Community-Based Biodiversity Conservation in Australia

Engaging the community in the Wet Tropics World Heritage Area

Location: Mission Beach, Queensland, Australia
Partners: CSIRO Ecosystem Sciences; Terrain NRM; Spatial Information Services Pty Ltd; and the University of Wyoming Geographic Information Sciences Center

Context: Australia's Wet Tropics is a band of rainforest extending along the east coast of Australia in northern Queensland. The area enjoys very high species diversity, and some 73 species of vertebrates are endemic to these rainforests. This coast is called the Cassowary Coast, in honor of the Southern Cassowary, a large, endangered, culturally iconic flightless bird that is an active disperser of rainforest seeds and is therefore critical to rainforest preservation. The Wet Tropics were listed as a World Heritage Area in 1988.

Within the Wet Tropics, Mission Beach is especially significant and was identified as the optimal site for investment in habitat action. It hosts Australia's highest concentration of southern cassowaries, and very high diversity of vegetation communities, birds, mammals, and insects. Mission Beach visitors and residents enjoy a quiet lifestyle centered on villages in coastal rainforest areas. Small-to medium-scale tourism and tropical agriculture drive the local economy and add to the area's appeal. However, these qualities are threatened by the pressures of human population growth and the march of coastal development. Habitat loss and fragmentation are ongoing, altering available habitat for biodiversity.

In this environment, Australia's national science agency, CSIRO, set out to develop, apply, and test a new model and tools for biodiversity conservation. CSIRO partnered with Terrain NRM, a non-profit resource management body for the Wet Tropics, and with Spatial Information Services Pty Ltd and the University of Wyoming's Geographic Information Sciences Center to assist with computer modeling using CommunityViz.

> *"CommunityViz helped bring together the science and community knowledge allowing all to see outcomes as desired."*
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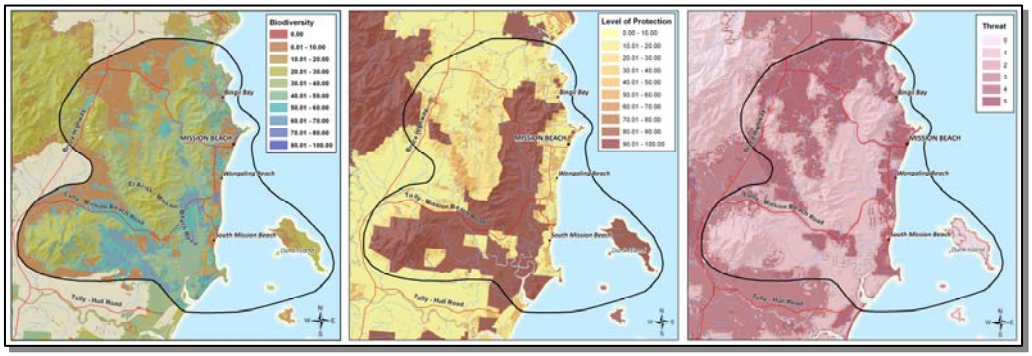
> — Sharlene Blakeney, Terrain NRM

Project Description: The project comprised six stages: analyze and incorporate information about natural resources and the human community; facilitate community ownership and a shared community vision; identify and prioritize strategies and projects; forge implementation partnerships; develop a participatory monitoring system; and update and refine plans over time. CSIRO and Terrain NRM brought together industry, government, civil society organizations and individuals into a Mission Beach Habitat Network Action Committee to guide plan development and implementation. Broad community engagement was integral to the project to raise awareness, gauge community values, increase involvement, provide feedback, and facilitate implementation.

In order to develop a shared community vision, the project team developed two scenarios –one depicting the current situation, and the other a business-as-usual scenario of the future at 2025 based on a projection

of current trends in population and land use change. The business-as-usual scenario showed extensive conversion of forested land to intensive land uses, clearing of large areas of vegetation especially in the areas of endangered habitat along the coast, and degradation of vegetation within an important rainforest corridor. In addition to these biodiversity impacts, the business-as-usual 2025 scenario highlighted remarkable changes to the cultural landscape, including replacement of the current pattern of villages in the rainforest by urban strip development. Community members uniformly agreed that business-as-usual was not the desired future. They found common ground in a vision statement that combines natural and human values.



The analytical centerpiece of the project was the interactive "Collaborative Habitat Investment Atlas," a participatory tool developed in CommunityViz. The "Atlas" was used to promote dynamic interaction among stakeholders through the use of variables that can be weighted to reflect differing biodiversity protection requirements, and formula-based dynamic attributes that are automatically updated as changes are made in the weighting of the variables. Three sub-models were brought together to facilitate decision-making: a Biodiversity Sensitivity Model which incorporates and weights up to 15 biodiversity attributes; a Threat Model which incorporates and weights areas potentially cleared in the business-as-usual 2025 scenario analysis, weeds, distance to major and minor roads, future development applications, fragmentation and 2031 rural living and urban footprints; and a Protection Level Model which summarizes and weights legislative protection levels.

Technology and Tools: CommunityViz Version 4.1 including its LandFrag Tool; ArcGIS 9.3 including Model Builder; and stakeholder input through one-on-one meetings, presentations, and group meetings. Two community workshops were held – one on values and one on target outcomes. Information, draft reports, workshop outcomes and other information was distributed by mail and in print and online media.

Outcomes: Using the models developed in CommunityViz, the project team identified strategies and projects for investment and brokered a set of community partnerships to implement the priorities. The team prepared a Mission Beach Network Action Plan which set out the priority strategies, targets, measures of progress, objectives, projects, partners, tasks, and outputs. The Plan was finalized in June, 2010 and has achieved improved alignment between institutions at local, state and national level institutions. The Australian government denied a development application that would have threatened an important cassowary habitat, and a new national policy for cassowary protection has been released. In addition, the state of Queensland imposed rules that constrain the urban footprint at Mission Beach to minimize impacts on ecological and cultural values. Further regulatory mechanisms and funding commitments are under discussion.

KEY LINKS

CommunityViz
http://placeways.com/communityviz
CSIRO
http://www.csiro.au
Terrain NRM
http://www.terrain.org.au
University of Wyoming Geo. Info. Science Center
http://www.uwyo.edu/wygisc
Spatial Information Services Pty Ltd
http://www.spatialinfoservices.com.au

Sources: CSIRO, University of Wyoming Geographic Information Science Center, Terrain Natural Resource Management, Mission Beach Habitat Network Action Plan, June 2010 www.terrain.org.au/missionbeach ; Mission Beach and cassowary photos used by permission of Terrain NRM

Papers: Hill, Rosemary Hill, Kristen J.Williams, Petina L. Pert, Petina, Catherine J. Robinson, Allan P. Dale, David A.Westcott, Rowena A.Grace, Tony O'Malley, Tony (2010) Adaptive community-based biodiversity conservation in Australia's tropical rainforests. Environmental Conservation, 37, pp 73-82 http://journals.cambridge.org/action/displayAbstract?aid=7819778

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