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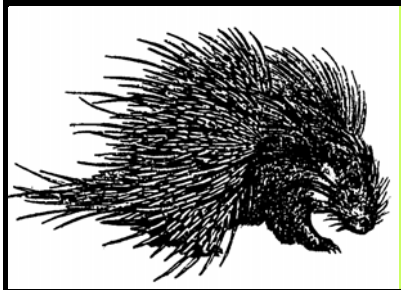


Porcupine!

Newsletter of the Department of Ecology & Biodiversity, The University of Hong Kong

How protected are marine protected areas?

Editorial

Among the many contributions made by John Hodgkiss to the local community over the last few decades has been his 17 years as Editor of the Memoirs of the Hong Kong Natural History Society. For the last 11 of those years, the Memoirs and Porcupine! have played complimentary roles in promoting interest in and understanding of the ecology and biodiversity of Hong Kong. While Porcupine! has published the news - new species, new sightings, new ideas, new threats, new people, new publications – the Memoirs has had a basically archival role, publishing mostly checklists and the results of local surveys and ecological studies. With John's retirement, I will be taking over from John as Editor and the Department will be assuming responsibility for publishing the journal. The details still need to be worked out, but the plan is to rename it or, rather, to revive an old name - The Hong Kong Naturalist - while retaining links to the Society. We also intend to launch an electronic version and to strength the sister (aunt?) relationship with Porcupine! Overall, however, the role will remain the same as it has always been: the publication of significant information on local natural history that would otherwise remain unpublished.

Richard Corlett

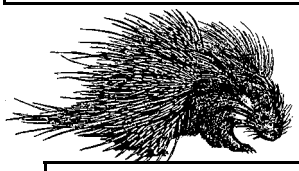
Marine protected areas (MPAs) are widely considered to be a means of conserving vulnerable marine species or habitats, and are increasingly proposed as fisheries management tools, globally. In Hong Kong, we already have a marine reserve, several marine parks and the government is also considering 'fishery protection areas': all very different categories of MPAs that address very different objectives. So, what exactly is an MPA, what is its role in marine conservation and fisheries management and how much marine protection is there in Hong Kong through MPAs?

Ask family or friends what they understand by a 'marine protected area' and they are likely to respond that, if they think about it at all, they would imagine it to be a place where things cannot be removed; secondarily respondents might add that damaging input (like pollution) should also be avoided. IUCN defines a protected area (terrestrial or aquatic) as "An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means". Six categories of MPAs are identified by IUCN, ranging in degree of protection from no utilization (Category I), to protected areas dedicated to the sustainable management of natural resources (Category VI). Categories I-V involve 'elimination and prevention of exploitation contrary to the purposes of the category designation', while Category VI is to promote sound management practices for sustainable fisheries production.

In Hong Kong we have one true MPA, the marvellous Marine Reserve at Cape d'Aguilar, where 180 fishes have now been recorded (p. 6) and no activities are allowed without a permit. Fishery Protected areas have been proposed (Category VI) for Port Shelter. So what about the 4 Marine Parks? These don't appear to fit any of the IUCN categories because significant fishing activity, except for trawling, continues within them. In 2002 there were 634 fishing licences, up from 551 in 1998, allowing for removal of fish and invertebrates and smothering corals with gill nets. The total area of the Marine Parks is around 1% of Hong Kong's marine environment which falls far short of the 20%, or more, recommended for MPA coverage if they are to contribute meaningfully to fisheries management and conservation; this should, in any case, be non-extractive use. By way of contrast, 40% of Hong Kong is designated as Country Park where no hunting is allowed. Our Marine Parks, it seems, do not even begin to fulfill any of their conservation, education or sustainable fishery production roles, leading one to wonder what exactly is being protected, and indeed, from what.

Yvonne Sadovy

Porcupine!



NUMBER 28
April 2003

Newsletter of the Department of Ecology & Biodiversity, The University of Hong Kong

INSIDE THIS ISSUE:

News from DEB

As I write from the epicentre of what might turn out to be a global pandemic, it may appear parochial to focus on local concerns. Yet despite government's repeated assertions that we are now retooling to become a 'knowledge-based' society, actions continue to speak louder than words. The most recently announced cuts of 10% off the total university budget (with a projected 12% for HKU) are on top of the 3% salary decrease already effected, and the 6% reduction that is in the pipeline. Most university running costs go on staff salaries so the outlook is not good. Furthermore, like the Hong Kong economy, the HKU endowment funds are performing badly so there is no financial cushion to break our fall. Things are set to get even bleaker, as in 2005 we can expect another cut of around 10% on top of the one already announced to take effect in 2004. Brother, can you spare a dime?

So where is the light at the end of the tunnel? To mix metaphors, I turn my attention to the other end of the telescope and look backward in time, to the very early 1980s. When I took up a lecturing post in the Department of Zoology at HKU in 1981, ecology and environmental science were scarcely neonatal. Hong Kong was focussed on making money, and looking fearfully over its shoulder at the recent tumult on the mainland. There was no Joint Declaration, and the future was uncertain. What awareness there was of the natural environment was due, in large part, to the efforts of John Hodgkiss and Brian Morton who had arrived in Hong Kong (separately) more than a decade earlier.

Both of them had been impressed by the biological diversity of Hong Kong, and saw the effects that 'develop now, clean up later' approach was having on local environments. For a while it was scarcely possible to turn on a TV or tune onto RTHK without hearing one or other of them (sometimes, scarily, both) berating government about the state of our environment. Their approaches were different (meticulous argument *versus* often rather direct appeal to the emotion: "of course, it's pig shit"), but the objectives were the same. For some years Government remained obdurate in the face of criticism: flat denial, " … there is no pollution problem in Hong Kong …" was the stock response. By the late 1980s, an incremental change began. Government had formed an Environmental Protection Department; their response to Hodgkiss and Morton, as well as a growing clamour of other voices, was to admit that there was some pollution, but to deny it was as bad as their critics stated.

In some respects, things are much the same today. Academics and conservationists are still railing at government inaction (specifically, its lack of a long-promised conservation policy), but a transition has taken place. Many post-graduate students trained by Hodgkiss, Morton and others have positions in government, where they can influence the management and conservation of our countryside and inshore waters. Others are in universities where they train their own students in environmental matters. There is a university department devoted to the study of ecology and biodiversity, and three marine laboratories. There are both new and mature NGOs, some of them undertaking important biodiversity research in China (KFBG) and others (such as Green Power and WWF) with an education remit and popular visitor centres. There is a new C in AFCD, a RAMSAR site, marine parks and reserves, plus a wetland park under development. There are water pollution control zones, waste-water standards, and an annual closed season on fishing. And, of course, there is *Porcupine!* Honorable mention too to *Hong Kong Discovery*.

Why am I writing this now? Firstly, because it is important to remember, in these rather depressing times that, despite some setbacks and losses, much has been achieved. Secondly, because both John H. and Brian M. are retiring from HKU at the end of June 2003. This is a good time to remind ourselves that the positive aspects of the present situation are, in good part, a reflection of their tireless efforts over the years: in research, in teaching and in community service. Neither of them would want, or expect, acknowledgement for their actions. Nevertheless, on behalf of the readers of *Porcupine!* I thank them for helping us get to where we are now. We wish them and their families the very best for the future.

David Dudgeon

INVERTEBRATES

Mantis Shrimps found in Hong Kong waters — A brief look at the Stomatopoda

by Wolfie Chien-Houng Lai and Kenny Leung

Where Hong Kong's culinary culture is concerned, the mantis shrimp is quite a familiar sight, and for that matter, quite an important commercial species. However, the Stomatopoda fauna of Hong Kong waters, or Chinese coasts has received relatively little scientific attention. Recently, we have conducted a trawling survey to look into the diversity and abundance of mantis shrimps in sub-tidal marine environments of Hong Kong. This short communication serves to report on the stomatopod species found in this survey.

The stomatopod specimens were collected by trawling between December 2002 and February 2003 from Hong Kong waters (see Fig 1). Sampling was carried out using a shrimp trawler with 10 replicate trawl nets (beam length: 2m, cod end mesh size: 2 cm stretched). The total duration of each trawl was 30 minutes, and a U-turn was made 15 minutes after the start of the trawl. GPS positions for the starting point, U-turn point and end point of each trawl were noted.

