August 12, 2008

It is our pleasure to welcome you to the 11th Annual International Conference of the Society for Conservation GIS. We’ve come a long way and seen many changes from our modest beginnings at the University of California James Reserve with Dr. Michael Hamilton. Among those changes, Dr. Hamilton left the James Reserve to take the helm of the newest and potentially largest reserve in the California system, in central California. Our international chapters continue to grow and diversify. SCGIS Philippines and SCGIS Mexico have been supporting conservation GIS and geographic mapping work with schools and children in their area. We have new chapters starting up in Cameroon, Southern Africa, and Nepal. Nearly all of our 12 international chapters took a huge leap forward in 2008 as they took over the scholarship selection and review process formerly carried out in Redlands. We feel that it’s a significant event when the chapters who consist of, depend upon, and benefit most from the scholarship program become the very institutions that operate and govern the program. This will allow us to find more ways to send GIS and training resources out to the chapters as an important complement to the scholars coming to the USA each year. We plan to continue the growth and support of this important program in every way we can.

Another important change this year at ESRI is the launch of our new Climate Change GIS program. Climate change may finally be the hook that embeds conservation thinking and, more importantly, conservation funding into every government and business around the world. It’s a broad movement with formal engagement by nearly every country in the world with only a few notable and hopefully short-lived exceptions. There is a very real possibility that climate change activities may finally provide the sustainable business model that conservation groups need to grow with stability, since for the first time, the conservation knowledge and data you possess about ecological systems will have very real financial value to businesses and governments mandated to document their ecological impacts under a climate change trading or monitoring scheme. Our hope with this new program is to help all of our grantees and partners to become fluent in climate change ideas and technologies so you can be best equipped to participate fully in the global economies of the future.

This is a very hopeful time for all of us; I encourage you to celebrate your time in Asilomar and your relationships with friends and colleagues from all around the globe!

Regards,

Charles Convis and Sasha Yumakaev
SCGIS International Program
The Society for Conservation GIS would like to welcome you to its eleventh annual conference. The theme for the 2008 SCGIS conference is Our Changing World. As members of the conservation GIS community, we experience change on a daily basis: from new software, hardware, and analytical techniques for achieving our conservation goals to the changing and emerging conservation challenges we work to overcome and find solutions for. At this year’s conference, we will consider the changes of yesterday, today, and tomorrow:

1. Yesterday: An opportunity to reflect on the conservation challenges we have faced, our successes, failures, lesson learned, and how we have adapted over time
2. Today: An opportunity to share how we are embracing and developing new and changing technologies and how our approaches are changing given changing conservation challenges
3. Tomorrow: An opportunity to share our visions of the future and how we are contributing to that future—technology, techniques, and approaches to conservation challenges

— Gillian Woolmer and Patti Bailey
2008 Conference Committee
Conference Tips

- Use this program to familiarize yourself with events and locations.
- A map is on the back cover, and the last few pages are for note taking and to help you track what you want to see.
- Pace yourself—you can’t see or do everything.
  - Set priorities.
  - Remain flexible.
  - Skip something and relax if you need to.
  - Catnaps are great.
  - Drink lots of water.
- Wear your name badge so we can meet each other with greater ease.
- Be on time; it is respectful.
- Any questions? Head over to Scripps and ask a friendly SCGIS volunteer.
- Attend the evening socials—hopefully you will make a new friend.

Recycle Badges

We ask that at the end of the conference you return your name badge holder to the Registration Desk.

Thank you for your cooperation.
About Asilomar

Meal Service
All meals are served semi-cafeteria style at Crocker Dining Hall. Your group will be seated together at designated tables.

- Breakfast: 7:30 a.m. to 9:00 a.m.
- Lunch: noon to 1:00 p.m.
- Dinner: 6:00 p.m. to 7:00 p.m.

Neither cooking nor coffee making is permitted in the guest rooms or meeting rooms. Individual visitors are also welcome at Crocker Dining Hall. Meal tickets for individual meals may be purchased at the front desk.

