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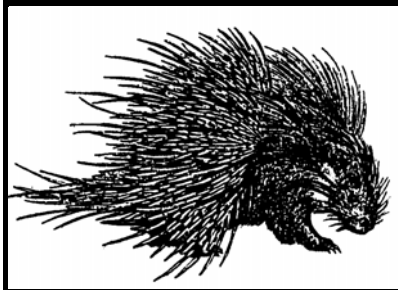

Porcupine!

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

Irresponsible Fishery

In a recent letter to Nature (Watson and Pauly, 2001), it was suggested that the state of global fisheries is even worse than is generally believed. The article claims that (mainland) China has consistently and significantly over-reported annual production to the Food and Agriculture Organization (the international body responsible for compiling global fishery figures), thereby inflating world fishery production. While China is by no means the only country implicated, the fact that she is a major fishing nation means that her figures have a disproportionately large impact on estimates of global production. These estimates are used to judge the state of world fisheries and to make decisions about management and the appropriate levels of investment in fishery operations by governments, banks and private enterprise. In other words these production figures are critical for sustainable resource use.

The responsibility to manage fisheries within each country's exclusive economic zone is enshrined in the Law of the Sea and reliable monitoring of production is an essential step towards good management. In 1995, a voluntary Code of Conduct for Responsible Fisheries was adopted by many nations to encourage and guide ecologically sustainable fisheries. With China a signatory of the Code, the government of Hong Kong claims to have adopted measures in line with its principles. Unfortunately, there is little evidence of progress. Local fisheries are overfished and unmanaged, production not meaningfully monitored and there is no obvious government research programme on local fishery resources. Despite plans for a licensing system and fishery protection areas there appear to be no means of scientifically establishing the appropriate number of licences and fishery protected areas will not necessarily be protected from fishing. Nor is there any genuine attempt to restore depleted stocks, for even when fishery experts are contracted, their advice is not heeded. As an example, the principle recommendation from top fishery experts of the University of British Columbia to address overfishing in Hong Kong was reduction in fishing effort (Pitcher *et al*. 1998). Instead, we see the implementation of expensive, controversial fishery restoration tools, restocking and unprotected artificial reefs.

There is little excuse for the current absence of management. It cannot be lack of money, for millions are being spent on artificial reefs and importing fish for restocking. It cannot be concern for livelihoods, for many more could now be supported if management had been implemented a decade ago. The sad truth is that either nobody realizes, or, more likely, few really care, about the state of the local fishery. This produces a mere 10% of the seafood consumed in Hong Kong and is effectively sustained by demand for fish feed (much of which then pollutes inshore waters) for mariculture operations (Wilson, 1997; AFCD website; Cheung, 2001). When will it sink in that supplies of fish are not endless and that we must learn to live within their natural limits? Instead of wasting taxpayers' money on unproven and expensive schemes, it is time to be responsible in the management and use of local resources.

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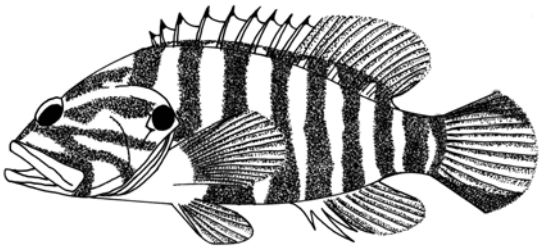
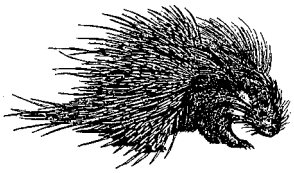


The Chocolate Hind, *Cephalopholis boenak* (Drawing by Liu Min). Elsewhere considered to be of little commercial value, this small species is one of the only groupers still taken regularly in local waters. Overfishing has depleted the many larger, more valuable, species, once common in local catches.

Yvonne Sadovy

Porcupine!



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December 2001

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

INSIDE THIS ISSUE:

DEB News

The bad news and the good news

The bad news

I am writing this three days after Mrs Lily Yam's speech about conservation policy, made in the context of a Legislative Council motion debate on 21 November, 2001. For those who came in late, Lily Yam is the Secretary for Environment and Food, and the motion debate proposed by Hon. Ms Choy So-yuk: was that LegCo urges the Government to "… formulate a set of comprehensive policies on conservation of the natural environment and ecology ..." including neat things like setting clear and specific conservation objectives, reviewing and improving the existing legislation and mechanisms relating to conservation, increasing the funding for education and research on conservation in local tertiary institutions, enhancing training for personnel work in protected areas, and encouraging discussion on conservation issues among government departments, green groups and other stakeholders. This all sounds rather wonderful, and it is the sort of thing that many of us have been hoping that government would get around to. The Hon. Ms Choy iced the cake by adding to her motion the hope that government would take account of "… the findings of the Hong Kong Biodiversity Survey recently completed by the University of Hong Kong …" as well as other relevant data and use it "… to plan and set priorities for conservation work…". Well, my cup runneth over. Inevitably, there were proposals to amend the motion. My favourite comes from the Hon. Mrs Sophie Leung who wished to include a statement that conservation action should "… avoid hampering the business environment and creating a heavy financial burden on the Government …". She also proposed deleting the statement "… based on the findings of the Hong Kong Biodiversity Survey recently completed by the University of Hong Kong …" and the bit about increasing funding for tertiary institutions. Why am I not surprised by this? The Hon. Law Chi-kwong, on the other hand, had a more positive amendment in mind, proposing " … penalizing those who cause wanton destruction of such ecological environment, and strictly prohibiting any developments in the sites designated as of high ecological value …". Way to go, Mr Law!

You may be able to guess – or already know – the substance of Mrs Yam's speech. She remarked that conservation objectives could not be easily quantified, and that it was difficult to decide on objective standards and levels of protection needed – especially in the absence of clear international guidelines. So government would need to conduct a review in order to find a set of generally accepted criteria (accepted by whom, I wonder?) that could be used to assess and decide on the conservation measures needed. Mrs Yam hoped that the review would be finished next year, whereupon there would be a phase of public consultation. (I am unsure as to why a completed review should be followed by consultation, since a review does not include any legislation and is only the first step along the road toward setting policy. But never mind that.) Note that Mrs Yam did not make a clear statement as to when, or even if, a conservation policy would be put in place. She also appeared to rule out government resumption of private land for conservation purposes because of the "… enormous financial burden". Concluding her speech, Mrs Yam noted that government needed more time for deliberation, but would strengthen conservation work using existing mechanisms. (Does this mean that, previously, government has not been using all of the mechanisms at its disposal?) In the face of such prevarication, I am beginning to wonder whether we will ever have any sites of conservation importance added to the existing tally of protected areas. It is also disturbing to discover that the Secretary for the Environment and Food does not seem to regard setting a conservation policy for Hong Kong as a priority. Odd that, since Article 6 of the 1992 Rio Convention binds signatories to putting such a policy in place.

The good news

Yes, there is some! I am pleased to be able to tell you that Dr Billy Hau was recently appointed as an Assistant Professor in DEB. Many of you will know Billy because of his work with WWF and, more recently, KFBG. He has written an article of introduction that is printed elsewhere in this issue. In the next *Porcupine!* I will have even more good news about DEB recruitment and, hopefully, less of the bad stuff.

David Dudgeon

Thanks to Lisa Hopkinson and Jackie Yip for some of the information used to prepare this piece.

Feedback

Don't Stone the House Crows (More on alien invaders)

Dear *Feedback*,

In the article on Hong Kong's Bad Biodiversity (Porcupine 23) Richard Corlett points out that most urban exotics are doing no obvious harm and some contribute positively to the quality of city life. Nevertheless, he went on to conclude that in view of the risk from 'invasive species' (species which become established in natural and semi-natural environment) we need a system by which newly established exotics are identified, reported and, if possible, exterminated, before they can spread. Whilst I do not disagree with any of Richard Corlett's account of exotics in Hong Kong I think his final recommendation is unjustified. It should be applicable only to those species with the potential to cause large economic losses or severe ecological damage but unwarranted for the vast majority of harmless exotics, especially in an urban setting.

One point, which should be clearly recognised, is that man has highly modified the local environment, creating conditions, which allow exotics to become established. Our heavily disturbed local ecosystem lacks biodiversity, relative to its natural, mostly forest condition. Urban areas and much of Hong Kong's rural environment are prone to domination by a few species, either local or exotic in origin. Even a local species can become a pest if you create the perfect environment for it.

As part of continental Asia, China already possesses a robust fauna and flora, which is not especially susceptible to 'invasive species'. Remote areas, isolated islands and even isolated continents such as Australia, possessing naive faunas are at high risk from alien invasion but here the local fauna and flora is probably at a lower risk from exotics than most other ecosystems on earth. However, when habitats are simplified they become susceptible to colonisation by exotics. Also when species are over-exploited a niche is created for invasion by an exotic.

At Tai Po Kau Forest, which is a secondary forest about forty years old, we have witnessed the steady colonisation of fauna and flora. Whilst many southern Guangdong native birds, such as Rufous-capped Babbler and Chestnut Bulbul, have recolonised there are several non-native birds, which have established breeding populations, such as Silver-eared Mesia and Blue-winged Minla. These latter Asian birds, with distributions including China but not Hong Kong, are taken from the wild and are freely traded at Hong Kong's bird markets. Should we control the flourishing trade in exotic birds to prevent introduction of exotics? No identifiable ecological damaged has been reported arising from colonisation in Hong Kong by exotics birds (apart from damage to exotic trees by Lesser Sulphur-crested Cockatoos). If there are no good examples to cite it is difficult to make a compelling argument to control the bird trade on these grounds. It should be noted that under the Animals and Plants (Protection of Endangered Species) Ordinance, measures are already in place to control trade in scheduled species.

Even if birds were not traded some birds would still manage to find their way here by the many routes made available in today's global marketplace. For several years I have observed House Crows in and around the docks at West Kowloon. In July this year I observed a family of House Crows raise four fledglings in Tonkin Street West, Sham Shui Po. This represents the first breeding record for this species in Hong Kong. These birds undoubtedly arrived on container vessels on passage from Celon or India where House Crows are abundant in lowland, urban areas. Here, the native Jungle Crow prefers open country of peaks and forest. Another native crow, the Collared Crow, prefers the open lowland environment associated with the fish pond areas and Deep Bay in the northern New Territories. Hong Kong's two native crows appear to avoid lowland, urban environments. There appears to be nothing to gain from exterminating House Crows since it is relatively harmless and we have created the perfect environment for this tropical, Asian species and furthermore have unwittingly provided the transport means for it to arrive here.

Some forest birds also find Hong Kong's urban environments to their liking. Indian Crackles, a popular cage bird, successfully bred in Hong Kong Park in 1999 and 2000. Another bird, which certainly could not be described as bad biodiversity, is the Lesser Sulphur-crested Cockatoo; a threatened bird from Indonesia, which has one of the largest remaining populations occurring here in urban Hong Kong. We would be doing a grave disservice to the planet's biodiversity if we embarked on a programme to exterminate this exotic parrot here in Hong Kong.

I am not advocating that we should purposely encourage the establishment of exotics but they should be viewed in the context of man's conversion of the countryside into a highly modified environment. Indeed most of man's choice of plants to grow as agricultural produce are exotics.

In the marine environment the fish Red drum, *Sciaenops ocellatus*, appears to have become established in Hong Kong waters. I have encountered it on several occasions during 2000, whilst diving using a rebreather, in an apparently wild state, both in shoals and as individual fish. This fish is extensively cultured in southern China and Hong Kong as a mariculture food fish. The risks this western Atlantic fish poses to Indo-Pacific populations are unknown but now it is here there seems to be no point in trying to eradicate it. Any effort would be futile.

Red drum is a large croaker, which can grow rapidly to 1.5 m with a maximum weight of 45 kg. One can't help surmise that the local extirpation, of the similarly sized 1.5 metre Chinese croaker, *Bahaba taipingensis,* which is restricted to South China, has facilitated the spread of this exotic. Red drum are freely available from hatchery facilities developed in the USA. I am not aware of any attempt to grow Chinese croaker but Giant Grouper a local Indo-pacific species considered under threat from the reef fish trade is now freely available and is being cultured in large numbers in China and Taiwan. This type of culture should be encouraged but the decision to culture exotic Red drum in marine sea cages, where the inevitable escapees will enter ideal conditions to thrive, was unwise.

The presence of South American Fire ants, *Solenopsis invicta,* in Australia is another matter. The Australians are currently launching a major A$100 million, five-year campaign to rid themselves of this aggressive exotic, and prevent it from becoming an 'invasive' species. It has already established populations in some 40,000 ha around Brisbane, and according to recent estimates, has the potential to cause damage in excess of A$ 100 billion over the next 30 years. However, according to Bert Candusio (New Scientist: 17.XI.2001), curator of the Insectarium of Victoria near Melbourne, "Going on past experiences, fire ants will not be eradicated from Australia". Attempts in the USA have failed and similar attempts in Australia to eradicate the Argentine ant, *Linepithema humile* have failed. Ants probably arrived in Australia in soils associated with imported pot plants.

The message here again is that preventive measures to stop unwanted aliens arriving in the first place are the most expedient. We will not be able to exterminate exotic species without spending enormous sums of money and the eradication treatment itself may have adverse impacts on local species. Agriculture, Fisheries and Conservation Department (AFCD) already has measures in place to restrict the importation of plants with associated soils. A phytosanitary certificate is required before plant imports can be accepted under the Plant (Importation and Pest Control) Ordinance.

Apart from preventative measures to prevent introduction of exotics the priority for protection of local fauna and flora should be to conserve the best examples of remaining natural or semi-natural habitats. By far the biggest threat to these habitats comes not from exotics but from developmental pressures, pollution or fire. These threats should remain the main focus of effort to protect Hong Kong's biodiversity.

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Dear *Feedback*,

There is a new book called "Common Names of Mammals of the World" (Washington: Smithsonian University Press, 2000) by Wilson & Cole, which gives English names for every species of mammal. They use Sikkim Rat for *Rattus sikkimensis* and I suggest in the interests of stability in use of English names that there is no strong reason not to follow it in Hong Kong.

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Dear *Feedback*,

Recently, Ming Pao reported that the Yi O villagers on Lantau Island had decided to close two footpaths in their village starting from late November. One of these footpaths leads to the Yi O mangrove. A village representative said the move was to prevent Yi O from becoming the second Long Valley as some environmentalists had planted mangroves on his land.

I visited the mangrove at Yi O in July. It was a shock as I found most mangrove trees dead or dying. All *Avicennia marina*, the dominant tree species of the Yi O mangrove, had lost their leaves and had no signs of life.

Yi O is a small mangrove located on southeast Lantau Island, mainly composed of *Avicennia marina*, *Kandelia candel* and *Aegiceras corniculatum*. *Acanthus ilicifolius* and *Bruguiera gymnorrhiza*, although relatively rare, are also found. Epiphytic fauna, e.g. *Littoraria* species, are abundant. Compared to the pictures taken in the summer of 2000, the recent photo taken in the mangrove is like a scene from 'Sleepy Hollow'. (Figures 1 and 2)

According to Ming Pao and The Sun (1 Jun 2001), most *Avicennia marina* trees at the mangrove were damaged by moth larvae, whilst other mangrove species were not affected. Shocking news was reported, two months after the natural disaster occurred, when about 200 mangrove trees were chopped off, burnt or splashed with oil (Ming Pao, Apple Daily, The Sun, 23 Jul 2001). Live mangrove no longer exists. What is left in the mangrove are several littorinids attached to the bald canopy, and a few small mudskippers and crabs on the mudflat. Who is the murderer of these trees? Is there someone who hates moths very much and wants to destroy the moth population by depleting all potential food items of the moth larvae? Or someone who doesn't want the mangrove to exist anymore as he thinks conservation of the mangrove will conflict with his indigenous rights?

