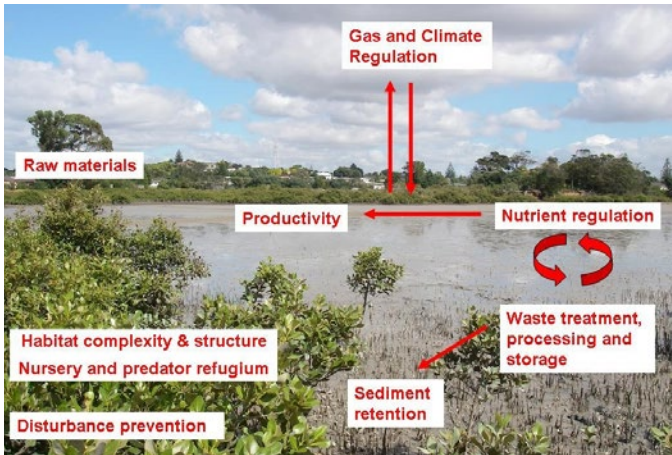


ECOSYSTEM SERVICES IN ESTUARIES

WHAT ARE ECOSYSTEM SERVICES IN ESTUARIES?

Estuaries are partially enclosed coastal bodies of water with rivers or streams flowing into them and with a free connection to the open sea. They are highly productive ecosystems that are culturally, commercially and recreationally important. They support diverse and abundant ecological communities of plants and animals and provide important habitats for many fish, birds and shellfish.



Estuaries provide a range of valuable 'ecosystem services' for humans such as food provision, water filtration, nutrient regulation and storm protection (see Figure 1).

As one of the most sensitive coastal areas, estuaries are at risk from human activity, so understanding the different values of these ecosystems is important if we are to successfully manage activity and associated impacts on the coastal marine area.

Figure 1: Examples of ecosystems services in an estuary (source: Michael Townsend, NIWA).

MAPPING ECOSYSTEM SERVICES IN ESTUARIES

The Waikato Regional Policy Statement (2016) identifies the importance of recognising and maintaining or enhancing ecosystem services.

In collaboration with the National Institute of Water and Atmospheric Research (NIWA), we are exploring how to develop maps of ecosystem services in our estuaries. This work is based on intertidal (foreshore) habitat maps (see Figure 2) that show the type of plant and animal communities that exist in our estuaries. The habitat types can be linked to different ecosystem services. For example, seagrass beds provide primary production, habitat structure and retain and stabilise sediment, while cockle beds provide food, sequester carbon, and process and store nutrients.

Ecosystem services maps have already been produced on a broader scale for the entire Hauraki Gulf, which show how various ecosystem services, such as nutrient recycling, vary across the Gulf (see Figure 3). These maps were used in Sea Change Tai Timu Tai Pari – an initiative aimed at informing how the Hauraki Gulf should be looked after for future generations. This allowed stakeholders to consider and manage ecosystem services in marine spatial planning.

Although the ecosystem services maps for the Hauraki Gulf provide useful information, the scale is too coarse for considering ecosystem services in particular estuaries. Therefore, we need to use more detailed intertidal habitat information and different techniques to develop ecosystem services maps specifically for estuaries. Once these have been developed, they may be used to understand which parts of our estuaries are important for different ecosystem services and for communicating the value of these important ecosystems to our stakeholders.

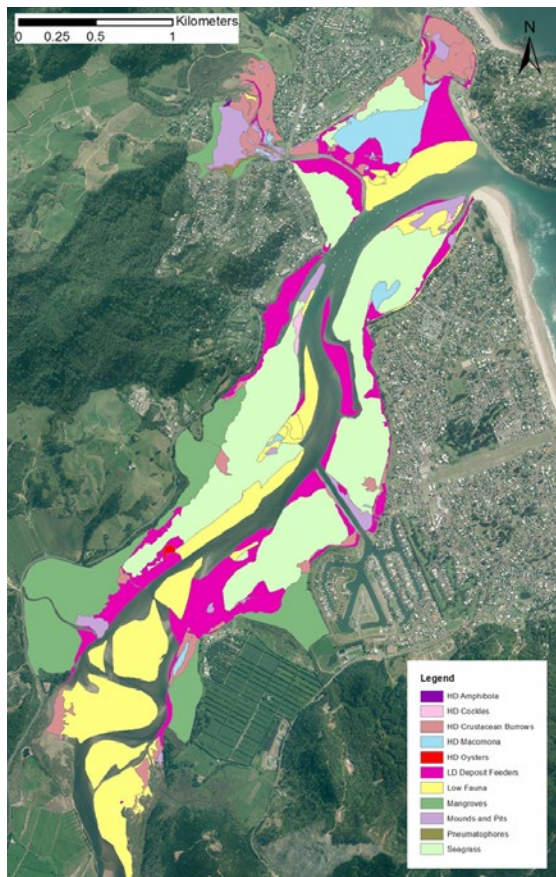


Figure 2: Intertidal habitat map for Tairua Harbour (Waikato Regional Council Technical Report 2014/39).

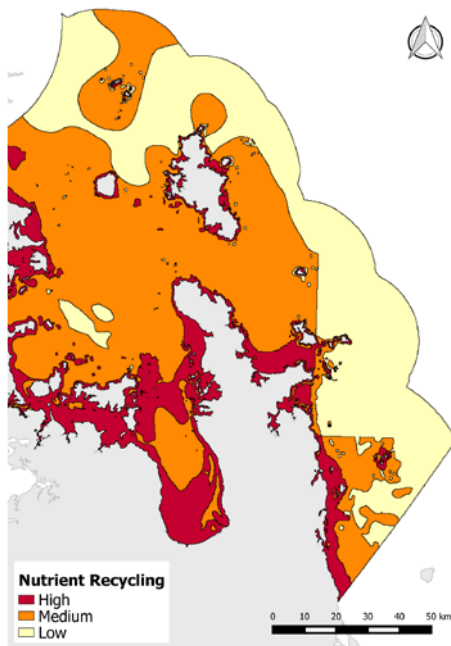


Figure 3: Ecosystem service map for the Hauraki Gulf, illustrating how nutrient recycling varies across the Gulf (adapted from Townsend et al, 2014).

For more information

Technical reports describing estuary intertidal habitat mapping that will be used to develop ecosystem services maps:

waikatoregion.govt.nz/tr201352/
waikatoregion.govt.nz/tr201439/

Ecosystem services maps for the Hauraki Gulf:
seachange.org.nz