A total of ten trawling stations were surveyed: four in Tolo harbour waters (Stations 1 to 4), three off the Southern coast of Hong Kong island (Stations 5 to 7) and three in the waters around Lantau Island (Stations 8 to 10). No mantis shrimps were obtained from stations 1 and 9.

Eight different species of mantis shrimp was identified. Table 1 shows the distribution and relative abundance of the stomatopod species collected. Of the eight, *Harpiosquilla harpax* was found in all surveyed stations. When occurring, *Oratosquillina interrupta* has the highest abundance in species composition for sites surveyed, followed by *O. oratoria*. An interesting find was the discovery of two specimens of *Clorida decorata* in Station 8; this species was not found in any other trawling stations. *Erugosquilla woodmasoni* was equally interesting with its blue tinged uropod protopod, although only a few specimens were collected off Station 4 and in the southern waters of Hong Kong island (Stations 5 and 6). Pictures of these mantis shrimps can be accessed by visiting http://www.hk-fish.net/eng/database/mantis/common.htm (AFCD website). Some of the specimens featured on the web page came from our trawling surveys.

Where species richness is concerned, both Station 2 (Tolo harbour) and Station 8 (Lantau Island) have the highest mantis shrimp diversity. Conversely, Station 3 in Tolo harbour yielded just two species of stomatopod. Generally, all surveyed sites showed similar patterns with *Oratosquilla interrupta*, *O. oratoria* and *H. harpax* making up the bulk of the species composition, except for Stations 3 and 4 where *H. harpax* dominated.

While most surveyed stations showed a higher species richness near open waters, it is interesting to note a departure from this observed pattern in Tolo Harbour waters. Although no mantis shrimps were obtained from the innermost station along the channel (Station 1) high species richness and abundance of mantis shrimps were observed in Station 2. Station 3 near the mouth of the channel exhibited low species richness but high abundance while Station 4 has a species richness comparable to the other survey stations despite the absence of *Oratosquillina interrupta*.

More monitoring surveys will be conducted in the future to study the population dynamics and ecology of these mantis shrimps in Hong Kong.

Acknowledgements: We are grateful to DEB's undergraduates and postgraduates including Renee Chan, Janet Lee, Karen Lui, Jasmine Ng, David Poon, Karen Qiu, Justine Tsui, Ariel Yeung and Quinn Yeung for their assistance in the field.

Table 1. Relative abundance of mantis shrimps obtained from the eight trawling stations. No stomatopod was obtained from Stations 1 and 9.

	Stations							
Species	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**10**
Miyakea nepa	+	++	++	0	0	0	++	0
Oratosquilla oratoria	+++	0	+	+++	++	+	++	+
Oratosquillina interrupta	+++++	0	0	++	++++	+	+++++	+++++
Dictyosquilla foveolata	+	0	0	0	0	0	+	+
Clorida decorata	0	0	0	0	0	0	+	0
Harpiosquilla harpax	++	+++	++++	+	+	+	+++	+++
Anchisquilla fasciata	+	0	0	0	+	0	0	0
Erugosquilla woodmasoni	0	0	+	+	+	0	0	0

\+ : *N* less than 10% (occurrence in the Stomatopoda assemblage)
++ : *N* between 30% and 10%
+++ : *N* between 50% and 30%
++++ : *N* between 60% and 50%
+++++ : *N* more than 60%

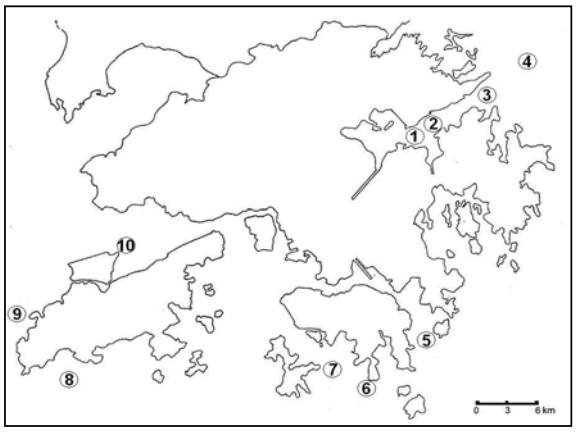


Fig 1. Map showing the trawling stations surveyed

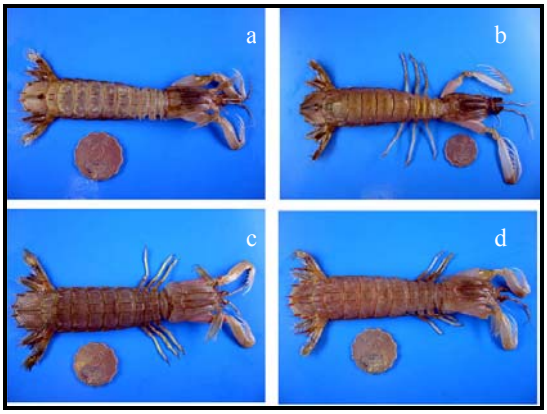


Fig. 2. Four most abundant stomatopod species found in this study (a) *Oratosquillina interrupta*, (b) *Harpiosquilla harpax*, (c) *Oratosquilla oratoria* and (d) *Miyakea nepa.*

Endemic skipper described

by G. T. Reels

A butterfly collected in October 1996 by staff of the DEB, as part of the Hong Biodiversity Survey, has recently been described as a new taxon by Dr. Alexey Devyatkin (*Atalanta* 33 (1/2): 131). *Halpe paupera* (Hesperiidae: Hesperiinae) is currently known from a small number of specimens from Vietnam, and from the single Hong Kong female, which was collected on Ma On Shan. The Hong Kong specimen has been tentatively named as a separate subspecies, *Halpe paupera walthewi*, after George Walthew, who made a large contribution to the study of butterflies in Hong Kong (much of it published in *Porcupine!*), during the 1990s. The skipper is Hong Kong's only endemic butterfly subspecies.

VERTEBRATES

Bats in an underground water channel

by Sze-man Cheung

Bats were sighted during an exploration to an underground water channel in the northern New Territories in December 2002 by Dr. Benny Chan, Rita Yam and the author (see *Porcupine!* 27 p. 18-19). After examination of some close-up photos, some of the bats were identified as Bi-colored round-leaf bat (*Hipposideros pomona*).

The bodies of the bats ranged from 4 to 6 cm and had a brownish yellow coat and grey belly. The presence of a pink non-pointed leaf nose and disproportionately large ears distinguished them from the Great round-leaf bat (*Hipposideros armiger*) (Ades, 1990; Ades *et al.*, 2002). The bats roosted in a dark humid underground water channel which is a part of a water network conducting hill stream water to Plover Cove Reservoir. Water channels are typical preferred habitat of *H. pomona* (Ades, 1994, 1999; Ades *et al.*, 2002). They are used as roost sites by many bat species in Hong Kong (Ades, 1999). Although *H. pomona* is insectivorous (Ades, 1990, 1994, 1999; Ades *et al.*, 2002), it is unknown whether the moth fragments and dead 'headless' fish found within the channel (see *Porcupine!* 27 p. 18-19) were food remains of the bats.

Previous studies had shown that *H. pomona* is a species with a moderate colony size of up to 1000 individuals (Ades, 1994, 1999; Lin & Chen, 2002). We observed over 200 bats in approximately 300 m of the channel well within the range of a normal colony size for *H. pomona*.

Disturbance to the bat colony is one of the major threats to bats in Hong Kong, in addition to filling of tunnels and habitat destruction (Ades, 1990). It should be stressed that all bats are protected locally under Wild Animals Protection Ordinance, Cap. 170. No person can collect any bat unless under a special permit obtained from the Agriculture, Fisheries and Conservation Department.

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Diadema sea urchins and the Black-spot tuskfish

by Andy Cornish

One of the first things everybody notices when diving or snorkeling in Hong Kong for the first time is the multitude of sea urchins in shallow waters, particularly the black-spined urchin, *Diadema setosum*. Densities on rocky reefs are high enough (up to 3.4 m^{-2}; Thompson, 1980) to support a fishery by hookah divers from the mainland who risk arrest, for fishing in Hong Kong, to collect them for their roe. Populations of *D. setosum* must be having a considerable impact on shallow reef biota as they graze algae, and aggregations have been observed causing serious bio-erosion to otherwise healthy coral heads (McCorry, 2002), but how natural are these high densities ?

