

SHELLEY McMURTRIE Aquatic Scientist



QUALIFICATIONS

Master of Science (Zoology, 1st class hons); University of Canterbury, NZ, 2001

Bachelor of Science (Dbl major in Zoology and Plant & Microbial Sciences); University of Canterbury, NZ, 1995

AFFILIATIONS

Member, New Zealand Freshwater Sciences Society; current

Member, EIANZ; current

Chairperson, 50 Degrees South Trust; current



FIELDS OF SPECIAL COMPETENCE

Shelley McMurtrie is a director and senior aquatic scientist at EOS Ecology, with 12 years combined research and consulting experience specialising in freshwater ecosystems. Her expertise lies in urban ecology; including the impacts of urbanisation and land use change on aquatic fauna, the rehabilitation of aquatic systems, and biotic and abiotic factors governing aquatic fauna. In her current position she is responsible for undertaking research and consultancy work pertaining to aquatic systems throughout New Zealand, project managing a wide range of freshwater and estuary programmes, and maintaining internal quality assurance standards and aquatic invertebrate identifications. Science communication is a core focus of her professional and personal career, and her belief in the need for bridging the gap between science and the public sector has led to the success of her company as science communication specialists in addition to being aquatic research consultants.

Shelley has been involved in an extensive range of aquatic studies in New Zealand. She was responsible for coordinating the 2010-11 multidisciplinary research expedition to Campbell Island, where she also led the freshwater research team that studied the island's freshwater systems (www.campbellisland.org.nz). The largest multidisciplinary expedition to the island in over 20 years, Shelley was the key driver of the expedition and public output strategy, which was a central component of the otherwise research-oriented expedition. She was also directly involved in helping raise the \$800 000 of funding and in-kind support needed to cover the 11 week, 14 person expedition to this remote Subantarctic island.

In addition to her Subantarctic work, her commercial career has encompassed applied research projects such as studying mosquito larval populations in stormwater networks; assessing the impacts of sewage and stormwater discharges on aquatic biota; designing stream channel restorations and assessing the long-term success of such projects; establishing long-term aquatic monitoring programmes for a wide range of systems and end-user requirements for councils, community groups, and schools; and developing survey programmes for a wide range of systems and end-user requirements. She is a well regarded author of countless AEE reports, presenter of expert evidence at resource consent hearings, and auditor of consents relating to stormwater and aquatic ecology issues. She is highly regarded within the industry for her integrity, high standards, and drive for perfecting the art of communicating science.

CAREER HISTORY

2001 to current	EOS Ecology Aquatic Scientist (principal)
2000 to 2001	Christchurch City Council Freshwater Ecologist
1997, 1999	NIWA Freshwater Technician
1997 to 1998	North Canterbury Fish and Game Assistant Environmental Officer

EXPERIENCE

- Project coordinator for, and driver of, the multidisciplinary 14-person research expedition to Campbell Island in Dec 2010-Feb 2011, involving research and investigations encompassing geomorphology, botany, avifauna, freshwater ecology, terrestrial invertebrates, and human history, and with post-expedition research outputs spanning three years. Also responsible for the communication strategy during the expedition and post-expedition output strategy.
- Research leader of a three-person freshwater ecology team undertaking research on the freshwater systems of Campbell Island during an 11 week expedition in Dec 2010-Feb 2011. Development and implementation of a field programme that resulted in the most comprehensive study of the island's freshwater environs to date.
- Project manager for a broad range of research projects, monitoring programmes, and consent-related environmental assessment programmes within the freshwater and estuary fields.
- Development of waterway channel designs for the enhancement of urban and peri-urban waterways, with the aim to improve instream values and biodiversity. Incorporated providing the key habitat and biological design requirements to project landscape architects and engineers, reviewing design documents and plans, and on-site ecological management of the construction phase.
- Aquatic Assessment of Environmental Effects (AEEs) relating to various land use practices, including water abstraction, hydro schemes, land development (urban subdivisions, integrated

catchment management plans), sewage discharges, stormwater discharges, and river crossings (bridges, culverts, and sewers).