Business Center
Located next to the front desk. Hours of operation are 6:30 a.m. to midnight daily. Charges are collected on the honor system. A list of charges is posted in the business center. Features include:

1. Four dedicated local access lines
2. One personal computer for word processing
3. Speaker phone for conference calls

Photocopies and faxes are handled at the front desk.

Park Store
The Park Store is located in the administration building (Phoebe A. Hearst Social Hall). Hours of operation are 6:30 a.m. to 9:00 p.m. daily. Coffee and espresso drinks, bakery items, cold beverages, personal care items, phone cards, and gifts are available.

Check-in time: After 3:00 p.m.
Check-out time: By noon

Guests will be charged 1/2 day rate for staying beyond noon. After 4:00 p.m., a full day's charge is made. Guests are responsible for destruction, unnecessary breakage, and misuse of property.

Parking
Parking at Asilomar is provided for guests residing on grounds. Guests are required to park in designated areas. Disabled parking is available where indicated on the map (on the back cover).

Please note the one-way roads, speed limit of 15 mph, and 10-minute parking zones. Roads must be kept clear at all times for emergency and service vehicles. Violators are subject to citation under California Vehicle Code and under State Park Rules and Regulations. No RVs are allowed on grounds.

Quiet Hours on Grounds
Please respect your neighbors’ rights and maintain quiet between 10:00 p.m. and 6:00 a.m.

The Environment
Asilomar’s 107 acres are dedicated to a natural ecological environment. Please walk on paved areas only. The dunes are a particularly fragile environment and we request that you use the boardwalk to the beach. Trash receptacles are located throughout the grounds. Asilomar encourages recycling whenever possible. Receptacles are available. Please do not litter in the park. Use cigarette receptacles for cigarette butts.

* Please see back cover of agenda for Asilomar map.
## Tuesday, August 12

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preconference Training Workshops</td>
<td>9:00 a.m.–5:00 p.m.</td>
</tr>
<tr>
<td>Marlin: Workshop 1—Introduction to Spatial Analyst for ArcGIS</td>
<td></td>
</tr>
<tr>
<td>Heather: Workshop 2—Marine GIS: Conservation, Management, and Geodatabases</td>
<td></td>
</tr>
<tr>
<td>Field Trip to Monterey Bay Aquarium</td>
<td>1:30 p.m.–5:00 p.m.</td>
</tr>
<tr>
<td>Registration and Welcome Reception</td>
<td>6:00 p.m.–9:00 p.m.</td>
</tr>
</tbody>
</table>

### Registration and Welcome Reception
Catch up with old friends and meet new ones at the Tuesday night Welcome Social in the Scripps Room. You will be able to register, pick up your conference materials, and enjoy an evening of socializing.

## Wednesday, August 13

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Session</td>
<td>9:00 a.m.–10:30 a.m.</td>
</tr>
<tr>
<td>Break</td>
<td>10:30 a.m.–11:00 a.m.</td>
</tr>
<tr>
<td>Paper Sessions</td>
<td>11:00 a.m.–12:30 p.m.</td>
</tr>
<tr>
<td>Technical Session</td>
<td>11:00 a.m.–12:30 p.m.</td>
</tr>
<tr>
<td>Lunch</td>
<td>12:30 p.m.–1:30 p.m.</td>
</tr>
<tr>
<td>Special Lunch Session</td>
<td>1:30 p.m.–2:00 p.m.</td>
</tr>
<tr>
<td>Paper Sessions</td>
<td>2:00 p.m.–3:30 p.m.</td>
</tr>
<tr>
<td>Technical Session</td>
<td>2:00 p.m.–3:30 p.m.</td>
</tr>
<tr>
<td>Break</td>
<td>3:30 p.m.–4:00 p.m.</td>
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</tbody>
</table>

### Opening Session
Join us at the official opening of the 11th Annual SCGIS Conference. Hear from our keynote speaker, Paul Beier, researcher and professor at Northern Arizona University. An experienced conservation biologist, his research focus is on landscape-scale conservation planning and connectivity. In 2007 his research team released the ArcGIS application Corridor Design, a GIS tool for designing multi-species wildlife corridors.

