Topics: Management of Wetlands,Coastal Dunes,
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Studies on the environmental factors to limit the distribution of eelgrass (*Zostera marina* L.) bed, using transplanting experiments

Kiyonori Hiraoka*, Kazunori Takahashi**, Toshio Nakahara***
Toshinobu Terawaki**** and Mitsumasa Okada*****

** Hiroshima Environment and Health Association, chief of planning section*
9-1 Hirosekitamachi, Naka-ku,Hiroshima 730-8631,Japan.
Tel.+81-82-293-1511,Fax.+81-82-291-7683,E-mail:kanhokyo@hiroshima-cdas.or.jp
*** Hiroshima Defense Facilities Administration Bureau, engineer*
6-30 Kamihattyobori,Naka-ku,Hiroshima 730-0012,Japan.
Tel.+81-45-651-1631,Fax.+81-45-671-1533
**** Yokohama Defense Facilities Administration Bureau, engineer*
5-57 Kitanakadori, Naka-ku, Yokohama 231-0003,Japan.
Tel.+81-45-651-1631,Fax.+81-45-671-1533
***** National Research Institute of Fisheries and Environment of Inland,*
Chief researcher
2-17-5 Maruishi, Ohno, Saeki, Hiroshima 739-0452, Japan.
Tel.+81-829-55-0666,Fax.+81-829-54-1216,E-mail:terawaki@nnf.affrc.go.jp
****** Hiroshima University, Professor*
1-4-1 Kagamiyama, Higashihiroshima 739-0046, Japan.
Tel.+81-824-24-7622,Fax.+81-824-23-2406,E-mail:mokada@ue.ipc.hiroshima-u.ac.jp

Abstract

Eelgrass beds are important components of coastal ecosystems. Recently, they have been diminished due to reclamation, dredging and water pollution of shallow coastal areas in Japan. It is indispensable to investigate limiting factors on the

distribution of eelgrass bed for their restoration in coastal environment.

In January 1996, we transplanted vegetative shoots of eelgrass into a shallow bottom without eelgrass vegetation, off Iwakuni City, Yamaguchi Prefecture, in the Seto Inland Sea. Depth of transplantation were D.L.(Datum Level) ±0m, -1m and -2m. Monitorings of their survival were carried out from February 1996 to March 1998.

At ±0m transplanting site, the shoot density of transplants showed a rapid decline after the typhoon attack in August 1996, and all the transplants disappeared in November 1996, because of sand movement by wave action. However, natural eelgrass bed near our transplanting site remained active. There were differences in the vertical distribution of shell remains in the sediments between natural eelgrass bed and transplanting site, although their conditions at surface resembled each other.

On the other hand, the shoot density of transplants at -1m and -2m transplanting sites increased to the level higher than that of the natural eelgrass bed within 1 yr of transplanting. The shoot density at -1m and -2m sites were about 50 and 20 shoots/m^2, respectively, in March 1998, irrespective of transplanting methods and initial densities. This indicates that these transplanting sites had not been disturbed heavily by wave action and sand movement over the monitoring period.

From these results, sand movement was found to be one of the most important factors for the development of eelgrass bed in conjunction with physical characteristics of the sediment. It is important to create stable habitat for eelgrass bed restoration by reducing wave action and sand movement.

Poster cession: Kiyonori Hiraoka