Under the Forests and Countryside Ordinance, any person who, without lawful authority or excuse, in any forest or plantation, plucks or damages any bud, blossom of leaf of any tree, shrub or plant shall be guilty of an offence. We need Sherlock Holmes, in the 21st century, to find the murderer!

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Fig. 1. Yi O mangrove in September 2000.

Fig. 2. Photo taken in the same place in July 2001.

This is Billy Hau

I took up the post of Assistant Professor in DEB from September this year. Steve Pointing, who also started in September, introduced himself in the last issue of *Porcupine!*, so now it is my turn.

I have to say I was brought up by DEB, although when I graduated from the Environmental Life Science Programme in 1991, DEB had not yet been formed. I started joining ecology as a summer research assistant of Gray Williams in 1990, working on limpets and encrusting algae. Rapidly inspired by Gray's real science, I devoted my final year B.Sc. project to another rocky shore organism and studied the ecology of the sea urchin *Anthocidaris crassispina*. After I graduated from HKU, I joined the World Wide Fund for Nature Hong Kong (WWF) as an Assistant Conservation Officer, focusing on the impacts of urban development on Hong Kong's natural environment. While I was working for WWF, I finished the part-time M.Sc. in Environmental Management, jointly run by DEB and Centre of Urban Planning and Environmental Management (CUPEM).

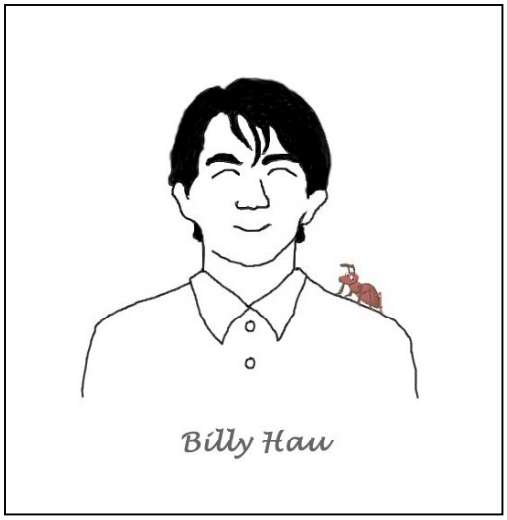
The job at WWF deepened my knowledge of the biodiversity of Hong Kong and gave me the chance to identify my postgraduate research topic. I finally decided to study the ecology of forest regeneration, because the extent of degraded forest land in Hong Kong, southern China and throughout the tropics is so large. Many countries have been experiencing serious disasters, such as droughts and floods, that are attributed to the loss of extensive forest cover. For this reason, tropical reforestation has gradually moved from plantation forestry for timber production towards restoring forest function and conserving biodiversity. The latter has been a popular research topic in the tropics since the early 1990s and is still a growing discipline. There are ample opportunities for more research work in this area and the current focus is on "accelerated natural regeneration", i.e. speeding up the natural process of forest recovery.

I started pursuing my Ph.D. degree on forest restoration ecology in September 1994, under the supervision of Richard Corlett. The primary aim of this project was to identify the various physical and biological barriers to natural forest regeneration on Hong Kong's degraded hillside. My research results suggested that seedling establishment is the most critical stage in tree regeneration on degraded hillside sites in Hong Kong. Insufficient seed input, seed predation by rodents and poor seed germination in dry and exposed conditions significantly reduce the availability of tree propagules. However, once tree seedlings are established, no other factors, except anthropogenic hill fires, significantly affect the growth and survival of the native tree species tested at the three typical hillside sites in this study. More planting trials will be needed to identify the native tree species most suitable for planting at such sites.

I joined the Kadoorie Farm and Botanic Garden (KFBG) in February 1998 as a Senior Conservation Officer. My two main duties at KFBG involved the planning and development of the Hong Kong native tree project and the South China Biodiversity Conservation Programme (SCBCP). The former project aims at promoting forest restoration for wildlife conservation and the emphasis is therefore on planting native tree species. Apart from setting up a native tree nursery for production and research purposes, associated education projects relating to tree planting and habitat restoration for the public, secondary school teachers and students, have been developed over the years. The SCBCP aims at minimizing the loss of forest biodiversity in south China: Guangxi, Guangdong and Hainan Provinces. Stage one of the programme mainly involved rapid biodiversity assessments at

selected forest nature reserves in south China, but a number of small scale conservation, education and community development projects targeted at biodiversity conservation have also been initiated. The main focus of the programme now is field report compilation, for which my role as an editor continues.

My primary research interest is forest restoration. I should like to determine the most cost-effective strategy to restore the extensive degraded hillside habitats in Hong Kong and South China. I am currently planning experiments on direct seeding, selecting framework tree species for afforestation and accelerating natural reforestation. As for teaching, my goal is to introduce more China biodiversity elements in the undergraduate programme, hoping that this will raise students' interest in biodiversity conservation. Both Hong Kong and mainland China need more new blood in the conservation field.



The Virtual School of Biodiversity – a belated update

by Gray A. Williams

It is a source of some embarrassment that I last reported on the Virtual School of Biodiversity in Issue 20 of *Porcupine!* (VSB: http://ecology.hku.hk/vsbhome/) two years ago and when we had been awarded a UGC grant! If you recall, the VSB was a joint project between the Department of Ecology & Biodiversity (DEB) at The University of Hong Kong and the School of Biological Sciences (now the School of Life and Environmental Sciences!), The University of Nottingham. It was launched in 1998 and, as I reported in December 1998 (Porcupine! Volume 18), aimed to "create an innovative and resourceful learning environment on the World Wide Web and to use it to deliver co-operative teaching and high quality distributed learning – at both undergraduate and postgraduate levels – to institutions, organizations and individuals all over the world". So, in its three year's existence - has it done that? Below I highlight, generically, the areas where we have been most involved. For those of you who would like more detail contact the current Hong Kong manager, Dr Benny Chan (chankk@hkucc.hku.hk).

Teaching Materials

The VSB has continued to produce a series of modules for teaching, using the Scholars Desktop, a Windows based delivery system (Fig. 1). To date, modules have been co-authored between staff at DEB and Nottingham, including outside collaborators from the Natural History Museum, and Universities in the UK and Europe. Many of these modules are being used in undergraduate and postgraduate courses run at HKU, these include modules on fungi, algae, fish, spatial patterns of diversity, etc. This method of delivery has been successful but, being CD-based, it is now slightly dated and cumbersome. To replace this, efforts have been devoted to a new XML-based web delivery system called WHURLE (Web-based Hierarchical Universal Reactive Learning Environment – which is impressive sounding by anyone's standards!). This system is under construction and hopefully will be ready for use in early 2002.

Learning Support Centres

A major initiative has been the development of Learning Support Centres for all the undergraduate courses taught by DEB. (LSCs; Fig. 2; see http://ecology.hku.hk/vsb/lsc/) These LSCs act as guidance and resource centres for students where they can access information on general study principles, career information, news updates and a whole range of general ecology-related information, but also specific material for each course (lecture timetables, chat groups, practical schedules, reading lists etc). Most of these resources are freely available on the web and staff have added sites which they have found useful so that students can also have access to this information. This makes use of the huge potential of the web, but also ensures - through staff vetting - that only quality-assured sites are used. In fact, one aspect of the LSCs is teaching students how to quality check sites themselves to be responsible users of the web and not to just "surf" aimlessly.

Courses – Biodiversity and How humans evolved

Two courses have been taught based on modules authored using the Scholars Desktop, 'How humans evolved' (by Prof Dudgeon to 2nd and 3rd year students as an elective) and 'Biodiversity' (jointly run between Nottingham staff and DEB staff as a core course in the Environmental Life Science theme). These courses focused on students driving their own learning experiences, at their own pace and in their own time, but also included a number of timetabled events such as seminars and practical workshops. The Biodiversity course

also involved students in HKU and Nottingham linking up to produce joint-projects, the abstracts of which were published on the web. These two courses met with mixed responses from students, some of whom enjoyed the opportunity to work in their own style whereas others were a little overawed by the experience. Running a course jointly between two institutions half-way across the globe also posed its own series of unique problems, both practically (running exams at the same time!) and culturally (for example timetabling between Chinese New Year at HKU and Easter Vacation in the UK) which added to the novelty value. Student assessment of the courses were solicited in a large scale programme directed by educational specialists in HK and the UK and the outcomes of these assessments are being used to fine-tune these courses for this academic year.

Other collaborations/Projects

The VSB has also been involved in a series of other collaborations, for example to produce a Virtual Lecture (with Dr Ian Hart in CAUT, HKU); a Rocky Shore Sampling Unit and Virtual Microscope (with G. Mitcheson and students in the Computer Science Department), a Virtual Scrapbook, and has also developed LSCs for school seminars and for the Hong Kong Society of Accountants to show the transferable nature of this medium. We have also initiated collaborations and held discussions with other possible members, most notably the University of Oslo, Peking University, the National University of Singapore and the University of Copenhagen.

Conferences/Seminars/Papers etc

Throughout the course of the VSB, we have been involved in producing papers about our work, giving talks to visiting Chancellors/Rectors/dignitaries and giving a number of conference presentations. The most notable being as panel presentations at the 10th International World Wide Web Conference and the 8th Association for Learning Technology Conference 2001 (ALTC-2001). The VSB has also been highlighted in the University's Bulletin, Faculty Review etc etc as well as in the press. As mentioned in the last Porcupine! we were also the inaugural winners of the HKU IT in Education Awards.

So this all seems like a project that has achieved a great deal, and it has! The recent assessment from the UGC, for example, stated that "this is a very well conducted project… making valuable contributions to enhancing the interest and effectiveness of student learning at the tertiary level". The VSB has, however, failed at one level, and that is in securing long term funding. It is a source of great disappointment that institutions and the private sector make a great deal of noise about teaching innovations, e-learning and the importance of the environment in the coming decades, but that there is very little genuine support in terms of hard cash. The VSB is a model that DOES work, we have the evidence for that, however it is a model that still requires staff-costs and time commitments. Many people are still either seduced by the idea of computer based teaching replacing traditional lectures, or appalled by this idea, and often fail to see the reality of the situation. Computer based teaching is simply another means of augmenting the teaching process. Used in a sensible manner it is a valuable addition to the arsenal of resources that a teacher utilizes but, like all modes of teaching, requires a great deal of time and effort. Hopefully the time is approaching when funding bodies will realize this and stop paying lip-service to students' education but invest in providing the best possible education, which will be one in which computer mediated teaching will play a role. Be assured, when that day comes, The Virtual School of Biodiversity will be a major influence in the direction that computer-based education develops.

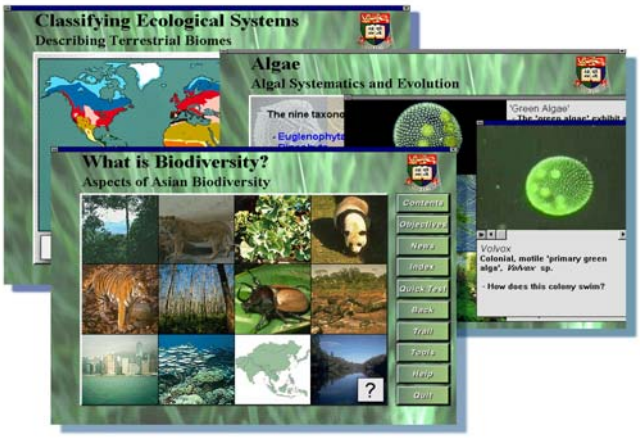


Fig. 1. Interface of the multimedia courseware 'Scholar's Desktop'.

Fig. 2. Interface of the web-based Learning Support Centres which provide support to access the web resources concerning general educational aspects ('Study Skills', "News Room', 'Jobs and Career', 'Web Search' and 'Virtual Library') and all

Salzburg, Austria – Hong Kong, China: connected
A comparison of studying in these cities

by Harald Parzer
Paris Lodron University, Salzburg, Austria

Universities which offer the opportunity to study Ecology are established worldwide, two of them are The University of Hong Kong in Hong Kong and Paris Lodron University in Salzburg, Austria. The differences in distance, climate, culture, teachers and research methodology make these two places distinct and unmistakeable. I am a visiting student from Austria.

The first thing an Austrian in Hong Kong discovers is the climate: for someone who is used to living in a temperate zone, one needs several days to get accustomed to the wet and hot season. However, once you are used to it you will start to investigate the people and environment: high biodiversity and different adaptations have created a remarkable and quite different group of organisms in Hong Kong e.g. mangroves, wild monkeys, civets, praying mantis, 400 tree species with families like Euphorbiaceae, pangolins, corals; shrimps, crabs, snakes and terrapins in streams; fruit bats … you will have to open your eyes if you want to see even a subset of these.

To get more familiar with the species and their ecology, it was a very good idea to contact the Postgraduates and to ask to go with them out into the field. Who else could explain their research better than they? (thanks a lot, by the way!).

However, not only the environment differs: if you want to make comparisons between the universities you should start with a student's life in general. In Salzburg there is no campus, the halls are independent of the universities, and the library and courses are open and free to everyone, even non-students. If you are living in a hall this is just your shelter (from the rain, the wind and the snow) without "culture": hall songs, high table dinner or orientation week. Because of the lack of a campus, fewer facilities are offered compared to HKU: no Sports Hall, no Audio-Visual Department, no Amenities Centres, no Personal Development Centre etc.

BUT: you have to pay very little in student fees. There is no restriction to doing Masters or PhD, everyone can do these. The Postgraduate and Undergraduate programmes are distinct and separate and you can choose lectures from every level. You can choose your own timetable (with a lot of lessons) and complete your compulsory lectures whenever you like. However, in the first three semesters you have to attend the same lessons as all other Biology students in Salzburg (genetics, physiology and ecology) to get the basics.
There are also a lot of elective courses offered, which can be done just for interest: e.g. Biology of Fishes, Biology of Mammals, Introduction and Identification of Lichens,… . many identification courses are available.

To finish the Bachelors degree you have to attend at least ten days of study trips. Every year there are different ones offered: bird watching in Eastern Austria, a lot of botanical trips in- and outside of Austria, every second year a marine course in Croatia and a big ecological field trip outside of Europe, this year to East Africa. To get familiar with Austrian ecology, short one day field trips are offered throughout the year.

Also different from HKU, you do not have to do any project (or dissertation), just two weeks of working outside the university, in an area related to your subject (e.g. in a zoo). The project is a great possibility to do praxis, to learn how to solve problems, to do something really interesting and (maybe) to get to know your supervisor.

The Professors in HKU are generally more willing to tell you about their research, offer you a lots of ideas and papers and you feel much closer to them than those in Austria, whose research you do not know much about.

Another good idea in HKU on how to get a wider view is to attend the seminars, for Post- AND Undergraduates. The Postgraduates talk about their research, and everyone can ask questions or give comments. In Salzburg (mostly) you do not know what most Masters and PhD students are doing, unless you know them personally.

