



Modeling spatial pressures of urban expansion on wetland in Beijing, China using a GIS-based spatial model

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To protect the wetlands that play the important roles in the regional ecological security, the article has developed a GIS-based spatial model to model the spatial pressures of urban expansion on wetland, in Beijing, China. The proposed model can quantitatively and visually evaluate the actual and potential spatial pressures of the urban expansion on the wetland due to its integration of the spatial analysis function of a GIS and the simulation abilities of one urban expansion model developed by us in 2008. With the further analysis of the spatial pressures, the “hot spots” of the urban expansion on wetland can be directly mapped, thus providing useful information for the wetland protection.

The model was performed in Beijing China with the actual spatial pressures of urban expansion on wetland from 1991 to 2004 simulated and the potential spatial pressures of urban expansion on wetland before 2015 predicted. The simulated results were basically consistent with the actual situations observed by the remote sensing data, indicating the model was capable to depict and reflect the spatial pressures of the urban expansion on the regional wetland. The predicted results indicated the wetlands with easy accessibility to traffic roads and close distances to the central city in Beijing met high spatial pressures of urban expansion. Measures should be given to the “hot spots” that were exposed to both the high actual pressures and potential pressures of the urban expansion on wetland so that the wetland in Beijing, China can be protected effectively.

Key words: urban expansion; wetland; spatial pressures; Beijing