



Cost-Effective conservation in Peru: The value of apples and oranges.

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This brief shows that having conservation data in different forms – economic apples and biological oranges, if you will – can lead to better conservation planning.

Descending from the snow-capped heights of the Andes through the Kosñipata Valley, crossing the cloud forests and skirting the Manu National Park, one comes to the small town of Pilcopata. There, at the headwaters of the Madre de Dios River, one has a view of the vast Amazon Basin, stretching away to the horizon. This is one of the last vast tracts of truly intact rain forest in Peru, in a part of the Andes range that is probably the most biologically diverse region on earth. The area is also home to indigenous people living traditionally, with minimal contact with the outside world. To the North, the forest stretches to the Colombian border and beyond, uncrossed by asphalt for more than 1,500 kilometers.



This situation is changing. The Southern “Inter-oceanic” (Spanish acronym: IOS) highway is being paved. The road, named for its function in linking the road networks of Brazil and Peru – and thereby the two countries’ seacoasts – is part of the Initiative for Integration of South American Regional Infrastructure (IIRSA) and is being upgraded to blacktop. To the north, another parallel road has been proposed, from Peru’s Amazonian city of Pucallpa to Cruzeiro do Sul, in Brazil. In regions like

this, roads bring all the benefits and wreckage of development, putting at risk the biological riches of the area.

Conservation Strategy Fund and our partners at NatureServe and GRADE analyzed the most cost-effective way to accomplish biodiversity protection goals, considering the economic impacts of the IOS road project. First we estimated the profitability of a range of land uses that compete with conservation within 100-kilometers on either side of the road. Profit figures showed where the “opportunity cost” of conservation is highest and therefore where forests are at greatest risk of being cleared. Next we overlaid these profitability maps on maps of biological features and analyzed where the biological elements could be protected to a given – ambitious – level at the lowest cost.

We discovered that there is potential to conserve vast areas of habitat and secure its biodiversity at a relatively modest cost.