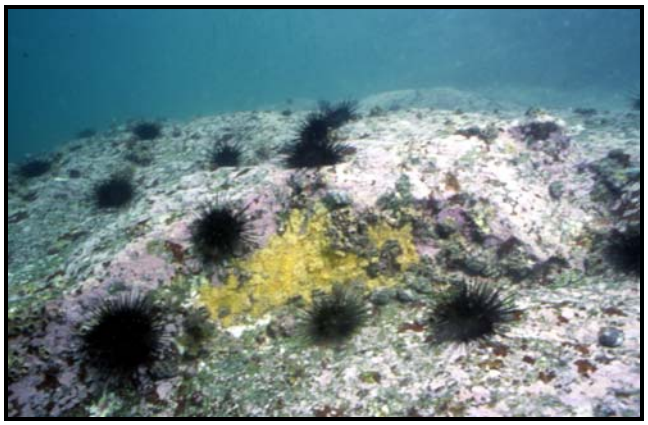

Fig. 1. Sea urchins at Cape d'Aguilar

This question has been asked before by Thompson (1980). He observed that the behaviour of *D. setosum*, which hides from predatory fish in crevices on Indo-Pacific coral reefs and feeds at night, is quite different to that in Hong Kong where it is often found in the open during the day, and speculated that predators, including lobsters, may naturally be scarce here, or have been reduced in number by overfishing. Unusually high numbers of a related species, *Diadema antillarum*, have previously been linked with intense fishing on their fish predators in the Caribbean (Hay, 1984).

The most notable predators of adult sea-urchins in the tropical Indo-Pacific are certain large reef fishes, particularly the larger wrasses, triggerfishes, puffers and porcupinefishes. Hong Kong lies at the limits of distribution for many tropical reef species and all triggerfishes (Balistidae), porcupinefishes (Diodontidae) and the large *Arothron* puffers (Tetraodontidae) are currently rare in local waters (Sadovy & Cornish, 2000), and there is no evidence to suggest they were ever otherwise. Of the large wrasses (Labridae), the Napolean wrasse (*Cheilinus undulatus*) appears to have been scarce too in the past as it is not noted in early accounts of local fisheries, leaving just three species of tuskfish, *Choerodon anchorago, C. azurio* and *C. schoenleinii* as potentially important predators. Again, I have come across no mention of the two former species in the early Hong Kong fisheries literature and as both only grow to 40 cm, it seems unlikely that either had a significant impact on sea urchin populations due to their small size and low abundance (although *C. anchorago* does feed on them, Sadovy & Cornish, 2001). The Black-spot tuskfish, *C. schoenleinii*, however, is a different proposition. It is far larger, at 100 cm maximum length, includes sea urchins in its diet and was noted in the 1960s as being "common in Hong Kong" and "taken locally year round in small numbers by gill-net and hand-line, and often speared by SCUBA divers" (see Sadovy & Cornish, 2001). These days this highly prized fish (which has the local name Ching Ye), is rarely seen and has disappeared from the commercial fishery, although spearfishers continue to take a few each year.

What is really intriguing is that in the 1930s the Black-spot tuskfish was common enough in local waters to be able to support a dedicated fishery (Lin, 1940). Longlines with 60 hooks 2.5 inches long were baited individually with an urchin with "black, very long, robust and brittle spines" (i.e. *Diadema* spp.) which the fishers dived to catch. Although it was reported that "not many" fishers were engaged in this fishery, as not many had the skills to collect the urchins, the fact that this was a viable fishery tells us that i) *Diadema* form a significant part of the diet of Black-spot tuskfish in Hong Kong and ii), the ratio of Black-spot tuskfish to urchins was much higher than it is now (if the bait was naturally very abundant in regard to the numbers of fish it is unlikely fishers would catch any). It seems completely plausible, therefore, that a combination of a naturally low diversity of predators, and severe overfishing of a major one, could have allowed *Diadema setosum* (and possibly other abundant urchins like *Anthocidaris crissipina*) to expand in numbers to those seen today.

Taking this story a final stage further, it would be very interesting to know what effects any increase in urchin grazing pressure is having on sessile benthic organisms, notably the hard corals. In the Caribbean, high densities of *Diadema antillarum* resulted in high mortality of coral recruits due to the intensity of grazing, although the optimal conditions for coral recruitment and growth came at intermediate densities when the urchin reduced competition for space from algae (Sammarco, 1980). If artificially high sea-urchin densities have resulted in changes to coral survival rates in Hong Kong, and I would be the first to admit this is highly speculative at

present, the case of the Black-spot tuskfish may be an illuminating example of ecosystem overfishing.

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More new fishes from the Cape d'Aguilar Marine Reserve

by Andy Cornish

The following is an update on the reef fishes at Cape d'Aguilar since the last time I wrote on them in August 2000 (*Porcupine!* 21). That article included 5 new records of reef associated species for Cape d'Aguilar to the 170 already known (Cornish 2000). I had spotted another new fish at that time (15 and 16 June, 2000) but was reluctant to reveal it as I was concerned about poaching, a 20 cm Napolean wrasse (*Cheilinus undulatus*). This globally threatened species has not been seen wild locally for decades as far as I am aware, although spearfishers occasionally shoot very large ones they believe to have been released. The fact that Cape d'Aguilar is miles away from the nearest live reef fish trade operations means there is a good chance this was a truly wild individual! Since then I also recorded a single initial phase Pastel ringwrasse (*Hologymnosus doliatus*) in summer 2000 (no date) which is the second record of this species from Hong Kong, the first being obtained by me from Lamma fishers on 22 May 2000. Other new records for the reserve are of individuals of Yellowstreaked snapper, *Lutjanus lemniscatus* (20 March, 2001), Thumbprint Emperor, *Lethrinus harak*, (31 May 2001, 19 March 2003) and, Longfin batfish, *Platax tiera*, (19 March 2003). The Emperor is particularly rare and three 30 cm individuals seen at Long Ke Wan on 28 April 2000 represent a new record for Hong Kong. The total number of reef associated species from the Cape d'Aguilar Marine Reserve now stands at 180.

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Fig.1. *Hologymnosus doliatus* Pastel ringwrasse (initial phase) a new record for Cape d'Aguilar.

FLORA

It is time for ecologists to take notice of recent advances in plant phylogeny

by Richard T. Corlett

Ecology only makes sense in the light of evolution, so a correct understanding of phylogenetic relationships is a fundamental requirement for almost any ecological research. The rapidly increasing availability of DNA sequence data over the last 10-15 years, coupled with improved methods for analyzing these data, has transformed our views of the relationships between organisms. However, for much of the last decade, changes have been so rapid – and, in some cases, so controversial - that ecologists have been reluctant to adjust the classification systems with which they are familiar. For flowering plants, at least, this caution is no longer justified. Thanks, in part, to the collaborative approach adopted by plant phylogeneticists, the new phylogenetic understanding of the angiosperms at the family level and above has reached a level of comprehensiveness and stability that removes any excuse for ignoring it (as the two most recent checklists of the Hong Kong flora - Corlett *et al.* (2000) and AFCD (2002) – unfortunately did). When I have time (i.e. when pigs fly), I intend to produce a generic checklist of our flora that reflects the new phylogenetic classification. In the meantime, here are some highlights of the major changes as they affect the Hong Kong flora. I have followed the most recent publication of the Angiosperm Phylogeny Group (APG 2003), but it is easier to

find current information on their regularly updated website, (www.mobot.org/MOBOT/Research/APweb/) although it differs in some details.

The following major local families have not survived the revolution at all: Aceraceae (= Sapindaceae), Asclepiadaceae (= Apocynaceae), Capparaceae (= Brassicaceae), Chenopodiaceae (= Amaranthaceae), Flacourtiaceae (= Salicaceae), Sterculiaceae (= Malvaceae), and Tiliaceae (= Malvaceae). The Euphorbiaceae has survived, but most of the local woody genera, including *Antidesma*, *Aporosa*, *Bischofia*, *Bridelia*, *Glochidion* and *Phyllanthus*, are now in a separate family Phyllanthaceae. The Hamamelidaceae loses *Altingia* and *Liquidambar* to the Altingiaceae, the Caprifoliaceae loses *Sambucus* and *Viburnum* to the Adoxaceae, the Loganiaceae loses *Buddleja* to the Scrophulariaceae and *Gelsemium* to Gelsemiaceae, and the Theaceae loses *Adinandra*, *Anneslea*, *Cleyera*, *Eurya* and *Ternstroemia* to the Ternstroemiaceae. As for the Scrophulariaceae, I do not have the space to explain all the changes. Suffice it to say that *Lindernia, Veronica* and several other genera are now in the Plantaginaceae, along with *Callitriche*. Other noticeable changes among the dicots are the inclusion of *Avicennia* in the Acanthaceae and the separation of *Maesa* as the Maesaceae.

