Paying less for thermal comfort

A software program that aids the design of houses that are cooler in summer and require less heating in winter has been developed by CSIRO's Division of Building, Construction and Engineering.

The software, called NatHERS, is part of the Nationwide House Energy Rating Scheme, a program which is supported by the Federal Department of Primary Industries and Energy and by state-based energy and planning representatives. It allows architects and builders to simulate the energy requirements of house designs, and then to allocate star-ratings which reflect energy efficiency.

NatHERS assesses factors such as insulation levels, window orientation and area, wall type and ventilation to estimate the annual heating and cooling energy needed to maintain comfortable temperatures. Graphs and displays demonstrate the temperature in each of the building's zones, highlighting where improvements can be made. Temperatures in a house without the use of heating or cooling can also be estimated.

Where changes to initial plans would increase building costs, the trade-off between cost and improved performance can be determined. The software's developers say that energy efficient design can reduce energy costs by as much as 40%.

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Tony Yap

Melbourne's playground passes four-year health test

About three million people live and work in the catchments of Victoria's Port Phillip Bay. The effects of their activities on the bay's ecosystem has been the focus of a four-year study designed and managed by CSIRO and principally funded by Melbourne Water.

The Port Phillip Bay Environmental Study, which ended in June this year, has provided a scientific framework developing long-term management programs. It involved 47 research tasks – covering physical oceanography, toxicants, algal nutrients, marine ecology and ecological modelling – conducted by a range of government agencies, universities and consultants.

The study found that the bay's diverse flora and fauna contribute to an enormous natural recycling system which acts to prevent the over-accumulation of nutrients. On the whole, the bay waters, sediments and biota were relatively unpolluted, except in areas close to sources such as Corio Bay, Hobsons Bay and the mouths of creeks and drains.

Threats to the bay's environment included litter, which has become a significant danger to marine life, and introduced marine organisms, from sources such as ship ballast water.

An important feature of the study was the development of a numerical model integrating data collected during this and previous research. The model describes and quantifies the chemical and biological processes in the bay ecosystem, enabling the likely effects of gross changes in catchment practices to be predicted.

Another outcome was the identification of a critical nutrient loading beyond which irreversible damage to the bay would occur. This enabled recommendations to be made concerning sustainable nutrient loads, and signalled the need to reduce nutrients from stormwater flows in the Yarra catchment on the bay's eastern shore.

The study also recommends an ongoing link between science and management, and the continued monitoring of the bay environment. 'To ensure the sustainable use of the bay, its management must be seen in the context of both the bay ecosystem and its catchments,' the report says. 'The entire catchment/estuary system must be managed as a single entity.'

The 240-page Port Phillip Bay Environment Study Final Report *is available for $60 including postage from CSIRO Publishing, PO Box 1139, Collingwood, Vic. 3066, toll-free 1800 626 420, fax (03) 962 7555, email: sales@publish.csiro.au.*

A natural ene

A potential biological control agent for the European carp is being investigated by scientists at CSIRO's Australian Animal Health Laboratory and the Division of Water Resources.

The agent is an exotic virus called spring varaemia of carp virus (SVCV). The virus, first isolated in Europe during the 1970s, affects carp in spring, when water temperatures are cool. It can also affect guppies, sheatfish and northern pike which are all exotic fish species. The pilot study will evaluate all existing knowledge of the virus, including its performance