designs and strategies for placement have been evaluated and reported on by BCI staff and associates over the 9+ years of the project. The results of that project proved promising so I chose it as a model for application at Kau Sai Chau. This manuscript summarises the results of the first two years of implementation of a bat roost project on Kau Sai Chau, an island of 6.7 km^2 area in Port Shelter of northeast Hong Kong Special Administrative Region (HKSAR).

Methods & Materials

Bat boxes were constructed according to blueprints shown in Tuttle & Hensley (1993b). Rough-cut lumber for the exterior walls and roof of the boxes was sourced from a sawmill in Tuen Mun. Internal partitions were made of plywood. In each box one internal partition was covered with green plastic screen material to provide an alternate substrate in the event that roosting bats could not cling to the smooth internal plywood surfaces. Ten boxes were installed in early December 2000, six on trees in woodlands, one on an isolated tree, and three on buildings (Table 1). Boxes were monitored periodically thereafter using torches to illuminate the interior of the boxes.

Table 1. Locations of bat roost boxes installed at Kau Sai Chau in December 2000

Box No.	Location No.	Location Description
1	1	*Hibiscus tiliaceus* (Sea Hibiscus) at clubhouse
2	2	exterior wall at clubhouse
3	3	isolated *Ficus sp*. (fig) at 29 green
4	4	*Celtis tetrandra sinensis* (Chinese Hackberry) in streamside woodland at marsh
5	5	*C. t. sinensis* in streamside woodland at marsh
6	6	*Cinnamomum camphora* (Camphor Tree) in woodland at 2-3
7	7	*C. t. sinensis* in woodland at 2-3
8	8	*C. camphora* in woodland at 2-3
9	9	northeast wall of maintenance shed
10	10	northeast wall of maintenance shed

Results & Discussion

No boxes were occupied by bats during the first 10 months after the boxes were installed. It is not uncommon for roost boxes to remain unoccupied for months or years, even when foraging bats are abundant in the vicinity of the roost boxes (Tuttle & Hensley 1993a). This can be due to several factors including duration of daily solar input or presence of flight path obstacles such as tree branches near roost boxes (*ibid*.). Either of these factors may have affected the boxes that were installed in relatively dense woodlands at Kau Sai Chau. Also, some of the roost boxes at Kau Sai Chau were colonised by ants. To avoid this problem one box was relocated from a streamside woodland to the wall of a building in late June 2001.

The first record of roosting bats was made on 20 October 2001 when box 1 in a small plantation of Sea Hibiscus was occupied by two Pipistrelles (*Pipistrellus* sp.) (Table 2). The plantation was at the golf course clubhouse in an area frequented by vehicles, golfers and staff.

Table 2. Occupancy of 10 roost boxes at Kau Sai Chau between December 2000 and December 2002.

					Nylon Mesh	
Date	**Species**	**Bats**	**Box No.**	**Location No.**	**On**	**Off**
20-Oct-01	*Pipistrellus sp.*	2	1	1		2
27-Oct-01	*Pipistrellus sp.*	3	1	1		3
29-Nov-01	*Pipistrellus sp.*	6	1	1		6
19-Jan-02	*Pipistrellus sp.*	5	1	1		5
24-Oct-02	*Pipistrellus sp.*	4	1,3	1		4
29-Nov-02	*Pipistrellus sp.*	11	1,3,4,7	1	3	8

On 27 October 2001 two additional boxes were shifted because they had been colonized by ants, one from a Camphor Tree in a dense woodland to a plantation of Sea Hibiscus at the clubhouse, and one from an isolated fig to a Bauhinia at the clubhouse building. On 29 November 2001 the remaining three boxes initially installed on trees in woodlands were relocated to a plantation near the clubhouse because of colonization by ants and because only the boxes near the clubhouse had attracted roosting bats. After shifting roost boxes from the woodlands the box locations were as follows: on the walls of a metal-sided maintenance shed (3 boxes); on the exterior masonry wall of the clubhouse (1 box); on a Bauhinia at the clubhouse (1 box); and in a Hibiscus plantation at the clubhouse (5 boxes).

Numbers of roosting bats ranged between 2-6, and box 1 was the only box occupied until 24 October 2002 when a second box was occupied on a Sea Hibiscus at the clubhouse. Just over one month later two additional boxes were occupied, one on a Sea Hibiscus at the clubhouse, and the second on a Bauhinia also at the clubhouse. On 29 November 2002 four boxes were occupied by a total of 11 Pipistrelles (Table 2). All four occupied boxes were shaded for most of the day, but received some mid-day sunlight through the tree canopy.

Roost box locations will be shifted in winter 2002 to increase bat occupancy. Some boxes will be moved from shaded to more sunny locations to increase absorption of solar radiation, thereby increasing the interior temperature of the box. Such a shift increased bat use of boxes at 31-32^{o} N latitude in North America (Anon 2000). Three unoccupied boxes in shaded locations on exterior walls of buildings at Kau Sai Chau are also distant from freshwater bodies such as streams and ponds. Those boxes will be shifted to tree or free-standing locations <400 m from water because distance from water has also been found to affect bat use of roost boxes (Tuttle & Hensley 1993a).

Acknowledgements

Studies reported here were funded by The Jockey Club Kau Sai Chau Public Golf Course Ltd., whose support is gratefully acknowledged.

Bibliography

Acker, E. (2000) Backyard Bats. *Bats* 17(4): 3-6.

Anon. (2000) Bat house landlords. *Bats* 17(4): 6-9.

Tuttle, M.D. & Hensley, D.L. (1993a) Bat houses: The secrets of success. *Bats* 11(1): 3-14.

Tuttle, M.D. & Hensley, D.L. (1993b). The *bat house builder's handbook.* Bat Conservation International, Austin, Texas, 34p.

Stinkhorns in Hong Kong

by Justin Bahl

This past summer two rare species from the *Phallaceae* family, colloquially known as stinkhorns, were identified. Members of the *Phallaceae* are very distinct, or rather they stink. The reproductive strategy of these unique and strange fungi is to attract insects, most often flies, to assist in spore