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An integrative perspective on ecological sciences: Monitoring and prediction of population/community dynamics regarding invasion, eruption, establishment, and responses to disturbances

Recently global climate change has been a critical issue for survivability of the whole life system on the globe. Monitoring and prediction of population and community stabilities are an urgent issue as a prerequisite for achieving sustainability of ecosystems. Example cases of population/community dynamics are presented during the course of invasion, eruption and establishment. Based on model applications population growth patterns are reported, showing the break points during the course of invasion and eruption.

Community structure properties are additionally revealed in responding to various sources of natural and anthropogenic disturbances according to species abundance distributions. The responding patterns of communities were observed including a few dominant taxa in natural conditions and rapid decrease in species richness under stressful conditions of disturbances. Feasibility of mathematical models in population/community monitoring and management are further discussed in the presentation.

Biography

Tae-Soo Chon is Professor Emeritus at the Department of Biological Sciences, Pusan National University (PNU), Busan, Republic of Korea, and currently serves as the Chair, Ecology and Future Research Institute, Busan, Republic of Korea. Prof. Chon taught courses on ecology, behavioral sciences, ecological modeling, and mathematical biology at PNU. His research interests range from behavior monitoring to population/community dynamics, broadly based on computational sciences and engineering (e.g., pattern recognition). Prof. Chon published more than 160 scientific papers and book chapters, and co-edited Handbook of Ecological Modeling (2009). He is Associate Editor of Ecological Modeling and Ecological Informatics. Prof. Chon served as the first president of the Korean Society for Mathematical Biology and the second president of the Benthological Society of Asia. He recently chaired the biannual meeting of International Society for Ecological Modeling (ISEM 2017 Global Conference) in Jeju, Korea, on September 17 – 21, 2017.

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