Healthy rivers study links hands across the water

Science lessons at Huonville Primary School have become suspiciously interesting lately. Children are packing pH meters, turbidity tubes, magnifying glasses, biochemical oxygen demand bottles, nets and scoops, and heading down to the river, keen to learn how the real scientists do their stuff.

Huonville Primary is one of many Tasmanian schools involved in the Huon Valley Council's Healthy Rivers Project, a Federally funded Landcare initiative which is monitoring environmental indicators along Tasmania's Huon River, and working towards a catchment-management strategy for the region.

As part of the Healthy Rivers Project, scientists from CSIRO's Division of Marine Research have begun a study of the river's estuary. They are investigating the sources, distribution and cycling of nutrients in the estuary including those from fish farms, urban discharge and natural run-off, as well as the effect of nutrients on estuarine ecology (such as algal blooms). The estuary research, which will underpin future monitoring and research programs for ensuring water quality in the long-term, is partly funded by the Fisheries Research and Development Corporation.

An important goal of the Healthy Rivers Project is to encourage cooperation between government agencies, industry groups, scientists and the community.

CSIRO project leader, Dr Ed Butler, says that while environmental quality is a concern for industry, equal acknowledgment of community concerns is needed. 'People living in a community witness changes or events that scientists have no chance to see or respond to quickly,' Butler says. 'The project offers community groups the chance to assist the research by taking day-to-day measurements using scientific field equipment and techniques.'

As well as providing valuable data, the project is bringing 'real science' into the classroom, where it is being enthusiastically received by children, parents and teachers. Water monitoring kits developed by the National Waterwatch Program are enabling children to learn about monitoring the health of river systems. The kits are also facilitating community data collection, a practice which is gaining favour Australia-wide.

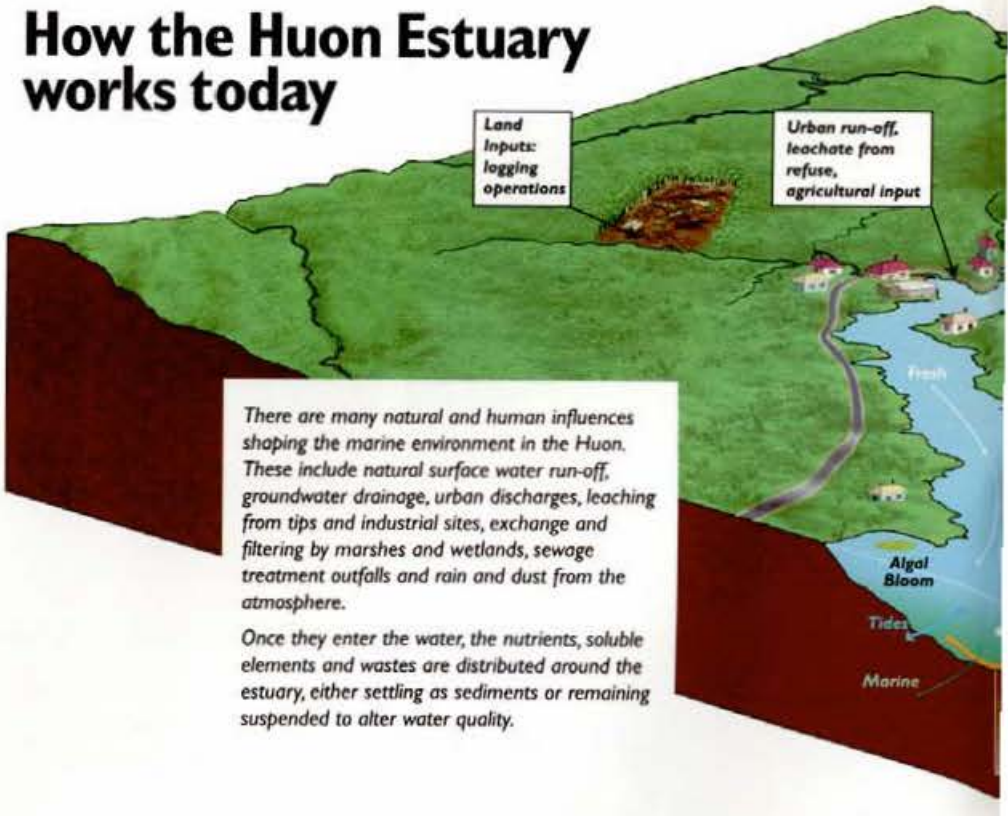
During 1996, the Healthy Rivers Project worked with children to illustrate principles such as dissolved oxygen, flow rates and pH. Using a spectrophotometer donated by CSIRO, classes also tested water quality, the results of which can be used as part of the scientific program.

Butler says the cooperative nature of the project will help establish the scientific input needed to effectively manage waterways such as the Huon River and its estuary. He hopes it will also be an example of how science agencies can establish deeper relationships with community groups.

Real science in the field. Children from Huonville Primary School learn about the river environment with Alan Gray from Greening Australia.

Debate about the value of community data collection centres on the reliability of information collected in the field. Are groups collecting samples the same way?

How the Huon Estuary works today



There are many natural and human influences shaping the marine environment in the Huon. These include natural surface water run-off, groundwater drainage, urban discharges, leaching from tips and industrial sites, exchange and filtering by marshes and wetlands, sewage treatment outfalls and rain and dust from the atmosphere.

Once they enter the water, the nutrients, soluble elements and wastes are distributed around the estuary, either settling as sediments or remaining suspended to alter water quality.

