

The impact of drainage on carbon exchange in a restiad peatland

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Peatlands store carbon more efficiently than any other terrestrial biome. Degraded peatlands may exceed 2Gt of CO₂ annually, more than international shipping and aviation combined. Much of New Zealand's remnant peatland is in a modified or degraded state, yet little is known about the resilience of these systems or what their long term ecological trajectory may be. Here we present carbon flux measurement from a drained peatland, Moanatuatua, and compare them to a near pristine site Kopuatai. Our results show the drained site to have maintained sink behaviour, despite a highly modified hydrological regime. Sink strength appears to be declining with time, suggesting that while restiad peatlands are relatively resilient to drainage, Moanatuatua may be approaching a threshold beyond which it will become a net source of carbon. Key questions remain over the role fire plays in restiad systems and the effect of ecohydrological feedbacks on ecosystem stability.