Effects of different weed cutting methods on physical and hydromorphological conditions in lowland streams

Climate change has increased the frequency and intensity of stream flooding events. In response, managing authorities may increase frequency and intensity of aquatic plant removal (weed cutting) to lower the water level in rivers possibly impairing physical and hydromorphological stream conditions. We studied 32 Danish lowland streams subjected to three different weed cutting practices, representing a gradient in weed cutting intensity, and uncut controls to compare physical and hydromorphological habitat quality parameters among stream groups. Moreover, we measured short-term changes in dissolved oxygen (DO) concentrations and suspended sediment (SS) transport in two streams before, during, and just after weed cutting for the least and most pervasive weed cutting method, respectively. Our results indicated a lower habitat quality affiliated with increasing intensity of weed cutting practice, notably an association with silt cover at the expense of hard substrate. DO concentrations were relatively unaltered but an abrupt increase in SS transport comparable to storm events was observed during cutting with the most pervasive method. Our results indicate that ecological and hydromorphological effects of high intensity weed cutting should be carefully studied and considered before large scale implementation.

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