Are the measuring instruments being calibrated correctly? Is there consistency between all groups?

'A community has to accept that there are some limitations to the scope of their monitoring activities, and scientists have to be prepared to accept community input,' Butler says. 'As long as scientists accept this approach, and quality information comes in, data collected by the community could act as an important precursor to in-depth research.'

Healthy Rivers Project executive, Ian Sansom, says the study's extension into the schoolyard is an excellent example of how government agencies can develop community collaboration and education programs for budding scientists.

'Maybe we underestimate the ability of the community to do these things,' Sansom says. 'This is a brilliant way of getting science into the classrooms and making it relevant, and giving children an appreciation for their environment.'

Butler and Sansom agree that catchment management is not just about water quality. It is also about balancing aesthetics and a range of social and cultural values. Also, environmental management should not be regarded as the responsibility of the government agencies alone.

'Other catchment management plans around Australia tend to forget about the social and cultural components of river management. It's an important part of the whole picture,' Sansom says. 'We're looking at bringing together people with different perspectives, so that practical measures can be taken to improve environmental quality (such as maintaining wetlands and riparian zones).'

Butler agrees. 'We're feeling our way at the moment. There are no real models to go on in Australia. There are perhaps better models overseas whereby scientific organisations are prepared to work with the community and even foster public interest groups and schools.'

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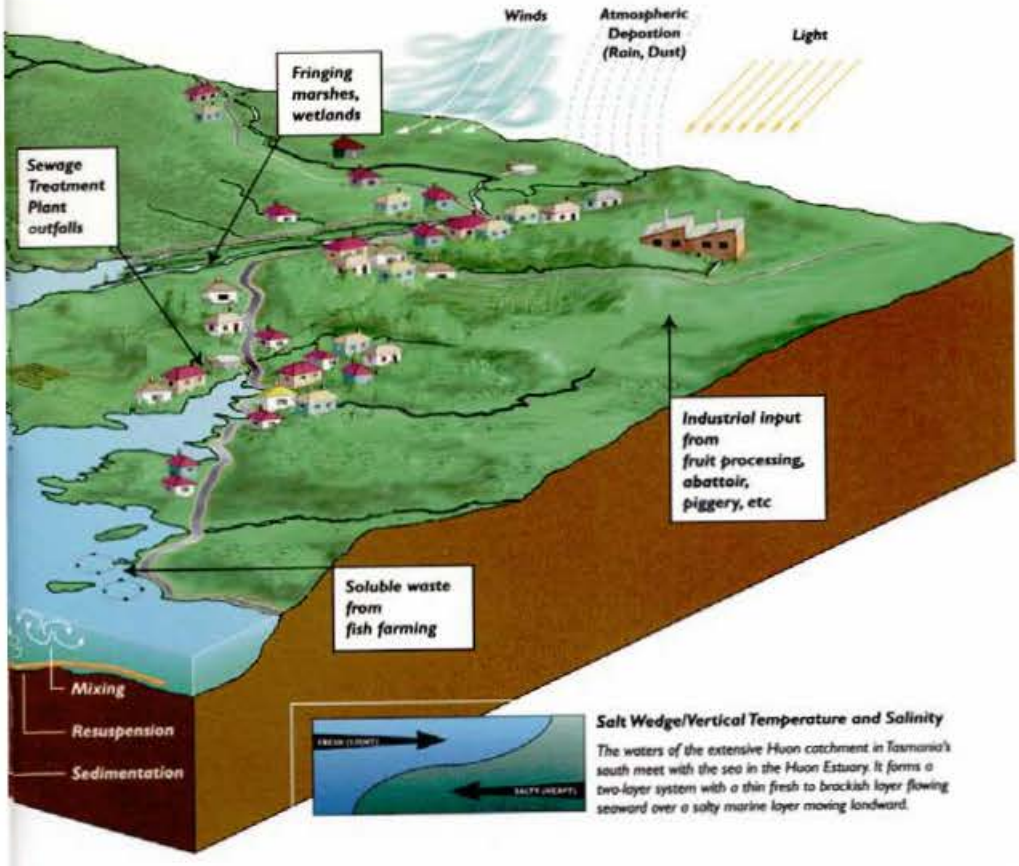
By Jessica Dietzel



Salt Wedge/Vertical Temperature and Salinity

The waters of the extensive Huon catchment in Tasmania's south meet with the sea in the Huon Estuary. It forms a two-layer system with a thin fresh to brackish layer flowing seaward over a salty marine layer moving landward.

Firefighters feel the heat

A THREE-YEAR study of firefighters in action has found that suppressing bushfires with hand tools generates about three times more heat than firefighters absorb from fires. Their clothing should therefore be designed to let heat out, rather than to stop heat from getting in.

The study was a joint effort between the CSIRO and Worksafe Australia, supported by the Rural Industries Research and Development Corporation and the Australian Fire Authorities Council.

Phil Cheney from CSIRO's Bushfire Research Unit says the heavy uniforms issued to some bushfire fighters offer a false sense of security. 'Firefighters should never be under the illusion that their clothing can protect them, or save them from entrapment,' he says.

By stopping heat escaping from the skin, heavy clothing can cause a rapid increase in deep body temperature, leading to heatstroke. The study found that firefighters' body temperature rose by about one degree, and water loss through sweating averaged more than one litre an hour. This could lead to significant dehydration.

A manual called Safe and Productive Bushfire Fighting with Hand Tools *is available from the Australian Fire Authorities Council, PO Box 713, Mt Waverley, Vic. 3149.*