Pengembangan indeks komunitas burung dan analisis tutupan lahan di kawasan pulau Nusa Penida, Kabupaten Klungkung, Bali = Development of a bird community index and land cover analysis in Nusa Penida island, Klungkung, Bali

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Abstrak

The information about bird community and response guild of each species are required for calculating the ecosystem health in Nusa Penida Island. At present time, the facts about bird species in the island has been known but not the response guild. Respose guild considered necessary to construct a Bird Community Index, thus we can make judgement on the ecosystem health in that region.
Base of this research is animal ecology and ecological indicators. The aims are to develop a regional index of biotic integrity based on bird community composition, apply the index to a probability-based sample of field sites to verify the proportion of the study area exhibiting various categories of biotic integrity, determine the combination of landscape configuration and local vegetation variables that are associated with different levels of biotic integrity, and to verify the bird community index with independent data collected from the same sample locations. The research was held on two parts, from March -May and July - September 2010 on Nusa Penida Island.
This study is classified as a non-experimental study. Point count along the transect was used to collect the information of bird community. The Landsat satellite imagery was personalized by supervised method and overlay with sampling points coordinat. The image was enhanched by buffered the sampling points coordinat 500 m that intersect with landscape configurations to reveal the proportion of land cover type each sampling points. The enhanched imagery was done using ArcGIS 9.3. Linear regression by stepwise method was used to identify the association along with land cover category and bird community. Statistic calculations were counted using SPSS 17.0. The instruments are binocular [Bushnell] 10 x 50, GPS [Garmin 76 CSX], rollmeter, digital camera [Sony DSC P-150], watch, field guide book, note book, pencil, and an image from Landsat satellite path 116 row 66.
The result for bird community on first part of the research are eleven sites classified as high integrity, thirty five sites as moderate integrity, and five sites as low integrity. On the second part of the study showed that four sites as highest integrity, twenty three sites as high integrity, and twenty four sites as moderate integrity. Nevertheless, not all land cover and vegetation variables were significant different on each integrity category.
The conclusions are bird community index in Nusa Penida Island devided into three category, high, moderate, and low; there is a connection between bird community index and disturbance levels; the BCI that used to rank the environmental condition appropriate to land cover in that area; and landscape configuration combination has relationship with every level of biotic integrity.