EuroSciCon

12th Edition of International Conference on

Oceanography & Marine Biology

December 03-04, 2018
Rome, Italy

Teruhisa Komatsu et al., J Mar Biol Oceanogr 2018, Volume 7
DOI: 10.4172/2324-8661-C2-014

# A Satoumi practice to the semi-enclosed bay after the hit of huge Tsunami on 11 March 2011 for realizing sustainable aquaculture and sound marine environments: An example of Shizugawa Bay, Japan

**Teruhisa Komatsu[1], Shuji Sasa[1], Shigeru Montani[1], Takahumi Sakamaki[2], Osamu Nishimura[2], Chihiro Yoshimura[3], Manabu Fujii[3]** and **Tetsuo Yanagi[4]**

[1]Yokohama College of Commerce, Japan
[2]Tohoku University, Japan
[3]Tokyo Institute of Technology, Japan
[4]EMECS Center, Japan

Rias-type bays are one of the most common coasts in Japan where aquacultures without feeding have been active. The huge tsunami hit Sanriku Coast consisting of open rias-type bays near the epicenter facing Pacific Ocean on 11 March 2011. For recovering Sanriku Coast, it is important to include sustainability in its program. Satoumi practice is defined as a human use and management of coastal seas for high productivity while maintaining high biodiversity. We studied a typical rias-type bay, Shizugawa Bay, in southern Sanriku Coast, where oyster and *Undaria pinnatifida* are mainly cultured. The tsunami flushed out most of all aquaculture facilities. Just after the tsunami, they deployed seed oysters which fortunately escaped from the tsunami on the sea in 2011. The oysters grew to a commercial size in ten months due to good prey condition while they needed two to three years before the tsunami because of insufficient prey condition. After long discussion among fishermen, committee for Shizugawa Bay management of fishermen's cooperative of miyagi prefecture decided to decrease oyster culture facilities based on this experience of oyster growth. We conducted scientific researches on mapping of coastal habitats and aquaculture facilities, hydrography and material flows of nutrients, a minor element (Fe) and particulate organic matters in the bay including those from the rivers and the offshore waters. Based on these data, a physical-biological coupling model was used for calculating the number of aquaculture facilities that are suitable not only for yields but also for environments. A council for discussing on sustainable aquacultures and sound marine environments in Shizugawa Bay was established by a fishermen's cooperative, local governments, WWF and scientists. Discussion based on scientific researches promoted sustainable aquaculture. This satoumi practice may help to realize sustainable coastal use of a rias-type bay.

**Conclusion & Significance:** The tsunami event gave a chance to fishermen to change their aquaculture practices to ones that are economically and environmentally sustainable through their experiences and discussions together with our scientific researches and WWF's supports. Thanks to this change, oysters in Tokura Branch of fisheries cooperative in Shizugawa Bay obtained ASC certificate from Aquaculture Stewardship Council in March of 2016. This success story may permit to broaden such kind of Satoumi practice to other rias-type bay where aquaculture without feeding are mainly conducted.



**Recent Publications**

1. Xu M, Sasa S, Otaki T, Huc F X, Tokai T and Komatsu T (2018) Changes in drag and drag coefficient on small Sargassum horneri (Turner) C. Agardh individuals. Aquatic Botany 144:61-64.
2. Sakanishi Y and Komatsu T (2017) Growing depth limit of Zostera caulescens in coastal waters along the Japan Sea coast of Honshu, Japan. Fisheries Science 83(6):977-986.
3. Uto K, Seki H, Saito G, Kosugi Y and Komatsu T (2016) Development of a low-cost hyperspectral whiskbroom imager using an optical fiber bundle, a swing mirror and compact spectrometers. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing 9(9):3909-3925.
4. Hamana M and Komatsu T (2016) Real-time classification of seagrass meadows on flat bottom with bathymetric data measured by a narrow multibeam sonar system. Remote Sensing 8(2):96.
5. Sagawa T and Komatsu T (2015) Simulation of sea grass bed mapping by satellite images based on the radiative transfer model. Ocean Science Journal 50(2):335-342.

## Biography

Teruhisa Komatsu has his expertise in marine ecology and fisheries oceanography. He graduated from Kyoto University. He has studied marine environments in seaweed and seagrass forests. He is extending his research to cartography of seagrass and seaweed forests using acoustic and optic methods. He has been a leader of Ocean Remote Sensing Project on Coastal Habitat Mapping of Subcommission of Western Pacific, Intergovernmental Oceanographic Commission/UNESCO since 2010. He has worked at Atmosphere and ocean Research Institute, the University of Tokyo since 1990 and moved to Yokohama College of Commerce in 2017. Now, he is a theme leader of a research project of the Japanese Ministry of Environment on "Development of coastal environmental management methods on Sanriku Coast, which has a succession of open inner bay".

komatsu@shodai.ac.jp