Although the Internet is common in Salzburg University there is nothing like the Learning Support Centres found in DEB.
If you want to take a look on the website (note that as there is no ecological department, ecology is divided into (a) Botany and (b) Zoology) :
a. zoologie.sbg.ac.at/index.htm
b. sbg.ac.at/bot/home.htm

Since we have met a lot of people who really supported us we wanted to say "THANK YOU" to the Ecology Department, especially to:

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INVERTEBRATES

Terrestrial shrimps or hallucinating ecologists?

by Sukhmani Kaur Mantel

Returning from an evening of fieldwork on a warm September night, I stopped short; there in front of me was a *Macrobrachium* shrimp walking over a footbridge that crosses a tributary of Tai Shing Stream in Shing Mun Country Park! It had apparently climbed a 50 cm precipice to get there. The ground was completely dry and the shrimp was facing upstream as I came across it. Startled by my close scrutiny of it with my headlamp, it turned around and scuttled into a "safer" position on a lower ledge of the footbridge. It waved its chelae around a bit and then after about two minutes it suddenly walked across the ledge, jumped headlong into the water and disappeared downstream. I wondered if these were the ramblings of a deranged individual or a phenomenon so rare that I had not come across it in my year and a half of night observations?

After talking to my co-workers, I learned that two other ecologists (Sze-man Cheung and Rita Yam) have observed similar behavior for two species of freshwater shrimps, *Macrobrachium hainanense* and *Caridina cantonensis*, in other streams. Strangely enough, Rita has witnessed a *Macrobrachium* in a tree!

I have always assumed that many decapod crustaceans were capable of climbing over waterfalls since diadromous crustaceans migrate from the sea to freshwaters. A quick literature search confirmed that some shrimps are positively rheotactic and they migrate upstream by navigating through flowing water or in the splash zone to get over natural or artificial obstacles (Lee & Fielder, 1979; Fiévet, 1999). I am, however, unaware of any reports of shrimps walking completely outside of water and, especially, climbing trees. Since I don't know how often this event occurs or, more importantly, WHY, I am requesting any readers who have come across this behaviour in person or in literature to contact skmantel@hkusua.hku.hk with any comments. Oh, and next time you go strolling by a stream, be wary of where you step.

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VERTEBRATES

A glance at the marine aquarium fish trade in Hong Kong

by Anita C.W. Tsang

The marine aquarium fish trade (MAT) has expanded markedly and globally during the last two decades due to improvements in transport, aquarium equipment, synthetic seawater mixes and better knowledge of the control of disease. In the 1990's, the estimated annual global retail value of the MAT reached US$200 million (Holthus, 1999) and involved an estimated 35 million marine fishes (Baquero, 1999). The MAT accounted for about 10% of the total (freshwater and marine water) aquarium fish trade by volume (Baquero, 1999) and 12% in terms of value (Wheeler, 1996). Hong Kong's MAT accounts for 2-3 % of the global trade (Wheeler, 1996; Chan & Sadovy, 1998).

A market survey, interviews and analysis of data from the Census and Statistics Department (CSD), were carried out from 1st October 2000 to 31st December 2000 at Tung Choi Street, Mong Kok, to investigate the MAT in Hong Kong, concentrating on 8 fish families or groups of conservation or humane concern: elasmobranchs, Pomacanthidae, Chaetodontidae, Syngnathidae, Callionymidae, Balistidae, Serranidae and Labridae. Certain species in these families either have the potential of being threatened by over-fishing or are difficult to keep in captivity. A total of 143 species in these 8 families or group was involved in the local MAT during this survey with an annual estimated (i.e. scaled-up) retail value of HK$40,473,400 and representing 33.42% of the total MAT retail value.

Interviews with shop owners showed that all fish species come from the wild, mainly from the Philippines and Indonesia.

Most shop owners were aware that these fishes are caught with cyanide and probably have much higher mortality rate as a result and one shop owner did not order Philippine fishes due to poor quality. The fishes from this shop were generally more expensive than average and the shop owner believed that experienced hobbyists were willing to pay more for higher quality fishes.

Prices were determined by species, availability, size, origin and health. Fishes from distant countries and larger individuals of a given species had higher prices due to higher freight costs. Injured fishes or those in poor health were cheaper. For example, some injured fishes were sold at $30 per individual, while conspecifics in good condition were sold at a few hundred dollars. Interviewees generally agreed that the brighter the colour, the more beautiful the fishes were thought to be and the higher the price. The appearance of the same species of fish evidently varies according to source country. For instance, *Pomacanthus imperator* from Australia and Hawaii are considered brighter and more beautiful than from the Philippines. Therefore, the price of *P. imperator* from Australia and Hawaii is twice that of the same species from the Philippines.

Interviews with customers showed that almost all hobbyists buy fishes based on appearance, rather than size or whether the fishes are easy to keep; most new hobbyists (<2 years experience) also considered the price while most experienced hobbyists (>2 years experience) took apparent health into account (Figure 1). The shortest survival time of fishes kept by both new and experienced hobbyists was less than 1 week while the longest survival time of fishes kept by experienced hobbyists varied from 1 to 8 years, considerably longer than

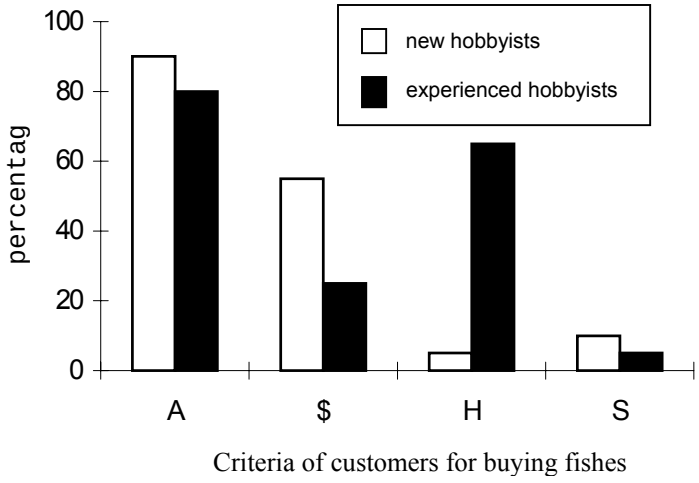

Fig. 1. Criteria of new and experienced hobbyists for buying fishes (new hobbyists: customers with <2 years experience; experienced hobbyists: >2 years experience; with 40 interviewers)
(A — appearance of fishes, e.g. colour, $ — price, H — health of fishes, e.g. with or without wounds/ scars, S — size).

that for new hobbyists. Most new hobbyists had not heard about cyanide fishing while all experienced customers had and most of the latter were willing to pay more for net-caught fishes because they have higher survival rate (Figure 2). Those not willing to pay more said that they would not trust an eco-labelling system.

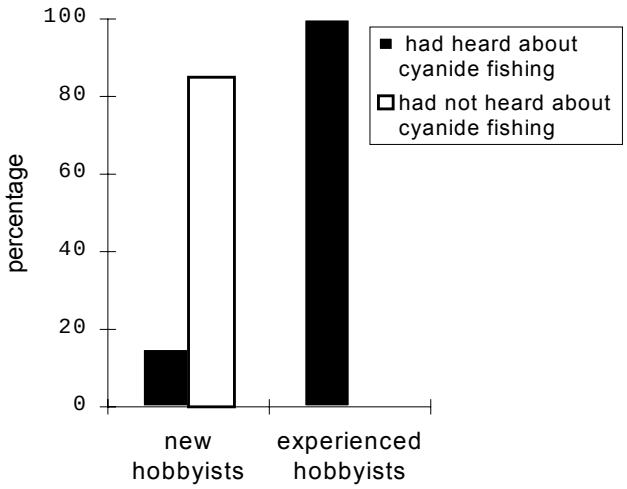

Fig. 2. Percentage of hobbyists who had heard about cyanide fishing. (new hobbyists: customers with <2 years experience; experienced hobbyists: >2 years experience)

Information from the market survey and interviews with shop owners and customers identified 2 problems in Hong Kong's MAT: (1) involvement of unsuitable species; (2) insufficient knowledge on marine fish-keeping. Species considered suitable for the MAT are those that survive well in captivity, are relatively easy to maintain, and that come from a country with aquarium fishery management (Wood, 1992). These species or populations are considered less likely to be threatened by activities of the MAT. Unsuitable species are those difficult to keep in captivity, species with an important role in the ecosystem, as well as rare or threatened species (Wood, 1992). Two Hong Kong shop owners considered all species of Syngnathidae and Callionymidae difficult to keep in captivity, and many species of Chaetodontidae and Pomacanthidae were also considered difficult to maintain. On the other hand, all species of Balistidae and Serranidae were considered easy to keep in aquaria (Table 1).

Difficult-to-keep and rare or vulnerable species are traded in Hong Kong's MAT and many customers buy fishes based on their appearance and do not select species that are easy to keep. Species with an important role in the ecosystem, such as *Labroides dimidiatus* (bluestreak cleaner wrasse), are also traded in large amounts. Logically, we might expect that when fish numbers become too low for fishing to be commercially viable, fishing should cease. However, some fishes are so highly prized that it is still worth fishing for them even at very

low population levels. Indeed, in some cases, rarity is valued, causing prices to rise (Wheeler, 1996). No fish species involved in the market survey is endangered, but species classified as 'vulnerable' in the IUCN (World Conservation Union) Red List, such as *Hippocampus histrix* (thorny seahorse) and *H. kuda* (spotted seahorse) (IUCN 2000) are being traded. Two common seadragons, *Phyllopteryx taeniolatus*, retailing at HK$10,000 each, were bought by customers immediately after they were delivered to one shop late at night. *P. taeniolatus* is a protected fish under Fisheries Management (General) Regulation 1995 - Sect 5 of New South Wales in Australia and is listed in the IUCN Red List 2000. The shop owner claimed that the 2 animals were imported legally but did not explain why they were traded after working hours at night.

Most new hobbyists had not heard about cyanide fishing and believe that the mortality of the fishes they buy is inevitable and mainly due to their inexperience rather than to fishing methods. Besides, most new hobbyists prefer to buy cheaper fishes to practice with first. Therefore, many shops import large numbers of Philippine fishes which are cheaper due to lower freight costs, even though they know Philippine fishes were probably caught with cyanide and have higher mortality. High and unnecessary mortality can result from cyanide fishing (Baquero, 1999). The involvement of a large amount of cyanide-caught fishes could lead to high wastage of fishes to replenish those that die. Coral reefs, which are habitats for most marine aquarium fishes, can also be killed by cyanide. The shortest survival time of fishes kept by both new and experienced hobbyists was less than 1 week. Although experienced hobbyists can identify healthy fishes, and new hobbyists lack this ability, even experienced hobbyists cannot distinguish cyanide-caught fishes from the non-cyanide caught ones. Customers who understand the effects of cyanide on fishes are usually willing to pay more for non-cyanided fishes.

Several recommendations for the management of Hong Kong's MAT are suggested. Firstly, retailers of marine aquarium fishes should be licensed. This can limit the number of retailers engaged in the trade and ensure that retailers have adequate knowledge on fish-keeping. There should be standards on fish-keeping to ensure the welfare and health of fishes, reduce mortalities and humane treatment (Wood, 1985; Chan & Sadovy, 1998). Secondly, conservationists and traders should work with aquarist magazines to inform hobbyists of the difficulties and conservation impacts of keeping certain fish species, and caution against non-experts keeping them in captivity. This can enhance the knowledge of hobbyists and reduce unnecessary mortality. Thirdly, an eco-labelling programme should be introduced in Hong Kong. Such an eco-labelling programme could guarantee that appropriate methods were used for the capture, transport and handling of fishes and adaptability to captivity of fishes (MAC, 2001; Wood, 1992).

Such a certification system promotes a sense of responsibility in using coral reef resources in customers and hobbyists (Wood, 2001). Fish importers and hobbyists should realize that competition for cheaper fishes without regard to quality can drive the use of destructive fishing methods. Fishes that are particularly rare or of conservation concern (e.g. IUCN Red List) or those caught exclusively or largely by cyanide (e.g. *Pomacanthus imperator*, Albaladejo & Corpuz, 1981) should be excluded from the trade. Species with low survival rate in captivity are not suitable for new hobbyists and should be excluded because their high mortalities do not justify the capture for aquarium purposes. Cyanide tests could be introduced (Holthus, 1999).

It is hoped that with proper regulation by the government and a positive role played by both consumers and retailers, Hong Kong's MAT can be conducted in a sustainable and environmentally friendly way; there are plenty of species suitable for this trade, if it is properly managed and practised.

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Family	Common names	No. of Spp.	No. of individuals	Size (cm in TL) Mean (S.E.)	Retail price (HK$) Mean (S.E.)	Total value (HK$) (retail value)	%
Chaetodontidae	Butterfly-fishes	52	2236	6.18 (0.04)	66.45 (2.25)	149,260	12.57
Pomacanthidae	Angel-fishes	36	1919	7.54 (0.07)	288.56 (12.85)	560,900	10.79

Serranidae	Fairy Basslets and groupers	22	567	6.75 (0.06)	52.12 (2.47)	31,850	3.46
Labridae	Wrasses	17	615	6.21 (0.06)	67.40 (2.78)	34,210	3.19
Balistidae	Trigger-fishes	9	299	7.00 (0.16)	74.05 (5.86)	22,140	1.68
Syngnathidae	Seahorses and pipefishes	3	253	12.43 (0.10)	25.59 (0.18)	6,550	1.42
Callionymidae	Dragonets	1	39	5.15 (0.16)	27.18 (1.22)	1,060	0.22
Elasmobranchs	Sharks and rays	3	16	20.94 (1.95)	250 (0.00)	3,500	0.09
Total		143	5944	7.02 (0.04)	137.74 (4.45)	809,470	33.42

Table 1. Number of species and individuals of marine aquarium fishes, by family, sampled in Hong Kong from 1st October 2000 through 31st December 2000 (ranked according to number of species sampled per family);

Notes:
* *Estimated proportion (%) = retail value of each family of the 3-month survey* x *4 (i.e. a year)* x *101/40 (no. of tanks)* x *20/4 (no. of shops)* x *100%*
* *Wholesale value of all families from CSD* x *4 (= retail value, Wood, 1985)*
* *% : Estimated proportion by volume to the MAT in Hong Kong from the market survey*

Phyllopteryx taeniolatus (Weedy Seadragon)
Drawing by Liu Min

Restocking - an effective measures to restore the depleted fishery stocks in Hong Kong?

by William Cheung Wai Lung
World Wide Fund For Nature Hong Kong

Overfishing is an undeniable fact in Hong Kong waters. Local waters are suffering from growth overfishing, recruitment overfishing, ecosystem overfishing, as well as economic overfishing (ERM, 1998; Pitcher *et al*., 1998; Sadovy, 1998; Cheung, 2001). In view of the depleted situation, ERM (1998) conducted a territory wide fishery stock assessment in 1996-97 and recommended a series of measures which aimed to restore the depleted fishery stocks in Hong Kong. One of the recommendations that the ERM (1998) ranked as high priority is a restocking programme in local waters[1]. In this connection, the Agriculture, Fisheries and Conservation Department (AFCD) carried out a series of restocking trials, the latest trial involved releasing 15,000 physically tagged green grouper (*Epinephelus coioides*) and red snapper (*Lutjanus malabaricus*) at artificial reef sites in Yan Chau Tong and Hoi Ha Wan Marine Parks in mid-October this year. However, the effectiveness and the risk associated with restocking hatchery-reared marine animals are still highly controversial. This article aims to discuss the validity of considering restocking as a high-priority fishery restoration measure in Hong Kong.