Fig.1. *Aporusa dioica*, now in the Phyllanthaceae

There are also a lot of changes among the monocots, but, since I did not really believe in the Anthericaceae, Convallariaceae, Phormiaceae *et al.* anyway, I will have less problem adjusting to these changes than those botanists brought up on Dahlgren's narrowly defined families. Here, the APG (2003) authors – rather irritatingly - offer several alternative options, with their current recommendations putting the Anthericaceae in the Agavaceae, the Convallariaceae in the Ruscaceae, and the Phormiaceae (*Dianella* in Hong Kong) in the Hemerocallidaceae. I never liked the monocots much anyway!

I am oversimplifying things a lot. Some of these proposed changes come with a great deal of support. There is no reasonable argument for continuing to recognize families that have been shown to be polyphyletic (e.g. Flacourtiaceae or the old, world-dominating, Mega-Euphorbiaceae) or to be nested within another family (e.g. Asclepiadaceae). Other proposals are more tentative – some differ between the text, the appendix and the website! – and a few may still change again as more taxa and more molecules are sampled. It should also be remembered that evolution does not always produce well-circumscribed families, so decisions on whether or not to combine sister groups under one umbrella are often more or less arbitrary.

Fig. 2. *Asclepias curassavica*, now in the Apocynaceae.

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Fig. 3. *Eurya chinensis*, now in the Ternstroemiaceae.

DIVERSITY AT A GLANCE

This column aims to introduce interesting species of Hong Kong flora and fauna that might be encountered during fieldwork. Distinctive physical characteristics and some interesting ecological facts are included for each example. Although the tree Bauhinia species are exotic and found only in cultivation in Hong Kong, they have been included due to the irony that one of the them is the Hong Kong emblem and the trees are widely planted and commonly seen during fieldwork.

Editors : Sukh Mantel (skmantel@hkusua.hku.hk) and Jacqueline Weir (jesweir@hkusua.hku.hk)

The six common *Bauhinia* species in Hong Kong by Carol, P. Y. Lau

The flower of *Bauhinia blakeana* was adopted as the emblem of Hong Kong in 1965. The tree was first discovered on the shore of Hong Kong Island near Pokfulam around 1880 and described as a new species in 1908 by Dunn. It was named after Hong Kong governor Sir Henry Blake, who had a strong interest in botany. Fruit set is extremely rare in *B. blakeana*, as it is of hybrid origin.

There are six common *Bauhinia* species in Hong Kong, which can be separated into two groups, the tree species (subgenus *Bauhinia*) and the liana species (subgenus *Phanera*). *Bauhinia blakeana*, *B. purpurea* and *B. variegata* var. *variegata* are trees that are widely cultivated and distributed in different areas in Hong Kong, from roadsides to local and country parks. The tree species are exotics, originally from Guangdong province and Malaysia. The three *Bauhinia* tree species can be distinguished by their petal colours, number of stamens, flowering periods and fruit sets. *Bauhinia blakeana* produces fragrant flowers that have five rose-purple petals with darker veins and whitish towards the margins, and each flower has five pink fertile stamens. The colour of *B. purpurea* flowers is highly variable ranging from pale pink to violet. They have three fertile stamens, or rarely four. The petals of *B. variegata* var. *variegata* are purple, streaked with red and yellow. They have the same number of stamens as *B. blakeana*. *Bauhinia variegata* var. *candida* is a variety of *B. variegata* var. *variegata*. Its petals are white streaked with yellow and green veins.

Flowering period differs slightly for each species. *Bauhinia purpurea* blooms first, from September to January; *B. blakeana* blooms second and has the longest flowering season (8-10 months) from September to April-June; *B. variegata* blooms from late December to April.

Bauhinia corymbosa, B. championii, and *B. glauca* are liana species, the latter two being native. They grow on hillsides and stream-sides as natural populations in Hong Kong, such as in Aberdeen Country Park, Victoria Road, Bowan Road and Tai Po Road. *Bauhinia corymbosa* flowers first in late spring, followed by *B. glauca* in early summer, and then by *B. championii* in late summer. The liana species have smaller flowers than the tree species, and many small flowers cluster together to form inflorescences. *Bauhinia championii* has white to cream colour flowers. The petals of *B. corymbosa* and *B. glauca* are white with pink lines. *Bauhinia corymbosa* has smaller petals - the upper petal overlaps the lateral petals - and the deep pink colour of the androecium and gynoecium distinguish it from *B. glauca*. *Bauhinia glauca* is much more common than *B. corymbosa* in Hong Kong. It produces dense inflorescences which fragrance the hillsides. The flowering periods of these two species are coming - try to identify the two species by the characteristics described above and learn something new about them.

Fig. 1. *Bauhinia blakeana*

"*Siphonaria japonica*" by Wallis K.S. Chan

The Siphonariidae is the most primitive family of limpets, known as basommatophoran pulmonate limpets (Hyman, 1967). They are known as false limpets due to the presence of a secondary gill which lies within the mantle cavity. To accommodate the opening of this so-called "lung" the shells of these animals are slightly asymmetric.

Three species of *Siphonaria* (Sowerby, 1824) have been recorded on Hong Kong shores: *Siphonaria atra* Quoy and Gaimard, 1833; *Siphonaria sirius* Pilsbry, 1894 and *Siphonaria japonica* Donovan, 1834. *Siphonaria sirius* and *S. atra* are sometimes very difficult to tell apart and recently were proposed (based on electrophoresis and morphological analysis) to be ecomorphs of the same species; *Siphonaria laciniosa* (Slingsby *et al*., 2000).

Siphonaria japonica is relatively small (10 – 25 mm, Morton and Morton, 1983; Liu, 1994), and is easy to distinguish from the other *Siphonaria* species on Hong Kong shores due to its distinctive shell morphology; with numerous ribs at regular

intervals radiating around the shell. *Siphonaria japonica* generally occurs from mid to low shore on sheltered to semi-exposed shores, such as Butterfly Beach, Cafeteria Old, Angler's Beach, Wu Kwai Sha, Clear Water Bay, Wah Fu, Middle Bay and South Bay.

Siphonaria japonica can live up to one year, growing rapidly during the winter and breeding and recruiting in winter. They lay yellow gelatinous egg ribbons on the mid-low shore or in rock pools. Their egg capsules are ellipsoid and early development is rapid, releasing veligers (one of their larval stages) after seven days at 21°C. These limpets disappear from the shore completely by May at most sites (after a life span of ~ 8 months). At some sites, which are north facing, (such as Wu Kwai Sha) they can survive for a year, perhaps due to the shores' aspect that protects the limpets from summer heat stress.

Siphonaria japonica is a grazer and the most abundant food items in its diet are cyanobacteria. The availability and species composition of this food supply, however, varies greatly around Hong Kong and has important implications for growth and reproduction. In my study, most population parameters were positively correlated with abundance of filamentous cyanobacteria (*Phormidium* spp., *Lyngbya* and *Oscillatoria* spp.), whilst negative correlations were found with *Kyrtuthrix maculans*, *Hildenbrandia rubra* and diatoms. Shores with a high standing crop of filamentous cyanobacteria were mostly found on the west coast, and supported faster growing individuals which laid more, larger egg masses, as compared to shores on the east coast which lacked these cyanobacteria.

Although *S. japonica* does not show strong food selection on the shore or in laboratory feeding preference tests, the spatial and temporal variation in the distribution of the cyanobacteria biofilm plays a significant role in the growth and reproductive effort of this species and perhaps explains variation in its success on different Hong Kong shores.

