

Interacting factors influence the quality of water delivered to Tasman Bay from the Motueka River

Roger Young¹, Aaron Quarterman¹, Rebekah Eyles², Breck Bowden³, Rob Smith⁴

¹Cawthron Institute, Nelson, ²University of Otago, Dunedin, ³Landcare Research, Lincoln, ⁴Tasman District Council, Richmond

Water quality in shallow embayments like Tasman Bay is intricately linked with the quality of runoff from surrounding land. Management of such large areas of land is often difficult due to a complex mix of land use, climate and geology, as well as a complex mixture of stakeholders with competing interests. Efforts to prioritise management action to protect coastal water quality require an understanding of large scale patterns of river water quality across entire catchments, as well as an understanding of the relative contribution of contaminants from different subcatchments. As part of the Motueka integrated catchment management (ICM) program we measured water quality monthly at 23 sites across the Motueka River catchment for one year. Site selection aimed to cover the variety of geological types (ultramafic, Moutere gravels, Separation Point granites, karst), land uses (native forest, production forest, mixed agriculture, dairying, horticulture) and stream sizes found throughout the catchment. Flood sampling has also been carried out to relate the delivery of sediment, nutrients and bacteria with river flows. Some water quality variables (*e.g.* faecal bacteria, nutrients) appeared to be primarily related with land use, while others (*e.g.* temperature, suspended sediment, water clarity) were strongly controlled by both geology and land use. Longitudinal patterns in response to changing proportions of the catchment in different landuse and/or geology were also evident. Concern with high levels of faecal bacteria in one subcatchment has already led to a response from farmers aiming to improve water quality.