

# Fractal Characteristics of Pattern of Endangered Plant *Alsophila spinulosa* Population

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**Abstract:** The fractal characteristics of pattern of *Alsophila spinulosa* population in different sites in Guaxi *Alsophila spinulosa* Nature Reserve of Fujian Province was analyzed by applying box counting dimension, information dimension and correlation dimension in fractal theory. The results indicated that *Alsophila spinulosa* populations in 8 sites showed different scale variation and fractal trait on spatial occupation. Pattern intensity and spatial correlation of individuals. The box counting dimension ranged from 0.313 2 to 1.118 9 and the order of that was  $Q_3 > Q_6 > Q_7 > Q_1 > Q_2 > Q_4 > Q_5 > Q_8$ , information dimension from 0.303 1 to 1.078 and the order of that  $Q_3 > Q_7 > Q_6 > Q_1 > Q_2 > Q_5 > Q_8 > Q_4$  and the correlation dimension from 0.745 0 to 1.145 3 and the order of that  $Q_3 > Q_6 > Q_8 > Q_1 > Q_5 > Q_7 > Q_2 > Q_4$ . The spectrum of fractal dimension showed that spatial structure characteristics of those populations in sites  $Q_1$ ,  $Q_2$ ,  $Q_3$ ,  $Q_6$  and  $Q_7$  were similar, the same to those in sites  $Q_4$ ,  $Q_5$  and  $Q_8$ .

**Key words:** *Alsophila spinulosa*; population pattern; fractal

## 封面照片说明: 纳帕海龟背山

纳帕海位于云南省西北部迪庆州香格里拉县城北面,距县城 8 km,属高原季节性湖泊、沼泽草甸,地理位置  $27^{\circ}49' \sim 27^{\circ}55' N$ ,  $99^{\circ}37' \sim 99^{\circ}43' E$  海拔 3 266 m,面积 3 125  $km^2$ 。作为黑颈鹤 (*Grus nigricollis*) 和斑头雁 (*Anser indicus*) 等候鸟的越冬栖息地,纳帕海高原湿地同时承载着当地牧民的生产生活。藏民族敬畏和爱护飞禽的传统文化,形成并维系着湿地内人与候鸟和谐共处的关系。照片中纳帕海东北角的龟背山,在夏末秋初的积水湖面上,犹如漫游于水天之间的神龟;在冬春季节则与越冬候鸟、牛羊牧群,共同构成“天、地、人”合而为一的壮美景象,体现出自然生态系统和民族传统文化的完美结合。

(杨文忠)