The last wild places on earth—our great reserves of biodiversity—are often also the places where humans struggle most to prosper. The challenges to human well-being in these regions often put the people in conflict with the goals of protecting biodiversity. Yet in some regions, particularly those with long periods of human habitation, biodiversity and subsistence livelihoods have coexisted, often for several centuries. It is in these areas that we may find the keys to simultaneously improving the lives of humans and protecting the environment.

Geographically my work has centered on the Caribbean “Miskito” Coast of Nicaragua, where isolation for centuries created a diversity of local and indigenous communities living relatively sustainable livelihoods. The last 25 years have brought multiple shocks to this region, including connection to global markets through transportation and technology, the migration of outsiders with different land practices, and a changing climate that threatens the coastal region.

My research focuses on three aspects of this puzzle:

1. The impacts of “shocks” to the systems—economic, climatic, or social—that force rapid change in the peoples of these remote regions;
2. The factors that lead to successful coexistence of humans and wildlife before the shocks; and
3. The structures of governance, management, and community that provide resilience for people in these rapidly changing regions.

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MORE INFORMATION
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RESEARCH APPROACH

During a six-year NSF-funded project, we examined the impacts of market connections on the wildlife, with my work focusing on human impacts on large rainforest mammals and marine resources. As this work comes to a close, I am balancing the need to help people of the region adapt to their changing world with the interest in studying new threats such as the interoceanic canal now planned by the Nicaraguan government and Chinese developers.

I work in close connection with leaders of the regional government in Nicaragua’s Southern Caribbean Autonomous Region and NGO leaders protecting wildlife. But most importantly, I work with the communities to address their needs and interests. I am also a vocal leader of the scientific call for caution in moving forward with the canal initiative. In this context I work with Nicaraguan scientists to urge the government to more carefully evaluate their proposal before jumping into a project that may be the shock that undoes the centuries of cultural coexistence.

I have two critical needs as I move forward:

1. Developing research and applying research in a way that can build resilience among the communities and the natural environments, and
2. Addressing the threat to both people and biodiversity as Nicaragua’s interoceanic canal moves forward.

NEXT STEPS

Future initiatives will involve U.S. and Nicaraguan scientists and will focus on both problem identification and problem solving.

The major project in problem identification is a collaboration between MSU, University of Washington, MIT, and the Nicaraguan Academy of Sciences, led by Dr. Jorge Huete-Perez. We have raised funds for a field expedition in January 2016 to assess the state of biodiversity in the Nicaraguan canal zone. We are seeking funds to continue this effort beyond 2016 and to generate long-term monitoring of biodiversity impacts of the canal. This project is especially important to understanding the impacts on populations of endangered species, including Jaguars (pictured at right) and Baird’s Tapirs.

On the side of problem solving, the combined deforestation caused by an advancing agricultural frontier and new development projects is extremely threatening to endangered mammals and birds like Harpy Eagles and Scarlet Macaws. Along with local leaders, I am developing a team of experts who can confront the deforestation head on and begin to reverse its course through active reforestation involving the same migrants who are now cutting the forest. My partners in this effort include regional government officials—including the secretary of natural resources for Nicaragua’s Caribbean Region—as well as local biodiversity and forestry experts and indigenous community members. We are seeking government development agency or foundation support to advance this project at this critical juncture in the history of Nicaragua.

Whether the Nicaragua of the future is still a “land of biodiversity” will depend on whether we can address this grave threat and turn people toward a solution.