



Department of Biological Sciences
Seminar Announcement

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LECTURE:
MACROINVERTEBRATES AS SENTINELS FOR
MONITORING FRESHWATER
POLLUTION

Friday 8 May 2009 | Time 4pm - 5pm | Venue LT20 Block S3 | Host Dr Esther Clews

Living organisms respond to environmental conditions in ways that are much more meaningful for humans than are chemical or physical measurements alone. The density, diversity, and taxonomic composition of communities of insects and other macroinvertebrates that live in terrestrial-surface-water ecosystems are commonly used as measures of freshwater pollution. The sampling and assessment of these communities are more reliable and cost-effective than traditional chemical analyses for determining the general health of freshwater ecosystems. Dr. Morse will discuss some of the rationale and potential methods for implementing a macroinvertebrate biomonitoring system for surface waters in Singapore.

TRICHOPTERA: A WORKSHOP

Monday 11 May 2009 | Time 10am - 5pm | Venue Lab 7 Blk S2 Level 3 | Host Dr Esther Clews

The Trichoptera (caddisflies) are an insect order with aquatic immature stages that are ubiquitous in the world's freshwaters, but are especially diverse in rivers and streams. With about 13,000 species worldwide (in 45 families and 600+ genera), Trichoptera constitute the 7th largest insect order and the largest order of primarily aquatic insects. The order's true species diversity is much higher, since recent work in the Neotropics, Southeast Asia, and Africa has revealed faunas containing 100s of new species. The number of actual species may be as high as 50,000, with 40,000 of these in the Oriental Region. The great diversity of case-making and net-spinning behaviors of caddisfly larvae has fascinated naturalists for centuries. Their ecological diversity has been attributed to the ability of the larva to use silk to construct capture nets, retreats, cases, and pupal shelters. With these adaptations, they are able to exploit a wide variety of aquatic microhabitats. This diversity makes them critical components of aquatic food webs. Along with mayflies and stoneflies, caddisfly species are among the least pollution-tolerant macroinvertebrate taxa in the world's freshwater ecosystems. Unfortunately, the knowledge base on which biomonitoring rests is a firm taxonomic and ecological foundation of the native species, which is woefully inadequate in the Oriental Region. Adult caddisflies resemble small moths, which is not surprising since the Trichoptera and Lepidoptera are sister taxa. Although collectors and aquatic ecologists often overlook adults, the species taxonomy of the order is based on the adult male genitalia. Thus, immature stages cannot be determined until positive associations have been made with adult males. Progress in larval taxonomy is therefore dependent on advances in adult taxonomy.

Dr. Morse will share many of the reasons that caddisflies have been such a source of fascination and are so important in freshwater studies, especially in southern Asia, provide an overview of their diversity, and then assist workshop participants to begin learning how to identify them.