

The Amazon GIS Project

A Smithsonian pan-institutional collaboration

<http://AmazonGIS.org>



Smithsonian
National Zoological Park



Smithsonian Tropical Research Institute

The eight country region of the Amazon contains the greatest concentration of biodiversity anywhere on earth, and conserving its resources while simultaneously accommodating sustainable development has become one of the great conservation challenges of the 21st Century. As human population growth in and around the Amazon continues to soar, agricultural, pastoral, and mining activities penetrate ever deeper into its interior placing much of this unique and irreplaceable ecosystem in jeopardy.

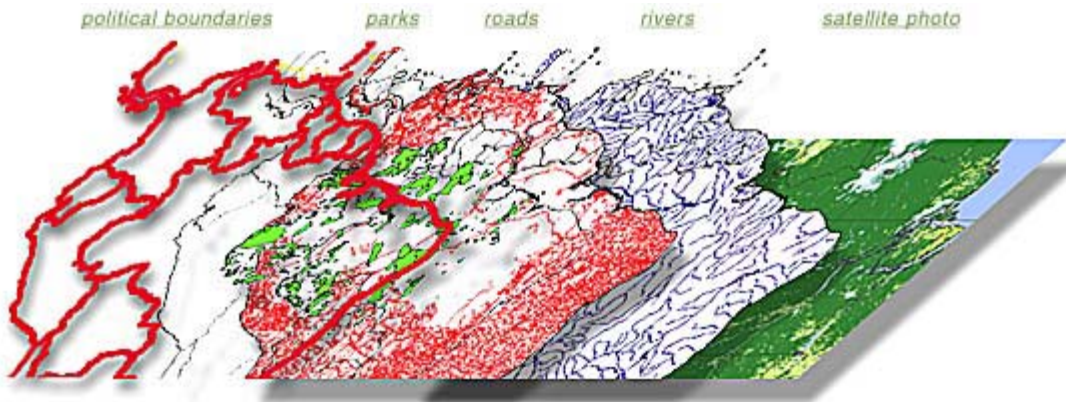
Survival of the Amazon as a viable biological entity will depend on wise development planning and careful stewardship of the region's natural resources. For effective conservation and sustainable development to become a reality, it will be necessary to assemble, analyze and synthesize as much relevant information as possible. Critical data such as distribution and abundance of the region's biological and cultural diversity, its natural resources and their patterns of use, and development such as roads, oil and gas infrastructure, and mining activity must then be made readily available to development and conservation planners and policy makers, particularly in the eight member nations of the Amazon Cooperation Treaty (ACT), signed in 1978.

Using the tools of GIS (Geographic Information Systems) and the Internet, Amazon GIS aims to influence conservation decision-making and promote effective strategies towards sustainable development.

The Amazon GIS Project brings together the Smithsonian's National Zoological Park and Tropical Research Institute to form a pan-institutional collaboration. The Zoo and STRI will work together both in the Amazon region and in Washington, DC at the Amazonia Science Gallery of the National Zoo.

The Amazon GIS portal:

The Amazon GIS Portal is an automated web-based mechanism for encouraging and enabling the public registration, discovery, access and use of geographic information resources pertaining to the greater Amazon basin. The Smithsonian Institution envisions a crossroads where the worldwide community of scientific investigators, planners, decision-makers, and others contributing to the understanding of activity in the Amazon basin can enrich, inform and help coordinate their efforts.



Themes Under Investigation :

- What are the parameters of the defined area commonly known as “ **the Amazon** ”?
- Is the Amazon Cooperation Treaty (**ACT**) area adequate in terms of representing the region?
- Where are the priority areas in the Amazon in terms of biodiversity?
- What current landscape-level trends represent the future of the Amazon?
- What are the major development vectors within the Amazon and where are they located?
- How can GIS and on-line mapping tools contribute to the conservation of endangered species, and the protection of parks and wilderness areas?
- How can GIS and on-line mapping tools empower civil society?
- How can GIS support and enhance field research?
- Can on-line mapping be an effective tool for researchers and conservation planners?
- Can GIS help identify gaps in research, and determine where to focus study efforts?
- How can GIS help create educational opportunities and promote at-a-distance learning?
- What is the state of spatial data analysis, inventory, and quality in each Amazon country?