Restocking can be defined as stock released to compensate for depletion of a natural stock (Bannister, 1991). It involves seeding important habitats with captively grown juveniles of high value species and often associated with the use of artificial habitats and substrates such as artificial reefs (ARs) (Oshima, 1984). The ultimate aim of restocking should be a permanent increase in the sustainable population of that species, rather than a "put and take" fisheries where species are re-stocked for the purpose of being caught later (Agriculture, Fisheries and Forestry, Australia, 2001). Therefore, throughout this article, the measure of "success" of any restocking programme is judged by its demonstrated ability to re-establish sustainable populations of targeted species.

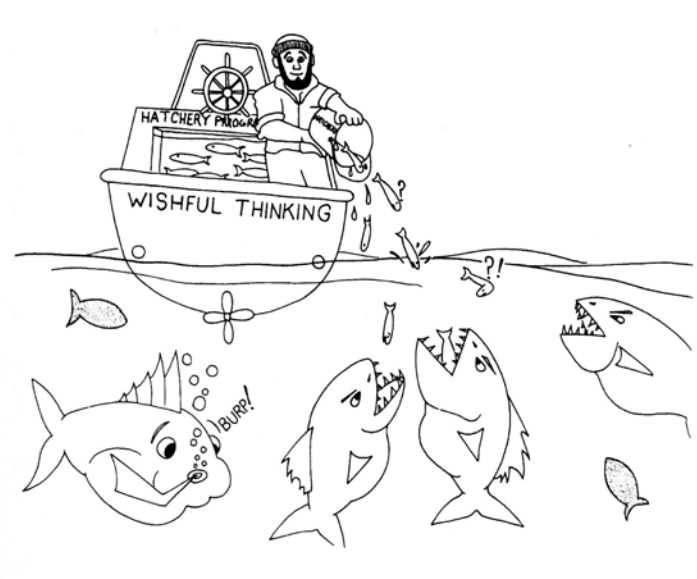
Although restocking may be seen as an attractive and easy way out of the overfishing problem and is often highly acceptable to fishing communities, clear-cut quantitative evidence of its success is lacking (Johannes, 2001). Despite modeling studies suggesting that restocking might potentially increase a stock's yield and rate of recovery during the recovery period for selected species, e.g. Pacific ocean perch (*Sebastes alutus*) (Polovina, 1990), its effectiveness in terms of marine species, particularly those associated with tropical or sub-tropical reef systems, has not been empirically demonstrated. There have been several published trial restocking studies which provide evidence that stocking cultured marine organisms into coastal areas may result in recruitment of released individuals to fisheries, for instance cod (*Gadus morhua*) in Norway and Denmark (Svasand *et al*. 1990), Flounder (*Paralichthys olivaceus*) in Japan (Kitada *et al*., 1992), turbot (*Scophthalmus maximus*) in Spain (Iglesias & Rodriguez-Ojea, 1984), striped mullet (*Mugil cephalus*) in Hawaii (Leber and Lee, 1997). However, none of the studies conclusively demonstrated the long-term success of restocking (i.e. a permanent increase in the sustainable population of that species).

Indeed, restoration of depleted stocks through restocking is highly uncertain. For example, Liao (1997), in his review of

the Taiwan restocking programme in the last two decades, could not conclude that there had been any success for the restocking programme. Instead, he noted that further studies would be required to demonstrate the significance of restocking, particularly regarding the efficiency and effectiveness of the released species. Also, results of a small scale Nassau grouper restocking experiment suggest that there are many unanswered questions as well as many concerns in restocking of species and that restocking should be an option only when simpler management methods for attaining wild stock recovery have failed (Roberts *et al*., 1995). Moreover, Polovina (1990) concluded that the knowledge gap in the post-release ecology, and the unknown behavioural and biological differences between hatchery-released juvenile and the natural stock, rendered effectiveness of restocking uncertain. The differences include less adaptability of hatchery-released juvenile in feeding and anti-predation at early stage of release, abnormal behaviour and undesirable morphological characters. The impacts of such differences to the survival potential of individuals after release, impacts on wild natural populations as well as how long effects may last, are still entirely unclear (Svasand, 1993).

Even worse, restocking may pose a potential threat to natural genetic diversity and have unknown effects on the ecosystem (Bannister, 1991). Introduction of juveniles from non-native populations may risk disrupting the genetic integrity of local populations through cross breeding[2]. There is also concern that over-production of some overseas hatchery provides incentive for them to sell/export fingerlings for restocking purpose at low price. Even if the hatchery-reared juveniles are from local native brood stock, the limited size of the brood stock which produces juveniles in a hatchery may limit the genetic variability of the juveniles. Also, the highly controlled environment in a hatchery may favour selection of certain genetic traits. Should such hatchery-produced juveniles be released in large numbers into the wild and breed with natural stock, especially when natural stock has been depleted to a very small size, natural genetic variability of future generations may be reduced. The reduced genetic diversity may result in reduced resilience of the natural stock to changing environmental conditions. Besides, the effect on the marine ecosystem from a sudden increase in size of selected groups through restocking is also uncertain. In particular when the ecology of the restocked groups and its relation to other groups of the marine ecosystem is unclear. Therefore, relationships between stock enhancement and biodiversity must be clearly defined before mass restocking is conducted (Liao, 1997).

Yet even if the above concerns have been dealt with, restocking does not solve the root cause of stock depletion in local waters, which is overfishing. A basic principle of restocking is that the released juveniles can enhance recruitment of the natural population and facilitate stock recovery. However, restocking is of little use if the cause of the decline in the population is still present (Liao, 1997; Agriculture, Fisheries and Forestry, Australia, 2001). The major cause of stock depletions locally is excessive and unregulated fishing, which has resulted in growth and recruitment overfishing. Currently, fisheries are still largely



From: Bohnsack,J.A. (1996) Maintenance and recovery of reef fishery productivity. In:Polunin, N.V.C. and Roberts, C.M. (eds) Reef Fisheries, Chapman & Hall, Fish and Fisheries Series 20, Chapter 11, pp. 289

unregulated, except that there is no fishing in the marine reserve. Even in the limited space of the marine parks (<2% of Hong Kong waters), fishing, including fish fry capture for grow-out in mariculture farms, is still allowed through a permit system. In addition, the highly ineffective fishery monitoring system in local waters renders evaluation of any mitigation measures impossible. Therefore, without proper protection, management and monitoring of the fisheries, the released juveniles are highly likely to end up in the fishermen's nets before they can grow to a mature size and reproduce.

Restocking can also be costly. Although hatchery-reared juveniles may not be expensive nowadays and the actual release of the juvenile may incur only a small budget, it is an expensive task to carry out the background and precautionary studies necessary to ensure effective and ecologically safe restocking. Such studies may include genetic and ecology studies of the natural and brood stocks, stock assessment and monitoring before and after restocking trials etc. Therefore, it is vital to assess the cost-effectiveness before any large-scale restocking is pursued.

Considering the highly uncertain effectiveness of restocking, its various associated risks, its inability to address the root cause of stock depletions in Hong Kong, the lack of basic

information necessary for a proper restocking programme, and the high cost of tax-payer money it may incur, I consider that restocking is not an effective measure to restore the depleted fishery resources in Hong Kong. The government must focus on those measures which address the root causes of local stock depletions more directly and effectively, such as speeding up the implementation of a licensing system to restrict and reduce local fishing effort, and improving the fishery monitoring system. Also, an ecosystem-based approach should be adopted, which restores fishery resources through rehabilitation of the whole marine ecosystem, rather than only particular targeted groups. Such an approach can restore depleted stocks and conserve marine biodiversity more effectively and holistically. It is also recommended that the IUCN/Re-introduction Specialist Group Guidelines for Reintroduction be consulted and applied (http://www.iucn-org.ac.psiweb.com/themes/ssc/pubs/policy/reinte.htm). In addition, all fishery management initiatives, including restocking, should be finalized through public consultation and should be scientifically based, while the results of any trials or monitoring studies should be readily available to the public. Restocking is too expensive and risky an experiment for taxpayers' money.

1. However, a study carried out by the Fisheries Centre, University of British Columbia (Pitcher *et al*., 1998), the biological basis for the ERM consultation study regarding fishery stock assessment and management aspects, did not recommend restocking to address the overfishing problem!

2. At least one species, the high-fin grouper, *Cromileptes altivelis*, which was being released during the previous government restocking trails in Hong Kong in 2000, has been brought in from Bali, Indonesia.

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The case of the disappearing croaker, the Chinese bahaba, *Bahaba taipingensis*

by Yvonne Sadovy and William Cheung Wai Lung

In the early 1930s, a new species of giant croaker became known to western scientists when Herre described the giant yellow croaker, now known as *Bahaba taipingensis* (Herre, 1935; Lin 1935) "In the markets ……of China I have seen sciaenids a meter or more in length which I am confident belong to undescribed species. Unfortunately I had no way of preserving them at the time and no small specimens were to be found……. ". By 1988, this species was listed as a 'State Protected Species' in the People's Republic of China (PRC) (Bureau of Fisheries Management and Fishing Port Superintendence). It was noted as commercially extinct in Hong Kong in 1997 but is not protected locally. The increasing rarity of this fish in the last 4 decades has conferred upon it such high value that fishers have referred to it as "soft gold" and the top current retail market value of the swimbladder, weight for weight, exceeds that of gold by up to 7 times. Its numbers are so reduced that it may already be too late to save this species from extinction. It may be the first documented example of the near extinction of a highly fecund marine fish species (those that produce hundreds of thousands to millions of eggs yearly).

Since the biology and fishery of the giant yellow croaker are sparsely documented we conducted a series of interviews with 13 experienced fishers and 4 traders in Taiping (within the

Pearl River estuary) and Hong Kong, carried out reviews of the English and Chinese literature and communicated directly with 10 scientists from academia and government departments in the PRC. This account is an extract from the results of this study.

The giant yellow croaker, or Chinese bahaba, is one of the two largest of all croakers (Sciaenidae) and a modest fishery for it has existed for decades. It attains 2 m and at least 100 kg and is limited to the coast of China, from the Yangtze River to Hong Kong (Chu et al., 1963). It enters estuaries seasonally to spawn in large aggregations during which time the fishery is active. In western Hong Kong, croaker aggregations were especially important in the 1960s: "In February and March occurs the peak run of the giant croakers *Nibea diacanthus* and *Bahaba flavolabiata (=taipingensis)*. Trawlers set their nets and charge dead into the immense schools of these fish, making incredible hauls" (Anderson 1970). Also referring to these two giant croakers: "Trawls of tons are not unknown; boats have made $30,000 (HKD) in a single haul. They are the mainstay of the trawlers"(Anderson, 1969). Several gears were used including specialized nets (*Ting Ji*) of mesh size 37-40 cm and length 90 m. During the 1950s-1960s, 30-40 boats, specialized in catching giant croakers, were active annually in Hong Kong.

Estimates of landings in the last 4-6 decades from estuarine areas suggest massive declines which are inversely related to rising prices of its highly appreciated swimbladder (the 'maw' is valued for medicinal properties) (Fig. 1). In Hong Kong of the late 1930s, for example, 50 t were landed annually but by the 1990s, only small fish (< 30 kg) were sporadically taken, with the rare larger individual (>50 kg). Swimbladder market value (per kg) increased from little more than a handful of US$ in the late 1930s to anywhere between US$ 20,000-64,000 in 2000 (Fig. 1).

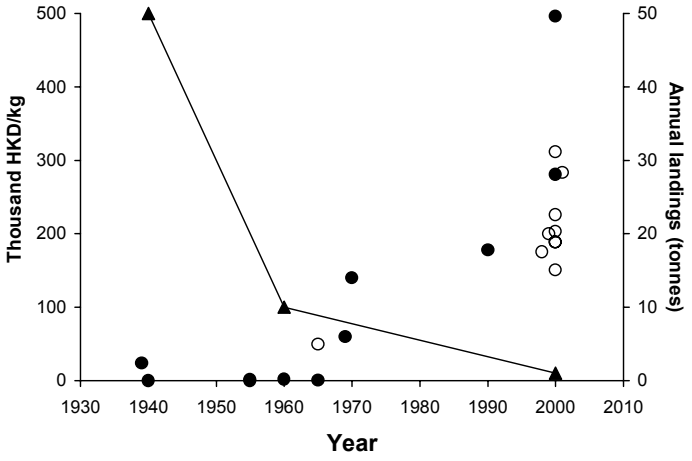

Figure 1. Swimbladder market prices and estimated annual landings of *B. taipingensis* in HK and elsewhere in the PRC from 1939-2000. Swimbladder market prices in HK (closed circles) and elsewhere in the PRC (open circles) were estimated and Renminbi (RMB) converted to HK dollars (HKD). Landings (solid line and triangles) were estimated from published accounts and fisher interviews.

There is little doubt that the giant yellow croaker has become critically reduced and may well be threatened with extinction throughout its geographic range, unless significant refugia exist offshore. In the Pearl River estuary, declines in landings cannot be attributed to reduction in fishing effort for in Taiping approximately 100-200 boats still seek this species on its spawning ground because of its high value. The demise of this species has been driven by its inherent biological vulnerability (large size, restricted range and aggregating behaviour), its value. While the possible role of other factors in the decline of this species, such as degradation of estuarine habitat is not known, without doubt fishing pressure has been a major factor.

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Modification of local wire cage traps to reduce injuries to small mammals

by Kylie Chung

The local wire mesh cage traps have been used in Hong Kong for a long time to catch pest rats. These traps are very efficient and the trapping success rate can be higher than 50%. However, they can cause awful damage to the animals that are caught. Trapped rats cut their noses as they try very hard to get out of the trap by squeezing through the small mesh, and some of the rats' tails are chopped off by the quick and powerful spring door. There is an easy way to avoid these unnecessary disasters. It just takes you 10 minutes of preparation and the traps work as efficiently as before.

A typical cage trap is 12.5 cm high, 15 cm wide and 29 cm long. Plates of 2 mm thick clear plastic are prepared to insert

inside the trap, except for the door, which has to be on the outside to avoid interfering with the spring mechanism. All plastic plates should be cut into sizes at least 2.5 cm smaller than the trap measurement. The plate for the roof must be divided into two pieces, about 7 x 12.5 and 18 x 12.5 cm, because of the bait hook. Two holes are drilled in each of the four corners of each plastic plate for attachment by thin wire. The plastic plates stop the rats trying to squeeze through the mesh and also provide some protection from wind and rain. Damage to tails can be prevented by inserting a suitable stick – such as a chopstick – into the entrance when setting the trap, so the door does not close completely.

Fig.1 A modified trap.