### The Myth and Mythology of Map Art
Presented by Mark Denil, Conservation International
### Wednesday, August 13 (continued)

<table>
<thead>
<tr>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td><strong>Paper Sessions</strong></td>
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</tr>
<tr>
<td>Chapel and Heather</td>
<td>4:00 p.m.–5:30 p.m.</td>
</tr>
<tr>
<td><strong>Technical Session</strong></td>
<td></td>
</tr>
<tr>
<td>Marlin</td>
<td>4:00 p.m.–5:30 p.m.</td>
</tr>
<tr>
<td><strong>SCGIS Board of Directors Meeting</strong></td>
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<tr>
<td>Guest Inn</td>
<td>3:30 p.m.</td>
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<tr>
<td><strong>Dinner</strong></td>
<td></td>
</tr>
<tr>
<td>Crocker Dining Hall</td>
<td>6:00 p.m.–7:00 p.m.</td>
</tr>
<tr>
<td><strong>Map Gallery and Wine Reception</strong></td>
<td></td>
</tr>
<tr>
<td>Chapel</td>
<td>7:00 p.m.</td>
</tr>
</tbody>
</table>

#### Map Gallery and Wine Reception
Map products, posters, and multimedia map projects illustrating the achievements of the user community will be on display at the popular Map Gallery. Several special exhibits will include displays of unique and innovative uses of GIS from around the world.

The Map Gallery opens with a reception on Wednesday evening and will remain on display throughout the conference.

### Thursday, August 14

<table>
<thead>
<tr>
<th>Event</th>
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<tbody>
<tr>
<td><strong>Breakfast</strong></td>
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<td></td>
<td>8:00 a.m.–9:00 a.m.</td>
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<td>Scripps</td>
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<td><strong>Paper Sessions</strong></td>
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<tr>
<td><strong>Lunch</strong></td>
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<tr>
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</tr>
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<td>Chapel</td>
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<tr>
<td>Chapel and Heather</td>
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</tr>
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<td><strong>Technical Session</strong></td>
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<td>Marlin</td>
<td>2:00 p.m.–3:30 p.m.</td>
</tr>
<tr>
<td><strong>Break</strong></td>
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<td>Scripps</td>
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</table>

#### Conservation GeoPortal: Current Status, Future Plans, Feedback Session
Presented by Demian Rybock, NatureServe
Thursday, August 14 (continued)

<table>
<thead>
<tr>
<th>Event</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Technical Session</td>
<td>4:00 p.m.–5:30 p.m.</td>
</tr>
<tr>
<td>Dinner</td>
<td>6:00 p.m.–7:00 p.m.</td>
</tr>
<tr>
<td>Auction and Wine Reception</td>
<td>7:00 p.m.</td>
</tr>
</tbody>
</table>

**Auction and Wine Reception**

SCGIS will be conducting a silent and live auction during this year’s conference to share treasures and artwork from around the globe. Please plan to donate an item from your culture, community, or country and come to the conference prepared to bid on some wonderful and exotic trinkets.

**Auction and Wine Reception Information**

You are invited to an evening celebration to close out the SCGIS Conference.

The theme for the evening will be Cultures, Communities, and Conservation. Get ready to dress up, celebrate our global heritages, and raise some money to support conservationists from around the world!

There will be a silent and live auction to share treasures and artwork from around the globe. Please bring an item from your culture, community, or country and be prepared to bid on some wonderful and exotic trinkets. All donations are appreciated and cherished; no item is too big or too small.

Share your work, your history, or your passion with other conservation colleagues. All funds procured will be used to support the SCGIS international and domestic scholarship program, providing travel assistance to fellow conservationists from around the globe.

Items for the auction can be delivered to the Chapel during breaks and lunch on Thursday, August 14, or between 6 p.m. and 7 p.m.—a volunteer will help you complete an item description form.

This event would not be possible without the talents of Michelle Kinzel, who has been coordinating the SCGIS auction events for us for quite some number of years. Thanks Michelle!

