NEW DISCOVERIES

The Second Coelacanth

The discovery of the first coelacanth in 1938 from the Indian Ocean was a milestone because many people see it as a 'missing link' between fishes and amphibians. The fish, which has remained unchanged for 300-400 million years, is what biologists call a living fossil. Coelacanths are unusual among bony fishes in having lobed fins and an additional lobe on the tail. They are slow-moving nocturnal drift hunters of bottom-dwelling animals. They have been found in caves in groups of up to 14 individuals. Until JLB Smith, described *Latimeria chalumnae* in 1938, coelacanths were believed to have died out 70 million years ago. In 1997, University of California graduate student, Mark Erdmann, encountered at a market at Manado, Sulawesi, a large fish which turned out to be the second coelacanth species, and the first from outside the Indian Ocean.

A specimen was eventually collected, and in 1998, Erdmann, Roy Caldwell and their Indonesian collaborator, Kasim Moosa, announced to the world that the coelacanth had been found 13,000 kilometres away from where it was supposed to be. As later work would show, the Indonesian coelacanth was a different species, with colour differences and a different genetic makeup.

K. Moosa holding a cast of *Latimeria menadoensis* at the museum

Refs: Erdmann, MV, RL Caldwell & MK Moosa, 1998. Indonesian 'king of the sea' discovered. Nature, 395: 335-335; Erdmann MV, RL Caldwell, SL Jewett & A Tjakrawidjaja, 1999. The second recorded living coelacanth from north Sulawesi. Env. Biol. Fish., 54: 445-451; Pouyaud,L, S Wirjoatmodjo, I Rachmatika, A Tjakrawidjaja, R Hadiaty & R Hadie, 1999, A new species of coelacanth. CR Acad. Sci. ser. III-Vie, 322: 261-267.

Sex To Die For ...

Of all the living things on Earth, none rivals the beetles in diversity. It has been estimated that up to a quarter of all known organisms may be beetles. Discovering new beetle species is not exactly difficult, the challenge being to recognise them for what they are. Hundreds are described every year from the rich rainforests of Southeast Asia.

One of the most amazing beetles is the so-called trilobite beetle (Lycidae). The females never metamorphose into normal beetles but remain larvae-like. They never bear wings, and keep growing until maturity, reaching a length of 60 mm.This is a phenomenon known as neoteny. Adult males on the other hand, are normal beetles measuring only 1-2 mm in length.

When "it is time", the females exude sex hormones to attract the miniscule male. In what must be surely one of the most bizarre matings in the animal world, the almost tiny male fertilises a gargantuan female, and dies shortly after. The female then lays her eggs, and also dies! Surely sex is worth dying for ...

Refs: Wong, ATC, 1995. Trilobite larvae. A new understanding. Nature Malaysiana, 20: 24-29; Wong, ATC, 1996. A new species of neotenous lycid beetle *Duliticola hoiseni* (*Coleoptera: Catharoidea*: Lycidae) from Peninsular Malaysia and Singapore. Raffles Bull. Zool., 44: 173-187.

The female trilobite larvae (*Duliticola* sp.) can best be described as "an overgrown baby" – she never sprouts wings and grows to 60 mm in length

The male of *Duliticola* (inset) is a tiny 2 mm long normal beetle – why males and females of these insects are so different is still not known for certain

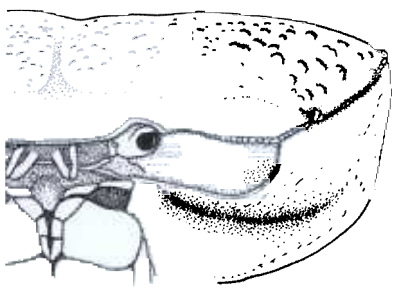
Life in the Netherworld

Caves are very hostile habitats – devoid of light, often even without a reliable food source. And they are extreme habitats to explore. Scientists who dare to venture into this netherworld to brave the lightless caverns and narrow tunnels are called speleologists, and they are a very special (and very courageous) breed indeed! Some of the cave animals being discovered are strange beyond measure. In 1998, Louis Deharveng, a French entomologist exploring caves in central Laos, came across a bizarre-looking crab with extremely long legs and greatly reduced eyes. Former NUS graduate student, Darren Yeo, who studied these specimens, confirmed that Deharveng had stumbled onto an animal so extraordinary that it was not only a new species but deserving a new genus as well! It was also the first true cave crab found in Indochina. Naming it *Erebusa calobates*, which means "stilt-walker from the nether world", it hints of what can be expected from this area in the years to come! Unlike normal crabs, *Erebusa*, has almost no eyes and is almost blind. Without light, eyes are unnecessary and evolution has selected against them! Instead, it uses its very long legs to feel its way around the cave.

Ref: Yeo, DCJ et al., 1999. *Erebusa calobates*, new genus, new species, a troglobitic crab (Brachyura: Potamidae) from Laos. J. Crust. Biol., 19: 908-916.

NUS graduate student, Cai Yixiong, seen here spelunking in the caves of the Philippines, looking for the strange and wonderful

The bizarre spider-like *Erebusa* of Laos



The tiny eyes of *Erebusa* are an adaptation to a lightless world

A New Orchid Species From The Wild

Orchids are one of the most speciose group of plants on earth (some 20,000 species are known), and they are especially successful in tropical Southeast Asia. *Phalaenopsis* is a genus of orchids well known for their ornamental value as cut-flowers and pot plants. There are 47 species ranging from Yunnan to Australia, India and Papua New Guinea. Recently, L. Garay and E.A. Christenson, named a beautiful new species collected from Sabah, *P. doweryensis*. A NUS graduate student, Michelle Goh Wee Kee, is currently studying the molecular systematics of *Phalaenopsis* in an attempt to provide a new classification using biochemical markers as well as traditional morphological characters.

Ref: Christenson, E.A. 2001. *Phalaenopsis*: a monograph. Timber Press, Portland, Oregon. 330 pp.

The beautiful *Phalaenopsis doweryensis* orchid from Sabah