Feral dogs and civet mortality on Kau Sai Chau, Sai Kung

by Thomas D. Dahmer
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Introduction

Feral and stray dogs (*Canis lupus familiaris*) are abundant and widely distributed throughout Hong Kong, but concentrated at the fringes of urban areas (Dahmer, Coman and Robinson 2000). Many are released by their keepers who no longer want them as pets, some may be escapees, and some are wild-reared offspring of stray or feral parents. Between the Agriculture, Fisheries and Conservation Department (AFCD) and the Society for Prevention of Cruelty to Animals (SPCA) more than 20,000 feral/stray dogs (on average) are captured and destroyed each year in Hong Kong. In spite of this effort the population of feral/stray dogs shows no downward trend. Rather, the large number of dogs destroyed each year appears only to compensate for mortality that might otherwise occur due to disease, starvation, or accidental death. While the public sanitation, human health, and personal injury risks of maintaining dense populations of feral/stray dogs are widely acknowledged, the ecological implications are little understood. To take one example, predation by feral/stray dogs upon wildlife may not be widely known because it is difficult and time-consuming to document, and is therefore probably under-reported. The purpose of this note is to document six cases of civet mortality on Kau Sai Chau in Port Shelter, Sai Kung from May 1998 through May 2001, all of which were attributed to attacks by feral/stray dogs.

Methods

Due to the apparent scarcity of civets on Kau Sai Chau no attempt has been made to quantify population numbers. However, civet signs have been recorded during other studies on the island. I carried out systematic quarterly bird surveys on Kau Sai Chau beginning in summer 1995. The surveys covered approximately 43 ha of area split equally between the golf course and adjacent shrublands. The areas were surveyed on foot 4 times per quarter, twice beginning before sunrise, and twice during the last hours before sunset. The surveys took place on the northern third of the island (approximately 2.2 km^2 in area) where golf facilities were constructed in 1994-6. During the bird surveys, opportunistic observations of mammals and mammal signs were also made, resulting in infrequent records of civet droppings and recovery of one Small Indian Civet (*Viverricula indica*) skeleton in May 1998.

Greenskeeping personnel work on the island at The Jockey Club Kau Sai Chau Public Golf Course from 0600-1530 hrs Monday through Friday, and 0600-1100 hrs on Saturday. The staff numbers over 50 greenskeepers and maintenance workers who have adopted as standard practice the reporting and collection of mammals found dead on the golf courses. This resulted in recovery of four Small Indian Civet carcasses and one Masked Palm Civet (*Paguma larvata*) carcass between May 1998 and May 2001.

Results of ecology studies have been documented in periodic reports to the Hong Kong Jockey Club (e.g. Ecosystems Ltd. 2000). Nomenclature used in this report follows Wilson and Reeder (1992).

Results

Over a period of 37 months, six dead civets were recovered from northern Kau Sai Chau. Five were Small Indian Civets (four fresh carcasses and one skeleton), and the sixth was a Masked Palm Civet (fresh carcass) (Table 1). All fresh carcasses were discovered between 0620 and 0730 when the staff spread out over the golf courses to mow grass and carry out other greenskeeping tasks. No flesh or internal organs of any of the five carcasses had been eaten, and none of the body cavities had been opened (except by tooth punctures through skin and underlying flesh). Three of the carcasses were

photographed but disposed of before a post-mortem examination could be made. The last two carcasses were examined in detail and body measurements were taken (Table 2)

Species	Material Recovered	Month and Year Recovered
Small Indian Civet	fresh carcass	May 1998
Small Indian Civet	skeleton	May 1998
Small Indian Civet	fresh carcass	October 1998
Small Indian Civet	fresh carcass	October 1998
Small Indian Civet	fresh carcass	May 2001
Masked Palm Civet	fresh carcass	May 2001

Table 1.Civet fatalities documented at Kau Sai Chau between May 1998 and May 2001.

Measurement	Small Indian Civet	Masked Palm Civet
sex	male	male
age class	sub-adult	sub-adult
body weight (g)	1650	4760
total length (cm)	78.0	109.0
tail length (cm)	31.0	50.1
body length (cm)	47.0	58.9
hind foot length (cm)	8.8	9.5
ear length (cm)	2.8	4.6

Table 2. Sex, age class, and morphometrics of two civet carcasses recovered at Kau Sai Chau in May 2001.

The first fresh carcass was found in May 1998, followed in the same month by the only recovered skeleton. The fresh carcass was disposed of before a post-mortem examination could be made. The skeleton was found in tall grass where the civet had apparently slept immediately prior to dying. The posture of the skeleton was typical of a canid or felid curled to sleep. Although all flesh and nearly all skin and hair had been removed or decomposed from the skeleton, it had not been moved after the civet died, and only a few of the larger bones were missing. None of the long bones was broken, but the pelvis was disarticulated, and the right scapula broken and punctured. The puncture appeared to have been made by a single tooth, possibly a canine. The two May 1998 fatalities were found within 0.5 km of one another at the northern periphery of the golf courses.

Similar to the two May 1998 fatalities, those in October 1998 were found within several hundred metres of one another on the golf fairway and rough. The location was at the eastern periphery of the golf courses. Of the two fresh carcasses reported in October 1998, only one could be examined. The civet had suffered a compound fracture of the left femur in addition to numerous bites to the dorsal lumbar region. The bites penetrated the skin and flesh to the spine and pelvis.

The two fresh carcasses recovered in May 2001 were found on the south periphery of the golf courses, but were separated by a distance of approximately 900 m. One carcass was that of a Masked Palm Civet, the first record of the species on Kau Sai Chau. The second carcass was that of a Small Indian Civet. Both civets had suffered bites on the posterior dorsum, upper hind legs, and on the anterior thoracic dorsum. The Masked Palm Civet had numerous bites that penetrated the skin and underlying flesh in both areas, including the upper thorax. The wounds of the Masked Palm Civet caused tissue trauma as evidenced by swelling and infection. The wounds also appeared to have caused blood loss, although rain or irrigation water had washed away most evidence of blood. No physical damage or symptom of disease was detectable in the internal organs of either carcass. Feral dogs were observed in the vicinity of the Masked Palm Civet carcass near the time it was found. The location of recovery of the Small Indian Civet carcass is an area frequented by feral dogs at night. Weights and measurements of the two civets recovered in May 2001 are listed in Table 2.

Discussion

Fatalities of 6 civets were recorded over a time span of 37 months. Four of the six dead civets bore bite wounds that in some cases caused broken bones and/or blood loss, and penetrated thoracic or abdominal cavities. Although Kau Sai Chau is Hong Kong's fifth largest island, it is not large (6.67 km^2), and civet signs have not been recorded with any regularity since routine, systematic surveys began on the island in summer 1995. This suggests that civets are not abundant on the golf course portion of the island. In a separate study involving 14 nocturnal bird surveys spanning 28 hours and carried out between March 2000 and June 2001, only one Small Indian Civet was seen. This also suggests that civet abundance on the island is low or civets are extremely wary.

Since 1993 I have observed from 1 to 3 dog packs on the northern third of Kau Sai Chau at any given time. Since 1995 more than 60 dogs have been removed from the island by control actions of the golf course or AFCD. As dogs are removed they are replaced by litters born on the island, dogs that swim to the island, or unwanted dogs that are dropped from boats. Total dog numbers may range from zero immediately after a capture operation to over 20.

The feral/stray dogs often receive handouts from golfers, visitors, or golf course staff. As a result, most dogs on the island appear to be in good condition, if not well-fed. The dogs frequently attack or threaten members of other packs or individual dogs. Although injuries to humans have not been recorded, dog fatalities have been attributed to attacks by other dogs or dog packs on the island.

Civets at Kau Sai Chau appear to be entirely nocturnal: No civet has been seen during daylight hours. Civet encounters with dogs may go unobserved because such interactions take

place at night when observers are few. Although feral/stray dogs have not been observed attacking civets, the injuries suffered by civets on Kau Sai Chau combined with dog presence near civet kill sites suggest that dogs in packs are responsible for inflicting wounds that result in civet fatalities. The wounds on the Small Indian Civet carcass recovered in October 1998 (compound femur fracture) and on the Masked Palm Civet recovered in May 2001 (numerous body cavity and limb punctures, severe tissue trauma from bites to the dorsal pelvic area) suggest attack by dogs. The disarticulated pelvis and punctured and broken scapula of the skeleton found in May 1998 also suggest dog attack.

The only other possible agents of civet mortality are golf course shuttle buses, other civets, and Eagle Owls (*Bubo bubo*). Buses can be ruled out because there are no roads in areas where the civet carcasses were found. Also all fresh carcasses were found in the early morning and none evidenced *Rigor mortis*, yet the buses do not operate after 2200 hrs or before 0615 hrs. Civets could kill other civets in mating or territorial disputes, but this would be expected to occur when civet population densities were high and competition for food or mates most intense. If civet density were high, civet signs (faeces at marking stations) would also be abundant. Yet abundant civet signs have never been recorded during routine quarterly bird studies, or by the greenskeeping staff who are on the island 7 days per week throughout the year.

Eagle Owls have been observed on Kau Sai Chau (Ecosystems Ltd. unpubl. data). Eagle Owls would not attack the hind legs or lower back of prey (as would dogs), but would target the mid-back or neck. For that reason an Eagle Owl attack would be unlikely to cause a compound fracture of a civet femur. Eagle Owl attacks could result in breaking of the civet spine, and Eagle Owls would probably open body cavities to feed on internal organs. None of the recovered civets had a broken spine or opened body cavity. There was no evidence of a predator feeding on any of the five recovered civet carcasses. This suggests that the kills were not made by predators in search of food, which also implicates feral/stray dogs rather than Eagle Owls.

Many aspects of civet mortality on Kau Sai Chau remain unexplained. Why were dead civets found only in May and October? Are sub-adult males disproportionately subject to dog attacks? If so, is it because they are being driven from other civet territories or family groups? Why was a Masked Palm Civet fatality not recorded on the island until May 2001? Can civets swim to Kau Sai Chau? Would elimination of feral/stray dogs from the island lead to increased civet numbers? These and other questions will be investigated in future by continued night surveys, detailed examination of all civet carcasses, and reduction of numbers of feral/stray dogs. Readers wishing to contribute information on civet mortality in other locations or to provide carcasses for post-mortem examination are invited to contact the author.

Acknowledgements

Civet carcasses and other wildlife observations were often reported by Darren Moseley, Cameron Halliday, Rick Hamilton, Paul Yip and other greenskeeping 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., which support is gratefully acknowledged. AFCD assisted frequently in capture of feral/stray dogs on Kau Sai Chau. The efforts of former AFCD Dog Control Unit Supervisor Dr. Thomas Sit and his staff are gratefully acknowledged.

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The changing bird community of Tai Po Kau

by Kwok Hon Kai
Ecosystems Ltd

Tai Po Kau Nature Reserve holds the biggest contiguous forest area and richest forest ornithological record in Hong Kong. It is one of the local bird-watching hot-spots and more than 160 species have been recorded in Tai Po Kau to date. I studied the forest bird community in Tai Po Kau between August 1992 and June 1995 as part of my PhD research. Japanese White-eyes *Zosterops japonica*, Great Tits *Parus major* and Chinese Bulbuls *Pycnonotus sinensis* were the three most abundant species at that time, accounting for 65% of the total bird density (Kwok & Corlett, 1999). I have continued to visit Tai Po Kau regularly after I finished my study and have noticed that the abundance of some bird species has changed considerably. Systematic surveys are needed to confirm and quantify these changes, so I will only mention the most striking ones here.

The introduced species, Silver-eared Mesia *Leiothrix argentauris* and Blue-winged Minla *Minla cyanouroptera*, have shown a marked increase in the last few years. I saw juveniles of both species begging for food from their parents both this year and last. The Chestnut Bulbul *Hemixos*

castanonotus, which was only the sixth most abundant species during my PhD study, now seems to outnumber the Chinese Bulbul. This species is probably the most abundant bulbul in forests in South China. Yellow-cheeked Tits *Parus spilonotus*, are also seen much more frequently than they were in the early 1990s. The most exciting event is the increase in the encounter rate for the Rufous-capped Babbler *Stachyris ruficeps* and the Grey-cheeked Fulvetta *Alcippe morrisonia*. Although the birds at Tai Po Kau are probably the descendents of released cage-birds, these two species are very abundant in forests in Guangdong.

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Is the Javan Mongoose native and does it matter?

by Richard T. Corlett

Kylie Chung's capture of three Javan Mongooses (*Herpestes javanicus*) in grassland on Tai Mo Shan (see *Wild Corner*) is the latest example of a dramatic expansion in the range and abundance of this species in Hong Kong over the last decade. It now seems to be common in the northwest New Territories, with scattered records from the centre and the northeast. The first definite record for Hong Kong was one caught in a rat trap at Mai Po in 1989, but David Dudgeon thinks he saw one at Plover Cove in the early 1980s. All pre-1980 mongoose records refer to the larger, water-associated, Crab-eating Mongoose, *H. urva*. The Javan (or Small Asian, or Small Indian) Mongoose has a huge native range, from Iraq and Iran in the west, to Java in the south, and Guangdong in the east. It has also been widely introduced outside its range for the control of rats, in some cases with disastrous consequences for native wildlife.

Hong Kong is near the eastern margin of the recent range of this species, and it is possible that it was simply overlooked, or confused with the Crab-eating Mongoose, prior to the 1980s. However, it is a pretty distinctive animal and one that would have been well-known to many of the early naturalists in Hong Kong. It seems more likely that it is a recent, deliberate introduction. Mongooses are widely seen as "good animals", which can control "bad" ones, such as rats and snakes, so deliberate releases are common. Even if it is a recent introduction, it is possible that it was present here in the past and was then extirpated, i.e. it is a RE-introduction. This also I think unlikely. Although it appears to be a habitat generalist, there is some suggestion in the literature of a preference for non-forest habitats, both in its native range and where introduced. It is also widely reported as a commensal species, living around villages and in urban areas throughout its Asian range. This is not the ecology of a species that is particularly vulnerable to human-caused habitat changes. On balance – and this is untestable unless earlier records can be found – I think it likely that the Javan Mongoose in Hong Kong is a recent introduction outside its natural range. Indeed, its current range in southern China may well have been expanded by deliberate introductions.

Curiously, the ecology of the Javan Mongoose as an introduced species is far better known than its ecology within its native range. All studies, however, agree that it is an opportunistic, omnivorous carnivore, feeding principally on rodents, birds (and their eggs) and insects, although fruit dominates the winter diet of an introduced population in the Adriatic. It forages during the day, except in close contact with humans, when it may become nocturnal. It can climb trees but is usually observed on the ground.

Mongoose introductions have been disasters on islands lacking native carnivores, but Hong Kong supported at least nine other mammalian carnivores a century ago. It thus seems unlikely that one more is going to have much additional impact. Our ignorance, though, is worrying. For a start, we know virtually nothing about its diet in Hong Kong. Kylie's traps were baited with deep-fried batter, the one David saw was inspecting a rubbish bin, and Michael Lau has seen it feeding on dead fish at Mai Po. Clearly they scavenge, but mongooses cannot live on Tai Mo Shan by scavenging alone and must be killing something. Rats, probably, but are they raiding bird nests? We also know little about their use of the available habitats. All Hong Kong records are from non-forest areas, but this may simply reflect the greater visibility of a low-lying animal in the open.

Please continue to report mongoose records to *Porcupine!* Javan Mongooses are smaller than Crab-eating Mongooses, and lack the long white patch on each side of the neck.

