

Session #051403

Session: Assessing Threats to Biodiversity at an Ecoregional Scale

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Streamlining Threat Assessments to Multisite and Ecoregional Scales in the Wider Caribbean

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The lack of comprehensive data sets on threats to and protection of marine resources for the Caribbean region necessitates using inferential modeling to fill in data gaps. Here we report on results of a 2-year collaborative effort to represent threats with inferential modeling at the scale of the entire Caribbean basin as part of a large-scale ecoregional planning process. A simulated annealing framework (MARXAN) was adopted to explore solutions for optimizing the representation of biodiversity under a number of different conservation goals. The MARXAN framework allows threats to be incorporated into the planning framework as a “human-activity” cost surface. The following criteria used to determine which threats to model: judged by regional experts to have an important influence to biodiversity in the region; uniform and spatial explicit coverage for the entire planning area; model could be regularly updated from ‘non-static’ data sources. For marine threats, The Reefs at Risk in the Caribbean approach was adopted in which four human activities are modeled: coastal development, marine pollution, and land-based sources of sediment, and overfishing. Data from remote sensing were used to map changes in land cover which feed into a watershed-based analysis of sediment threat. Landcover along with population and tourism data were also used to develop a “human activity” footprint for terrestrial areas. These individual threat surfaces were then scaled and merged to produce a single integrated threat representation for the entire basin which included managed or protected areas scaled by IUCN rankings. Results of the preliminary runs for the Caribbean basin will be shown and discussed.

Keywords: marxan, threat assessment, ecoregional, Caribbean, marine resources, biodiversity, conservation, IUCN, marine threats, reefs at risk, coastal development, marine pollution, overfishing, landcover, tourism

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