- Presentation of expert evidence at consent hearings relating to freshwater and estuary matters in catchment developments and roading infrastructure projects.
- Auditing of resource consent applications on behalf of Regional Councils, pertaining to aquatic ecology and stormwater discharges.
- Author of multiple client-oriented reports on the health of urban and rural waterways systems and estuaries, incorporating spatial and temporal comparisons and their potential for ecological enhancement. A particularly extensive knowledge and understanding of urban, peri-urban, and rural waterway systems throughout the Canterbury region.
- Development (in conjunction with NIWA) of the Christchurch River Environment Assessment Survey (CREAS) protocol and waterway impact score, designed to assist the Christchurch City Council in their management of the city's waterways.
- The design and implementation of long-term monitoring programmes for assessing the success of restoration projects, long-term changes to ecosystem health, resource consent monitoring programmes, and for community monitoring groups.
- Designing and overseeing the implementation of stormwater monitoring programmes to test the efficiency of stormwater treatment systems, identify the problem and source of sediment entering river systems, catchment monitoring of stormwater from different land use types and stormwater systems.
- Research and design input into stormwater treatment systems with the aim to reduce mosquito breeding habitat. Research into the use of city sumps and stormwater treatment systems as potential mosquito breeding habitat.
- Research looking at the effects of heavy metal and PAH contamination of biofilms on stream invertebrate grazers.
- Editor and author of a national guide for the management and restoration of waterways and wetlands, design of stormwater treatment systems, and drainage issues (e.g., the CCC's 'Waterways, Wetlands and Drainage Guide'). Developed for use by a broad range of practitioners dealing with waterway and drainage design; from project managers to engineers.
- Extensive field work and freshwater invertebrate laboratory processing and taxonomic identification during the first ten years of commercial career. Later career advancement to overseeing quality control and quality assurance programmes for invertebrate identification, laboratory protocols, and field sampling protocols, as well as management of field and laboratory programmes.
- Natural history photographer, including the photographic study of the underwater denizens of freshwater and marine environments. Her images are used in a range of science outputs, and she has gained experience as an expedition photographer and videographer.

PUBLICATIONS AND CONFERENCE PAPERS

(SELECTION FROM 2005-2011)

- McMurtrie, S. 2011. Christchurch February earthquake - Effect on invertebrates of the lower rivers. EOS Ecology, Christchurch. EOS Ecology Report No: 11013-CIV01-01. 9 p.
- James, A. & McMurtrie, S. 2011. Christchurch February earthquake - Effect on freshwater fish of the upper Avon River. EOS Ecology, Christchurch. EOS Ecology Report No: 11011-CIV01-01. 9 p.
- McMurtrie, S. 2010. Heavy metals in fish and shellfish from Christchurch rivers and estuary: 2010 survey. EOS Ecology, Christchurch. EOS Ecology Report No. 08002-ENV01-02. 14 p.
- McMurtrie, S.A. 2009. Attaining the impossible – maintaining biodiversity in our urban streams. *Flow – Rivers Group Newsletter*. Issue 1 Nov 2009.
- McMurtrie, S.A. 2009. Roadside sumps – a hidden yet optimal habitat for mosquito larvae. EOS Ecology, Christchurch. *The New Zealand Hydrological and Freshwater Sciences Societies joint conference*. Forum North, Whangarei, November 2009.
- McMurtrie, S. 2009. Long-term Monitoring of Aquatic Invertebrates in Christchurch's Waterways: Avon River Catchment 2009. EOS Ecology, Christchurch. EOS Ecology Report No. 06064-CCC02-02. 28 p.
- James, A. & McMurtrie, S. 2009. Sources of sediment input into Cashmere Stream. EOS Ecology, Christchurch. EOS Ecology Report No. 08031-ENV01-01. 54 p.
- McMurtrie, S.A. (2008). Protection of a freshwater crayfish haven undergoing urbanisation. EOS Ecology, Christchurch. *NZWWA Stormwater conference*. Royal Lakeside Novotel, Rotorua, May 2008. 18 pp.
- McMurtrie, S. & Suren, A. 2008. Field methodology for the Christchurch River Environment Assessment Survey (CREAS). EOS Ecology, Christchurch. EOS Ecology Report No. 05007-CCC02-01. 18 p.
- McMurtrie, S. 2007. Styx Living Laboratory: Quality control of second sampling round for invertebrate monitoring programme. EOS Ecology, Christchurch. EOS Ecology Report No. 05025-CCC02-03. 20 p.
- Meurk, C.D. & McMurtrie, S.A. 2006. Socio-ecological lessons from 15 years of waterway restoration in New Zealand. Landcare Research and EOS Ecology, Christchurch. *NZWWA stormwater conference*. Royal Lakeside Novotel, Rotorua, May 2006.
- McIntosh, A.R., Greig, H.S., McMurtrie, S.A., Nystrom, P., & Winterbourn, M.J. 2005. Top-down and bottom-up influences on populations of a stream detritivore. *Freshwater Biology* 50: 1206-1218.
- Suren, A.M. & McMurtrie, S. 2005. Assessing the effectiveness of enhancement activities in urban streams II: Responses of invertebrate communities. *River Research and Applications* 21: 439-453.
- Suren, A.M., Riss, T., Biggs, B.J.F., McMurtrie, S. & Barker, R. 2005. Assessing the effectiveness of enhancement activities in urban streams I: Habitat Responses. *River Research and Applications* 21: 381-401.