Equipment :

- The Lab has four computer stations with the latest GIS and web-publishing software, related technical tools, and two powerful Internet Servers to distribute data.
- A suite of printers (including 2 large-format) produce customized hard-copy maps and images.
- In August of 2003, the project was awarded a Solid Terrain Model (**STM**) that is now on display in the GIS lab. This is a large 3-dimensional model showing nearly 5 million square miles of northern South America, overlaid by a composite of images from the MODIS (*Moderate Resolution Imaging Spectroradiometer*) sensor on NASA’s Earth Observing System (EOS) satellite, at a 1:1 ratio.
- A new plasma screen just outside the GIS Lab door is an “ **Amazon GIS Mapping Station** ” with an interface design that allows visitors to explore the map services of the Amazon GIS Project and view photos taken from the Amazon.

Collaborators :

In addition to “in-house” data from Smithsonian collections, the Amazon GIS Project has greatly benefited from leadership at World Wide Fund for Nature (**WWF-U.S.**), the U.S. Geological Survey (**USGS**), the Environmental Systems Research Institute (**ESRI**), the Smithsonian Institution museums (**SI**), and Conservation International (**CI**). More data postings (from the World Bank, the Amazon Atlas of Colombia, the University of Maryland’s Global Land Cover Facility (GLCF), the Inter-American Development Bank (**IDB**) and the Woods Hole Institute, among others, as well as satellite imagery and specific references from recent research, scientific discoveries or relevant news) are forthcoming.

Next Steps :

As the Amazon GIS Project moves into its next phase, it will forge a pan-institutional collaboration between the Smithsonian Tropical Research Institute (STRI), based in Panama, and the Smithsonian's National Zoological Park (SNZP) for a preliminary period of 3 years. Amazon GIS will incorporate management and leadership from STRI combined with continued exhibit and home-base support from SNZP. This relationship will introduce STRI Amazon conservation into the Amazonia Science Gallery exhibit of the Zoo and The Amazon GIS Project will remain active with its Department of Conservation Biology of the Zoo. This serves the Zoo's overall mission of educating and inspiring diverse communities to celebrate, study, and protect animals and their habitats.



Barro Colorado Island, Panama

Photo courtesy of STRI

To achieve this endeavor, the original architects of the Amazon GIS Project, Dr. Thomas Lovejoy (project advisor) and Mr. Ryan Valdez (project manager), consider one of STRI's research scientists, Dr. William Laurance, as the best candidate to lead Amazon GIS into its next phase. Dr. Laurance currently administers the Biological Dynamics of Forest Fragments Project (BDFFP), based in Manaus, Brazil and related Amazon research for STRI. Dr. Laurance is enthusiastic about working with Amazon GIS to insure continued funding and leadership and to create strong links between STRI and SNZP.



The Amazon GIS Lab, Amazonia Science Gallery, National Zoological Park

photo by Ryan Valdez

To access the myriad of GIS partners and organizations, it is essential that the Amazon GIS Project remain physically based in Washington, DC. With new STRI leadership, a home-base at the Zoo, and active involvement with the Zoo's Department of Conservation Biology, Amazon GIS will have more success in generating support for long-term funding from the Gordon and Betty Moore Foundation, which has expressed a great interest in seeing this collaboration evolve.

At the National Zoo, STRI would have a unique opportunity to highlight some of its Amazon conservation activities in the Amazon Science Gallery, such as those with the BDFFP and the Center for Tropical Forest Science (CTFS) programs in Yasuni, Ecuador and Manaus, Brazil. This venue could also be used to highlight the famous STRI research facility on Barro Colorado Island in Panama. In exchange, SNZP would benefit from strong exhibit and education content received through the Amazon GIS project and benefits from links with STRI that will develop over time.

STRI supports this collaboration and recognizes that Amazon GIS is well suited to its research objectives in the Amazon basin. Furthermore, Amazon GIS provides STRI with a level of GIS expertise that is likely to be useful for its research programs. The success of this partnership will help Amazon GIS achieve its mission of implementing an important conservation-mapping tool that supports science-based sustainable development of the eight-country region



The Amazonia Science Gallery, National Zoological Park

Photo by Ryan Valdez