Tribal / Indigenous GIS Sessions

ESRI International User Conference
San Diego, CA July 13th – 17th, 2009

Overview:

- *Protecting Tribal Lands and Resources*
- *Gathering Community Knowledge*
- *GIS for Tribal Government*
- *Preserving Indigenous Culture*

1) Protecting Tribal Lands and Resources

Tuesday, July 14 8:30 am – 9:45 am, Room 31C SDCC

Indigenous Communities face a wide array of pressures both internal and external on their lands and natural resources. This session will focus on the ways Indigenous / Tribal Communities across the country are using GIS technology to define and protect their lands and natural resources.

Presenters:

Paul Backhouse

Tribe / Organization: Seminole Tribe of Florida

Contesting the Everglades: Archaeological Investigations at the Fort Shackelford Site

The Tribal Historic Preservation Office (THPO) of the Seminole Tribe of Florida has initiated a program of archaeological research in an attempt to locate evidence for Fort Shackelford, a Seminole War fort known to have been built around 1855 on the Big Cypress Reservation in southern Florida. Management of the program is unique in that it involves investigations by a local university field school class under the direction of the THPO. Within this structure, many aspects of the project rely heavily on THPO based expertise with Geographic Information Systems to present, manage, and interpret the findings of the research. It is hoped that this program can be used as a model for indigenous groups seeking to utilize the benefits of collaborative associations with academic institutions without losing intellectual control of their cultural resources.

Jennifer Cutler

Tribe / Organization: Nisqually Indian Tribe

Nisqually River Steelhead Acoustic Tracking in Puget Sound, Washington

The Nisqually River winter steelhead population has been in decline since the early 1990's. The numbers of adult steelhead returning to the river each spring to spawn are at critically low levels. Similar patterns of decline are occurring in other Puget

Sound steelhead stocks, suggesting that the problem may be due to conditions in Puget Sound or in the Pacific Ocean. In an effort to determine movement and mortality patterns during their time in the marine areas, acoustic tags were placed in steelhead smolts as they left the Nisqually River. Smolt movements from the Nisqually River through Puget Sound and the straits of Georgia and Juan de Fuca were then monitored by a network of acoustic receivers or 'listening lines' placed under water. Preliminary results of the information gathered during this study will be presented using ArcGIS Desktop animation and cartography tools.

2) Gathering Community Knowledge

Tuesday, July 14 10:15 am – 11:30 am, Room 31C SDCC

Indigenous Knowledge is shared by the community. Each Tribal Member has a story to tell that in many cases was handed down for many generations. GIS can serve as medium to gather and store this knowledge for future generations. This session will showcase innovative programs from engaging the community with GIS programs from North America and around the world.

Presenters:

Gideon Cauffman

Tribe / Organization: Yakama Nation

Participatory GIS: The Preservation of Indigenous Root Gathering in Yakima

The presentation will demonstrate that consultation with tribal citizens is essential for creating a strong working model. The use of USDA data, Solar Analyst, in situ field work, in conjuction with participant observation allowed the creation of a strong working model in order to locate root gathering areas utilized by the Yakama and Wanapum on U.S. Army Garrison, Yakima Training Center.

Richard Resl

Tribe / Organization: USFQ, UNIGIS, AMAZONGISNET

The Self Determined Atlas Project of 10 Amazonian Indigenous Nations

10 years ago, AmazonGISnet indigenous user group gathered to build a regional resource platform to share relevant knowledge of their territories in order to create a self-determined spatial expression of their Amazonian identity. Along the line of this network initiative legal, environmental, social, cultural and political aspects were treated within workgroups of young native technicians guided by their leaders of each nation. Fighting for their rights, cultural survival and sustainability of their concepts of living within the fragile rainforests of the Amazonian Lowlands of Ecuador, these 10 nations decided to create their own ATLAS PROJECT aimed at giving a living testimony of this community based survey and mapping experience

in 5 native languages carrying the signature of both technical and thematic knowledge of the local habitants. The Atlas now builds the basis for a collaborative regional autonomous planning and zoning approach of more than one million hectares of inhabited rainforest.

Jeroen Verplanke

Tribe / Organization:
International Institute for GeoInformation Science and Earth Observation

Mobile GIS to Manage Indigenous Technical Knowledge in Developing Countries

Local communities in developing countries apply their indigenous technical knowledge (ITK) for sustainable resource management. If communities can use a user-friendly geo-database to assist management of their resources, they could also use the Geo-information tools to manage and preserve their ITK. Mobile GIS has been opted as a solution for many resource management issues. A PDA running ArcPad software connected to a GPS can supply the necessary technology for effective data collection in for instance community forests. The rapid price decrease of recent years has offered the opportunity to apply these tools in developing countries. Most interesting however is the possibility these tools offer to combine ITK and GIS mapping techniques. Experiences with community forestry have resulted in a field guide which communities can use to map forest resources with their indigenous knowledge of the area.

Tribal / Indigenous Special Interest Group Meeting
Tuesday, July 14 12:00 pm – 1:00 pm, *Room 31C SDCC*

3) GIS for Tribal Government
Tuesday, July 14 1:30 pm – 2:45 pm, *Room 31C SDCC*

Like any local government, Tribal governments are faced with many challenges in providing effective community services. GIS is increasingly used in support of many diverse Tribal Government services beyond the traditional project level GIS programs. This session will showcase innovative applications of GIS across Tribal Government.

