18th FEFCO

Forest Ecosystem Function Colloquium (FEFCO) は、地域や地球全体のレベルで森林生態系の機能とその持続的活用法を統合的に理解することを目的とし、研究者間の学術交流を推進します。

第18回森林生態系機能コロキウムは、広島大学の山田俊弘先生にご講演いただきます。どなたでも参加できますので、多くの皆様のご参加をお待ちしております。京都大学農学研究科熱帯環境学研究室がホストを務めます。

18th FEFCO
2015/1/23 16:00 - 17:30
Faculty of Agriculture Main Building, S174
山田俊弘（広島大学）

Soil habitat association and soil related variation in population dynamics of Malaysian rain forest trees

Species–habitat associations were studied in a 50-ha forest plot in the Pasoh Forest Reserve, Malaysia. I divided the plot into 5000, 10 × 10 m2 quadrats and assigned each to one of three habitats based on parent materials and drainage: well-drained hilly parts and ridge tops, moderately drained, topographically flat sites, and poorly drained riverine sites. Torus-translation tests showed that 295 species (60.0% of 492 species) had significant associations with habitats in at least one of the three habitats. Differences in species density among the three habitats led to differences among habitats in the relative importance of species, suggesting that species-habitat associations play a role in the distribution of tree species in the 50-ha plot and in determining variations in local floristic composition of the Pasoh forest.
Like this, density difference of conspecific trees in response to edaphic gradients are well documented but the way such density differences are generated and maintained is poorly understood. I examined how individual performance changed across the three soil habitats using 10-year demographic data. Plus, I constructed population matrix models to analyse the change in population dynamics across the habitats. Species showed only minor changes in mortality and growth across habitats, although recruitment differed largely. In contrast, we found a large interspecific change in mortality and growth in every habitat. The species made interspecific demographic trade-offs between juveniles' growth and mortality in all soil types. Interestingly the relative trade-offs by a species did not differ substantially among the habitats.
Population sizes were projected to keep stable in all habitats for all species with one exception. Life table response experiment revealed little change in population dynamics of a species among habitats. Therefore, species do not necessarily have large differences in population dynamics across habitats. However, interspecific differences in population dynamics were large. The demographic trade-off between mortality and growth led to a negative correlation between the contributions of mortality and growth to variations in the population growth rate (λ) and thus offset their net contributions. Recruitment had only subtle impact on the variation in λ. The combination of these factors resulted in little variation in λ among species.

Forest Ecosystem Function Colloquium
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