Kendall Leitch, MSc

Environmental Scientist

Education

MSc (Hons) – Marine Science, University of Auckland, 2019

PGDip (with Merit) – Marine Science, University of Auckland, 2017

BSc – Biological Sciences, Majoring in Ecology, University of Auckland, 2015

Experience Highlights

- Second Class Honors, First Division for MSc, University of Auckland, 2019
- Field research assistant for PhD student, Leigh Marine Laboratory, 2018 - 2019

Kendall joined us in January 2020 after completing her Master of Science degree at the University of Auckland. Her research focused on acoustics within the marine environment, concentrating on anthropogenic sound impacts, such as boat noise, on marine reserve soundscapes. Boat noise is not often understood as having large ecological consequences. This topic was of interest as it encompassed interactions of humans with the environment, their impacts and how they can be mitigated.

Kendall's main interest is in the area of ecology, the interactions within environments, including human interactions. As we rely on the environment for goods and services, assessing and managing the impacts we impose on environments to ensure a sustainable outcome is Kendall's focus. Her academic career has built her knowledge, experience and passion for environmental management. Management roles she has undertaken have allowed Kendall to build communication and problem-solving skills, as well as leadership and project management capabilities.

Kendall's involvement in a variety of field data collection methods, as well as in report writing, has built knowledge across a range of environmental and management issues. She also has experience using MatLab, Raven, QGIS, and R software for data analysis.

Specialty areas:

Marine ecology

Environmental acoustics

Assessment of Environmental Effects

Selected Examples of Relevant Experience

Assessment of Effects of Kinleith Mill discharge on the ecology of the Kopakorahi Stream, Oji Fibre Solutions, 2020. Assisted with a field investigation of sites on the Kopakorahi Stream and other streams within the Kinleith Forest to determine their current ecological health. The field investigations were comprised of: Qualitative Habitat Assessment, Rapid Habitat Assessment, and macroinvertebrate sampling.

Cyanobacteria in Kinleith Ponds and Lake Maraetai, Oji Fibre Solutions, 2020. Completed a desktop risk assessment of the potential for seeding of cyanobacterial blooms in Lake Maraetai from the Kinleith discharge ponds. This project included assessment of algal populations (cell counts and species composition), along with modelling to determine potential cell counts under different flow scenarios.

Assessment of Environmental Effects on the receiving environment associated with the stormwater discharges from Ravensdown Awatoto, Ravensdown Fertiliser, Napier, 2020. Undertook several projects as part of a suite of investigations to support a resource consent application. i) Assisted with the review of existing information, identification of information gaps and scoping of additional information needs; ii) Completed a trend analysis of compliance water quality monitoring data to identify any significant changes in contaminant concentrations in the receiving environment over time; iii) Assisted with an investigation of the current estuarine/marine ecological values upstream and downstream of the discharge. This investigation included identification of suitable sampling sites, as well as sediment and benthic invertebrate sampling and iv) Assisted with a field-based dye study designed to determine the extent of the mixing zone downstream of the discharge point and the quantify discharge dilutions achieved.

Assessment of Ecological Values of an Unnamed Tributary downstream of the stormwater discharge from the Pacific Aerospace facility, Pacific Aerospace, Hamilton, 2020. Assisted with a field investigation to determine the current ecological values of an unnamed tributary of Mystery Creek. The investigation included macroinvertebrate sampling, fish trapping, and habitat assessments (Qualitative Habitat Assessment, Rapid Habitat Assessment).

Assessment of Ecologic Effects on the receiving environment associated with the discharge from the proposed membrane Bioreactor wastewater treatment system for Kingseat development, Karaka Lakeside Ltd, 2020. As part of a suite of studies to support a resource consent application, completed a detailed desktop assessment and literature review of existing information regarding the ecological and cultural values of the receiving marine environment, which included Whatapaka Creek, and the wider Manukau Harbour. Also assisted with field work investigations, including water quality, macroinvertebrate, and sediment sampling, as well as other ecological value assessments of relevant watercourses (including fish and habitat surveys).

Reconsenting of wastewater discharge consents for Motenui and Waitara Valley plants, Methanex Ltd, Taranaki (2020). Undertook a review of existing information on marine and freshwater ecology and ecotoxicology associated with the operation of the Methanex plants. After initial investigations this project was discontinued as a consequence of the effects of Covid19 and the changing priorities of the client.

Impacts of Recreational Boat Noise on Marine Reserves Soundscapes, University of Auckland, 2018-2019. This project was part of my Master of Science and involved using passive acoustic monitoring inside and outside Goat Island Marine Reserve to determine both marine sounds and boat noise in the environment, and impacts boat noise can have on biologically important sounds within a marine reserve. Comparing the soundscapes inside and outside the marine reserve allowed analysis of how boat noise alters the soundscape within the marine reserve and implications boat noise may have on species residing within it. Many biological sounds were present in the recordings, with the New Zealand two spot demoiselle vocalisations focused on to represent how boat noise can impact biological sounds. It was found that when recreational boats entered the soundscape, ambient levels increased significantly, predominantly in the lower frequency ranges, 10 – 2,500 Hz. With two spot demoiselle vocalisations occurring at 600 – 2,500 Hz, masking of their communication is likely to occur as a consequence of boat noise. When comparing boat noise occurrence inside and outside the marine reserve, Goat

Island Marine Reserve was found to provide some refuge from boat noise. The listening station at the center of the reserve detected 15**%** less boat noise than the listening station furthest outside the boundary line. How boat noise can impact the soundscape was highlighted during the Leigh fishing competition, with listening stations outside the reserve jumping 5 – 15dB over natural sound levels. The center of the marine reserve, however, experienced no change to natural sound levels during this time. These findings suggest that large increases in sound levels outside the marine reserve do not occur as much within the marine reserve boundaries. Therefore, the chance of masking of biologically important sounds is less likely to occur as the marine reserve provides some refuge from boat noise.

Consultancy Reports

Leitch, K. (2020) Cyanobacteria analysis of Kinleith Mill Ponds and Lake Maraetai. In: Phillips, N., Boubée, J., Cox, T., Dada, C., Eivers, R.S., Leitch, K., Stewart, M (2020). Kinleith re-consenting AEE: Technical Reports, Streamlined Environmental, Hamilton, 292 pp.

Phillips, N., Boubée, J., Cox, T., Dada, C., Eivers, R.S., Leitch, K., Stewart, M. (2020) Kinleith re-consenting AEE: Technical Reports, Streamlined Environmental, Hamilton, 292 pp.

Phillips, N., De Luca, S. and Leitch, K. (2020) Review and Gap Analysis, Ravensdown Napier Reconsenting. Report RVD1901, Streamlined Environmental, Hamilton, 15 pp.