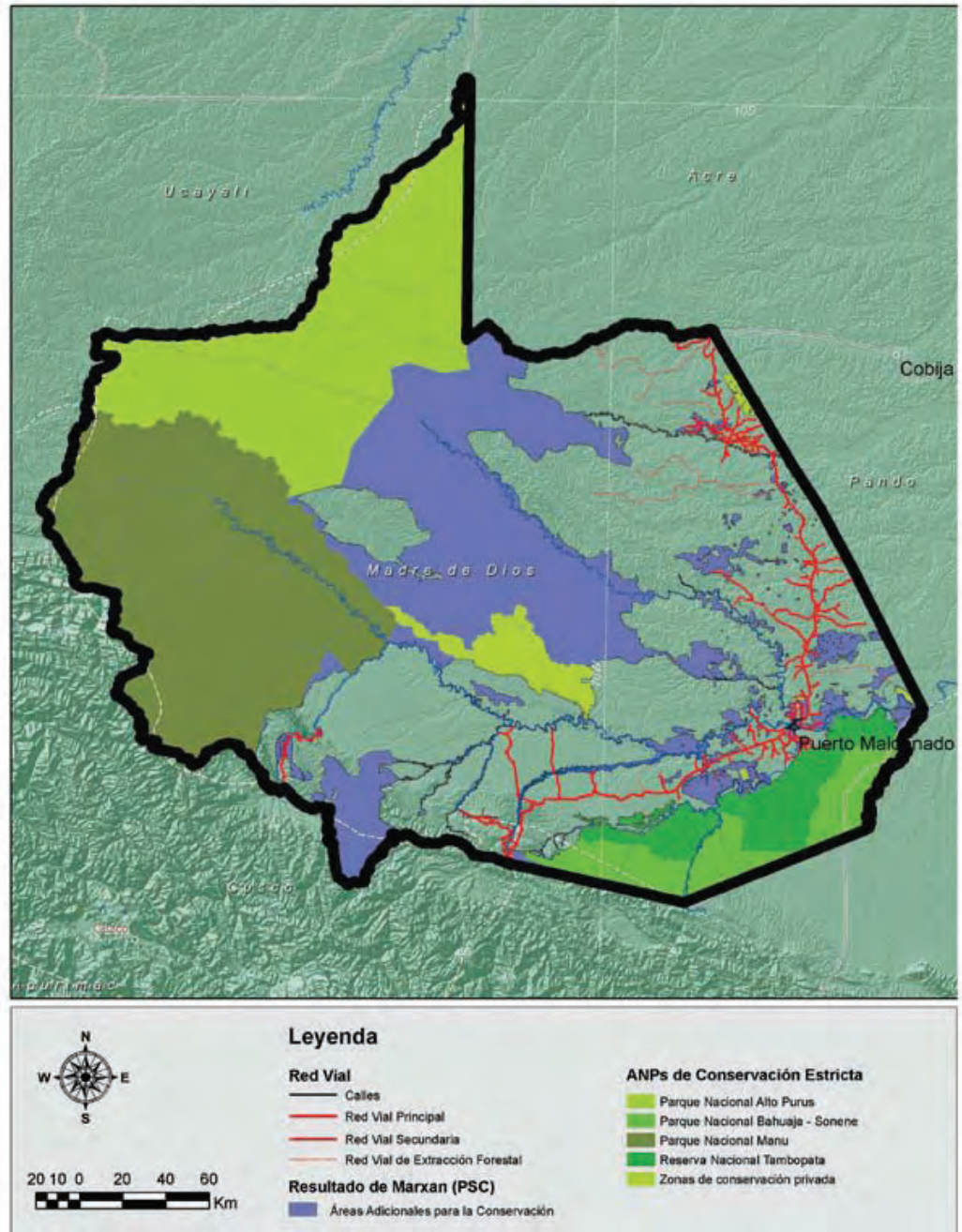
On nearly 6,000 km², no agriculture, ranching or logging is profitable. Around 10,000 km² have an opportunity cost of less than US\$100/hectare/year while 14,000 km² have opportunity costs above that level. These figures mean that 54 percent of the study region could be conserved

at an opportunity cost of less than US\$100/hectare/year.

We also looked at these numbers in terms of the cost of avoided carbon dioxide emissions from deforestation. Of the 3,700 km² vulnerable to deforestation – where non-forest uses are more profitable than conservation and forest-based activities – 2,639 km² (71 percent) have an opportunity cost of under US\$0.16 per ton of CO₂ per year. With payments of US\$0.64/tCO₂/year plus an allowance for transaction costs, 98 percent of deforestation could be avoided. Converted into present values for a 10-year time horizon, these figures would be US\$1.18-4.71 per ton CO₂, which compare favorably with the recent range of US\$9 per ton in voluntary markets for avoided deforestation.

When we combine economic information with biological data, we arrive at a map of areas that would accomplish conservation goals cost effectively. The map on this page shows in blue 16,000 km² which, if effectively protected, would accomplish this feat. These areas are additional to the government-protected areas, shown in various shades of green. Most of the new areas are within the boundaries of the State Reserve for Indigenous People in Voluntary Isolation, in central Madre de Dios, and in the southern part of the Amarakeari Communal Reserve. On the one hand, many consider these areas already protected, such that conservation objectives used in our study can be considered accomplished already. However, others point to the fragile status of these indigenous areas and the need to consolidate their protection in order to, among other goals, secure the biological wealth of the region.

In general we expect conservation plans to be most successful when they simultaneously consider biological and economic information, even when these values cannot be put in the same currency. This study strived to



Areas in blue show a conservation portfolio that would achieve biodiversity protection cost-effectively in the region crossed by the Southern Inter-oceanic highway.

provide an example of this approach.

Photos by Leonardo C. Fleck.

This project was made possible by the generous support of the Blue Moon Fund, the Gordon and Betty Moore Foundation, the Wildlife Conservation Society and the American People, through the United States Agency for International Development.

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