城市树木健康评价模型的构建及应用

——以北京市居住区为例

詹晓红[1]，黄帅帅[1]，邱尔发[1*]

1 中国林业科学研究院林业研究所 国家林业和草原局城市森林研究中心，北京 100091

摘 要：健康的城市树木不仅提供赏心悦目的自然景观，而且可促进城市居民身心健康。城市的居住环境和居民的生活品质依赖城市树木功能的发挥，城市树木的健康生长与树木本身特性、周围生长环境和经营管护状况密切相关。论文针对北京市 85 个居住小区树木健康状况的实地调查及影响因子分析，结合树木本身生长因子和影响健康的潜在环境因子等指标，选取光污染程度、地表覆盖程度、树干倾斜度、生长空间、偏冠度、冠形、树势、枝叶病害、干形、枝叶虫害、枯枝比例 11 个指标作为树木健康评价的指标体系，建立树木个体评价模型，评估不同来源、不同区域、不同时期和不同绿地树木个体的健康状态。结果表明：北京市居住区树木健康指数在 0.54~0.77 之间，健康等级呈似正态分布特点，健康林木比例为 2.38%，亚健康林木比例为 39.00%，中等健康林木（50.25%）最多，不健康林木有 7.97%，濒死林木仅占 0.40%。居住区树木健康指数在不同区域、不同时期和不同绿 地间差异显著（P0.05），健康指数大小分别为：4- 5 环>3-4 环>5-6 环>2-3 环>2 环内；商品房>福利房>保障房；2009-2013 年>2003-2008 年>1998-2002 年=1991-1997 年>1956-1990 年；游园绿地>宅旁绿地>道路绿地。对城市居住小区树木健康状况进行评价并就影响树木健康的原因给提出相应的健康经营措施，为预测居住小区树木健康状况以及后期的科学管护提供依据。

关键词：居住区、树木健康、评价模型、健康指数

Construction and application of urban tree Health assessment model

Zhan Xiaohong[1], Huang Shuaishuai[1], Qiu Erfa[1]*

1 *Research Institute of Forestry，Chinese Academy of Forestry，Urban Forest Research Center, National Forestry and Grassland Administration，Beijing* 100091*, China*

Abstract: Urban trees that evaluate the health of the model not only provide a pleasant Natural landscape, but also promote the physical and mental health of urban residents. The living environment and quality of life of residents in cities depend on the functioning of urban trees. The healthy growth of urban trees is closely related to their own characteristics, surrounding growth environment, and management and protection status. Based on the field survey and impact factor analysis of the tree health status in 85 residential areas in Beijing, and combined with the growth factors of trees themselves and the potential environmental factors affecting health, the paper selects 11 indicators as the indicator system of tree Health assessment, including light pollution degree, surface coverage, trunk inclination, growth space, crown deviation, crown shape, tree vigor, branch and leaf diseases, trunk shape, branch and leaf pests, and dead branch proportion, Establish a tree individual evaluation model to evaluate the health status of individuals from different sources, regions, periods, and green spaces. The results were as follows: Trees individual health indices in all residential areas of Beijing tested were 0.54 ~ 0.77, and tree health was characteristic of a near normal distribution. Healthy trees accounted for 2.38%, sub-healthy trees accounted for 39.00%, medium-healthy trees accounted for 50.25%, unhealthy trees accounted for 7.97%, and dying trees accounted for 0.40%.Tree health indices were not significantly different (P > 0.05) between residential areas in different districts, while differences between different assessment periods and origins were significant (P < 0.05). Ranks of trees health

indices in difference types of residential area are presented: 4th-5th ring road > 3rd-4th ring road > 5th-6th ring road > 2nd-3rd ring road > within 2nd ring road; commodity apartment > welfare housing > social security housing; 2009-2013 > 2003-2008 > 1998-2002 > 1991-1997 > 1956-1990; garden greenbelt > housing greenbelt > road greenbelt.

Key words: residential area; tree health; Evaluate model; health index; Beijing