

Andean Bear habitat availability model expansion to the western portion of the Condor Bioreserve (BRC), Ecuador.

Abstract

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Andean bear has been considered a conservation target in several local and regional evaluation and planning processes. This can be attributed to its large home range, its great habitat requirements as well as its ecological role. In Ecuador there are many protected areas with bears population, still, they seem to be too small to maintain viable populations in the long term. In order to test the remaining connectivity among the protected areas within the Condor Bioreserve (CB), we decided to expand the model developed for the Oyacachi river basin (72,000 ha. within the CB) to the whole western portion of CB (1'051,749 ha.).

The work was divided in two activities: field data gathering through the search of signals using transects and the analysis of the cartographic information in association with the field data. The transects were allocated randomly and proportionally to the extension of vegetal formation types. Each transect was 1,5 km long and 2 meter wide. Six variables were selected (altitude, slope, landform index, vegetation types, rivers distance and road density). The Mahalanobis Distance (d^2) was the multivariate statistic used for the analysis.

The model was generated with 498 transects in which we obtained 258 bear activity registries. 149 (57,75%) were feeding sites. The humid páramo grassland was the vegetal formation in which we obtained the bulk of registries, 130 (50,38%). The obtained d^2 values were distributed between 1,124 and 1,422,938 ($\bar{x} = 30,798$; $SD = 161,446$). From the accumulated frequencies analysis of d^2 values, we obtained the ranks that define the four generated areas. The zone I ($1,124 \leq d^2 \leq 1,688$; $SD = 0,145$, $\bar{x} = 1,48$) includes 249,239.75 ha (24%) while the zone II ($1,688 < d^2 \leq 4,430$; $SD = 0,813$, $\bar{x} = 2,486$) has an extension of 381,428.25 ha (36,69%). Inside these two zones the humid páramo grassland occupies 519,789.75 ha followed by the low evergreen montane forest with 105.538,5 ha.

A fair amount of zones I and II overextend between the protected areas. The results allow us to use the model as a tool to understand the connections between protected areas inside the CB and plan biological corridors. These results show the possibility to manage the protected areas in an integrally way and this is the concept that the CB is trying to establish.