Special Lecture by Visiting Researcher

Global warming and elevational range shift in a subtropical evergreen forest in Northern Taiwan

気候温暖化と台湾亜熱帯山地林における樹木種の高度分布の変化

by: Visiting Professor

I-Fang Sun

from Department of Natural Resources and Environmental Studies,
National Dong Hwa University 東華大學自然資源與環境學系
(Tropical Forest Resources and Environment Lab 熱帯林環境学研究室)
ifsun@gms.ndhu.edu.tw

Date: 16:30- Fri, February 16
Room: W320

Summary:

Global warming has profound effect on population dynamics, species distribution and ecosystem functions. In the face of anthropogenic climate change, species must acclimate, adapt, move, or else die. Forest dynamics plots (FDP) provide an excellent opportunity to study effect of global warming on plant migration, because it contains longitudinal data and spatial locations of each individual, and plots has been recensus every five years, which provide temporal dynamics data for population change.

Many studies have found plant movement is much lagged behind climate change, while other studies have shown that plant functional traits exhibited significant changes to cope with changes of environment. Will plant movements keep up with climate change? Will plant exhibit trait adaptation as it shifts its distribution? In this study, we are particularly interested to understand the following questions: 1) How do global warming affect species elevational range shift in a subtropical evergreen forest at Northern Taiwan? 2) Can plant movement track the velocity of temperature warming? 3) Do plant functional traits change as plant shift its distribution?

This study was carried out in the Fushan 25 ha FDP in northern Taiwan, which has an elevational range over 130 meters in 25 ha plot. Our results indicated that many species in Fushan FDP shifted its elevation range in a very short time, and more than 35% of species significantly migrated upward. However, species responded differently in their migration pattern, in which some species moved upward while others moved downward. Annualized migration distance is shorter than that of other studies, and is lagged much behind the speed of temperature increased in Taiwan. Plant functional trait values and functional diversity also exhibited strong associations with elevational gradient. However, longer study period and more detail study is needed to fully understand the complex responses of plant to climate change.

Contact: 国際交流室 International Exchange Section
075-753-6320, fsao@kais.kyoto-u.ac.jp