Fig. 2. *Siphonaria japonica*

Chinese three-striped box turtle *Cuora trifasciata* in Hong Kong: possibly the last viable wild population in the world by S. M. Cheung

The Chinese three-striped box turtle *Cuora trifasciata* (Bell, 1825) (Family Bataguridae) is one of the five native freshwater turtle species in Hong Kong. It is characterized by having three dark brown stripes on its back and the head, tail and limbs can be concealed within its shell by closing the hinge on its plastron when disturbed. The shell length of fully grown turtles can reach over 20 cm but local specimens are generally smaller in size. *Cuora trifasciata* is classified as a 'critically endangered' species on the 2002 IUCN Red List and has been included in Appendix II of CITES (Convention on International Trade in Endangered Species of wild fauna and flora). This turtle is among the rarest turtle species in Hong Kong and is protected by law under the Wild Animals Protection Ordinance Cap. 170. No wild turtles should be collected unless under a special permit obtained from the Agriculture, Fisheries and Conservation Department.

Fig. 3. *Cuora trifasciata*

Specimens of *Cuora trifasciata* are known from Southern China and Vietnam, where they inhabit low altitude (<600m a.s.l.) forested hill streams. *Cuora trifasciata* in Hong Kong, however, is considered to be the last viable wild population in the world. In Hong Kong, records of this turtle are scattered across the New Territories, Lantau Island and Hong Kong Island and thousands of trap-nights only revealed fewer than ten turtles. Since July 2001, an intensive ecological study has been conducted in a catchment in Hong Kong using radio-tracking. Some of the radio-tagged individuals remained at the same sites for up to two months even in the summer active season. This suggests that any over-overexploitation or habitat degradation would severely deplete local populations. In fact, over-collection for the regional and international food market has played a major role in dramatic declines of *C. trifasciata* in Hong Kong and other parts of its range. A co-operative programme that includes the establishment of reserve areas with restricted visitor entry, captive breeding attempts and feasibility studies on using captive bred *C. trifasciata* to restock depleted wild populations, is urgently needed.

MISCELLANY

Indiana Jones?! Safety issues on exploration of underground water channels in Hong Kong

by Sze-man Cheung and Rita S.W. Yam

As a relatively unexplored habitat, underground water channels have aroused not only the interest of researchers *(Porcupine!* 27 p. 18-19) but also the curiosity of the general public, e.g. a man, and a group of naughty children were reported getting lost in underground water channels on 20 November, 2002 (Wen Wei Pao), and 12 January, 2003 (Sing Tao Daily) respectively. Although the biodiversity in some underground water channels is high and there might be plenty new to find such habitats (*Porcupine!* 27 p. 18-19), exploration in the underground water channels could become highly dangerous if necessary safety precautions are not taken seriously.

Underground water channels are an oxygen deficient environment and sudden increases in the level of harmful, toxic and explosive gases may occur at any time. Flooding may happen when huge volumes of water drain into these channels over a short period of time, especially during or shortly after rainstorms. Some channel systems resemble a maze, people get lost easily, as in the cases of the man and young children in the news reports mentioned above.

According to the Factories and Industrial Undertakings (Confined Space) Regulation, underground water channels are defined as a type of 'confined space'. Though ecological surveys are not considered to be 'industrial undertakings' (for precise definitions of 'confined space' and 'industrial undertaking' check the 'Bilingual Laws Information System' web site in Bibliography), the precautions and procedures in the 'Factories and Industrial Undertakings (Confined Space) Regulation, Cap. 59AE' are a good reference for researchers preparing to investigate underground channels.

Before planning the trip to enter underground water channels, think thoroughly whether you really need to go into such dangerous habitats. It is highly recommended that the persons involved in channel surveys attend a safety training course, approved by the Labour Department of Hong Kong Government, for confined space work and hold a relevant certificate. If you must go, never visit these channels during or shortly after rainstorms, otherwise you may be washed away when sudden flooding comes. Study the site maps carefully and properly plan the visit. Tell reliable friends where and when you are going. In this way they can call for rescue if you do not turn up by the stated time. The water and gas quantities should be assessed to be at acceptable levels before entry. At least some members must stay at the channel opening and keep close contact with the people inside. If possible, wear appropriate breathing apparatus and suitable safety harness with a life line held by a person outside the channel. Remember to bring powerful torches with back-up batteries in order to walk in total darkness. Put a light stick on the channel wall at each junction to prevent getting lost in these underground mazes. Always stay alert and prepare to retreat if any sudden change in body conditions and environment occurs. For details on safety matters related to working in confined space, check the bibliography or contact the Occupational Safety & Health Branch of Labour Department.

In addition to personal safety, researchers should bear in mind that collection of any animals in underground water channels within the Country Park Area and capture of protected animals under the 'Wild Animals Protection Ordinance, Cap. 170' requires permits from the Agriculture & Fisheries & Conservation Department.

Although ecological surveys conducted in these water channels allow us to explore a little-unknown habitat, these should be properly planned and attention should be paid to all safety precautions. Like the 'Indiana Jones adventure series', exploration in underground water channels can be exciting but also full of life-risking dangers and we strongly discourage the general public from visiting these channels unprepared.

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BBR ----- More than a race!

by Fion Cheung
Environmental Life Science Year 2 student

To most people in Hong Kong, the 22nd of February 2003 was just an ordinary Saturday. To us, a group of 9 Environmental Life Science students, it was a big day. After learning bird-watching for about 4 months, it was the time to test our birding skill in the Big Bird Race.

The schedule on that day was quite tight. Starting at 6 a.m. at the Kadoorie Farm and Botanic Garden, we visited Tai Po

Kau, Long valley, Mai Po, Kam Tin, Tai Mo Shan and finally went back to Mai Po at 5:00 pm. Breakfast and lunch were bread and water on the coach while traveling from one site to another. Despite the tiredness, we enjoyed the race very much. Every time we arrived at a site, we took the binoculars out immediately and started looking for birds. We had to keep very quiet most of the time, which was very unusual behaviour for us. Apart from those birds we had seen before on training trips, we saw many species new to us such as the European Spoonbill and Oriental Pratincole. Our "Bird of the Day" was a Common Starling, which is, in fact, uncommon in Hong Kong. We saw it amongst the water buffaloes at Kam Tin.

Fig.1. The "Pokfulam tree sparrows" looking for forest birds at Tai Po Kau in the early morning.

In the end, we recorded 136 species and came sixth amongst all teams. For a group of bird-watching beginners, this result was really encouraging. Many thanks to Lee Kwok-shing, our trainer and the star of our team. Aside from the outcome, what delighted us most was the valuable experience we had in the BBR. Now, we have seen many more bird species than the common ones such as swallows, sparrows, black kites and feral pigeons that we were already familiar with. What is more, my parents have begun to appreciate nature and wildlife since I have started pointing out birds to them with my new skill when we go to parks. This shows how we can change peoples' minds with just a little effort. To me, the BBR is not just a race but a real life lesson.

Finally, I sincerely appreciate Dr. Hau's effort in putting together such a meaningful activity for us. I am also very grateful to Lee Kwok-shing who spent so much time teaching us bird-watching skills. We have decided to continue birding so as to prepare for the next year BBR and I hope that more ELS students will be interested in this kind of activity besides studying.

BBR—A special experience in HK

by Wang Jing (Jackie)

Environmental Life Science Year II student

I come from north China, a rather different place from Hong Kong. In Hong Kong, I can see eagles circling around in the blue sky. I can smell the fragrance of flowers when walking in the campus. I can see wild monkeys walking with people leisurely. All of these make me feel the harmony between human and nature. I want to learn more about the natural environment in Hong Kong during my limited study time here.

Fortunately, the Big Bird Race (BBR) gave me the chance. During our training trips, we visited many nature reserves and country parks, where I had not been before. If I had not joined this activity, I might have had no other opportunities to visit these places. During our trips, I saw many beautiful birds that I used to think I could only see in a zoo or in pictures. But they are real, alive, freely flying in the sky or happily singing in the trees. Through this experience in the BBR I have learnt how to identify birds from their morphology, habitat, or even their songs. Many thanks to our skilled coach, who has taught us a lot about field identification of birds. The Big Bird Race appears more as a gathering than a race. It is a gathering for people who love birds, nature and life. Through this activity, I have come to appreciate the beauty of nature even more. It is really a special experience for me in Hong Kong.

Fig. 2. Quite a lot of Pied Avocets were busy feeding on the Deep Bay mudflat on the BBR day.

