

Global Spatial Data Infrastructure
GSDI 2002

September 16 – 19, 2002 Budapest, Hungary
From Global to Local

Presentation by Ryan Valdez

Amazon-GIS, A Key to a Sustainable Future
Smithsonian National Zoological Park
Department of Conservation Biology

valdezra@nzp.si.edu

<http://AmazonGIS.org>

The eight country region of the Amazon contains the greatest concentration of biodiversity anywhere on earth, and conserving its resources while simultaneously accomodating 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 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 and the internet, Amazon GIS aims to influence conservation decision-making and promote effective strategies towards sustainable development.

SLIDES:

- Periodic assessments of Amazon conservation have taken place over many years, but it was not until the Amazon 90 workshop by Conservation International, did various organizations come together and actually design a map of the most important areas for protection.
- It is now time for a new assessment. It requires that we cover the entire Amazon and that we use a tool capable of handling various types of information. That tool is GIS (Geographic Information Systems). GIS is a computer-based mapping program that allows the manipulation of spatial data. Lastly, we had to find a suitable location to house this project – and we chose the Amazonia exhibit of the National Zoological Park in Washington, DC. (pictures of the laboratory).
- The program is non-advocacy. We endeavor to broadcast Amazon data and not to tell stories about the Amazon. We work on the basis of science, and therefore found it very appropriate to house this program at Smithsonian, an institution of science. We want Amazon GIS to be continuously updated – and have the ability to be easily updated. The data in our program will be very comprehensive and include information from non-governmental organizations (NGOs), the United States Geological Survey (USGS), National Oceanic and Atmospheric Administration (NOAA), and the National Air and Space Administration (NASA). Lastly, the program has to be internet accessible. The whole world must be able to see the results of our work.
- We created the web site <http://AmazonGIS.org>
- It uses a web version of the intensive GIS software; this is called ArcIMS. ArcIMS allows a user to interact with maps on-line. We plan to allow this website non-exclusionary access in two versions (HTML and JAVA). Ultimately, we are looking toward assisting and linking to the Treaty on Amazon Cooperation.
- To understand some of the tools that we use in GIS, satellite photos are among the most important. This slide is a view of orbits and the paths of selected global weather satellites. This represents only a group of well over 500 non-military satellites currently in orbit. The next slide is an image produced from one of the GOES satellites that take infrared photos of the Amazon and determine sources of heat – or fire. (pictures from orbit).
- Here are some examples of the data that we have received from various organizations and are putting into our website so that anyone can have access to them:
 - USGS Digital Atlas of Central and South America
 - I will use the example of Guyana to demonstrate some other data layers that we would like to gain more information on.
 - Mining sites
 - Oil and gas fields
 - Air fields
 - Roads
 - Railroads

- Large perennial rivers, lakes, and floodplains with their associated network of tributaries and small rivers
 - Geologic age
 - Geological province
 - Ecological regions
 - Population centers
- From the Environmental Systems Research Institute (ESRI) we have:
 - Age of Quaternary deposits
 - Agricultural threat to landscape
 - High range annual surface runoff
 - High range January precipitation
 - Protected areas vs. agricultural threats
 - Annual precipitation
 - Geologic tectonic data
 - Temperature of the Amazon
- From the World Wildlife Fund – US we have:
 - Ecological region classifications
 - Satellite imagery of protected areas in Bolivia
 - Priority regions of the Amazon
- From Conservation International we have:
 - Ecological classifications
 - Protected areas and bio-regions
- And lastly from the Smithsonian Institution we are offered:
 - Animal species distribution data. This example is of the Coleopteran diversity in the Amazon. There are other data sets that involve distribution of primates, frogs, and various plants.

The Amazon GIS Program at the National Zoo is very dedicated to building a strong library of Amazon data and to make this data accessible to the world by the internet. Please view this website and explore the areas of the Amazon and all the vectors of development that interest you.

I would very much appreciate your assistance with helping us locate new GIS information about the Amazon. We only have 5 sources of data – and there are hundreds existing. One example is that we currently do not have any GIS information on the locations of indigenous peoples of the Amazon.

I also encourage you to look at this program with potential. We are only 1-year old – and in that year have produced a large collection of data and have set up an impressive laboratory for everyone to see.

Thank you all for your very fine support and for your attention with a new and innovative method to view what is happening in the Amazon – and to explore maps on-line.

To contact us, please use the website: <http://AmazonGIS.org> or call us at (202) 673-4941, (202) 673 4605 or fax us at (202) 673-0278.