FLORA

Is the Paper Bark tree becoming invasive in Hong Kong?

by Billy Hau

Melaleuca quinquenervia (Paper Bark tree) is a famous invasive species in sub-tropical wetland habitats. It is one of

the "One Hundred of the World's Worst Invasive Alien Species" identified by the Invasive Species Specialist Group (ISSG) of IUCN (http://www.issg.org/database/welcome/). It is native to Eastern Australia, New Guinea and New Caledonia in open swampy areas. It was first introduced into Florida in 1900 and is now a major wetland pest. It currently infests over 202,000 ha of wetlands in south Florida of which 10,000 to 20,000 ha are monocultures (Turner *et al.*, 1998). Studies in Florida have shown that the distribution of this species is limited more by suitable habitat and the presence of seed than by climate and the two key factors for the spread of this species are fire and wetland (Turner *et al.*, 1998). Apart from invading marshlands such as sawgrass prairies, *M. quinquenervia* trees can invade many artificial areas such as canal banks, roadsides, pastures, and urban areas. Fire does not usually kill *M. quinquenervia* trees because resprouting or coppicing branches enable burnt trees to survive and fire induces the serotinous fruits or capsules to release many tiny seeds, which are dispersed by wind and water (Turner *et al.*, 1998). Seed germination and seedling establishment on the resultant fertile ash bed are promoted by the more open canopy after burning.

M. quinquenervia were introduced into Hong Kong from eastern Australia in the late 19th century as ornamental trees in gardens. It was first planted in the wild in 1897 (Ford, 1898). About 200 seedlings were planted in the vicinity of Kennedy Town Hospital. Since then, it has been planted in large numbers annually (Corlett, 1999). It was one of the 10 key pioneer species commonly used by the Territory Development Department in the restoration of degraded lands in Hong Kong in the late 1980s and early 1990s (Chong, 1999). However, it was found not to grow well on dry, upland slopes, and is no longer a significant species in woodland planting mixes (Liz Leven, pers. com.). Hong Kong has a similar climate to south Florida and eastern Australia, with distinct dry and wet seasons and plenty of anthropogenic hill fires. Yet, there has been no report of this species becoming invasive in Hong Kong. It is believed that *M. quinquenervia* cannot reproduce successfully or its seedling cannot establish itself naturally in Hong Kong. However, Dr. Ng Sai Chit and I have recently discovered a patch of 30 to 40 mature *M. quinquenervia* trees (over 10m in height) in a fire-maintained shrubland in Ho Sheung Heung, Sheung Shui with lots of young seedlings ranging from less than a metre to over 2 metres. Those seedlings are randomly distributed at that site and unlikely to have been planted. We suspect that wild fire triggered the release of seeds from the mature trees and the seedlings have somehow overcome the environmental barriers even in the absence of wetlands in that site.

Without a more widespread survey, I cannot say that *M. quinquenervia* is becoming invasive in Hong Kong but it surely has the potential to be so. Fortunately, it is no longer planted in any significant numbers in our countryside but those existing patches should be monitored according to the IUCN guideline on invasive species (ISSG, 2000). In addition, two other introduced tree species of concern are *Casuarina equisetifolia* and *Acacia auriculiformis*. Both species are still widely planted in our countryside. Natural recruitments of *C. equisetifolia* have been noticed in a number of places. Bulbuls were recently seen taking the seeds of *A. auriculiformis* enhancing seed dispersal (Richard Corlett, pers. com.). And although there are no reports of these two species as invasives in any parts of the world, their fast growing habits and the ability to reproduce naturally in Hong Kong is reason for concern. Any reports from *Porcupine!* readers of natural recruitments of *M. quinquenervia*, *C. equisetifolia* and *A. auriculiformis* in Hong Kong are welcome.

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Hong Kong vascular plants: a new record and clarification of a name

by Ng Sai-chit
KFBG

Symplocos cochinchinensis* (Lour.) S. Moore var. *cochinchinensis
In J. Bot. 52(6): 148-149, 1914; Wu R.-F. & H.P. Nooteboom, Flora of China 15: 248-249.

On a trip to Tai No Village near Ho Chung, Sai Kung, with Ken So of KFBG on 11 September 2001, Ken spotted three fruiting *Symplocos* trees up to 15-20 m in the feng-shui woodland behind the village. Attempts to collect a fruiting specimen were unsuccessful but the shape of fruit and infructescence were noted, and a specimen without fruits or flowers were collected (S.C.Ng, 3147 (AFCD, HKU, KFBG)). The plant was finally identified as *Symplocos cochinchinensis* var. *cochinchinensis* using the key and description in Wu &

Nooteboom (1996), and this identification was confirmed by comparison with specimens collected from Hainan (Anon. s.n. (HK 18069), 18 June, 1893, Hainan (AFCD); A. Henry s.n. (HK18074), 1889, Hainan (AFCD)). No earlier records of this variety in Hong Kong have been found.

This variety is remarkable among Hong Kong's *Symplocos* spp. in that it has persistent and dense, soft brown to reddish brown, hairs on the young shoots and undersides of the leaves, which are visible at a distance. Although it has a spike-like infructescence which may branch at the base and globose to ampuliform fruits similar to the supposedly related *S. cochinchinensis* var. *laurina* (Retz.) Noot., these two varieties of Nooteboom appear different enough to be considered as distinct species, as they have previously been (Wu & Huang, 1987). This variety is very rare in Hong Kong and is so far only known from the above locality. Regionally it is widespread and has been recorded in South China, India, Indochina, S.E. Asia, and Japan.

***Carex bodinieri* Franch.**
In Bull. Soc. Philom. Paris 8 sér 7: 85, 1895; Anon., Flora Reipublicae Popularis Sinicae 12: 445, 2000.

Carex brunnea auct. non Thunb.:
Xing, Ng, & Chau, Memoirs of the Hong Kong Natural History Society 23: 113, 2000.

Three Hong Kong specimens which had previously been considered as *Carex brunnea* (Anon. s.n. (HK8213), 22 September 1909, exact locality unknown (AFCD); S.C. Ng 1552, Pik Uk, 5 November, 1998 (AFCD, HKU); S.C.Ng 2810, 4 November 2000, Nam Fung Road, (AFCD, HKU)) were identified as *C. bodinieri*. This was confirmed by comparing with Chinese and Japanese specimen deposited at the Beijing National Herbarium (PE) and the description in Dai & Liang (2000) which also mentioned Hong Kong as the type locality for the species.

Carex bodinieri differs from *C. brunnea* in having more or less glabrous utricles with a hispid margin, whereas *C. brunnea* has white, minute, coarse rigid hairs on both sides of the utricle as well as on the margin. When fully ripe, the achene of *C. bodinieri* has convex faces on at least the abaxial side, whereas that of *C. brunnea* is slightly concave at the middle. The spike of *C. brunnea* also tends to have denser utricles than *C. bodinieri*. Locally in Hong Kong, *C. bodinieri* has been seen by me at Ho Chung and Aberdeen only, but it is usually locally abundant where it occurs. Regionally it is widespread and has been recorded over S. China and Japan.

Carex brunnea was first mentioned to occur in Hong Kong near Magazine Gap in Dunn & Tutcher (1912), which did not specify the specimen this record was based on. It has since then appeared in the local checklist (Anon., 1978, 1993), and in Shaw (2000), which for the first time mentioned a Hong Kong specimen (HK Expedition HK 7187, October 1909, Magazine Gap) that may be at Kew. Without seeing the specimens used by Dunn & Tutcher (1912) and Shaw (2000), I am unable to confirm whether they are also misidentifications of *C. bodinieri*.

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MISCELLANY

Species new to science from Hong Kong 1996 - 2001

by Richard T. Corlett

As regular readers of *Porcupine!* will know, there are new plant and animal records for Hong Kong in every issue. Indeed, communicating these is one of the major aims of this newsletter. Most of these records are new only to Hong Kong, but a proportion of them are totally new to science. These are species for which the first scientific description – and hence the scientific name - is based on specimens collected from Hong Kong. I recently decided to find out how many such species there had been over the last five years. I have not finished counting the fungi yet but, even without them, the total described from Hong Kong during this period is an incredible 224 species! When the fungi are added in, this will come to an average of more than one new species per week. It

is also very likely that I have overlooked some relevant publications.
What are these new species? Rather a lot of them are beetles – 101 to be precise. An amazing 94 of these are rove beetles, Staphylinidae, thanks to the efforts of Guillaume de Rougemont. Judging by his recent paper in MHKNHS (Rougemont, 2001), there are still quite a lot more of these to be described. Next come 38 moths, mostly described by Tony Galsworthy. Given Roger Kendrick's recent efforts, this may be just the tip of the iceberg. Then there are 22 assorted crustaceans, 12 spiders, 9 ribbon worms (Nemertea), 8 mites, 6 mayflies, 5 stick insects (Phasmida), 5 dragonflies (Zygoptera), 4 polychaete worms, 2 homopterans, 2 dinoflagellates, a fish, an angiosperm, a moss, a liverwort, an oligochaete worm, a wasp, and single species each in the orders Hemiptera, Heteroptera, Psocoptera and Pycnogonida.

Not surprisingly, a lot of these are named after Hong Kong – 30 to be precise. Most of these are *Something hongkongensis*, but there are several spiders with names such as *Thanatus hongkong* (you don't have to latinize it), a staphylinid has been named *Atheta hongongiphila* (Hong Kong-loving), another is *Pedinopleurus hongkongicola* (living in Hong Kong), and a leiodid beetle is *Agathidium xianggangense*. Pride of place in this list, however, must go the whole new spider genus *Hongkongia* (Song and Zhu, 1998). Other place names commemorated include Cape D'Aguilar, as in the littoral mite, *Copidognathus daguilarensis*, and several other species, Hoi Ha, in a staphylinid, *Atheta hoihaensis*, Sek Kong, in yet another staphylinid, plus a geometrid moth, *Eupithecia sekkongensis*, and other species with the epithets *samchunensis* (a staphylinid), *maipoensis* (a geometrid), *taipoensis* (a notodontid moth), *toloensis* (a crustacean) and *victoria* (a phasmid).

The Kadoorie family feature as both places and people, in recognition of their huge influence on ecology in Hong Kong. Eleven species incorporate the Kadoorie name in some form, but Guillaume de Rougemont tops the personal name list, with no fewer than 13 species named after him. Graham Reels is next, with 4 staphylinids and a moth. A dozen other people have one or two species named after them. My overall favourite, however, is a gnaphosid spider, *Hongkongia wuae*, named after both DEB postgrad Carrie Wu and her study area!

Please let me know of any new species that I have overlooked.

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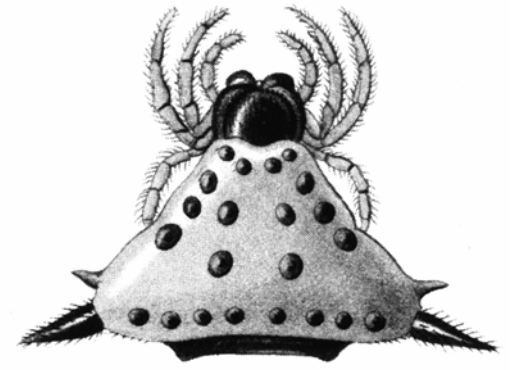
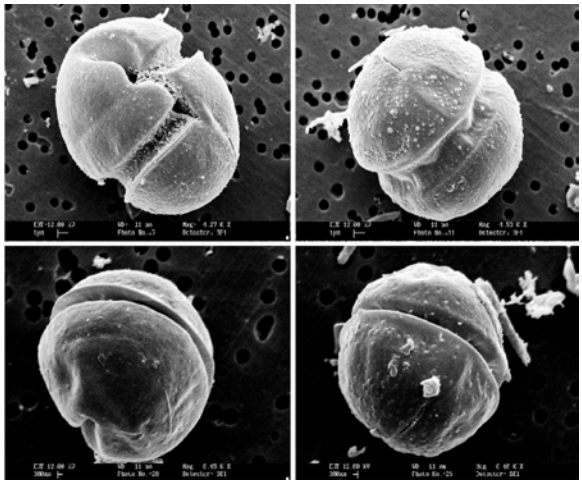


Spiny spider, an orb-web spider (Araneidae)



A new dinoflagellate, *Karenia digitata*

Ricefields for wetland mitigation in HongKong

by Captain L.C. Wong
KFBG

Long Valley has been a very hot conservation issue in Hong Kong since last year. Some of the debates have concerned the viability of the proposed re-creation of wetlands for birds. Wetland recreation is an integrated science of water chemistry, soil properties, hydrology, plant, invertebrate and bird ecology, and is certainly not dictated by ornithology. Unfortunately, the technique of wetland recreation is still not very mature, even for countries with much better knowledge of their wetlands. In the U.S.A., the success rate for mitigation wetlands is only about 27% (Marsh *et al*., 1996). In Hong Kong, a newspaper recently reported that 80% of the wetland grasses cultivated at Mai Po for the Wetland Park were dead. This may arouse the concern that wetland recreation is impossible in Hong Kong due to our relatively poor

understanding of local wetland ecology. Being realistic, if we want to recreate a wetland for birds in HK, then we should design it in accordance with the available information and relevant experience. Local studies have demonstrated that man-made fishponds and *geiwais* are important for waterbirds (Wong, 1991; Young, 1998). Other than these, the most similar habitats to "natural" freshwater wetlands in South China are ricefields, which have been available in the region long enough for birds to have adapted to them.

Ricefields are temporary aquatic ecosystems that serve as valuable feeding habitats for birds in many parts of the world in both the breeding and non-breeding seasons (Fasola and Ruiz, 1996) because of their non-intertidal and shallow water nature (Gonzalez-Solis *et al,*. 1996). In the Mediterranean region, ricefields are considered as substitutes for natural wetlands for waterbirds like waders, gulls, terns, ducks, egrets and herons (Fasola and Ruiz, 1996). In the USA, the 140,000–180,000 ha of ricefields in the Central Valley of California, which act as a substitute for destroyed wetland habitats, support 200,000-400,000 waders, such as the Long-billed Dowitcher (*Limnodromus scolopaceus*) and White-faced Ibis (*Plegadis chihi*) (Elphick and Oring, 1998). In Japan, ricefields are also feeding habitats for egrets and herons, but concern has been expressed due to changes in agricultural practices in recent years (Lane and Fujioka, 1998).

In southern China, waterbirds were associated with ricefields in the past and still are today. Vaughan and Jones (1913), during their visit to Southeastern China in the 1910s, observed that ricefields afforded ample protection to many wading birds in the spring and autumn, and in summer to certain of the Rails (Rallidae), but they were especially famous at the right season as the haunt of the migrating Snipe (*Gallinago* spp.). Yellow Bitterns (*Ixobrychus sinensis*), Chestnut Bitterns (*I. cinnamomeus*) and Black Bitterns (*I. flavicollis*) have even nested in the ripe paddy. In Fujian, Great Egrets existed in great numbers in the paddy fields (La Touche, 1924). During summer 2000, Prof. Mauro Fasola, an Italy-based ardeid expert, found that there were 40,000 pairs of mainly Little Egrets but also Night Herons in an area of intensive rice cultivation in east-central China (Hafner pers. comm.). He also found that in this huge ricefield area of east-central China, a mixed heron colony was found about every 30 km. These observations suggest that the ricefields in this region of China are also important feeding habitats for nesting ardeids.

