

## ECOLOGICAL ENVIRONMENT EFFECT ANALYSIS OF WETLAND CHANGE IN BEIJING REGION

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As one of the most important ecological and environmental factors in Beijing, wetland plays significant role in the development of the city. Wetland is one of the weakest ecological systems in the world, once it was degraded or disturbed by the impact of increasing human-induced and natural stresses, regional ecological environment would also be influenced correspondingly. The overall purpose of this study was to examine the ecological environment effect due to the wetland dynamic changes, including regional non-point pollution, soil salinization, vegetation coverage depression, microclimate dry-warm effect and landscape fragmentation etc.

This article takes Beijing wetland resources as an analysis object. By utilizing TM/ETM+, SPOT and IKONOS remote sensing images as the major data sources combining with the field survey to get the rule of dynamic process of Beijing wetland ecosystem, this paper systematic analyzed the hydrology, soil, plant condition of the typical wetland areas, which are Wild Duck Wetland Natural Reserve and Miyun reservoir wetland. And the results are as follows: In recent years, wetland areas were sharply reduced by half. The negative ecological effects around wetland areas have a close relationship with the deterioration of wetland resources. The non-point source pollution is serious in the upstream of Wild Duck areas. While the contamination is not that serious in GongTin reservoir and Wild Duck wetland compared with Wild Duck area. Non-point source pollution directly speeds up water eutrophication. Water quality has reduced up to IV or V grade. At the time, the areas of soil salinization had increased every year and in 2004 reached to 21.79km<sup>2</sup>. Due to the soil salinization, the marsh vegetation species changed to the mesophytic, xeromorphic and salt tolerable ones. Till 1998 vegetation areas increased and in the later years the areas decreased. And the moderate and high covering areas of vegetation decreased 71.09% from 1998 to 2004. While covering areas of vegetation decreased 99.26%. As a result, soil fertility decline. Diversity of wetland landscape presented decreasing trend from 1984 to 1992, but shows the trend of slightly increase in 1998~2004. Since 1998, in Beijing area the proportion of all kinds of wetland resources were becoming smaller and the stability of wetland landscape were enhancing. The phenomenon of the reducing amount of regional daily evapo-transpiration proves that the climate is warming. In 2004, the average of daily evapo-transpiration is 5.67mm which is blow the value in 1998. The warming and drying trend of climate leads to the deficit of water resources in wetland. Based on the above analysis, the corresponding protection and utilization designs are brought forward and give the scientific basis for the restoration of wetland.

Keywords: wetland, ecological environment effect, environment degraded, spatial analysis, remote sensing, Beijing