

— The potential habitats of two submerged macrophytes, _____

We examined the environmental factors that characterize the habitats of two submerged macrophytes, *Myriophyllum spicatum* and *Hydrilla verticillata*, in South Korea using generalized additive models (GAMs). We performed a vegetation survey and measured water depth and water velocity from May to September, 2014–2015. Averaged water quality data from the Ministry of Environment's national water quality measurement network from January 2012 to October 2015 were used for modeling. Potential habitats of *M. spicatum* were linked with chlorophyll a, nitrate nitrogen, suspended solids, water temperature, water depth, and water velocity (deviance explained = 28.7%, accuracy = 74%). In the case of *H. verticillata*, electrical conductivity and suspended solids were key habitat factors (deviance explained = 23.4%, accuracy = 75%). Model results were highly consistent with observations and field data. Model performances were evaluated by the accuracy rate, the area under the receiver operating characteristic curve, the kappa value, and field verification, and were in generally good agreement. Few studies have evaluated the developed models using the independent field data. By understanding the environmental factors that characterize the habitats for submerged macrophytes, our results contribute to the development of conservation and management strategies for river ecosystems.

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