

MONITORING ESTUARINE VEGETATION

ABOUT ESTUARINE VEGETATION

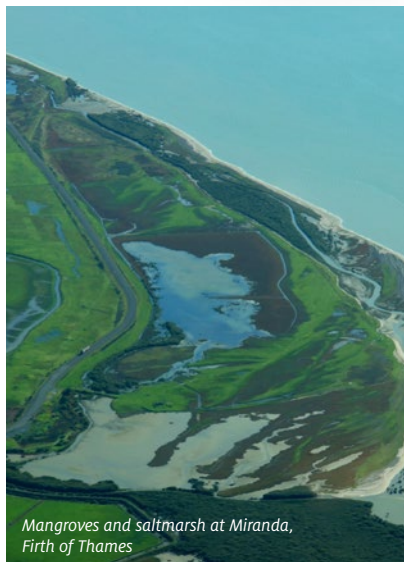
Estuarine vegetation, such as salt marsh, mangroves and seagrass provide shelter, food, breeding and nursery grounds for animals such as fish, birds and shellfish. These habitats also act as filters, trapping sediment, nutrients and other contaminants, which improves estuarine water quality.

Estuarine vegetation can also stabilise sediments and buffer the land from wave action, which helps to reduce coastal erosion.

IMPACTS ON ESTUARINE VEGETATION

Human activities can impact estuarine vegetation. Seagrass, for example, is affected by increased sediment and nutrients, and salt marsh is impacted by land drainage and reclamation.

Invasive plant species, such as *Spartina* and saltwater paspalum are also found in some of our estuaries. These pest plants trap sediment, compete with native species and smother intertidal flats.



Mangroves and saltmarsh at Miranda, Firth of Thames



Mangroves in the Firth of Thames

WHAT WE ARE DOING

The extent of estuarine vegetation provides information about the health of an estuary. Monitoring estuarine vegetation (by mapping the extent of different types of vegetation repeatedly through time) allows us to assess the state of, and trends in, estuarine health. In particular, monitoring the presence and extent of invasive plants allows us to direct pest plant control and to assess whether these measures have been effective.

Mapping of estuarine vegetation has previously been carried out in 19 estuaries in the Waikato region, with seven estuaries surveyed once and 12 estuaries surveyed twice since surveys began in 1998 (see Figure 1). The results are published as technical reports and summarised in an environmental indicator called Extent of coastal habitats, which is available to view on our website (waikatoregion.govt.nz).

The mapping involved drawing around estuarine vegetation patches on aerial photographs and then ground truthing (data collection) of these maps by field surveys. This type of mapping is time consuming and changes in the methodology since 1998 mean that it is difficult to compare the surveys. The Waikato region contains more than 25 estuaries, therefore we need to explore other ways of monitoring estuarine vegetation to allow for surveys to be conducted at regular intervals across the region.

Aerial photographs at a high spatial resolution are currently collected in the Waikato every five years as part of the Waikato Regional Aerial Photography Service (WRAPS). We are trialling automated classification of estuarine vegetation in partnership with the National Institute of Water and Atmospheric Research (NIWA), using these aerial photographs. Mapping will involve using software that can be trained to recognise the various colours of vegetation types from aerial images and automatically classify mangroves, seagrass and saltmarsh. This method will also require some ground-truthing but this may also be combined with broad-scale intertidal habitat mapping.

We are also associated with other projects that aim to develop new ways to monitor estuarine vegetation in the future. For example, we are supporting PhD research that aims to assess seagrass health remotely using photographs taken from unmanned aerial vehicles (drones). Once we have developed a robust, cost-effective methodology, we will implement regular estuarine vegetation monitoring for the Waikato region.

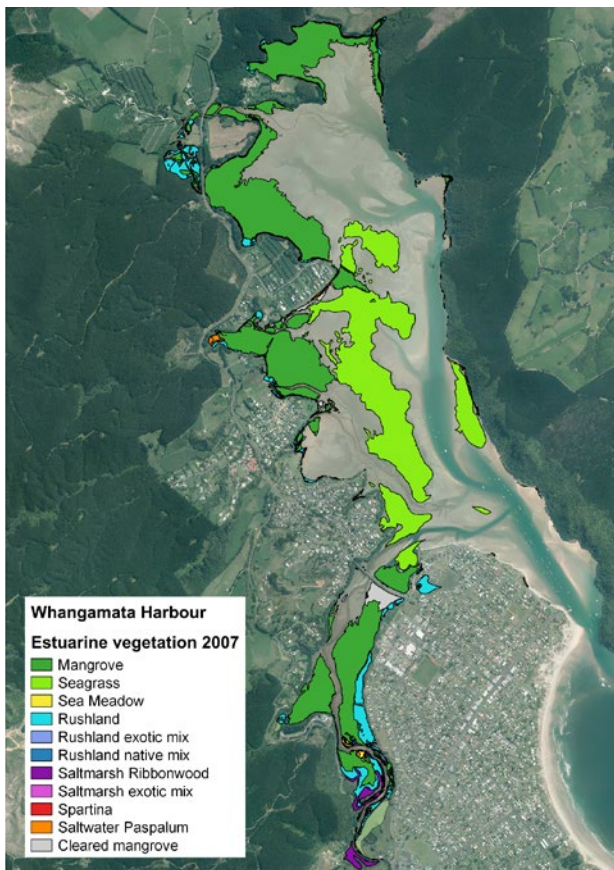


Figure 1: Estuarine vegetation in Whangamata Harbour in 2007

For more information

Environmental indicator Extent of coastal habitats:
waikatoregion.govt.nz/coastal-habitats-indicator/

Estuarine vegetation survey technical reports can be found here:
waikatoregion.govt.nz/Technical-reports