



PARKS PRODUCE LOCAL ECONOMIC BENEFITS IN AMAZONIA

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Parks and reserves in the tropics have been portrayed as constraints on development for already poor communities. It is also argued that rich northern countries reap the benefits from these parks in the form of carbon storage, climate stability and biodiversity conservation, while the payoff to locals is inadequate to cover their opportunity costs (2,3). Recent evidence from the Brazilian state of Amazonas suggests that in some places the reality is the reverse; parks funnel money and jobs to places with few other options, and outsiders pay the tab.

Economic analyses of protected areas usually adopt a broad so-called “social” perspective, putting the establishment, operational and opportunity costs in the debit column, and counting as benefits any incremental values that can be attributed to formal protection. These include things like recreation, biodiversity, climate stabilization, watershed protection and sustainable extraction (4). This perspective is valid from a national or global point of view, but gives little insight into the costs and benefits as they are experienced

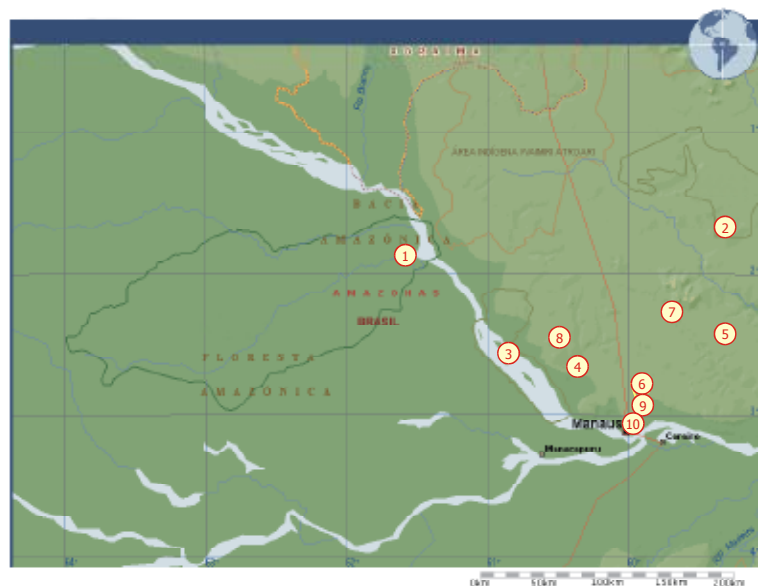
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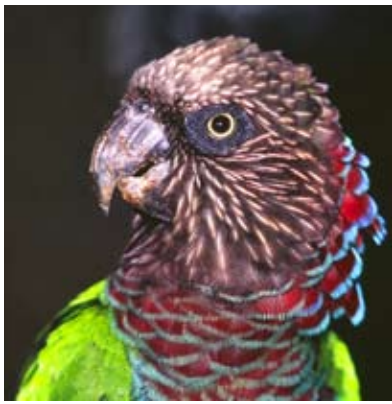
We gathered 1992-2003 financial data from 10 protected areas (Figure 1) within 200 km of Manaus, state capital of Amazonas, sorting it according to the purpose and source of cash flows. Expenditures on local goods and services made with funds originating outside state or local government were considered net additions to local economies. These figures were compared with the local opportunity cost of land. Further, we compared median incomes of people whose employment derived from protected areas with the regional median.

The 10 protected areas ranged in size from 33 to 2.3 million ha. Annual local expenditures ranged from \$3,280 to \$428,010, with a median of \$142,105 per park, and \$3.72/ha, similar to other studies (5, 6). The total for the 10 areas was \$1.76 million per year. We conservatively estimated the present value of local expenditures over time at between \$7.23 and \$11.17 million, applying punishing discount rates of 10-20% consistent with Brazil’s financial markets.

PROTECTED AREAS STUDIED

1. Jaú National Park (2,272,000 ha)
2. Uatumã Biological Reserve (943,000 ha)
3. Anavilhanas Ecological Station (350,018 ha)
4. Rio Negro State Park (157,807 ha)
5. Walter Egler Experimental Reserve (760 ha)
6. Adolfo Ducke Experimental Reserve (9,572 ha)
7. Projeto de Dinâmica Biológica de Fragmentos Florestais Reserve (2,488 ha)
8. Cuieras Experimental Reserve (18,900 ha)
9. INPA Botanical Garden (500 ha)
10. Mindu Municipal Park (33 ha)





Financial flow analysis (Table 1) shows that only 1.49% could be identified as deriving from state and local government sources. An additional 5.98% came from non-governmental and private sources within the state of Amazonas, but may have originated elsewhere. A

further 13.13% was from undefined government sources. At a minimum, therefore 79.4% of park-related funds comes from outside the state and can be viewed as “income” for the State’s economy. If we apply the minimum percentage of outside funding to the median financial flows in the 10 parks, \$3.72/ha/year, parks draw at least \$2.95/ha/year into the local economy.

Pastures cover 77% of deforested areas in the Brazilian Amazon (7), making them a useful indicator for the opportunity cost of protection. Profits have been estimated at between \$2 and \$4/ha/year for extensive cattle ranching (8). Where Brazilian federal law is enforced, only 20% of private properties in the Amazon may be deforested, meaning that 80% has no opportunity cost for ranching, which drops the unit opportunity cost to \$0.40-\$0.80/ha. Regardless of which figures are used, parks are on average a competitive land use from a local perspective. Further, the five protected areas reporting employment figures showed 218 workers at an average annual salary of \$4,329.12 (min = \$2,556.67; max = \$9,786.08), well above the Amazon average of \$1,620 (9).

The per-unit-area median masks huge variation. While smaller areas readily compete with cattle ranching, larger areas such as Jaú, Anavilhanas, Rio Negro and Uatumã have local expenditures in the range of \$0.02-\$0.18/ha/year. These remote areas, however, also have opportunity costs well below the median. Among the most significant economic activities was research, which was concentrated in one area managed by the National Institute for Amazon Research (INPA).

This analysis is conservative in that it excludes many of Amazonas’ most recently created parks and reserves, which are now receiving substantial investments. The study also omits much of INPA’s administrative and research activity, which is surely related to the protected areas but difficult to tie to them directly. Further no multipliers were applied to the direct economic activity generated by parks. Finally, we assumed constant investment in the 10 protected areas over time, rather than growth driven by increasing global interest in ecosystem services.

Far from being a local sacrifice for the global good, protected areas can be a strategy for local economic development. They will be more economically competitive where opportunity costs are low and can be managed by allowing small scale economic activities and encouraging research.



READ THE FULL REPORT

Economic Benefits of Manaus Parks (Brazil: 2004-2005) is available at:

<http://conservation-strategy.org/files/beneficios.pdf>

REFERENCES AND NOTES

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SOURCE OF INCOMES

TABLE 1

| Origin | Undefined | Government | NGO | Private | Total |
|---------------|--------------|---------------|---------------|---------------|----------------|
| Undefined | 0.01% | 13.10% | -- | 0.02% | 13.13% |
| Municipal | -- | 1.49% | -- | - | 1.49% |
| State | -- | -- | 0.80% | 5.18% | 5.98% |
| National | -- | 22.21% | 3.84% | 0.13% | 26.18% |
| International | -- | 30.94% | 14.34% | 7.94% | 53.21% |
| Total | 0.01% | 67.74% | 18.98% | 13.27% | 100.00% |