Analysis of Attractive Sources related to airport Wildlife Strike by using Geospatial Tools

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**Abstract**

Territorial development and landscape transformations around airports determine changes that may have an effect on the increase of risks for aviation as well as on wildlife protection. In both the rural and urban environments, the presence of wildlife attractive sources (e.g., vegetation, water bodies, landfills, livestock buildings, and feed mills) in the airport surroundings increases the risk of ‘Wildlife Strike’. Therefore, the investigation on attractive sources at the airport surroundings is needed to contribute to the ‘Wildlife Strike’ monitoring in order to activate efficient countermeasures for limitation and control in view of aviation safety and at the same time increase wildlife protection.

The main aim of this study included the acquisition of basic knowledge useful to control “Wildlife Strike” phenomenon around airports in different seasons. To this aim, supervised classification of open-source remote sensing imagery made available within the ESA Copernicus program, coupled with GIS tools application, was considered as an easy and low-cost solution to the problem of information updating. The integration of this information into a GIS allowed localisation of vegetation and water surfaces bodies in relation to airport ‘Obstacle Limitation Surfaces’ (OLS), ‘Rete Natura 2000’ (SIC/ZSC and ZPS) areas, and the ‘Important Bird Areas’ (IBA) that play a key role in birdlife protection. The case study was related to the 13-km territorial area surrounding the airport of Catania, Italy. The monitoring of these attractive sources for wildlife, in different seasons of the year made it possible to obtain information about the periods in which it is most useful to reduce the risk. In detail, the vegetation coverage was found to increase to about 40% of the total investigated area in winter.

Further geostatistical analyses of kernel density performed by using GIS tools have defined the areas of greatest importance in relation to the weight of their suitability and proximity to the airport considered.

This approach has made it possible to analyse these areas both from the point of view of airport safety and to monitor ecological areas and corridors of high naturalistic value in order to protect them, providing a contribution for the sustainable management of the Wildlife Strike problem.