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Development of transplantation method for the restoration of the surfgrass, *Phyllospadix japonicus*, on exposed rocky shores of the Korean Peninsula

Jung-Im Park and **Min Ho Son**
Marine Eco-Technology Institute Co. Ltd., Korea

The surfgrass, *Phyllospadix japonicus*, is abundantly found on exposed rocky shores of the Korean peninsula. Surfgrass meadows provide a habitat for various fauna and flora and act as a source of carbon to bedrock ecosystems. However, the surfgrass habitats along the eastern coast of Korea has been severely damaged by anthropogenic factors, such as offshore construction and eutrophication, and this has promoted interest in the need for the restoration of surfgrass habitats. Few attempts have been made to develop transplanting techniques for surfgrasses, owing to the difficulty of transplant survival on exposed shores. We developed a new phyllospadix transplantation flame method (PTFM), which involves affixing surfgrass transplants on a stainless steel wire rope frame on the underwater bedrock. In November 2013, we transplanted *Phyllospadix japonicus* on a shore exposed to the Pacific Ocean on the eastern coast of the Korean Peninsula by using this newly developed PTFM. To evaluate the feasibility of this transplantation method, we investigated the survival rate of the transplants every month for approximately 1 year. The density, biomass, morphology, and productivity of the transplants were compared with those of nearby naturally growing surfgrasses, to examine the adaptation process of the transplants. The survival rate of the transplants was 90.6% at 1 month post-transplantation, increasing rapidly to 156.3% a year later. The increase in shoot density was higher for the transplants than for the natural surfgrasses, whereas shoot biomass and height were significantly higher for the natural surfgrasses than for the transplants. Leaf productivity of the natural surfgrasses was significantly higher than that of the transplants, but the relative growth rate of the transplants was significantly higher than that of the natural surfgrasses 4 months post-transplantation. Surfgrasses transplanted using PTFM grew successfully at the test site because of an increase in density through the formation of lateral shoots and decrease in individual shoot height. We propose PTFM as a useful transplantation method for the restoration of surfgrasses on rocky subtidal zones with high waves.

Biography

Jung-Im Park has completed her PhD at the age of 37 years from Pusan National University and postdoctoral studies from Research Institute for Basic Sciences. She is the manager of coastal restoration team in Marine-Eco Technology Institute. In 2012, she was registered in the Marquis Who's Who 29th Edition. She has published more than 30 papers in reputed journals.

jipark@marine-eco.co.kr

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