Friday, August 15

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>8:00 a.m.–9:30 a.m.</td>
</tr>
<tr>
<td>Closing Session</td>
<td>10:00 a.m.–11:30 a.m.</td>
</tr>
<tr>
<td>Box Lunch Pickup</td>
<td>11:30 a.m.</td>
</tr>
</tbody>
</table>
Workshop 1: Introduction to Spatial Analyst for ArcGIS
Room: Marlin

Presenter(s): John Schaeffer, Juniper GIS

This one-day course introduces participants to the Spatial Analyst extension. Spatial Analyst allows users to work with raster data and perform a variety of analysis functions not available with regular GIS tools. Students will learn the basics of Spatial Analyst by completing an exercise to site a solar greenhouse, then delve into more advanced topics using Spatial Analyst to determine potential sites to set aside as elephant habitat in southern Kenya. If time permits, we will also work with ModelBuilder in the habitat exercise.

- Understanding raster GIS
- Interpolating surfaces from different types of data
- Using map algebra for spatial analysis
- Using the raster calculator
- Raster analysis properties and commands
- Distance, viewshed, and proximity grids
- Using GRID commands
- Using ModelBuilder

Introduction: Using ArcGIS Spatial Analyst

What is raster GIS? Interpolation, creating, and analyzing surfaces, working with raster/grid layers, raster analysis concepts, Spatial Analyst interface, and menu options.

Exercise 1: Locating a Site for a Solar Greenhouse

This exercise will demonstrate the core operations most often used in Spatial Analyst by working through a simple site suitability example. The exercise will show students how to interpolate, create, and analyze surfaces; find suitable sites using a query with the raster calculator; use reclassification methods; find suitable sites using cartographic modeling and map algebra; use neighborhood analysis to clean data; and use grid functions in the raster calculator.

Exercise 2: Identifying Potential Elephant Conservation Areas in Southeast Kenya

This exercise will build on skills learned in the previous exercise by tackling a more ambitious site suitability/habitat study, with emphasis on the modeling process and Spatial Analyst. This exercise will show students how to convert vector data to raster data, reclassify data into preference levels, establish a ranking scale, and use weighted overlay to assign preference to each criteria.

Exercise 3: Creating a Model for Elephant Conservation Areas

This exercise will introduce students to ModelBuilder by duplicating the steps in the previous exercise in a model. Students will learn how to create a new model, develop process steps within the model, and use a model to test the effects of different ranking and weights for the criteria.
Workshop 2: Marine GIS: Conservation, Management, and Geodatabases
Room: Heather

Morning: Using GIS Tools to Support Marine Conservation and Management
Presenter(s): Lisa Wedding 1,2 (1, University of Hawaii at Manoa, Department of Geography; 2, NOAA Biogeography Branch)

Applying a spatial approach to marine resource management is gaining recognition with the increasing implementation of marine managed areas, ocean zoning, and no-take marine reserves. Accordingly, employing a spatial approach using GIS can provide invaluable support to inform marine management. This workshop will provide an overview of some basic marine data sets and GIS tools that can be applied for marine conservation purposes. First, some basic marine GIS concepts and applications will be introduced. Participants will then be guided through a tutorial using GIS tools to evaluate a current marine protected area (MPA) design using benthic habitat maps and bathymetric lidar data and explore future MPA design scenarios. A second tutorial will review the GIS steps involved in planning a sampling design for monitoring in an MPA. Workshop participants will gain skills during the hands-on exercises that can be applied to marine conservation actions in their local community. Handouts and digital copies of a suite of GIS tools used during the workshop will be provided to participants.

