



## Bayesian network for estimating the interaction between ecological health and waterfowl abundance

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The serious decrease of biodiversity which is mainly induced by Habitat disappear is important issue of species field and in the world. The study area chooses Taoyuan County at subtropical area because of the most artificial farm ponds in Taiwan where the total area includes 27 km<sup>2</sup>. The effectiveness of these ponds is storage and irrigation and also supplies all kinds of environment like refuges for migratory birds, especially for water birds. Due to human development, farm ponds in this city not only suffer from largely disappear recent year, but also lead to the habitat and bird species reduce. Biological research usually contains incomplete and uncertain information, therefore, this study adopts Bayesian Network model to analyze interaction between land use and water birds. The habitat parameters include elevation, urbanization, building area, farm area, reconsolidation, forest area, irrigation area, farm pond area and lawn area; the biological factors have reproductive capacity, habitat condition, hydrological condition and food source. Using this structure can estimate the interaction of spatiotemporal abundance distribution between habitat parameter and biological parameter. In addition, the former results can define all the reasonable relationship of all hidden states and provide decision-makers with reasonable evaluation.