

# Manaaki Taha Moana

Manaaki Taha Moana (MTM) is a research programme to restore and enhance coastal ecosystems and their services of importance to iwi/hapū, through a better knowledge of these ecosystems and the degradation processes that affect them.

We utilise Western Science and Mātauranga Māori and participatory modelling tools and processes to assist iwi/hapū to evaluate and define preferred options for enhancing/restoring coastal ecosystems. This evaluation of options is assisted by innovative IT and decision support tools (e.g. digital libraries, simulation modelling, interactive mapping, 3D depiction, real-time monitoring).

Action plans are being produced for improving coastal ecosystems in each of the case study regions.

The research team works closely with iwi/hapū in the case study regions to develop tools and approaches to facilitate the uptake of this knowledge and its practical implementation.

Mechanisms will also be put in place to facilitate uptake amongst other iwi throughout NZ.



## MTM Research Providers



Find us on the Web | [www.mtm.ac.nz](http://www.mtm.ac.nz)

# Kapowai

Unmanned Aerial Vehicles

Enhancing the expression of kaitiakitanga with the aid of information technology



# Kapowai | UAV

Drones are low-cost unmanned aerial vehicles that Manaaki Taha Moana use for video monitoring and mapping of terrestrial and aquatic ecosystems

Manaaki Taha Moana drones are capable of:

- semi-autonomous flight
- flight time of up to 30 minutes
- range of up to 1 KM ( visual range as per CAA requirements)
- acquiring high resolution photographs of up to 1-2 cm per pixel
- acquiring high definition video footage of up to 1080p at 60 fps

MTM Drones have the potential to also produce geo-rectified 2D photo-mosaics and 3D Digital Surface Models of surveyed areas



We have adopted the use of quadcopters fitted with navigational GPS and photographic equipment to provide an extremely cost effective means of extending the spatially explicit range and visual resolution of our monitoring activities. Quadcopters can be used to fly over terrain inaccessible to humans and provide a literal 'eye-in-the-sky' when it comes to mediating environmental damage like pollution and/or oil spills. The digital imagery captured using these remotely controlled devices is of a stunning resolution and quality can thus be used to create a 360 degree 'street view' of an ecological system similar to Googles street view. Remote aerial vehicle imagery also fills a gap that has for some time existed between Satellite and Aerial photographic imagery. A monitoring technology of this kind means that concrete visual evidence of environmental change can be made available to kaitiaki, local government authorities and natural resource managers extremely quickly and cost effectively.



# Research Tool

Manaaki Taha Moana has developed a visual database of the case study research areas using low-cost unmanned aerial vehicles to assist our researchers in their research activities and conservation-related applications.

MTM objectives for Kapowai:

- Develop a video archive of research areas using unmanned aerial vehicles to support MTM researchers.
- Raise public awareness of environmental challenges in MTM case study regions
- inspire others to adapt emerging technologies for ecosystem conservation activities.

Research area footage from Kapowai can be viewed on our website - [www.mtm.ac.nz](http://www.mtm.ac.nz)

