

# Value of Huon research crystal clear

IN 1984, Trevor Dix received two eskies from New South Wales. Inside were thousands of fish eggs: the modest beginnings of Tasmania's Atlantic salmon industry.

At the time, Dix was head of research for the Tasmanian Department of Sea Fisheries. He must have had great faith in his tiny charges, for he worked hard to help get the fledgling aquaculture industry off the ground.

Today, as general manager marine operations for Tassal, Tasmania's largest Atlantic salmon producer, Dix is responsible for raising 1.5 million Atlantic salmon on 13 farms. This represents more than 60% of Tasmania's total Atlantic salmon harvest which in a decade has grown from 53 to 7000 tonnes a year, turning over \$120 million, and employing some 2000 people in direct and allied industries.

The quality of Dix's marine operation underpins the price paid for Tassal salmon at the Japan fish markets where Tasmania's 'clean green' image commands a 15-20% premium. Protecting this image is a priority for the industry which is poised to double production in the next five years.

Vital to this expansion is the Huon Estuary south of Hobart. The brackish waters of the estuary's middle reaches provide an ideal nursery for more than half of the state's Atlantic salmon which arrive in tankers from fresh-water hatcheries in the Derwent River. When one-third grown, the salmon are moved to salt-water 'finishing' pens downstream. This system mimics as closely as possible the salmon's natural migration patterns.



To ensure the industry's sustainability in the Huon, and of shellfish farms producing abalone, oysters and mussels, the Fisheries Research and Development Corporation is helping CSIRO to fund a three-year study aimed at developing a scientific framework for managing the estuary and its catchment.

Leader of the Huon Estuary Study is Dr Ed Butler of CSIRO Marine Research. Butler says the study, together with the Healthy Rivers Project run by the Huon Valley Council and other research by the Tasmanian Department of Primary Industry and Fisheries, will make the estuary one of Australia's best understood waterways, providing a model for managing other Australian estuaries, and for planning coastal aquaculture projects. A Marine Farming Development Plan produced by the department provides for a significant expansion of the aquaculture industry in the Huon region.

Dr Christine Crawford and her team from the department's Marine Research Laboratories are sampling changes in the benthic (bottom-dwelling) fauna and sediment chemistry associated with salmon farming in the Huon and relating the information to underwater video footage of transects within the farm and at control sites. The research is designed to develop the most suitable methods for on-going environmental monitoring of salmon farms in Tasmania. The department is also investigating the effects of waste organic matter from fish cages on sediments beneath salmon cages.

Novel techniques are being used to monitor the environment of the estuary and its catchment. CSIRO scientists have developed an automated, solar-powered water-quality monitoring system that records conditions in the estuary from the surface to the bottom every half hour. Sensors on the monitor measure salinity and water temperature, wind strength and direction, light levels and oxygen content, all of which influence the growth of phytoplankton and govern the onset of algal



Tassal's Trevor Dix.



blooms. Measurements taken by community groups under the Healthy Rivers Project are also contributing to the study.

All these measurements will contribute to the study's major outcome: a physical description of the Huon Estuary including computer simulations of water exchange between the estuary and the sea, the effects of nutrients emanating from fish farms and other activities in the catchment, and their links with algal blooms. This will enable a catchment management plan to be developed with objective guidelines for inputs from aquaculture, forestry, agriculture and horticultural industries, and from urban settlements, thereby ensuring their sustainability.

'The study represents a good blend of science and practical fish management,' Dix says. 'It is important to understand the estuary better than we do. We've taken it upon ourselves to limit production in the estuary, based on a "gut feeling" about what levels are environmentally sustainable. The scientists are unravelling the picture of nutrient fluxes in the estuary, so not only will aquaculture be well managed, but other activities with a bearing on the estuary will be too.'