

QUALIFICATIONS

BSc, Physics, Univ. of Otago, 1997
 PGDipSci, Photonics, Univ. of Otago, 1998
 MSc, Marine Science, Univ. of Otago, 2002

PROFESSIONAL AFFILIATIONS

NZ Marine Sciences Society

ROLE AT CAWTHRON

Ben is a biophysical systems specialist within the Sustainable Business Group. Ben's primary area of expertise is in development and application of modelling and remote sensing solutions to assist in the understanding of physical and biological systems.

SPECIAL INTERESTS

- Ecosystem and physical dynamics in coastal and estuarine systems and structures.
- Data mining and analysis to assist understanding of complex systems.
- Development and application of expert systems for risk management and conflict resolution.

PUBLICATIONS & REPORTS

B. Tuckey, M. Gibbs, **B. Knight** and P. Gillespie "Tidal Circulation in Tasman and Golden Bays: Implications for River Plume Behaviour", , Submitted to the *NZ Journal of Marine and Freshwater Research*, 2005.

B. Knight, N. Keeley and M. Gibbs "Characterisation of the hydrodynamics at the Napier Mussels Ltd. site in Hawke Bay", Cawthron Report 957

B. Knight, B. Tuckey, M. Gibbs, and L. MacKenzie, "Productivity Enhancing Mechanisms in Port Underwood and Cloudy Bay", Submitted to the *NZ Journal of Marine and Freshwater Research*, 2005.

B. Knight and M. Gibbs, "Development of longline design model" Cawthron Report

Ben Knight, "AMP3 Shellfish Water Strategy: Data Position Report", METOC Report 1178

Ben Knight, "AMP3 Shellfish Water Strategy: Dee Estuary Development Plan for Intermittent Discharges", METOC Report 1171

Ben Knight, "AMP3 Shellfish Water Strategy: Dee Estuary Development Plan for Continuous Discharges", METOC Report 1160



Ben Knight, "Dunstable Sludge Liquor and River Quality Analysis." METOC Report 1123

Ann Saunders and **Ben Knight**, "Calibration Report for a Regional Coastal Modelling System for Wales (CMSW)." METOC report number 1138

Ben Knight, "A one-dimensional biophysical numerical model applied to Doubtful Sound, a New Zealand fjord.", Masters Thesis

Mark Gibbs and **Ben Knight**, "Physical data report for proposed marine farms sites in the Bay of Plenty, NZ", Cawthron reports 626 and 627.

Ben Knight, "Chiral Birefringence in thin film nanostructures", Thesis for Postgraduate Diploma.

Ben Knight, "Chiral Birefringence in TiO₂ nanostructures", Ian Hodgekinson, Qui Hon Wu and *Journal of Advanced Optics*

EXPERT SYSTEMS DEVELOPED

UV and Storm Tank Optimization Tool (UVOT and STOT) - Designed to evaluate the effects of asset upgrades to UV treatment and storm tanks on water quality in coastal areas. The software was applied to assist in finding optimal solutions to complex multi-discharge embayments for the UK AMP programme.

Hindcast Discharge Analysis Model (HDAM) – Tool designed to predict the effects of increased wastewater nitrate discharges in a river on downstream extraction quality.

Spill Response Tool – Graphically driven tool designed to allow non-technical users to predict oil spill movements.

National Ballast Management Tool (NBMT) – Graphically driven application to assist in the analysis of the risk of invasion of foreign species from a large database of vessels entering New Zealand from a variety of bioregions from around the world.