

Turning the tide – are current New Zealand approaches and policies sustaining wetland ecosystems in agricultural landscapes?

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Wetlands are a highly threatened ecosystem type with less than 10% of their original extent remaining in New Zealand. The protection of wetlands is identified as a national priority (Ministry for the Environment and Department of Conservation 2007). New Zealand is a signatory to the *Convention on Biological Diversity* and to the *Ramsar Convention* and has international responsibilities to protect and restore wetland ecosystems. Wetlands contribute almost half of the world's ecosystem services, including flood control and filtering of pollutants and sediments (Barbier *et al* 1997). Remaining wetlands in agricultural landscapes provide valuable functions including improving water quality and soaking up flood waters. Wetlands are a critical habitat type and contain significantly high proportions of threatened species.

Knowledge of the dramatic loss of wetlands in New Zealand, and the development of policies regarding the importance of wetlands were first developed in the early 1980s (Environmental Council 1983). In 1984 the NZ Wetland Management Policy was developed. In the 1970s and 1980s NZ Wildlife Service undertook extensive wildlife surveys of wetlands and other habitats throughout the country. The WERI wetland inventory in the 1980s identified over 3000 wetlands of international, national, regional and local value, mainly from information collected through the wildlife surveys. These surveys were fundamental in providing a greater understanding of the values of remaining wetland resources.

Many wetlands in lowland agricultural environments lie on private land. Wetlands are under pressure from agricultural land use including drainage, grazing, runoff, and the impacts of pest animals and plants. In the North Island, where land use in lowland environments has been intense, the loss has been highest with only 4.9% of the original extent of wetlands remaining (Ausseil *et al* 2008).

Most wetlands, particularly in lowland environments, are small and fragmented and lack buffering from surrounding indigenous vegetation. The ecological integrity and quality of many wetlands is low. A recent study of freshwater ecosystems of national importance including wetlands has mapped over 7000 wetlands (Ausseil *et al* 2008). This study shows that the smaller wetlands in lowland areas, where loss has been most dramatic, account for most of the remaining wetlands. The protection of these systems is critical to retention of wetlands nationally. While small and fragmented they provide essential ecosystem services in lowland environments. In rural Rodney District, north Auckland, over 3000 mainly small wetlands have been mapped. Restoring the condition and viability of these wetlands is critical.

The Resource Management Act 1991 (RMA) identifies the protection of wetlands as a matter of national importance, and under Sections 30 and 31 of the RMA the development of policies and rules on the maintenance of biodiversity is a function of regional and district councils. The NZ Biodiversity Strategy reflects New Zealand's commitment to help stem the loss of biodiversity worldwide. A case study of the effectiveness of the rules and regulations in regional and district plans in protecting the ecosystem services of wetlands will be presented.

The protection of wetlands on private land requires voluntary management including fencing, control of pest plants, and runoff. The Dairying and Clean Streams Accord has set targets for the protection of streams and wetlands from the impacts of dairying and agricultural practices.

Reporting on this accord however shows that only two regional councils met the target of 50% regionally significant wetlands fenced by 2007 (Fonterra *et al* 2011). There is continuing loss and degradation of the ecosystem services of wetlands through drainage, clearance, grazing, and invasive species (Green and Clarkson 2005). Legislation and regulation to address drainage of wetlands has been identified as an urgent priority to address (Land and Water Forum 2010).

The majority of the small remnant wetlands in lowland agricultural landscapes lie on private land and working with landowners to encourage and support protection of them is a priority. In agricultural landscape wetlands play an important role in filtering nutrients and controlling floodwaters. The long term sustainability of agricultural systems is dependent on protecting these systems.

Despite the national legislative direction and strategies to protect wetland systems in New Zealand the extent of loss and degradation requires more than just physical and legal protection. A response requires restoration of the viability of wetlands particularly of small and fragmented systems, and a focus on restoring the functions and values of wetlands as well as preventing loss. It requires a combination of statutory regulation, and voluntary incentives including support for fencing, and practical management.

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