Management of the invasive Nuttall's pondweed (*Elodea nuttallii*) using jute matting in Lough Arrow, a Natura 2000 designated lake in Western Ireland

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The Collaborative Actions for the Natura Network (CANN) is an ambitious INTERREG VA project (2017-2022), to improve the conservation condition of selected Special Areas of Conservation (SACs) within Border Regions of Ireland and in Western Scotland, under the European Union's Habitats Directive (92/43/EEC). Lough Arrow, a CANN project site is a designated SAC, containing a representative example of the Annex I habitat "Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.". The Lough's primary features of interest are charophytes, benthic macroalgae that form dense perennial beds under favourable lake conditions. *Elodea nuttallii*, a canopy forming invasive macrophyte indigenous to N. America, is a recent arrival to the lake, and identified as a driver of habitat degradation under the Lough's most recent Article 17 conservation condition assessment due to negative impacts on the indigenous charophytes. The aim of this research was to trial a control mechanism for *Elodea nuttallii* that simultaneously promotes the rehabilitation of native charophytes. Jute matting, a biodegradable geotextile, which acts as a benthic barrier that excludes light inhibiting plant growth, was selected for treatment due to its previously proven capacity to permit charophyte regeneration in other lakes. Two experimental areas covering 800 m² were treated by covering the invasive weed and substrate with jute textile, using a single and double layer respectively. The trial was successful in controlling *E. nuttallii* for both single (P=0) and double layer treatments (P=0.002). Treatments resulted in a reduction of the mean percentage cover of the invasive plant by >60% for both treatments. Post-treatment mean percentage cover of *E. nuttallii* did not exceed 6% for either treatment. Furthermore, the mean percentage cover of indigenous charophytes present pre-treatment was not significantly impacted due to the application of jute in either the single (P=0.165) or double treatment (P=0.353). The treated transects were placed in close proximity to the bay's pier and slipway and marked with navigational buoys to provide a biosecurity corridor for boats entering and exiting the lake.

Keywords: INTERREG VA, Charophytes, SAC, invasive macrophyte, *Elodea nuttallii,* Biosecurity