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Ecological evaluation on Greenbelt Zone based on landscape and restoration ecological principles

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Korea has pursued rapid industrialization since 1960s. Seoul, covering 605km^2 and living more than 25% of Korean population, have formed metropolitan area since 1970's. Therefore it is well known in the representative metropolitan area in Asia. The greenbelt (GB), as a strong restricted development area, designated to protect green space, to prevent indiscreet urban sprawling and so on for 14 large cities in 1971.
This study aims 1) to evaluate the effect of GB designation in terms of conservation of greenery space by remote sensing methods, 2) to diagnose the actual state of vegetation and soil environmental characteristics based on species composition, diversity and physico-chemical properties of soil in its interior (IGB) and exterior (EGB) centering on GB, and 3) to prepare the sustainable management plan based on landscape and restoration ecological principles.

In the aspect of landscape quantity, decrease of forest cover in GB was relatively low (5.1%) compared with IGB (8.7%) and EGB (15.6%) during recent 30 years. Relative forest area compared with that of 1975 in IGB was decreased to 82.2%, 69.5%, and 62.1% in 1983, 1992 and 2001, respectively. In EGB, it was shown in 97.5%, 87.1%, and 78.4% in1983, 1993, and 2001, respectively. Decrease in GB was slight as they were 99.7, 98.9,and 92.2% in 1983, 1992 and 2001, respectively. Fragmentation patterns of forest cover well corresponded with the decrease of forest cover. NDVI of GB maintained 90% level of that in EGB without variation among years. NDVI of IGB, which maintained 70% level of that in EGB, increased until 1983 but since then decreased, The results of stand ordination showed that the effects of soil acidification and parent rock dominated species composition. In the analysis on the stand dynamics, a symptom of retrogressive succession was found in IGB and a part of GB. Based on Shannon index (H'), species diversity was higher in the order of Mt. Jookyup (2.33), Mt. Nam (1.85), Mt. Surak (1.83), Mt. Gwanak (1.64), and Mt. Wunak (1.18). Based on species rank-abundance

curve, richness was the order of Mt. Jookyup, Mt. Gwanak, Mt. Surak - Mt. Nam, and Mt. Wunak.

In consequence, GB has carried out well its primary roles. Even though so, "forest decline of new type", such as abnormal species composition and retrogressive succession is found in IGB and a part of GB, In order to solve the problems, landscape and restoration ecological approach is required but we don't have sufficient information.

Key words: Forest cover, Forest decline, Green belt, landscape quality, NDVI, Retrogressive succession, Species composition,