

Repairing Nature's Highways—The Diria Biological Corridor
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“No man is an island unto himself...”

The origin of *For Whom the Bell Tolls*, the title of one of Hemingway's better known novels is a somewhat obscure poem by John Donne, a 16th century English writer. It's about the intrinsic connection between individuals and mankind, the greater human family.

Connections of a different sort were the focus of a recent gathering in Santa Cruz at the gleaming new courthouse building. A group of young Costa Rican biologists presented the results of biodiversity studies in one of the several watersheds within the newly proposed Diria Biological Corridor. Frankly, the prospect of entering ANY courthouse goes against my better judgment. I apparently snored a bit through the exact number and name of all the bats, birds, fungi, reptiles and what ever else they found lurking in the woods. Nonetheless, I was thrilled to learn of the region-wide effort to “connect up” the protected areas and National Parks of Guanacaste.

And that is precisely what the proposed initiative is setting out to do: provide landscape scale linkages—a total of 180,000 ha. —between the Ostional Reserve, Diria National Park, and the Las Baulas National Park. As if that is not enough, the Diria effort is part of an entire Mesoamerican Biological Corridor that stretches from the US border to Panama, and which is the subject of a forthcoming 12-part documentary recently filmed for National Geographic.

So what's all the fuss about? Anyone who has spent time in Guanacaste and then visited the Howler monkey exhibit at the world renowned San Diego Zoo might feel perplexed at the “Endangered” sign in front of the enclosure. “Say what? Those monkeys are everywhere!” The fine print reads: “threatened by **habitat fragmentation.**” That is what the Diria Corridor Project—and the greater Mesoamerican project—aim to redress.

The concept of biological corridors and the importance of restoring “connectivity” to landscapes originate in what is known as **island biogeography**. After years of studying the complexity and decline of species richness on islands, scientists turned their attention to “islands” of vegetation and even large National Parks in the US. What they found, not surprisingly, was that the size of the protected area was important in determining the number of species it could support. But, alarmingly, even within large parks, species were declining due to interplay of complex factors including size of the area, resource availability and inbreeding within populations.

Increasingly ecologists and wildlife biologists have focused not just on protecting individual areas and ecosystems, but also on connecting a variety of different types of habitats and ecosystems. This is precisely the thinking behind the Diria Biological Corridor initiative. Hardly by coincidence, Guanacaste is the proud home of one of the most ambitious landscape “linkages” on the planet. The *Area Conservación de Guanacaste*, linking the lowland Santa Rosa National Park with the volcanic cordillera in Rincon de la Vieja is the life work of renowned ecologist Daniel Janzen

who studiously documented the importance of species movement across altitudinal gradients during the changing seasons in our region.

One of the many obstacles faced by Janzen and the ACG is fire. Much of the land acquired between the two national parks is former cattle pasture. The restoration efforts to bring back the forest are regularly threatened by fires racing through the *jaragua* grass in the fierce winds of the dry season. Anticipating similar challenges, the Diria proposal includes working with MINAE (the environmental ministry) to train local fire brigades in order to prevent this annual threat to forest regrowth.

Inclusion of the community in restoration efforts, and demonstrating that protection and restoration can provide a new basis to the economic life of the region is another parallel between the Diria proposal and the successful efforts of Dr. Janzen in the ACG. Where Janzen involved locals in biodiversity studies, the Diria effort aims to employ the “ecological goods and services” payments program of the Costa Rican government as a way to compensate farmers and landowners for protecting land.

The ecological services payments are in increasing use to protect watersheds, biodiversity and for carbon trading but the representative of one of the agencies involved, FONAFIFO, expressed keen interest in a comment made at the presentation. An audience member suggested the use of contour forest strips on hillsides, incorporating species that can provide cattle forage in the lean months of March—May. This technique would help get the cattle farmers on board in the effort to halt damaging runoff and at the same time increasing biodiversity and landscape connectedness.

In the area where I live, FONAFIFO has offered to help the efforts of a local group of developers that is trying to restore more than 30 hectares of mangroves. While the estuary habitat itself falls outside of their jurisdiction, they are authorized to provide financing to “buffer zones,” around critical habitat area. This concept of buffer zones is another area where there is a lot of room for developing new combinations of land use to further the overall goal of restoring the vital arteries which already connect much of our regional landscape: the riparian forests along the many streams and rivers of Guanacaste.

The gallery forests are in fact protected by law, from 10 to 40 meters or more from the bank of the river. Needless to say, this is less than religiously observed and landowners often cut, spray and plow as close as possible to get the most out of their land. But, as an hour by the river will confirm, birds use these forests as a flyway. Monkeys and other species move up and down the rivers. They are at present the de facto natural linkages in the Guanacaste landscape. Nonetheless their function as wildlife corridors is enhanced, according to landscape ecologists, if there is a less abrupt transition—say, from forest to field—and if land use at the “edge” of the forest has less frequent disturbance. What that means in everyday terms is that in between your field and your forest, you have a tree plantation or a fruit orchard, that “buffers” both in terms of the height transition and in the amount and kinds of human activity that take place in the transition zone. The good news for wildlife diversity is that the complexity of this forest edge provides even more microhabitats than the gallery forest itself.

Financing the ambitious goals of the Diria Biological Corridor initiative is far from a done deal. The ecological goods and services payments provide one way to help collaborating landowners offset costs of setting aside some of their land to assure the future integrity of Guanacaste's natural wealth. Even more promising is the current interest among some developers to "plug in" to the overall effort by designing large projects with conservation as a "built in" feature, not just another "add on." Under this approach, waterways, forest remnants and critical habitat connections form the essential framework of the design and the rest of the project is designed around and **designed to enhance** these critical landscape elements. The result might be a few less lots to put on the market. The upside is that the conservation development concept sells itself to a generation of environmentally aware buyers fresh off the plane with vivid memories of Katrina, Rita, and floods in the northeast, tornadoes in the Midwest or heat waves and droughts in Europe. As a successful developer remarked: "the view might bring the clients, but the monkeys clinch the deal."

Hopefully, residents of Guanacaste—from cattlemen to condo-builders--will help advance the ambitious goals of the Diria Biological Corridor initiative, to clinch the deal of restoring the corridors vital to the health of our area. The warning sign at the Howler exhibit in San Diego: "threatened due to habitat fragmentation," should come to mind every time you see the monkeys forced down out of the trees to cross a road which has severed their highway of preference—the forest canopy.

Nothing is sadder than seeing the ones who don't make it across in time, collateral damage in the pattern of progress imposed on their landscape by distant primate cousins. To the philosophically inclined, nothing could better illustrate the tragedy of man's insensate treatment of his natural realm, and by extension of his own future. As Dunne wrote centuries ago about the funeral bell

"...never send to know for whom the bell tolls, it tolls for thee."

To find out how you can help put the pieces back together, information on the Diria Biological Corridor, contact: Anna Briceño, at the MINAE office across the highway from the Banco Nacional in Santa Cruz.

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