

Recover the Seashore vegetation utilizing the waves

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1. Background and purpose

Though Sea coast projects aiming at maintaining the beach sand has been implemented throughout the nation, it was proved that some cases have failed to develop natural seashore vegetation even when the sea sand was recovered. The cause being that too much tranquilized sea surface due to the off-shore facility, although a method to cultivate periodically the beaches sand has been executed, in the future we think we need to introduce the seashore management that enables the self-sustaining recovery on recognizing the establishment and maintenance mechanism of the seashore vegetation.

As the essential research for that purpose, we have been carrying out the site survey on the formation process of the seashore vegetation on Kitafujihara work area in the Isewan south-west coast (Fig. 1). This beach is the one that has implemented the “Set back” to change the construction site onto the inland when reconstructing the old beach dike in 2009, which has created a new sand space at the front of the beach dike.

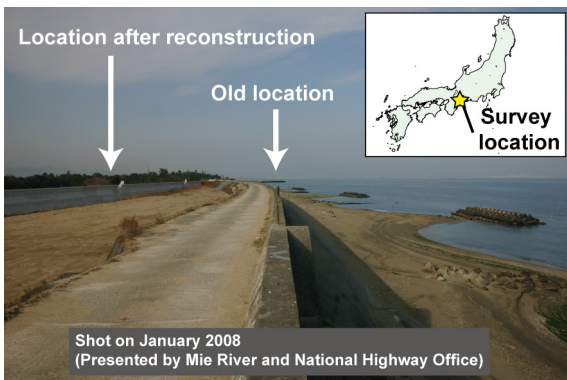


Fig. 1 Old and new dike location at Isewan south-west beach

2. Formation process of the seashore vegetation

After we have carried out the vegetation survey once to three times a year from just after the completion of the dike reconstruction work, though almost no seashore plant has appeared in the earlier stage, it was confirmed that grass land plants such as Mehishiba (*Digitaria ciliaris*) and Himemukashiyomogi (*Conyza canadensis*) have swiftly grown as far as to cover almost all the beach. After such a state has remained unchanged for two and half years, it has immediately

moved into the seashore vegetation mainly based on the Hamahirugao (*Calystegia soldanella*) during the period as short as two months and half after September 2011 (Fig. 2). As this transition has occurred in a very short period and it has never appeared in the survey line shielded from the wave, it was estimated that it was caused by the disturbance made by the wave of significant wave height 2.5m observed in the same period at site. Afterward, beach lower trees such as Hamagou (*Vitex rotundifolia*) have appeared in that place, types of the seashore plants are increasing gradually.

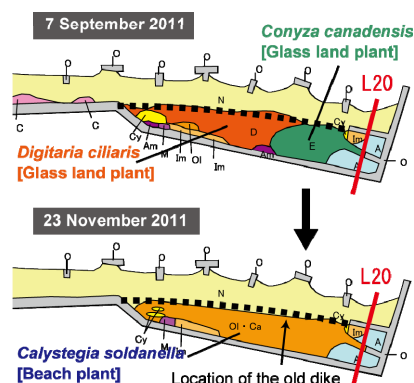


Fig. 2 Change of the vegetation distribution before and after disturbance due to waves

On the other hand, as it has been observed also the increase of the land hardness and ignition loss in the sand in the survey line shielded from the wave (L20 in Fig. 2), the place is changing into a hard land including a lot of organic substances, not appropriate for the seashore plants. It is being the plant compositions close to the waste inland, proved result that appearance of the sand space could not create the seashore vegetation by itself.

3. Future deployment and utilization of the results

We are to make clear the environmental factor controlled to the condition better for the seashore plants by the wave disturbance and degree of the wave disturbance required for the maintenance of the seashore vegetation to use those results to help the nationwide beach management. Results of this research are expected to become the reference to see how much period is required to recover naturally the seashore vegetation destroyed by The Great East Japan Earthquake and what kind of means are effective to promote the recovery, if possible.