A meaningful way for Environmental Life Science Students to spend the summer holiday

by Damgy H. L. Chan
Environmental Life Science Year III Student

It is always a headache for students to decide what to do during their three-month long summer holiday. Some students spend their time traveling abroad, some do summer jobs, some play around, and some do nothing at all! I used to be one of latter students, but in my last summer holiday I found a very meaningful way to utilize these three months' time – to be a summer research assistant in DEB!

Although being educated in our department, it is unfortunate that most Environmental Life Science students know little about DEB or about practical aspects of conducting researches. I was glad to be given a chance to work as a summer research assistant in our department last summer holiday. During this period, I learnt many things and gained much work experience. I would like to take this opportunity to share this wonderful experience with you.

Being a summer research assistant supervised by Dr. Benny Chan, I was assigned to work in two major areas: the Museum of the Swire Institute of Marine Science (SWIMS; see *Porcupine!* 26) and in a research project undertaking laboratory and field programmes of potential indicators for monitoring marine pollution supervised by Dr. Benny Chan and Dr. Kenneth Leung.

The first part of my work included rearranging and labelling specimens of the SWIMS museum, along with updating their database. Given that the previous update of the database was done 10 years ago, it was not an easy task to deal with! Nonetheless, I improved my organization, time management and computer skills. Besides, I learnt numerous scientific names and made contact with nearly a thousand species of specimens, many of them new to me! But most importantly, I worked in such a beautiful environment at Cape d'Aguilar and got to know the staff and postgraduate students at SWIMS; not many students have ever visited there.

The second part of my work included studying the distribution pattern and abundance of barnacles (*Tetraclita squamosa*, *Tetraclita japonica* and *Balanus amphitrite*) and limpets (*Cellana grata* and *Patelloida pygmaea*) in 60 sites, trawling fishes for histopathology studies and taking photographs of crab specimens. Whenever the weather was fine and the tide was low enough, my colleagues and I did field work intensively. Although we were born and grew up in Hong Kong, we had never been to most of the sites before and would probably not visit some of the sites in the rest of our lives again. Thus, we regarded the field trips as eco-tours, and we all enjoyed ourselves and learnt much about field transect sampling techniques.

Most of the sites we visited for the limpet survey were rocky shores, but some were artificial vertical seawalls in Victoria Harbour which were difficult to access. For that reason, we reached those sites by 'Kai To' (i.e. a small boat that sails you anywhere you want, acts as an aquatic taxi). Working on a Kai To was quite troublesome because the sea was not calm enough to maintain our balance. I even got seasick when everyone was busy in collecting the samples! Fortunately, my colleagues shared my workload and let me take some rest, so that we could finish the fieldwork by the end of the day.

Another part of the research involved trawling. That was the first time I worked on a shrimp trawler. Luckily, the trawler was not as smelly as I thought, so that the working environment was quite nice. Every time the fishing net was pulled out of water, we felt surprised because none of us could predict what we could find in it. Apart from the target species we needed, we also got crabs, shrimps, squids, rays, sharks, corals, sea pens, sea fans, brittle stars and different types of rubbish. Once we had sorted out our target species, my colleagues and I started to check their histopathology and dissect their livers on the board and store the livers in liquid nitrogen. Doing dissection on a trawler was a great experience as my colleagues needed to cut the livers out precisely and also needed to avoid cutting their fingers in a vibrating environment! When we finished our work, we rested on the roof of the trawler from where we could see Chinese White Dolphins, jellyfishes and egrets! But the most impressive thing during trawling was eating lunch that was cooked by the fishermen who cooked our by-catches (e.g. shrimps and mantis shrimps). The food was so fresh and was filled with our hard work; hence we thought the food was very delicious.

After trawling, I was asked to take photographs for the crab specimens being caught. Well, I used to know nothing about photography, but after training, I learnt this skill! I was also taught how to improve the quality of the photographs by using computer software such as Photoshop. I am grateful to the staff in the Virtual School of Biodiversity (VSB) for teaching me the techniques in editing and handling digital images.

To cut a long story short, even though the work for a summer research assistant in our department was quite tough and challenging, I think it was very worthwhile. I have learnt many things that will be beneficial to my studies especially in my final year project (e.g. sampling techniques, ecological experimental design and species identification) and had many unforgettable experiences last summer holiday. In addition, I developed a sense of belonging to our department because I understand it more than I did before. Last, but not least, I would like to say a big thank to Dr. Benny Chan for giving me the chance to be his summer research assistant and granting me so much knowledge on barnacles, dissection, species identification and photography.

"In the News"

by Jacqueline Weir and Sukh Mantel

Reuters News Service stories can be accessed at www.planetark.org. China and International News can be accessed on the web version of *Porcupine!*

Customs officers at the airport confiscated three stuffed crocodiles, each 1.2 m long, from a passenger from Thailand. Eight crocodiles were confiscated last year at the airport. (**SCMP, 23.1.03**)

Plans to make a "green" public estate at Shui Chuen O (Sha Tin) were dropped by the Housing Authority due to claims of high cost and because the government's Home Ownership Scheme has now been scrapped. Seventy million dollars has already been spent on the project. (**SCMP, 25.1.03**)

At the end of January, Secretary for Health, Welfare and Food Yeoh Eng-kiong stated that chicken was safe to eat and the better hygiene at chicken farms meant it was unlikely that there would be an outbreak of chicken flu. However, in the first week of February, 8300 chickens were killed after testing positive for H5 avian influenza virus, although it was not confirmed that it was of the H5N1 strain. (**SCMP, 25.1.03, Reuters, 3.2.03**)

A consultancy firm has recommended to the government that 68,000 light trucks should not be converted to liquified petroleum gas because of lack of LPG storage and re-fuelling facilities. Legislators criticized the government for dropping its policy on cleaner fuel. Thomas Chow Tat-ming, deputy permanent secretary for Environment, Transport and Works, said this was not true and that cleaner fuel policy will be promoted whenever possible. (**SCMP, 7.2.03**)

A government study has proposed that only 1% of Hong Kong's energy be renewably generated (including through waste incineration) by 2012. The reasons listed for such a low target include constraints of conventional power prices, operation regulations for power companies and accessibility to the electricity grid. Greenpeace is concerned about considering incineration as renewable, since it may be harmful through release of toxic gases and chemicals. (**SCMP, 7.2.03**)

Kadoorie Farm has launched a campaign to save Asian turtles from extinction. Of the 90 Asian species 46 are endangered, critically endangered or extinct, and 21 are vulnerable at present. The demand for turtle products is increasing due to rising economic status of people in China and other Asian countries. Although Hong Kong is primarily a transit place for illegal turtle trade, local turtlesoup and pet shops might have turtles that are not farm raised and therefore consumers are recommended to confirm the origin of the turtles from the vendors. Last year 10,000 wild turtles on the way to mainland China were confiscated by Customs and rescued by Kadoorie Farm. (**SCMP, 22.1.03**)

A $44.2 million pipeline is being built through Plover Cove Country Park by the Water Supplies Department to supply water to only 300 people in Wu Kau Tang, Ai Chi Wo and the islands of Kat O Chau and Ap Chau. Trenches that are being dug in Wu Kau Tang are near a wooded stream where migratory birds nest. A Water Supplies Department spokesman said that EPD and the Country and Marine Parks Authority had been consulted, however Financial Secretary, Town Planning Board, AFCD, Lands Department and Planning Department did not reply to inquiries. (**SCMP, 10.1.03**)

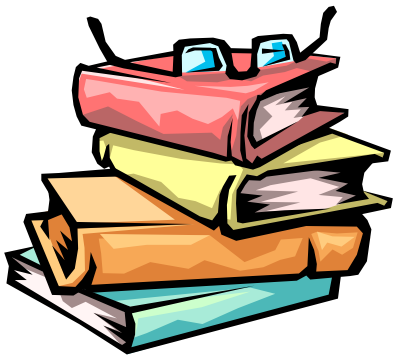
Hong Kong is planning to set up desalination plants and recycle water in order to supplement the supply of 810 million m^3 of Dongjiang water from Guangdong. The demand for fresh water this year is expected to be 910 million m^3. Two small desalination plants at the cost of $5 million will be set up in Tuen Mun and Sai Kung by the Water Supplies Department and recycling of water will initially be started on Lantau Island by 2005, however these are not expected to replace water coming from Dongjiang in the future. The cost of desalinating water is approximately $7-8 per m^3 in comparison to $3.08 for Dongjiang water. (**SCMP, 3.2.03**)

