Wetland restoration: Implication from the response of vegetation to fluctuation of water level

Qiang Liu, Jingling Liu, and Haifei Liu
Beijing Normal University, School of Environment, China (qiang.liu@bnu.edu.cn)

The changes of hydrological regimes, resulted from the anthropogenic and natural influences, inevitably altered ecological pattern and processes. Momoge wetland is a National Nature Reserve acted as an important habitat for the Siberian crane due to its capability of providing plenty food, the tuber of S. Planiculmis. Recent years, ecohydrological pattern has been dramatic altered by the anthropogenic activities, which also altered the habitat of Siberian crane. In present study, suitable water level depth for two types of vegetation, P. Communis and S. Planiculmis, were assessed, and then response of vegetation to different water level scenarios were simulated. The results showed that: (i) the suitable water levels for flood, normal and dry flow years were deduced from the relationship between annual precipitation and vegetation cover in the Baihe Lake, which are 1.23, 0.99 and 0.81m, respectively; (ii) The optimal ecological water level for P. Communis ranged from 30 to 50 cm, while it ranged from -5 to 30 cm for S. planiculmis; (iii) the spatial distribution of P. Communis and S. planiculmis, simulated using vegetation evolution model, exhibited that P. Communis and S. planiculmis both extended, while open water area decreased with decreases in water level; and (iv) the area for S. planiculmis in dry flow years are almost 2.8 times than that in high flow years, which can provide more food for Siberian crane. The results indicated that ecohydrological pattern varied with the water level, which also altered the habitat for Siberian crane. All of these would help address wetland degradation by providing suitable water level in high, normal and dry flow years/period.