

研究论文

厦门国家级自然保护区白鹭生态安全评价

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摘要 白鹭的生态安全是指白鹭所处的生态系统能够维持白鹭种群持续生存的需求和条件, 其中关键是白鹭生境的安全。白鹭生境安全从根本上取决于生境的适宜性和人为对生境的干扰程度, 又可以理解为生境受到人类干扰后所能保持的生态适宜性。分别选择白鹭在厦门的2个主要繁殖栖息生境——大屿岛和鸡屿岛和10个代表性觅食生境为研究对象, 对白鹭生境的生态适宜性和人为干扰程度进行分别评价。其中, 生境适宜性评价采用指标体系法, 通过赋值、计算进行评价; 人为干扰程度评价主要依靠地理信息系统分析方法, 将人为干扰程度用不同土地利用形式代表, 利用Mapinfo7.0和ArcView3.2a地理信息分析软件对白鹭生境的人为干扰程度进行计算评价。最后, 结合生境适宜性评价和人为干扰程度评价结果, 对厦门自然保护区白鹭的生态安全进行综合评价。评价结果显示: 鸡屿岛和大屿岛作为白鹭在厦门的繁殖栖息地的生态安全程度均处于安全等级, 鸡屿岛的生态安全程度高于大屿岛。厦门白鹭的觅食生境总体来看处于较安全等级, 但没有一处觅食地是属于安全等级。

关键词 [白鹭](#); [自然保护区](#); [生态安全](#); [评价](#)

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Ecological safety assessment of egrets in Xiamen National Nature Reserve

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Abstract Ecological safety for egrets means that the ecosystem in which they live provides the conditions necessary for sustaining life. The health of wildlife species depends on safe habitats, which consist of both living and non-living elements. As a result, egrets' ecological safety can be understood as the maintenance of ecological suitability in spite of anthropogenic impacts. The safety of the habitats is the primary issue in egrets' ecological safety assessment. This paper reports on the results of a study of two major breeding habitats and ten typical foraging habitats of egrets along the Xiamen coast, locations selected to assess the ecological safety of the egrets which live in that area. Breeding habitats cover the entire land area and the inter-tidal area of Dayu and Jiuyu islets which have been designated as the Xiamen National Nature Reserve. The foraging habitats cover all types of wetland along the Xiamen coast, including mudflat, estuary, mangroves, reservoirs and semi-salty lake. In this study, ecological safety assessment focused on the breeding and foraging habitats of the egrets, with the objective of assessing the extent to which the needs of egrets can be satisfied and maintained by the breeding and foraging habitats. In this paper, ecological suitability and the impacts from humans are considered as the two major factors affecting the egrets' ecological safety. Therefore, the ecological safety assessment has two components. The first evaluates the ecological conditions maintaining the egrets' sustainable lives while the second evaluates how human disturbances are affecting these ecological conditions. By calculation and assigning a value to the assessment, an ecological indicators system was adopted. For the human impact assessment, we used different land-use types to represent different degrees of human impacts, and assigned an assessment value for each land-use type. In addition, geographic information system analysis software- Mapinfo7.0 and ArcView3.2a were applied to analyze the impacts of different human activities on egrets' habitats. Combining the results of these two assessments, a meas

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ure of the egrets' ecological safety in Xiamen Nature Reserve can be obtained by using a synthetical assessment function: $ES=S-D \times w$. Egrets' ecological safety assessment can be divided into five levels: safe, marginally safe, moderate, weak safe and unsafe. Results of the study show that both the Jiyu islet and Dayu islet are at the safe level as breeding habitats, with Jiyu islet rated higher in this range. In contrast, the tenforage habitats are at marginally safe level on a whole, although no forage habitat is at safe level.

Key words egrets _ natural conserve _ ecological safety _ assessment

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