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Restoration of coastal ecosystems through seagrass transplantations

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Seagrasses are marine angiosperms, which grow submerged in shallow coastal and estuarine environments. Although there are relatively few species of seagrasses in the world, they cover extensive areas and form seagrass beds and meadows in many places. Seagrass meadows form extremely complex and productive ecosystems, which support a considerable biomass and diversity of associated plant and animal species. Seagrass meadows are among the most productive aquatic ecosystems, and provide important food sources for many animals. Seagrass beds also serve as a shelter and refuge for resident and transient adult and juvenile animals, many of which are of commercial and recreational importance. Seagrass plants can stabilize and hold bottom sediments, and the leaves slow and retard water currents and waves, promoting sedimentation of particulate matter and inhibiting resuspension and soil erosion. Seagrass blades and their associated epiphytes and macroalgae can take up nutrients from water column, which can reduce coastal eutrophication.

There have been significant declines in seagrass coverage in many parts of the world, related to reduced water quality and increased turbidity. Some natural and anthropogenic conditions threaten seagrass ecosystems and have resulted in substantial loss of many seagrass areas. Human threats to seagrasses are widespread, and are main causes to induce significant seagrass declines in many parts of the world.

Because seagrass habitats play an important role in coastal and estuarine ecosystems, the habitats are protected under the law, and numerous projects have attempted to restore seagrass habitats. Seagrass restoration include both the improvement of overall conditions for seagrass growth in an area, such as improvement in water clarity resulting from decreased runoff or nutrient inputs, as well as direct transplanting or seeding of seagrasses. Several seagrass transplanting methods have been developed, and practical transplantations have been conducted for seagrass habitat restorations in many places.