Afternoon: Building a Geodatabase Using the ArcMarine Data Model
Presenter(s): Michelle Kinzel, Oregon State University, Department of Geosciences

ArcMarine (or the ArcGIS Marine Data Model [MDM]) is a geodatabase model tailored specifically for the marine GIS community. Created by researchers from Oregon State University, Duke University, NOAA, the Danish Hydrologic Institute, and ESRI, work on the data model began in 2001 in response to three major needs of the marine GIS community: (1) provide an application-specific geodatabase structure for assembling, managing, storing, and querying marine data in ArcGIS 9; (2) provide a standardized geodatabase template upon which to develop and maintain marine applications; and (3) provide a better understanding of ESRI’s geodatabase data structure. ArcMarine was designed to be used as a geodatabase template for marine GIS users. This template, like all geodatabases, is an organized hierarchy of data objects. These data objects are a collection of feature data sets, feature classes, object classes, and relationship classes.

The purpose of this tutorial is to introduce you to the ESRI geodatabase in general and the ArcGIS Marine Data Model, in particular. The tutorial is designed to be a do-it-yourself exercise in geodatabase building. Although the exercise is step-by-step, it is assumed that the user has a working knowledge of ArcGIS. Hopefully, through the exploration of ArcMarine, you will see its utility for your own applications while grasping the basics of the geodatabase.

By the end of this tutorial, you will be able to do the following specific activities:
• List the basic elements of a geodatabase.
• Import an existing schema into an empty geodatabase.
• Compare your data structure to that of an existing geodatabase schema.
• Load data.
• Create new relationships between tables.
• Import tables with data already in them.
• Create and load a raster catalog.
• Display your data using dynamic segmentation.
• Query data linked through relationships in ArcMap.
Opening Session Schedule • Tuesday, August 12

Opening Session Located in Chapel

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome, Introductions, and Thanks</td>
<td>9:00 a.m.–9:10 a.m.</td>
</tr>
<tr>
<td>Gillian Woolmer and Patti Bailey</td>
<td></td>
</tr>
<tr>
<td>Introduction to the SCGIS International Scholars</td>
<td>9:10 a.m.–9:20 a.m.</td>
</tr>
<tr>
<td>Sasha Yumakaev</td>
<td></td>
</tr>
<tr>
<td>Our Changing World</td>
<td>9:20 a.m.–9:30 a.m.</td>
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<tr>
<td>Mark van Bakel and Charles Convis</td>
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<tr>
<td>Keynote: Cougars, Connectivity, and Missing Linkages: Two Decades of</td>
<td>9:30 a.m.–10:20 a.m.</td>
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<tr>
<td>Expanding Vision</td>
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<tr>
<td>Paul Beier</td>
<td></td>
</tr>
<tr>
<td>Announcements and Closing</td>
<td>10:20 a.m.–10:30 a.m.</td>
</tr>
<tr>
<td>Gillian Woolmer and Patti Bailey</td>
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</tbody>
</table>

Keynote Speaker

Paul Beier conducts research in wildlife ecology and conservation biology with a focus on conservation planning at landscape scales. His 1988–1992 study of cougars is best known for its documentation that cougars during juvenile dispersal find and use habitat corridors in urban southern California to reach distant mountain ranges where they establish home territories as breeding adults. Since then he has worked on “missing linkages” in California and Arizona to promote science-based efforts to maintain wildlife corridors on large regional scales. These alliances among state and federal agencies, local planning agencies, and conservation organizations are not trying to slow down the rate of fragmentation, but to improve connectivity for wildlife and ecosystem processes. During 2007–2008, he is serving as a science advisor to the Western Governors Association on their Wildlife Corridors Initiative.

He has also studied Mexican spotted owls, northern goshawks, and forest bird communities in the United States and West Africa. Since 2000, he has worked with traditional chiefs in West Africa to create and manage community-based wildlife sanctuaries for hippopotamuses, elephants, and rare forest birds. He also serves on the recovery team for the endangered ocelot population in Texas.

