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云南中南部季风常绿阔叶林恢复生态系统萌生特征

Sprouting characteristic in restoration ecosystems of monsoon evergreen broad- leaved forest in south-central of Yunnan Province

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中文摘要:

萌生是大范围干扰后物种维持的重要机制。通过对云南思茅地区皆伐后不同恢复阶段季风常绿阔叶林群落萌生状况的调查,探讨了不同恢复阶段群落物种萌生特征。结果表明:恢复15a群落共有萌生物种36种,而恢复30a群落有24种,老龄林有29种,萌生物种种类及多度所占比例随恢复时间的延长呈减少趋势。灌木科、属及种丰富度及其所占比例在恢复30a群落中最低,而乔木及总物种科、属及种丰富度、Shannon-Wiener指数及Simpson指数在3个不同恢复阶段群落之间均无显著性差异,但乔木及总物种科、属及种丰富度所占比例均为老龄林最低。恢复15a群落与30a群落间萌生相似性最高,而恢复15a群落与老龄林群落间萌生相似性最低。3个不同恢复阶段群落中物种萌生类型主要为根萌生,其次为干基萌生。不同萌生类型萌生物种丰富度及个体多度均为根萌生>干基萌生>干萌生>枝萌生。萌生物种生长特征中,除灌木平均高在恢复30a群落中最低外,乔木平均高及乔木和灌木平均胸径在3个恢复阶段群落中均无显著性差异。而在共有的萌生物种中,杯状栲(*Castanopsis calathiformis*)、短刺栲(*Castanopsis echidnocarpa*)和粗壮润楠(*Machilus robusta*)平均胸径和平均高均是恢复初期(15a)较高,红木荷(*Schima wallichii*)和山鸡椒(*Litsea cubeba*)则是在老龄林中较高。

English Summary:

Sprouting is a primary persistence mechanism in a site after a wide range of disturbances, and especially important where opportunities for seedling establishment are limited or only occur in harsh conditions. Sprouting facilitates coexistence in a patch- or sessile-dynamics framework, and is a part of the "regeneration niche" and a highly evolutionarily labile trait for plants. Sprout regeneration is an efficient mechanism for forest regeneration to regain lost biomass after disturbances, and has the important ecological function in regulating individual life history strategies of plants, and restoring secondary vegetation following intense disturbances, as well as maintaining species composition and structure of community. Sprouting is a complex ecophysiological process. The Sprouting ability of plant is not only affected by its exterior habitat, disturbances and resources level, but also controlled by its interior nutrient level and hormone situation. Broader study of sprouting has been recommended as a means of extending our understanding of plant functional types and traits. Agreement on the definition, measurement and systematic study of sprouting has been difficult, partly because sprouting behaviour is complex. In this study, we explore sprouting characteristic of different restoration stage communities by investigating sprouting of plant across three successional stages (15 years old (CF), 30 years old(CT), and old growth forest (OGF)) of monsoon evergreen broad-leaved forestry in Simao region, Yunnan Province. The results showed that there were 36 sprouting species in CF, while 24 sprouting species in CT, and 29 sprouting species in OGF, the percentage of sprouting species richness and abundance decreased with community restoration. The richness and its` percentage of family, genera and species of shrub were the lowest in CT, while no significant difference were detected to the richness of family, genera and species of tree and total species, Shannon-Wiener index and Simpson index in three different restoration stage communities, but the richness percentage of family, genera and species of tree and total species were the lowest in OGF. The hightest similarity existed between CF and CT, the lowest existed between CF and OGF. The major sprouting type in all of three different restoration stage communities was root sprouting, followed by stem basal sprouting. Stem epicormic sprouting appeared in CT and OGF, while branch epicormic sprouting only appeared in OGF. Sprouting type increased with community restoration. The descending order of species richness and abundance at different sprouting types were from root sprouting through stem basal sprouting and stem epicormic sprouting to branch epicormic sprouting. The major sprouting type of common sprouting species in three different restoration stage communities was also root sprouting. About growth characteristic of sprouting species, no significant difference were detected to the mean height and mean diameter of breast height(DBH) of tree, shrub and total sprouting species except that the mean height of shrub was lower in CT than in CF and OGF. In common sprouting species, the mean DBH and mean height of *Castanopsis calathiformis*, *Castanopsis echidnocarpa* and *Machilus robusta* were the highest in restoration early period, while the mean DBH and mean height of *Schima wallichii* and *Litsea cubeba* were the highest in OGF.

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