A Siberian Tiger on the cruise ship SuperStar Leo has been the center of attention by the Society for the Prevention of Cruelty to Animals (SPCA) for the animal's poor living conditions. Alex Yau of WWF said that there might only be 437-506 Siberian tigers in the wild. One of these wild tigers was photographed for the first time in northeastern China at the Hunchun nature reserve in Jilin province by a "camera trap" placed by the Wildlife Conservation Society. Most of the tigers in this area have been poached for Chinese medicine to cure everything from rheumatism to improving sexual performance. (**SCMP, 30.1.03, 8.2.03**)

Stonecutters Island sewage treatment plant has resulted in increased *E. coli* counts instead of decreasing bacteria levels in western Victoria Harbour, during the past 14 months of its operation. The plant is discharging partially-treated sewage into the sea until other stages of the Harbour Area Treatment Scheme are operational. Sewage treatment reduces *E.coli* levels by half, however the large volume of the sewage has led to increased bacterial levels. As a result four Tsuen Wan area beaches have been closed for the summer bathing season. (**SCMP, 4.3.03**)

This year 30 attacks on people were made by wild Rhesus Macaques in Sha Tin, in comparison to only five in the same period last year. The monkey colonies in Tai Wai have spread to Mei Foo and possibly further. The district councillors believe the policy of banning people to feed the monkeys is resulting in them being hungrier and more aggressive towards people. The AFCD is responding by increasing its sterilization program to control the primate population. (**SCMP, 7.3.03**)

Jill Robinson, founder of Animals Asia Foundation, recently took food to four endangered brown bears in Yulin Zoo in Guangxi province, after reading a *Los Angeles Times* story about the starving bears. The private zoo was supposed to receive a subsidy from the local government for zoo maintenance, which didn't come through. There are 200 private animal parks in China which are proliferating since keeping wild animals is considered prestigious and the situation is made worse by the fact that legislation on preventing cruelty to animals, including endangered species, is lacking. **(SCMP, 11.2.03)**



BOOK REVIEW

Restoring China's Natural Vegetation

by Xie, Yan, 58 pages. China Forestry Publishing House, Beijing, 2002.

The main aim of this small colourful book is obvious – to raise the public's awareness on the importance of natural vegetation in China. The book was supported mainly by the ex-Biodiversity Working Group of the China Council on International Cooperation on Environment and Development and the State Environmental Protection Administration of China. In addition, it was also supported by several international NGOs and the Kadoorie Farm and Botanic Garden in Hong Kong.

The book has three main sections. The first part is a brief account of the vegetation cover in China and the function of natural forests in soil and water protection. It has an interesting table listing the current and potential economic values of various services and products provided by natural vegetation in China.

The next part points out the main problem of forest restoration in China in the past, i.e. monoculture. Of the 16.55 % forest cover in China now, more than 6.55 % is forest plantation, mostly in monoculture. Referred to as "green desert" in this book, monoculture plantation is reported to be weak in soil and water protection, poor in nutrient recycling and enrichment, low in biodiversity and susceptible to pest attack. It then discusses 7 main flaws in vegetation restoration. The most important of these are the overwhelming use of introduced species such as *Eucalyptus* spp. and the ignorance of "diversity" in restoration projects. Traditionally, coverage is the only criterion used to measure the success of reforestation projects, which is somewhat misleading. This section puts forward several other criteria. Firstly, the soil and water protection capability should be determined by measuring the changes in stream flow in dry and wet seasons and the sediment level in watercourses. Secondly, the changes in biodiversity, especially species richness, should be monitored. The third criterion is to monitor the changes in ecosystem function such as nutrient flow and productivity. The last section of the book introduces various principles and techniques for restoring native forests in China.

Although the title of this book implies that it is about vegetation in China, it focuses mainly on forests. It is the first book I have come across in China that has so explicitly highlighted the importance of native species and diversity in forest restoration. This book is inadequate as a resource book for foresters and students, but would be a good book to change people's perception about tree planting and reforestation. Hong Kong has also made some of the reforestation mistakes stated in this book, so it is worthwhile to have it published in Hong Kong. Currently, it is only available in simplified Chinese in China. For those who are interested, I have a few spare copies with me. First come, first served!

Billy Hau

Artificial Reefs and Reef Fish in Hong Kong

by K.D.P. Wilson, 176 pages. Friends of the Country Parks, A.F.C.D. and Cosmos Books

The Agriculture, Fisheries and Conservation Department has placed an increasing emphasis on producing education materials in the past couple of years and this is the latest in the Marine Conservation Series. An attractive little full-colour hardback, it is well priced at $60 and achieves its aims of providing a brief account of the use of Artificial Reefs (ARs) in Hong Kong, and of the fishes inhabiting them. Pages are well laid out and care has gone into making the bilingual text far less obtrusive than is often the case. The first third of the book will be invaluable to anybody interested in AR deployment in Hong Kong with detailed timelines, maps and descriptions of the various types of ARs, including numerous colour photographs. Consultancy studies and relevant scientific literature are also listed.

The latter two thirds of the book are devoted to a guide of some 200 species of fish found around local ARs (including the High Island Dam dollos), with notes on seasonality, abundance, reproduction etc. Keith has put considerable effort into obtaining colour pictures of most species *in situ*,

increasing the appeal of this volume to local divers. He is also to be commended for recording a number of new species for Hong Kong waters such as the Coral hawkfish (*Cirrhitichthys oxycephalus*), Dusky batfish (*Platax pinnatus*), Brassy chub *(Kyphosus vaigiensis*), Saddleback hogfish (*Bodianus bilunulatus*) and Kner's wrasse (*Halichoeres kneri*). More critically, I would question the wisdom of listing the fishes in alphabetical order of the scientific family name as, i) few divers will be familiar with these and, ii) closely related familes such as the wrasses and parrotfishes do not appear together. There are also a small number of misidentifications, a juvenile Moon wrasse (*Thalassoma lunare*) has been identified as another labrid (*Halichoeres tenuispinis*), one of the pictures of Yellowstreaked snapper (*Lutjanus lemniscatus*) is not of that species (*Lutjanus vitta* perhaps ?), and Keith's exciting new record of Alligator pipefish (*Syngnathoides biaculeatus*) is labelled as *Syngnathus schlegeli*. As the latter is correctly identified on an AFCD website (www.hk-fish.net) I assume this is an unfortunate oversight.

Fig.1. *Plectropomus leopardus* (photo: Andy Cornish)

Such quibbles are minor, however, compared with some of the unsubstantiated claims about ARs in Hong Kong made in this book. For the sake of space and to avoid rehashing old debates I'll stick to those on reproduction and comparisons with natural reefs. A significant number of commercially important species are noted as forming "spawning groups" giving the impression that many such species are reproducing all over the ARs. Fishes aggregate for many reasons and it is near impossible to know why without observing spawning rushes and release of eggs and sperm, careful examination of caught fishes or other direct evidence of spawning such as egg masses (as is noted for some damselfishes). Without such evidence, claims for reproduction are premature, especially when some of the species involved are found in schools most of the time anyway. In addition, it is unlikely that aggregations of Leopard Coral trout (*Plectropomus leopardus*) on one AR are a spawning aggregation as is hypothesized. The first juveniles of this species settled on the ARs in May 2000 (Management Services to the Environment Ltd. 2001), but studies from Australia have shown females take at least 2 years to reach sexual maturity and males take at least 3 (see www.fishbase.org for summary) so the first time those individuals could be expected to spawn is summer 2003.

Even more dubious is the claim, based on monitoring carried out within the Yan Chau Tong and Hoi Ha Wan Marine Parks, that "Artificial reefs support higher numbers of medium and high value fish than both rocky shore and mud bottom control sites." In no way can the rocky reef sites used be considered as proper controls. A control site should be as similar in every practical way to the "treatment" site, bar the treatment itself, but the rocky reef "controls" were at different depth (0-5 m compared with 5-16 m on the ARs). The lack of physically similar natural reefs nearby to use as controls for the ARs is acknowledged in the AR monitoring report (Management Services to the Environment Ltd. 2001), "the lack of appropriate control sites ensured that the formulation of unambiguous and testable null hypotheses was not possible" but no mention is made of these misgivings when the monitoring data were analyzed to produce conclusions that are repeated in this book. In reality the "control" sites are so different from the artificial reefs that comparisons are not only meaningless, but worse, misleading. Furthermore, natural reefs in these 2 marine parks are fished by hundreds of licensed fishers, while the ARs are supposed to be unfished under a "gentleman's agreement."

