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journal or publication title	Journal of Integrated Field Science
volume	10
page range	32-32
year	2013-03
URL	http://hdl.handle.net/10097/56243

Dynamics of the Rocky Subtidal Ecosystem after the Tohoku Pacific Earthquake

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The rocky subtidal benthos communities at three localities have been monitored regularly since three months after the earthquake as a contribution to evaluating the dynamic effects of the Tohoku Pacific Earthquake on the coastal ecosystems of Miyagi Prefecture. In Shizugawa Bay, new recruits of the sea urchin *Strongylocentrotus nudus* appeared from September 2012. Tsunami had a seriously damaging effect on *Eisenia bicyclis* kelp beds, particularly, at innermost of the bay. The juvenile kelps grew at closer areas from shore in comparison to those prior to the earthquake, where they matured into adult plants. However, those settled in the deeper zones grew slowly and weakly, and died off at the deepest site. Similar trends have also been observed in the *E. bicyclis* population on the west coast of the Oshika Peninsula. The unusually high water temperature in the summer of 2012 evoked additional negative effects at these sites. The poor growth of *E. bicyclis* at deeper sites may be caused by the lack of light, with lower transparency probably due to subsidence (approx. 1 m) along the coast following the earthquake, and the disturbance and deposition of large quantities of mud in the off-shore zone as a result of the tsunami. In Onagawa Bay, analysis of the relationships between environmental factors and the distribution of algae and benthic animals shows that mud deposition at more sheltered sites has had a negative effect on the distribution of algae, abalones and sea urchins. Overviewing the results, the deposition of mud after the earthquake seems to have had profound effects on the rocky shore communities along the coast of Miyagi Prefecture.



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Associate Professor. The main focus of my interest has been the ecological aspects of coastal marine benthos, in particular the interactions between marine algae and herbivores. My interests have also included taxonomic and systematic studies of caprellid and gammarid amphipods; and, concerning plants, the seasonal dynamics of *Sargassum* species as habitats for epiphytic meso-grazers. I am currently engaged in studies on the population responses of kelp species such as *Eisenia bicyclis* and *Ecklonia cava* to herbivorous animals.