

## Relationship between Herbaceous Communities Succession and Hydrological Regimes in Napahai Wetland

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**Abstract:** Through dividing Napahai wetland of Yunnan, China into hundreds of equal-size grids, quadrat sampling was adopted to investigate herbaceous communities and species in each accessible grid. Detrended Correspondence Analysis (DCA) ordination was used to reveal the community succession phases and the major driving factor. Four species diversity indices were calculated for all community samples. Then we explored the impacts of the variation of the major driving factor indicated by DCA AX1 upon community species diversity. The study recorded 130 species, grouped into 88 genera and 36 families. Within the wetland, the mixed hygrophyte-mesophytes are the most widely distributed communities, then the mesophytes, the secondary communities on severely damaged habitats, and the hydrophytes, which are the four succession stages. DCA ordination showed the gradient variation of hydrological regime is the primary factor to determine the community succession stages of Napahai wetland; while, free-range pig directly caused the severe damage of wetland habitats and then the secondary community succession. Present hydrological regime of and free-range animal husbandry within the wetland will lead to the increase of hygrophyte and mesophyte species, as well as some companion species related to disturbances, which indicates higher potential risk of community degradation. Regulating hydrological regime to increase flooding area and frequency, and adopting enclosure breeding to weak livestock (especially the pigs) disturbance are the basic measures to promote community restoration of Napahai wetland.

**Key words:** Napahai wetland; community succession; DCA ordination; species diversity; hydrologic regime

### 封面照片: 华蓥山石林景观

华蓥山国家地质公园位于川东侏罗山式褶皱西部第一复背斜——华蓥山大背斜西翼, 川东平行岭谷西部第一山——华蓥山最高峰高登山西坡, 石林景区为地质公园的核心景区。伴随着华蓥山的褶皱隆升和断裂构造的发育, 出露的二叠系白云岩和白云质灰岩在长期的岩溶作用下, 形成色彩亮白、高低错落、分布密集的石林景观。和我国很多著名的石林景观不同, 这里的石林为我国中亚热带典型的喀斯特“林中林”景观, 石林林中有石, 石中有林, 石上有树, 树从石生, 树为石首, 石嵌树根, 树石相衬, 石树合一, 千姿百态、仪态万千, 石林于满目苍翠中若隐若现, 给人清、幽之感; 这里高大的石柱和小巧的石芽相间分布, 石柱顶部生长繁茂的藤蔓植物, 藤蔓或缠绕着石柱, 或穿梭于石缝, 于石柱顶端茂盛发育、尽情舒展, 被誉为华蓥山“盆景式石林”, 尽展秀、奇之美!

华蓥山“盆景式石林”是喀斯特地区良性生态环境的典型代表, 不但具有较高的美学价值, 更具有重要的科普科研意义。

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