Beier serves on the Board of Governors of the Society for Conservation Biology (SCB). In this capacity, he chaired the effort that produced the society’s first Code of Ethics, and he helped to make SCB the first society of professional ecologists to take responsibility for its greenhouse gas emissions. His Web site is http://oak.ucc.nau.edu/pb1/.
<table>
<thead>
<tr>
<th>Time</th>
<th>Session Matrix</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 a.m.–12:30 p.m.</td>
<td><strong>Conservation GIS Showcase</strong>&lt;br&gt;Climate Change and Conservation: Scaling Down to the Ground&lt;br&gt;Identifying Species at Risk from Environmental Change: Habitat Specificity of Amazonian Plants&lt;br&gt;MACROSCOPE: REDUX&lt;br&gt;LandScope America: The Conservation Guide to America’s Natural Places&lt;br&gt;Mapping Potential Marine Protected Zones</td>
<td>Chapel</td>
<td>Technical Session</td>
</tr>
<tr>
<td>12:30 p.m.–1:30 p.m.</td>
<td><strong>Lunch</strong>&lt;br&gt;Room: Crocker Dining Hall</td>
<td></td>
<td>ArcMap Tips and Tricks</td>
</tr>
<tr>
<td>1:30 p.m.–2:00 p.m.</td>
<td><strong>Special Lunch Session—The Myth and Mythology of Map Art</strong>&lt;br&gt;Room: Chapel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:00 p.m.–3:30 p.m.</td>
<td><strong>GIS Methods for Time Series and Wildlife Movement</strong>&lt;br&gt;Modeling Bird Migration in Changing Habitats: Space-Based Ornithology Using Satellites and GIS&lt;br&gt;Keeping Track of Florida Panthers and Snowy Plovers&lt;br&gt;The Why of Where: Using GIS to Investigate Habitat Use by Threatened Reptile Species in a Sand Prairie Ecosystem&lt;br&gt;Population Growth: Where Will Water Quality Be Impacted the Most?</td>
<td>Chapel</td>
<td>Technical Session</td>
</tr>
<tr>
<td>3:30 p.m.–4:00 p.m.</td>
<td><strong>Break</strong>&lt;br&gt;Room: Scripps</td>
<td></td>
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</tr>
<tr>
<td>4:00 p.m.–5:30 p.m.</td>
<td><strong>Indigenous Communities, Societies, and GIS</strong>&lt;br&gt;Indigenous Knowledge as Spatial Data&lt;br&gt;Defining Neighborhoods&lt;br&gt;Forest Crown Closure Assessment and Tree Species Classification Using Multispectral Imagery&lt;br&gt;Creating the Cameroonian Chapter of the Society for Conservation GIS: Progress Made and Lessons Learned&lt;br&gt;How to Count Wildlife from Space: Using Space Based Satellite Imagery to Improve the Accuracy of Wildlife Counts</td>
<td>Chapel</td>
<td>Technical Session</td>
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<tr>
<td>6:00 p.m.–7:00 p.m.</td>
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<td>7:00 p.m.</td>
<td><strong>Map Gallery and Wine Reception</strong>&lt;br&gt;Room: Chapel</td>
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</tbody>
</table>
## Session Matrix • Thursday, August 14