Overall, this book has many redeeming features but I was disappointed by the flimsiness of some of the evidence being put forward to justify this 100 million dollar programme to the public.

Andy Cornish

Management Services to the Environment Ltd. (2001). SCUBA Fisheries Assessment of the Artificial Reefs – Final Report. Contract AFCD/ARD/M/98-2. pp 36 plus Figures.

WILD CORNER

Any sightings of civets, mongooses, ferret badgers, leopard cats, barking deer, pangolins and porcupines – live or dead – should be reported. Rare birds, reptiles, amphibians and fish, or unusual behaviour by common species, are also of interest, as are rare or interesting invertebrates and plants. If you think it is interesting, our readers probably will! Please give dates, times and localities as accurately as possible

MAMMALS

Annika Walters saw a **Porcupine** (*Hystrix brachyura*) at around 6.30 am on the verge of Route Twisk road around mid-February 2003.

On 9 February 2003, at about 5.45 pm, Robert Davison saw a large adult **Barking Deer** (*Muntiacus* sp.) crossing a footpath between Lion Rock and Amah Rock in the south central New Territories. It was moving up the hillside, feeding slowly as it went. This is a wooded area, with dense secondary forest and undergrowth on steep slopes.

A **Barking Deer** (*Muntiacus* sp.) was sighted by Ian Roper in the late afternoon of 26 June 2002 at Tai Po Kau Forest Reserve. Barking Deer were also heard on the mornings of 12 December 2002 at Hok Tau side of Cloudy Hill (near Tai Po) and on 28 December 2002 above Wu Kau Tang (Plover Cove Country Park).

Rhesus macaques (*Macaca mulatta*) in Shing Mun Country Park were observed tearing off bark of *Melaleuca quinquenervia* and searching through it (possibly for insects) on 27 January 2003 by Sukh Mantel.

Ian Roper saw **Porcupines** (*Hystrix brachyura*) on the following evenings: two adults on 17 April 2002 in Sam A Chung (Plover Cove Country Park); one on 19 July 2002 in Tai Po Kau Forest Reserve; one on 4 September 2002 in Lam Tsuen Valley near Tai Po; one on 20 September 2002 on Tai Mo Shan.

One **Chinese Pangolin** (*Manis pentadactyla*) was seen by Ian Roper on the morning of 11 May 2002 in Tai Po Kau Forest Reserve.

Ian Roper saw one **Ferret-Badger** (*Melogale moschata*) on the evening of 12 June 2002 and a **Masked Palm Civet** (*Paguma larvata*) on the morning of 27 April 2002 in the foothills of Kai Kung Leng (Lam Tsuen Country Park).

Vijaykrishna Dhanasekaran saw a half metre long **Masked Palm Civet** (*Paguma larvata*) at 11.57 pm on 17 March 2003 near the service lift of on the ground floor of Kadoorie Biological Sciences Building (HKU). It ran off towards the spiral stairs upon being sighted.

Ian Roper sighted **Wild Boars** (*Sus scrofa*) as follows: one adult and two young on the morning of 26 January 2002 in Lam Tsuen Valley; one on morning of 23 February 2002 in Tin Fu Tsai (Tai Lam Country Park); two adults and two young on the evening of 19 June 2002 in Tai Po Kau Forest Reserve; one on the morning of 14 October 2002 in Sha Lo Tung near Tai Po; one on the evening of 22 October 2002 on Kap Lun Trail (Tai Lam Country Park); one adult and two young on the evening of 4 December 2002 above Kowloon Reservoir; one on the evening of 11 December 2002 on Bride's Pool Road near Tai Po.

Kylie Chung caught a 45-55 cm long **Javan Mongoose** (*Herpestes javanicus*) near the roadside of Tai Mo Shan on 26 November 2002. Some insect remains and more than 40 intact *Rhodomyrtus tomentosa* seeds were found in it's droppings along with some whitish grey long hair, which did not seem to belong to the mongoose. On 21 February, Katie Chick trapped a 60 cm long (including tail) **Javan Mongoose** (*Herpestes javanicus*) in a wire cage trap in an open grassland near Pak Ngau Shek. On 26 February, she came across a **Barking Deer** (*Muntiacus* sp.) at the site around 11.00 am. The deer looked quite large, around 120 cm tall. It immediately fled on seeing her.

BIRDS

A **Streaked Spiderhunter** (*Arachnothera magna*) was seen by Kwok Hon Kai in old woodland in Chatham Path, near Barker Road at the Peak on 24 January 2003 and 20 February 2003. The bird did not have a blue nape, but was streaked on both the back and the belly. The bird flocked with two **Black Bulbuls** (*Hypsipetes leucocephalus*) on both occasions. There is at least one previous local record of this species in Ng Tung Chai (M. Kilburn, pers. comm.). Since this species is not known to migrate, the bird was believed to be an escape (R. Lewthwaite, pers. comm.). The eastern limit of distribution for Streaked Spiderhunters is western Guangxi. Kai has never seen this species in the bird market.

On 12 March 2003 Kwok Hon Kai saw two **Oriental Pratincoles** (*Glareola maldivarum*) at Lut Chau. He saw another 14 in a drained fish pond in San Tin on 21 March, and also a **Eurasian Hoopoe** (*Upupa epops*) on Po Toi Island on 22 Mar 2003.

Jose Cheung and Captain Wong saw one juvenile **Mugimaki Flycatcher** (*Ficedula mugimaki*) with about 10 **Japanese White-eyes** (*Zosterops japonicus*) feeding on fruits of *Mallotus paniculatus* at the entrance of Kowloon Hill catchment on 1 January 2003. It is unusual (but not unknown) for flycatchers to eat fruit.

Kwok Hon Kai saw a flock of 20 **Red-rumped Swallows** (*Hirundo daurica*) feeding at a fishpond in San Tin on 9 December 2002.

A **Peregrine Falcon** (*Falco peregrinus*), an **Osprey** (*Pandion haliaetus*) and a **Eurasian Black Vulture** (*Aegypius monachus*) were seen soaring at the same time by Kwok Hon Kai at Lok Ma Chau on 6 March 2003.

Kwok Hon Kai noticed one **Black-headed Bunting** (*Emberiza melanocephala*) in Tai Sang Wai on 13 February 2003.

Fig. 1. Black-headed Bunting (*Emberiza melanocephala*)

Kwok Hon Kai saw a flock of six **Azure-winged Magpies** (*Cyanopica cyanus*) on a fishpond bund at Lok Ma Chau on 6 March 03. Solitary birds (presumably from the same flock) were frequently seen near the Peter Scott Centre at Mai Po Marshes Nature Reserve between November 2002 and February 2003. The Azure-winged Magpie is an escaped/released species, first noted at the ZBG on Hong Kong Island in 1975, where a small and extremely sedentary population bred for

several years before dying out. Their native range is northern and eastern China (Carey et al. 2001).

AMPHIBIANS/REPTILES

James Hopkinson came across a **Burmese Python** at least 3 m long (*Python molurus bivittatus*) at around 10.30 pm on 15 December 2002, on the road between Shek O and Central.

Emma Long, Cecily Law, Roger Kendrick, Will Trewhella, Kevin Caley and Jacqui Weir noticed eggs of the **Hong Kong Cascade Frog** (*Amolops hongkongensis*) on rocks under the largest waterfall at Ng Tung Chai. The eggs were seen on 23 March 2003.

PLANTS

Billy Hau and Katie Chick found a very peculiar flowering tree along Black's Link on 13 February. It was later identified by Ng Sai Chit as the rare *Sycopsis dunnii*. No flower specimen has ever been collected for this species in Hong Kong. It was previously recorded on Ma On Shan, Tai Mo Shan, Tan Chuk Hang and Sunset Peak. This represents a lowland record (330 m) of this montane forest species and the first for Hong Kong Island.

Fig.2. *Sycopsis dunnii* (Copyright: Billy Hau)

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Article submissions:
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Ms Eva Tam, Department of Ecology & Biodiversity The University of Hong Kong.

Tel: 22990612 Fax: 25176082

Email address:
Ecology@hkucc.hku.hk

Website:
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