

Coastal plants restoration project conducted by citizens on sandy coast at the disaster stricken area of East Japan

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Japan is an island country surrounded by the sea. Its inland consists of steep terrain; thus, its population and industry are concentrated in the plains along the coastline. After the World War II, extensive landfills and urban development have been conducted in the coastal areas, including sea wall construction for erosion control, "black pine forest" plantations as bio-shields, and intensive recreational use, which in turn have resulted in a rapid decrease in its natural resources especially coastal dunes and salt marshes. Coastal dunes and salt marshes are endangered landscapes in Japan so that these landscapes are still remains only extremely low population density area. However such an intensive land use in coastal area has resulted in increasing the risk of disaster like high tides because of the loss of buffer zones between land and sea. As the functions of ecosystem services of beaches and coastal dunes were re-evaluated, gentle slope revetments imitated the ecosystem of coastal dunes came to be built. When people had started to think about coastal environment, the Great East Japan Earthquake struck the Pacific Ocean coast of East Japan on March 11, 2011.

The settlements of coastal areas have been washed away by tsunami that occurred by the earthquake. After the tsunami disaster, but the settlement that created by people disappeared, sand dunes and salt marshes that once were there were revived. The result of interviews with the citizens in disaster stricken areas, it showed that many of the citizens were encouraged to such natural resources that revived. Recently they have started to plant the trees, investigate natural resources, and construct the flower beds by dune plants on the grounds of temporary housing. In addition, experts like ecologists and landscape architects who re-recognized the high beach environment resilience as a buffer zone, were various proposals with a focus on the concept of "Ecosystem-based Disaster Risk Reduction; Eco-DRR" in reconstruction planning while preserving the diversity of these natural resources as green infrastructure. However, due to rapid disaster recovery projects by construction of larger seawalls and by afforestation of coastal forests by the large-scale embankment, coastal dunes and salt marshes as green infrastructure are beginning to disappear again. Citizen groups that embrace a sense of crisis to the loss of natural resources due to such disaster recovery project, began the efforts to rescue the seeds of coastal dune plants and to restore of these communities on the disaster stricken area.

Kita-no-Satohama Hana-no-Kakehashi Network established in 2014 by Hokkaido citizens have aimed to collect the seeds of coastal dune plants which communities will be lost by disaster recovery project, to cultivate their seedlings in nursery of private company and Ishikari city in Hokkaido prefecture, and to plant these seedlings on disaster stricken area, collaborated with industry, local government, academia and citizen. Last year, a total of 112 people, include volunteer group, junior high students and faculties, conducted sowing in May, and a total of 55 people planted on the beach in front of new seawall and the slope of embankment for new coastal forest. After the seedlings transplant, they have continued to monitoring the survival status of seedlings and considering the plan for next season.

Still many issues are there in this project. First is to ensure the funds for project. Last year, they raised funds through crowdfunding, materials were provided from private companies. In order to sustained projects, it is necessary to ensure a stable source of revenue. Second is a disease and genetic disturbance caused by transport of seeds. Because there is also negative opinion to their project, establishment of a more secure method is required. Third is the lack of counterpart. In order to sustained projects, it is desirable to provide a multi-layer exchanges opportunities with various ages.

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