Presenters:

William Fisher

Tribe / Organization: CS&K Tribes

Implementation of GIS on the Flathead Indian Reservation

The Natural Resource Department GIS program of the Confederated Salish and

Kootenai Tribes are involved in projects for other departments in the Tribal organization as well as City, State, Federal and other local governments and organizations like The Montana Fish Wildlife and Parks, The Flathead Basin Commission, The National Bison Range. This presentation is a small representation of the projects that the GIS department is involved with. We have utilized the tools of GIS for analytical and general mapping purposes for a number of projects including but not limited to Land acquisition, the uses of our natural resources such as Range, Leases, Homesites, Wetlands, Wildlife, The Tribal Police, The Culture Committee, Tribal Preservation and Fire Management. GIS is used in Analysis of all phases of Timber sales.

Joseph Walksalong

Tribe / Organization: Northern Cheyenne Tribe

Environmental Protection Utilizing GIS on Northern Cheyenne Reservation, MT.

An ideal solution for creating graphic information with associated geographical data to aid in the technological progression of the Environmental and Natural Resources management was the implementation of a viable Geographic Information System. With different generations of ARCVIEW the Environmental Protection Department and Natural Resources Department generated Projects which displayed the Reservation land categories, water resources, and land status ownership. Tribally owned land and Non-tribal lands were projected and overlaid with various features such as streams and rivers. Classifications for each perennial, intermittent, and ephemeral stream were developed and projected on the Reservation lands to show how the Environmental Protection Department will preserve and maintain water quality on these water bodies. ARCGIS 8.0 is also utilized to maintain a database of water resource features and land use features.

Tia Morita

Tribe / Organization: La Jolla Indian Tribe / Univ. of Redlands MSGIS

A Water Utilities GIS on the La Jolla Indian Reservation

Water is an essential element of life, and as an essential government service, Native American Tribes must ensure the delivery of clean drinking water on their reservations. However, limited resources can challenge management and delivery of this most basic service. In an effort to improve water utilities management, the La Jolla Band of Luiseño Indians initiated a GIS project to map and analyze their domestic water system. The creation of a geometric data model required the integration of incompatible data sources (paper, CAD, digital, mental) into a comprehensive geodatabase using ArcGIS. Network analysis identified system weaknesses and helped to focus resources for future water projects; thus, resulting in more directed repairs and maintenance, and improved service delivery to

residents. This project speaks to the utility of GIS to further the ability of tribes to function as full-service governments and provides a potential framework for replication across other reservations in California.

4) Preserving and Understanding Cultural History

Tuesday, July 14 3:15 pm – 4:30 pm, *Room 31C SDCC*

Sometimes in order to understand the present we need to look to the past. GIS is broadly used in Archaeology and applying a geographic approach to understanding cultural use of land and resources. This session will focus on GIS as a medium for supporting innovative Tribal and Indigenous Archaeological programs.

Presenters:

Sandra Gaskell

Tribe / Organization: ARC Archaeology, Tribal Consultant for the Southern Sierra Miwuk Nation, Mariposa, CA

Tribal GIS Protocol Using Standard Tables Across Cultural Identifying Factors

Indigenous names relating to significant people and places along major tributaries descending from Yosemite Valley and emptying into the great San Joaquin River define culture boundaries. Compilation of data necessary for completing a Tribal GIS database used seven criterion listed by the BIA and implemented into theme layers. When GIS resource layers from other agencies are queried, patterns emerge to relate lineages of eleven cultural resource routes, through ceremonial villages, camps, and Treaty E, Treaty M boundaries, to ethnographic village records. Tribal GIS Protocols can be applied to data sets from other tribal cultures using a simple set of table guidelines for watershed nomenclature that may replicate this study.

Danette Johnson

Tribe / Organization: Southern Sierra Miwuk Nation Yosemite, CA

Five Decades of Historic Archaeology and Cultural Sites of Wah-ho-gah

While the NPS held scoping meetings in Wah-ho-gah Village with tribal participation, the Southern Sierra Miwuk Tribal GIS mapping system began an inventory of cultural resources and sacred sites. Chronology and practical activities of daily living such as contemporary bedrock mortars in context with the ancient mortar usage, leaching basins, fish and game hunting, automotive repair, and life in general in the New Indian Village, will be studied as part of the historic component of the CA-MRP-305 investigations from the 2008 fieldwork. Ethnography of the Tribe and by the Tribe can interpret historic features and artifacts post

archaeological work. Tribal monitors work concurrently with archaeological projects throughout the territory. Wah-ho-gah Village in Yosemite began the planning phase in 1980, and fieldwork was completed during the summer of 2008 for compliance in order to build the new Roundhouse ceremonial complex to be used by the Tribe.

Stacy Schumacher

Tribe / Organization: Confederated Tribes of the Umatilla Indian Reservation

Designing a Water Quality Database that meets the needs of multiple users.

Water quality data has been collected throughout the Umatilla Basin for decades. Multiple Federal Agencies as well as departments within the Confederated Tribes of the Umatilla Indian Reservation have collected water quality data for their own purposes. The GIS Program has taken a systematic approach to document the data, develop useful analytical tools, develop effective reporting tools and ensure that the information is accessible by policy developers. By developing a centralized water quality database and providing access to download the information via the internet we hope to be able to provide information to guide tribal policy and the management of recourses.