

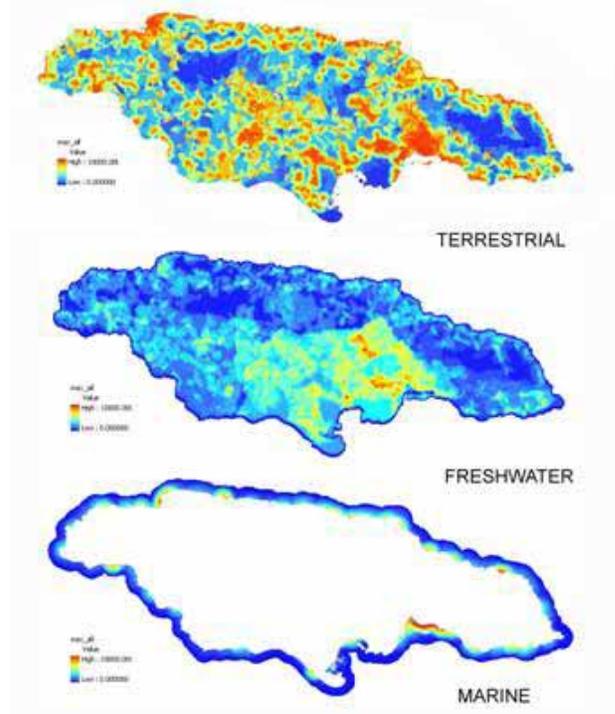


Protected Area GAP Decision-Support System for ArcGIS 9.1™ (Version 1.0)

The Protected Area Gap Decision Support System (DSS) is a free program that consists of three conservation modules that operate within Environmental Systems Research Institute's (ESRI) ArcGIS 9.1 Geographic Information System (GIS) software. The Nature Conservancy's Mesoamerica and Caribbean Science Program designed and developed the program with funding from the Inter-American Biodiversity Information Network (IABIN) and The World Bank Development Grant Facility (DGF). The DSS operates on three basic input data layers including a) habitats/species occurrences; b) risks to habitats/species; and c) protected areas. These tools were designed as part of an ongoing process to help build technical capacity to countries seeking assistance in identifying protected area gaps. They permit the calculation of complex conservation models within an easy-to-use interface. The three modules include:

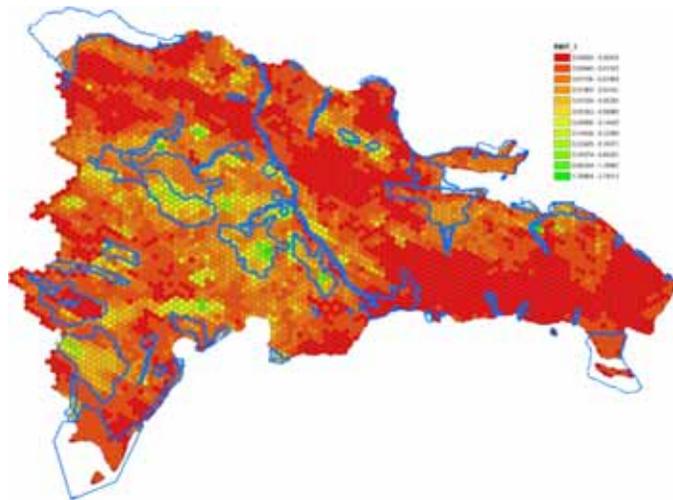
1) Environmental Risk Surface (ERS) Module

Permits users to develop customized surface models to measure cumulative levels of risk impacts across a land or seascape based on socio-economic activities and other natural events which may influence the ecological health of conservation targets. ERS models can be used to spatially stratify risk levels and focus conservation site selection by steering target selection away from high-risk areas where the abatement of pressures on biodiversity seems less likely. The output model reflects the spatial distribution of cumulative intensity values for all risk elements which can be used to model habitat patch intactness/risk or be incorporated as cost models for conservation goal optimization software.



2) Relative Biodiversity Index (RBI) Module

Designed as a complementary analysis to Marxan, the RBI module operates at a planning unit (e.g. hexagon, watershed) level and calculates an index that identifies unique relative abundance of habitat and species occurrences across a land or seascape. The advantage of this approach is that it can be used to identify the best remaining areas, in terms of target abundance, for each target or set of targets at both the planning unit and landscape scale.



3) Marxan Module

Marxan is a powerful optimization program that identifies efficient portfolios of protected area sites based on predefined conservation goals and cost factors. Marxan is repeatable and objective and results can illustrate a pattern of priority sites of low political or social pressure that can still satisfy the explicit biodiversity goals. Once the user has assembled the conservation targets, planning units, cost surfaces, and protected areas, the Marxan Module provides an easy-to-use interface to prepare the conservation target data, generate the required input files, and view the results.

Designed as a complementary tool to the protected area gap process, the user should keep in mind that the majority of the work that goes into this process involves the spatial delineation and critical

evaluation of habitats/species, protected areas, and risks to habitats. The Protected Area Gap DSS is ready to be used only after users have obtained the highest quality data available, conducted an ecological inventory and assessment of these data layers through expert review, and carefully considered all model scenario settings. The accompanying tutorial and sample dataset present each of the three modules and guides the users through the process of:

- Developing a customized Environmental Risk Surface (ERS) based on mapped risk elements (i.e. socio-economic activities) that have been identified through expert review as having negative impacts on the health of targeted habitats, species or ecological systems;
- Calculating a landscape's Relative Biodiversity Index (RBI), which measures relative biological richness, measured in terms of biodiversity feature abundance in comparison to the overall study area. Individual scores for each biodiversity occurrence can be used as a stand alone assessment for each planning unit or subsets of units (e.g. hexagons, watersheds);
- Creating input files for use in Marxan, popular conservation software which provides users an easy way to manipulate input parameters and review various conservation scenarios in order to achieve an optimal configuration of protected areas that meet user defined conservation goals.

The program, tutorial and sample datasets can be downloaded at [ftp://cerp:cerppassword@ftp.tnc.org/CDSS/Protected Area Gap DSS.zip](ftp://cerp:cerppassword@ftp.tnc.org/CDSS/Protected%20Area%20Gap%20DSS.zip) For additional information, please contact Steve Schill at sschill@tnc.org