In Hong Kong, Herklots (1954) found that there was a seasonal use of ricefields by ardeids. He stated that "the Chinese Pond Heron (*Ardeola bacchus*) is associated with ricefields where they, in company with Cattle Egrets and Little Egrets, seek their food. Frogs and small fish, aquatic insects and snails are the principal foods but nothing comes amiss and a snake, a shrew or a rat would not be refused if it came within striking distance of the powerful beak of one of these birds. In the autumn the Chinese Pond Heron and Cattle Egret depart for the south but some of the Little Egrets remain: they desert the dried up ricefields and find their food in the salt-marshes or at edge of the sea following the rising or ebbing tide in company with waders. In summer, ardeids feeding in the ricefields are not gregarious, each patch may have its bird but rarely are several seen together." From his description, the ricefields may have functioned as high tide roosts for waterbirds, like the current *geiwais* and fishponds. Thrower (1984) suggested that ricefields, particular the paddy channels, used to be important feeding habitats for the local nesting egrets and herons, where they fed on frogs and eels. In addition to waterbirds, these man-made wetlands can also attract seed-eating birds, such as Crested Bunting (*Melophus lathami*) (Herklots, 1954), and probably Chinese Greenfinch (*Carduelis sinica*) and buntings (*Emberiza* spp), which was once common in the lowlands of Hong Kong (Viney *et al,* 1994).

Some abandoned paddy fields in and around Luk Keng still appear to be suitable for growing rice, since they are owned by the Government and rice was grown there before the 1970s. The revival of rice cultivation in this area will help to create new feeding habitats for waterbirds and ardeids, especially the Chinese Pond Heron which was the dominant breeder in the 1950s when ricefields were the dominant landuse (Hong Kong Bird Report, 1958-1969; Young and Cha, 1995). The proposed Nature Park in Long Valley may also be a good area for rice farming, which would not only provide reliable man-made wetlands for birds, but also enhance the rural character of this valley. Although the maintenance cost of ricefields may be high, they are easily recreatable and require no additional research, so they would be a good start for us to learn more about the ecology of freshwater wetlands.

However, while wetland recreation should be undertaken to make new habitats, maintaining the integrity of existing areas with high conservation and ecological value should have first priority.

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The mangrove stand at Lai Chi Chong – an update

by Benny K. K. Chan

Mangroves are important ecological habitats and play a significant role in the ecology and economies of human society (Hogarth, 1999). Mangroves, however, are under threat globally and millions of hectares have been lost by urbanization including reclamation, pollution and human disturbance (Lean et al., 1990). Conservation of mangrove habitats, therefore, is increasingly attracting international attention. In Hong Kong, 44 mangrove habitats (a total area of 290 ha) have been identified, 23 of which having high conservation value (Yipp et al., 1995; Tam & Wong, 1997).

Lai Chi Chong (Figure 1) is one of 44 mangrove stands identified by Tam and Wong (1997) and is located in the Sai Kung West Country Park inside Tolo harbour. The area of the stand is relatively small (0.31 hectares) when compared to other mangrove stands in Hong Kong (e.g. Ting Kok and Three Fathoms Cove) and consists of boulder and sandy substratum with the most common mangrove plants *Kandelia candel* and *Excoecaria agallocha* (Tam and Wong, 1997). In their survey, Tam and Wong (1997) recorded six plant species (including 4 true mangrove plants). As a result, the mangrove stand at Lai Chi Chong was concluded to be a habitat with very low plant diversity and classified to have low conservation priority. No further in-depth surveys have been conducted (Tam and Wong, 1997).

In July 2001, I visited Lai Chi Chong during a Science Faculty function. During the field trip, I recorded a different species composition of mangrove plants when compared to Tam and Wong (1997). I suspected that the mangrove stand at Lai Chi Chong may have higher plant diversity than previously indicated and might merit higher conservation priority. Therefore, in November, 2001, I conducted transect surveys of similar design to those in Tam and Wong (1997) to record the plants and animals. I established three, 30 m, transects running from the landward to seaward region of the mangroves and in each surveyed the plant species richness and density in six continuous 5 x 5 m quadrats and scored the animal species in ten random 0.5 x 0.5 m quadrats. Infauna were sampled to a depth of 0.5 m within the quadrats.

I recorded 12 plant species (Table 1) which doubles the species of Tam and Wong (1997); the most common plant species were *Pandanus tectorius*, *Hibiscus tilaceas*, *Thespesia populnea* and *Cerbera manghas* (Fig. 1) on the landward side, while on the seaward side, the common mangrove plant species were *Kandelia candel* and *Aegiceras corniculatum*. At the seaward fringe, there was a patch of *Avicennia marina* (~ 30 m^2) which was absent from the species list of Lai Chi Chong in Tam and Wong (1997). The plant species composition recorded in the surveys by Tam and Wong (1997) appears to under-estimate the actual species composition.

A total of 31 animal species was recorded in my survey (Table 2). In the landward fringe, the gastropod, *Terebralia sulcata*, the Buddhist crab, *Tmethypocoelis ceratophora* and the fiddler crab, *Uca chloropthamalus* (Fig. 1) were common. There were also considerable numbers of burrows made by the sand-bubbler crab, *Scopimera globosa* which leaves radiating patterns of sand grains near its burrow opening. In the mid shore region, the gastropods *Cerithidia cingulata* and *Clithon* spp. were abundant. The western part of the mangrove stand had a sandy substratum dominated by the gastropod, *Batillaria zonalis* and a number of bivalve species (Table 2). The bark of *Avicennia marina* was also colonized by the barnacle, *Balanus albicostatus*.

In Tam and Wong (1997), the conservation priority of mangrove stands was evaluated based on the area of the mangrove stand, species richness, species rarity, representativeness of plant species, status of current protection, degree of disturbance and nature of hazards and social values. I followed Tam and Wong (1997) in trying to calculate the scores concerning area, species richness, degree of disturbance and representativeness of the mangrove stand at Lai Chi Chong to determine its possible conservation value. I ranked all the scores calculated with the scores of the 23 mangroves recommended for further ecological studies in Tam and Wong (1997) (Table 3).

Lai Chi Chong ranked 17 out of 24 mangrove stands surveyed (Table 3). Although it is relatively small in area, it is high

ranking in species richness and protection rank. Lai Chi Chong is also very remote from urban areas (it can only be accessed by ferry or a long time walk) and the mangrove stand is currently not disturbed by human activities and is unlikely to be disturbed in the coming years. With its high species richness and low risk of destruction, the mangrove stand at Lai Chi Chong should receive further ecological studies to evaluate its conservation priority.

Differences between the recent and the earlier surveys were probably due to differences in sampling design. To reduce the risk of under-estimation of species richness in a habitat, nested hierarchical sampling designs should be conducted. This type of sampling design can estimate the relative importance of different spatial and temporal scales (seasonal variations) to overall variability (see Underwood, 1997) and is therefore the most appropriate method to provide baseline information and allow future for comparative assessments.

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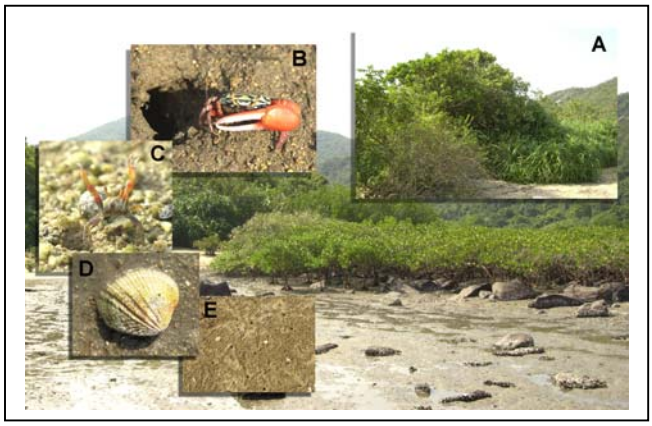

Fig. 1. The mangrove stand at Lai Chi Chong. Inserts showing a) the landward fringe was common with *Pandanus tectorius*, *Hibiscus tilaceas* and *Clerodendron inerme*; b) the fiddler crab *Uca chloropthamalus*; c) the Buddhist crab *Tmethypocoelis ceratophora*; d) the bivalve *Gafrarium pectinatum* and d) burrows made by the sand bubbler crab *Scopimera* spp.

	Tam and Wong 1997	Present study
True mangrove		
Kandelia candel	+	+
Aegiceras corniculatum	+	+
Avicennia marina	-	+
Excoecaria agallocha	+	+
Lumnitzera racemosa	+	+
Associate mangrove		
Hibiscus tiliaceus	-	+
Thespesia populnea	-	+
Clerodendron inerme	+	+
Cerbera manghas	-	+
Other plant species		
Pandanus tectorius	-	+
Suaeda australis	+	+
Glochidion sp.	-	+
Total no. of species	6	12

Table 1. Plant species recorded in Lai Chi Chong by Tam and Wong (1997) and in the present study. (+ = present; - = absent)

Arthopoda (Crustacea)	*Lunella coronata*
	Mitra sp.
Diogenes spinifrons	
Clibanarius longitarsus	**Mollusca (Bivalvia)**
Scopimera globosa	
Perisesarma bidens	*Saccostrea cucullata*
Uca chloropthalmus	*Gafrarium pectinatum*
Tmethypocoelis ceratophora	*Marcia hiantina*
Balanus albicostatus	*Dorsinia japonica*
Gaetice depressa	*Anomalocardia squamosa*
Metopograpsus quadridentatus	*Anomalocardia flexuosa*
	Asaphis dichotoma
Mollusca (Gastropoda)	*Soleltellina diphos*
	Tapes sp.
Cerithidea cingulata	*Mactra sp*
Terebralia sulcata	*Isognomon isognomon*
Clithon oualaniensis	
Clithon faba	**Chordata (Actinopterygii)**
Batillaria zonalis	
Littoraria ardouiniana	*Periophthalmus cantonensis*
Nerita polita	
Monodonta labio	**Total number of species = 31**

Table 2. Animal species recorded in the mangrove stand at Lai Chi Chong.

	Area rank	Spp. richness rank	Protection rank	Represent-ativeness rank	Over all score	Over all score rank
Lai Chi Wo	7	2.5	4.5	8	22	1
Ting Kok	3	4.5	12	3	22.5	2
Sai Keng	6	3	15	7	31	3
San Tau	12	1	18	1	32	4
Kei Ling Ha Hoi	21	5	4.5	2	32.5	5
Tai Wan	8	13	3	14	38	6
To Kwa Peng	13	10	7	10	40	7
Chek Keng	22	6	7	6	41	8
Yi O	19	2.5	12	9	42.5	9
Tsim Bei Tsui	2	17.5	3	23	45.5	10
Tai Tan	20	4.5	18	4	46.5	11.5
Kei Ling Ha Lo Wai	10	11	9.5	16	46.5	11.5
Sam Mun Tsai	15	7.5	20.5	5	48	13
Sheung Pak Nai	5	15	7	22	49	14
Wong Yi Chau	16	12.5	9.5	12	50	15
Nam Chung	4	14	15	18	51	16
Lai Chi Chong	24	7.5	3	19	53.5	17
Hoi Ha Wan	23	16	3	13	55	18
Sha Tau Kok	9	9	22.5	15	55.5	19
Lut Chau	1	19	15	24	59	20
Tolo Pond	18	17.5	18	11	64.5	21.5
Ho Chung	11	14	22.5	17	64.5	21.5
Tai Ho Wan	14	12.5	24	21	71.5	23
Pui O Wan	17	18	20.5	20	75.5	24

Table 3. Ranking of the scores concerning area, species richness, protection values and representativeness of the mangrove stand at Lai Chi Chong with the 23 mangrove stands recommended for further ecological studies in Tam and Wong (1997). Overall scores are the sums of the ranks from area, species richness, protection and representativeness. Mangroves with higher conservation value will have smaller scores in the rank. For calculation of the scores, refer to Table 5 (vol.1) of Tam and Wong (1997)

BOOK REVIEW:

The Avifauna of Hong Kong

[G.J. Carey, M.L. Chalmers, D.A. Diskin, P.R. Kennerley, P.J. Leader, M.R. Leven, R.W. Lewthwaite, D.S. Melville, M. Turnbull and L. Young]

Published by the Hong Kong Bird Watching Society, 563 pp. ISBN 962-7508-02-0, Available from the HKBWS office (tel. 2377 4387 or hkbws@hkbws.org.hk) at HK$250 for HKBWS members, and HK$350 for non-members, plus packing and postage

by Richard T. Corlett

The birds are the best-known group of organisms in Hong Kong. Not only do we have a complete species list – which is probably not true for anything else except the amphibia – but for every bird species we know the local, regional and global distribution and, for the majority of species, at least something about its ecology. I say "we", but until now most of this information has been locked away inside the heads of local birders or in the largely unpublished records of the Hong Kong Bird Watching Society. *The Avifauna of Hong Kong* not only makes much of this information available for the first time, but also provides a variety of analyses which will be of interest to the general ecologist.

The book starts with a useful history of ornithology in Hong Kong, from Robert Swinhoe's visit in 1860, up to 1997. This ends by noting that the membership of the HKBWS, which was dominated by expatriates until recently, is now largely local. Unfortunately, the 1997-1998 cut-off for most of the book, means that the work of expatriates still dominates the text, and the rapidly expanding research output from Hong Kong-born ornithologists is barely mentioned. After this introduction there is a brief description of the physical characteristics of Hong Kong, followed by an excellent account of the climate (by C.Y. Lam). There is then a rather odd selection of colour plates. This includes a photograph of 30-40 year-old secondary forest at Tai Po Kau described as "mature woodland", which, I suppose, makes me "over-mature"! The habitat pictures will be useful for readers unfamiliar with Hong Kong, although some major habitats are omitted, but the bird pictures are unexciting and their subjects apparently selected at random.

We then get into the meat of the book. First there is a new checklist of the bird species recorded in Hong Kong, with English and Chinese common names, the category to which each species has been assigned (from "apparently wild", via various categories for species escaped or released from captivity, to "doubtful"), and the principal status (resident, winter visitor etc.). This is followed by the results of the breeding bird survey carried out by the society between 1993 and 1996, with individual maps showing the breeding distribution (in 1 km squares) for each species. Despite the obvious limitations of such surveys, the results are fascinating and will provide an immensely valuable baseline for the future. Next come the winter waterbird counts, carried out in Deep Bay since 1979. Again there are problems with consistency, which are clearly explained, but the result is the best long-term record of any group of organisms in Hong

Kong. A rather disappointing summary of the ringing data follows. More than 45,000 birds have been ringed in Hong Kong since 1975, but only 35 have been recaptured "overseas" (which includes China!) and only 19 ringed outside Hong Kong have been caught here. The only other information extracted for this section from the huge ringing effort is a wonderful list of the longest surviving ringed birds. Who would have guessed that Japanese White-eyes can live more than nine years and Chinese Bulbuls more than ten?

The last section before the species accounts concerns the wild bird trade and its impact on Hong Kong's avifauna. This is essential reading, not only because without it you cannot understand the categories used in the species list, but also because of the huge impact that "ex-captive" birds have had on local bird communities. The downgrading of several species from "natural colonist" to escaped or released captives will come as surprise to many bird watchers, and the subsequent upgrading of several of these to "re-established native species, non-natural arrival" will be controversial. However, I think the impact of releases has still been underestimated. The account of the White-rumped Munia, for instance, while noting that many early records were from Hong Kong Island, does not mention the large numbers of birds sold to Buddhists for release and treats it as a natural colonist.

