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

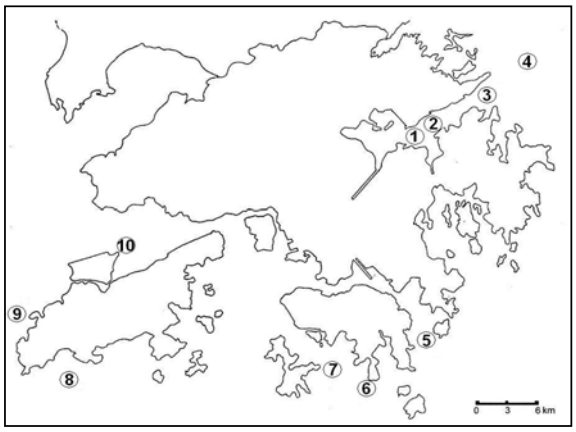

Fig 1. Map showing the trawling stations surveyed

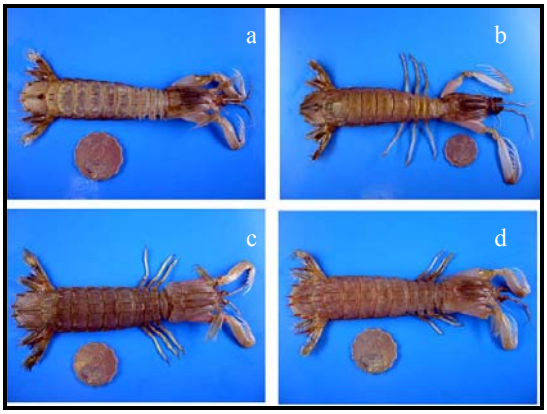

Fig. 2. Four most abundant stomatopod species found in this study (a) *Oratosquillina interrupta*, (b) *Harpiosquilla harpax*, (c) *Oratosquilla oratoria* and (d) *Miyakea nepa.*

Endemic skipper described

by G. T. Reels

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

VERTEBRATES

Bats in an underground water channel

by Sze-man Cheung

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

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

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

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

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Diadema sea urchins and the Black-spot tuskfish

by Andy Cornish

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

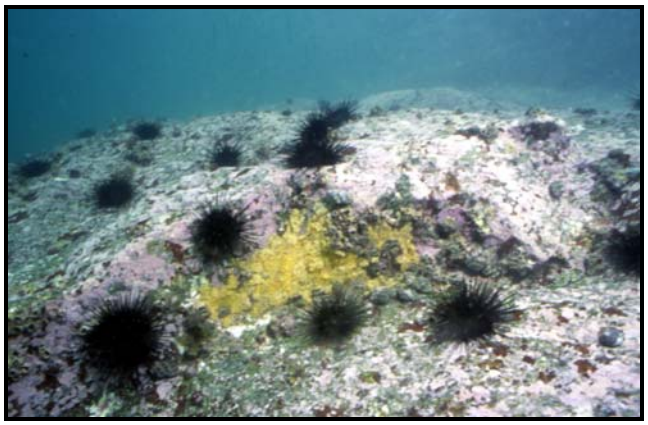

Fig. 1. Sea urchins at Cape d'Aguilar

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

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

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

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

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

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More new fishes from the Cape d'Aguilar Marine Reserve

by Andy Cornish

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

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

FLORA

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

by Richard T. Corlett

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