Apart from a useful (but outdated) bibliography of the local bird literature, the rest of the book consists of detailed accounts of each species recorded from Hong Kong. Each account starts with a description of the range and, where relevant, taxonomy, of the species, followed by a detailed analysis of its distribution and status in Hong Kong, including any historical changes in these. Seasonal patterns of occurrence and differences between years are shown in graphs which give a quick visual image of the major patterns, although exactly what the numbers plotted mean was not at all clear to me, even after reading the section which is intended to explain this. Additional ecological information is given for some species but not others, presumably depending on the interests of the particular person who wrote each account. Anecdotal accounts of diet are sometimes included but the vast amount of published and unpublished (but easily accessible) data from faecal analysis in Hong Kong is ignored.

The main weakness of this book is that the results of the many recent ecological studies in Hong Kong, including those by co-author Michael Leven, are almost entirely omitted. In a number of places this information could have greatly improved the species accounts without significantly adding to their length. There is clearly room for a separate book on the ecology of Hong Kong birds. That said, this is a wonderful summary of the pre-1998 bird records and will be mined by birdwatchers and ecologists for decades. Could the same be done for other groups of organisms in Hong Kong?

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

An adult **Rhesus Macaque** (*Macaca mulatta*) was seen walking along Clear Water Bay Road near Sheung Yeung Village by Michael Lau, on 28 May 2001.

An attendant at Nam Chung Tin Hau Temple, Starling Inlet, told Captain Wong that two monkeys (one large and one small) were seen collecting fruits in the temple in June, following bad weather. No previous records of monkeys have been made in this location according to the attendant.

At 5:40 pm on 23 October 2001, Captain Wong heard calls of **Barking Deer** (*Muntiacus* sp.) at the catchment between Sunset Peak and Cheung Sha. In addition, several calls of **Barking Deer** were heard in Twin Pavilion during daytime on 17 October, from the direction of Ng Tung Chai.

Robert Davison saw two **Barking Deer** at 1:00pm on 11 November 2001, crossing a grassy slope near Yi O, Lantau. They were moving slowly, occasionally feeding, across relatively open ground and away from the woodland nearby. One deer had a noticeable white tail and white socks on its back legs. Weather at this time was warm and sunny.

Photo of a **Leopard Cat** (*Felis bengalensis*) was taken by an infrared camera in KFBG chicken section on 29 October 2001. It was believed that the cat had killed several chickens. On 10 November 2001, Rupert Griffiths saw two **Leopard Cats** fighting high in a tree near the Apiary of KFBG at 18:30. They were aggressively calling and striking at each other before one proceeded to chase the other through the tree top and then down to the ground.

An **Otter** (*Lutra* sp.) was seen swimming in a fish pond of Lok Ma Chau, near the border crossing bridge on 6 December 2000 by Yu Yat Tung. Although two species of otter were recorded

in Guangdong, this individual and other past records are believed to be the Common Otter *Lutra lutra*.

Yu Yat Tung saw a **Javan Mongoose** (*Herpestes javanicus*) on 19 October 2001 at Mai Po Village, and three Javan Mongooses including one of smaller size (i.e. juvenile) on 7 November 2001, in Mai Po Nature Reserve.

Kylie Chung, with Albert Au, Angel Au and Harald Parzer, caught two **Javan Mongooses** on 18 October 2001 and one on 19 October 2001. The three mongooses were caught in local wire cage traps set at Tai Mo Shan (>750m), in grassland with short shrubland nearby. Another trap was broken possibly by an escaped mongoose.

Two **Masked Palm Civets** (*Paguma larvata*) were seen by Harald Parzer just off University Drive at 9.00-10.00 p.m. on 25th of November 2001. One was apparently sleeping in a palm, the other one was feeding on figs (*Ficus virens*) on the adjacent tree. After half an hour the one in the palm joined the other one in the banyan. Both were not shy and it did not seem that they were disturbed by the torch. On the next day one was observed again (same time).

Lee Kwok Shing and Bosco Chan saw a road killed **Ferret Badger** (*Melogale moschata*) at the northern end of the Tung Chung Road, Lantau, in November 2001. Apparently this is the first documented record of the species in Lantau.

Laura Wong and Angel Au saw a dead **Ferret Badger** on 18 November 2001. The fresh corpse was found on grassland by the side of Tai Mo Shan carpark (700m), and it showed no obvious wounds.

Steven Parker saw a dead **Porcupine** (*Hystrix brachyura*) in a drainage ditch between Repulse Bay and Stanley in Hong Kong Island, on 18 November 2001.

A road killed **Masked Palm Civet** (*Paguma larvata*) was found at around 7am, on 21 November 2001in Tin Hau, North Point, as reported in Apple Daily. The victim was about 2.5 feet long. (22 November 2001)
http://www.appledaily.atnext.com/template/apple/art_main.cfm?sec_id=4104&showdate=20011122&art_id=2278676

Three **Masked Palm Civets**, one adult and two juveniles, were found at the mountain lodge of KFBG on 13 August 2001, by the security guard.

Yu Yat Tung saw a **Small Indian Civet** (*Viverricula indica*) at Pond 21, Mai Po on 27 November 2001.

Three **Finless Porpoises** (*Neophocaena phocaenoides*) were seen off the Ocean Park from the ferry to Po Toi on 21 April 2001 by Yu Yat Tung.

Markus Shaw spotted a dead **Finless Porpoise**, floating in the sea just west of Town Island, on 26 August 2001. It was about 1.5m long and quite decomposed.

BIRDS

A flock of 16 **Black-faced Spoonbills** (*Platalea minor*) was seen flying high and heading to North/Northeast from Mai Po Village on 15 March 2001 by Yu Yat Tung. The sighting indicated that the birds had started their northward migration, which matches the result of satellite tracking study.

Michael Lau saw one **Black Bittern** (*Ixobrychus falvicollis*) flushed out at Sha Lo Tung on 8 October 2001.

One **Pygmy Wren-Babbler** (*Pnoepyga pusilla*) was seen and photographed by an AFCD warden in Tai Po Kau, on 7 November 2001, as reported by Michael Lau.

Keith Wilson saw a pair of **Red-necked Grebes** (*Pidiceps grisegena*) in Yan Chau Tong Marine Park on Fiday 16 November 2001.

A **Forest Wagtail** (*Dendronanthus indicus)* was spotted by Kwok Hon Kai (Ecosystems Ltd) in Tai Po Kau on 19 November 2001.

FISH

In the afternoon of 3 June 2001, Bosco Chan, Louis Cheng and Lee Kwok Shing observed the following species of interest when SCUBA diving and snorkeling at Bluff Island, Sai Kung.

1. One **Pipefish** (*Syngnathus* sp.) around 20 cm TL, 3 metres deep, sandy substrate.
2. One **Long-fin Bannerfish** (*Heniochus acuminatus*), 3 metres deep, around a 4-wheel vehicle on sandy substrate.
3. One **Tomato Clownfish** (*Amphiprion frenatus*) around 8 cm TL, 1.5 meters deep, coral substrate.
4. Two **Bird Wrasse** (*Gomphosus varius*), 1 initial phase and 1 juvenile (around 4 cm TL) 1-2 metres deep, coral substrate.
5. One **Blackeye Thicklip Wrasse** (*Hemigymnus melapterus*) juvenile around 7cm TL, 1.5 meters deep, coral substrate. The specimen has the characteristic white-dark brown-orange body coloration.
6. Some **Hingeback Shrimps** (*Rhynchocinetes* sp.), 1.5-3 metres deep, coral substrate.

AMPHIBIANS/REPTILES

An egg mass of a **Brown Tree Frog** (*Polypedates megacephalus*), suggesting the presence of this species on the island, was found by Cheung Sze Man on 26 July 2001 in Tap Mun.

Kwok Hon Kai (Ecosystems Ltd) saw a couple of **Two-Striped Grass Frogs** (*Rana taipehensis*) on 19 June 2001 on Kau Sai Chau.

An **Anderson's Stream Snake** (*Opisthotropis andersonii*) was recorded by Cheung Sze Man and Rita Yam at Ng Tung Chai on 1 June 2001.

On 9 October 2001, Harald Parzer, Klemens Wernisch and Sukh Mantel saw a 30 cm long **Bicolored Stream Snake** (*Opisthotropis lateralis*) biting down on a 1.9 cm carapace width dead freshwater crab, *Cryptopotamon anacoluthon*, on the side of a pool in Tai Po Kau at around 7 pm.

On 9 September 2001 at 1.30 pm Maria Salas saw a 30 cm long **Chinese Cobra** (*Naja atra*) at the steps leading to the swimming pool in Sandy Bay.

A **King Cobra** (*Ophiophagus hannah*) was found near the parrot cages of KFBG by the security guards on 26 July 2001.

On 20 September 2001, a **Chinese Mountain Snake** (*Sibynophis chinensis*), was sighted in Tai Po Kau by Cheung Sze Man.

At 1:30 pm on 4 July 2001, Jamie Chung and Sukh Mantel saw an 80 cm long **Common Rat Snake** (*Ptyas mucosus*) on the red trail in Tai Po Kau. The same two individuals spotted another Common Rat Snake in Tai Po Kau on 9 August.

A **Copperhead Racer** (*Elaphe radiata*) was seen swimming in the sea near a pier in Ko Lau Wan by Cheung Ming Hong around mid-April 2001.

A **Diamond-back Water Snake** (*Sinonatrix aequifasciata*) was spotted by Sukh Mantel on 10 July 2001 around 8 pm.

Kwok Hon Kai saw a **Mountain Water Snake** (*Sinonatrix percarinata*) in Tai Po Kau on 10 October 2001.

On 10 July 2001 around 6:30 pm, Sukh Mantel saw a 20 cm long juvenile **Red-necked Keelback** (*Rhabdophis subminiatus*) on the roadside in Shing Mun Country Park.

A 50 cm long **Many-banded Krait** (*Bungarus multicinctus*) was sighted on 23 July 2001 at 8:45 pm in Tai Po Kau by Sukh Mantel. Another Many-banded Krait 45 cm long was seen in Tai Po Kau on August 16 around 8 pm.

A freshly killed specimen of a **Banded Krait** (*Bungarus fasciatus*) was seen on 27 September 2001 in Ha Pak Nai by Cheung Sze Man.

A **Banded Krait** was found by the security guard at the Post Office Pillar of KFBG, on 17 September 2001.

One hatching juvenile **Burmese Python** (*Python molurus*) was discovered by the security guard at the Upper Canteen of KFBG, on 24 August 2001. Adults are seen regularly.

A **Chinese Slug Snake** (*Pareas chinensis*) was seen by the security guard at Twin Tower of KFBG, on 5 September 2001.

A **Three-banded Box Terrapin** (*Cuora trifasciata*) was found wandering near Sign Post of KFBG by the security guard, on 10 July 2001.

On 25 August 2001, Markus Shaw found a freshly dead sub-adult **Hawksbill Turtle** entangled in a fishing line in the sea just north of Town Island.

A large **Common Water Monitor** (*Varanus salvator*) was seen on Bride's Pool Road, near Wu Kau Tang, at around 1 pm on 4 June 2001, by Graham Reels and Moni Chin. The animal was observed slowly crossing the road. It appeared to be in very healthy condition, and measured over 1.5m in length. It was approached to within 6m before rapidly disappearing down a wooded ravine. The 'Common' Water Monitor is in fact very rare in Hong Kong, and was considered possibly locally extinct by Karsen *et al.* (1998). It is not possible to know whether the animal seen at Wu Kau Tang was a released specimen or a native individual. However, the very robust and healthy appearance of the animal would argue against it being a recent release.

INSECTS

Two locally rare butterfly species were recorded by Michael Lau in November: **Orange Oakleaf** (*Kallima inachus*) on 5 November 2001 and **Baron** (*Euthalia aconthea*) on 7 November 2001. According to Bascombe *et al* (1999) these two species have not been recorded on the wing in November.

Some interesting **Odonate** records from Hong Kong Island by Michael Lau: on 11 May 2001, one *Calicnemia sinensis* was found near a forest stream along Mount Parker Road at about 140 m. Two *Drepanosticta hongkongensis* were found near a small stream at about 210 m. Several *Drepanosticta hongkongensis* and two *Sinosticta ogatai* were found along a forest stream south of Quarry Gap from 180 – 260 m.

According to Wilson (1997) *C. sinensis* is a regionally rare species with restricted local distribution. It has been recorded from five sites in Hong Kong (Wilson, 1997) and this Mt. Parker record represents the sixth site. Both *D. hongkongensis* and *S. ogatai* are believed to be endemic (but see Reels' article in last issue of *Porcupine!*) and have never been recorded on Hong Kong Island (Wilson, 1997). Their presence in the Mount Butler area is hence of conservation interest.

A **Commander** butterfly *Moduza procris* was seen on 10 November 2001 in Tai Po Kau by Kwok Hon Kai (Ecosystems Ltd.) According to "The Butterflies of Hong Kong " by Bascombe *et al*. (1999), this species is only found sporadically at some wooded localities in the NT.

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We try to list ALL recent publications on the ecology and biodiversity of Hong Kong - plus a few other things that we think may be of interest. If we have omitted anything that you think should have been included, or if you have published anything that you think we are likely to miss, please let us know.

FREE Column

The latest *Memoir of the Hong Kong Natural History Society* is now available. It contains articles on ladybirds, birds on cultivated land, caterpillars in the forest canopy, the effects of cold weather on mangroves, the food habits of the wild boar, and the first account of a group of common beetles in Hong Kong, the staphylinids. The *Memoir* is priced at HK$50 plus postage and packaging, and can be ordered from Professor I.J. Hodgkiss in the Department of Ecology & Biodiversity. Memoir 25 is now in the final stages of preparation but manuscripts, notes, etc. for the next issue can be sent to Professor Hodgkiss.

Please continue to report mongoose records to *Porcupine!* Javan Mongooses are smaller than Crab-eating Mongooses, and lack the long white patch on each side of the neck (p. 19).

Any reports from *Porcupine!* readers of natural recruitments of *M. quinquenervia*, *C. equisetifolia* and *A. auriculiformis* in Hong Kong are welcome (p. 19).

The Hongkong Conservation Photography Foundation is publishing its inaugural nature calendar for 2002. Based on fine nature calendars from Australia, the HKCPF production tells the story of annual changes in the natural world with photos and short texts. Landscape and nature photos present a vivid impression of the beauty and natural diversity of Hong Kong, with linking texts that reveal the underlying seasonal changes. Ecologists from Kadoorie Farm & Botanic Garden advised on the texts. Photos by Edward Stokes and other photographers. Beautifully produced to an art photographic level. The calendar will only be on sale in some bookshops, including: Wanchai and Central branches of Kelly & Walsh, Dymocks, Joint Publishing, and Chung Wa. Price $75. The Foundation is selling calendars discounted to $60, but because of handling costs this is only for "box orders" of 40 calendars. Ring Ed Stokes, 2555 1327 or 2555 1919.

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Guidelines for contributions:

Contributions are welcomed. Any original article related to natural history, conservation or ecological research in Hong Kong will be considered for publication. Authors of long articles should send their work as a Word file, either by post (on disk, with hard copy attached) or by email. Original artwork should be sent by post (please indicate if return of material is required). Short articles (less than a hundred words) may be faxed or posted.