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
<th>Chapel</th>
<th>Heather</th>
<th>Marlin</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 a.m.–10:30 a.m.</td>
<td>Chapel</td>
<td>Analytical Tools for Species GIS</td>
<td>Conservation GIS at the Ecosystem Level</td>
<td>Technical Session</td>
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<tr>
<td></td>
<td></td>
<td>Spatial Variation in Distributional Model Accuracy for Pileated Woodpeckers</td>
<td>Papahanaumokuakea Marine National Monument Information Management System</td>
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<tr>
<td></td>
<td></td>
<td>Testing Methods to Estimate Abundance of Magellanic Penguins Using GIS</td>
<td>Mangrove Species Management in Cameroon</td>
<td>Understanding Projections for ArcGIS</td>
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<tr>
<td></td>
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<td>Effects of Urbanization on Avian Species Richness in the Phoenix Metropolitan Area: Patterns in Vegetation Remnants</td>
<td>Human Pressures on Mangrove Areas (São Francisco River Estuary, Sergipe State, Brazil) Investigated Using Landsat ETM+ Images and GIS</td>
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<td>10:30 a.m.–11:00 a.m.</td>
<td>Break</td>
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<td>11:00 a.m.–12:30 p.m.</td>
<td>Room: Scripps</td>
<td>Conservation Effectiveness and Awareness</td>
<td>Wildlife-Human Conflicts</td>
<td>Technical Session</td>
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<td>Measuring the Status of Effective Conservation</td>
<td>Vessel Response to Recommended Measures to Reduce Ship Strikes in the North Atlantic Right Whale Calving Ground</td>
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<td>The Challenge of Incorporating Well-Being Indicators in Natural Resources Management: the Case of Wetlands in Uganda</td>
<td>Observed Changing on Habitat Utilization of Mothers and Calves Humpback Whales, Megaptera Novaeangliae, between 2002 and 2006 in Antongil Bay</td>
<td>The Practice of Cartography</td>
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<td>Application of GIS for Conservation Awareness in the Protected Areas of Nepal</td>
<td>Application of GOS Collected Location Data in Understanding the Black Bear Human Conflict in the Kashmir Valley</td>
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<td>Mapping the KBAs: Maintaining Cartographic Consistency in a Dynamic Situation</td>
<td>Does Livestock Grazing Affect Suitability of Red Deer (Cervus elaphus) Distribution?</td>
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<td>12:30 p.m.–1:30 p.m.</td>
<td>Lunch</td>
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<td>1:30 p.m.–2:00 p.m.</td>
<td>Special Lunch Session—Conservation GeoPortal: Current Status, Future Plans, Feedback Session</td>
<td>Room: Chapel</td>
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<td>2:00 p.m.–3:30 p.m.</td>
<td>Room: Chapel</td>
<td>Analytical Methods for Conservation GIS</td>
<td>Conservation Landscapes for Wildlife</td>
<td>Technical Session</td>
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<td>Comparison of Spatial Unit Delineation Approaches for Ecological Monitoring</td>
<td>Sandhill Cranes and the Changing Landscape</td>
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<td>The Use of GIS and Bioclimate Envelope Modeling for the Assessment of IUCN/Red List Spatial Criteria</td>
<td>Changing Federal Land Management Planning for Oil and Gas Development: Evaluating Wildlife Impacts</td>
<td>Suitability Modeling with Spatial Analyst and ModelBuilder</td>
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<td>Using Geographical Information System (GIS) to Support Traditional and Adaptive Approaches to Manage, Conserve, and Sustain the Use of Biological Diversity of Dryland Ecosystems in East Africa</td>
<td>GIS Application in the Management of Zambia’s Wildlife Resources</td>
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<td>3:30 p.m.–4:00 p.m.</td>
<td>Break</td>
<td>Room: Scripps</td>
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### GIS Tools for Protected Areas and Site Prioritization
- **Chapel**: GIS Tools for Protected Areas and Site Prioritization
- **Heather**: GIS Tools for Species and Distributions
- **Marlin**: Technical Session

#### 4:00 p.m.–5:30 p.m.
- **Protected Area Tools (PAT) for ArcGIS 9.2**: Helping Countries Fill Protected Area Gaps
- **Using GIS Methods in Conservation Programs on Endangered Species**
- **Conservation Prioritization in the Democratic Republic of Congo**
- **Spatial Distributions and Patterns of Associations in Invasive Exotic Ants Found in Hawai‘i**
- **Working with ModelBuilder**
- **Defining Critical Conservation Sites and Guiding Conservation Investment to Safeguard Biodiversity in the Eastern Arc Mountains and Coastal Forest Region**
- **The Northern Appalachian Ecoregion: A Collaborative Approach to Identifying Conservation Priorities Using an Irreplaceability vs. Threats Framework**

#### 4:45 p.m.–5:30 p.m.
- **U.S. Geological Survey Science and Data Frameworks**
- **NHD Stewardship Program—National Data from Local Knowledge**

#### 6:00 p.m.–7:00 p.m.
- **Dinner**
  - Room: Crocker Dining Hall

#### 7:00 p.m.
- **Auction and Wine Reception**
  - Room: Chapel
Paper Sessions

Conservation GIS
Room: Chapel
Moderator(s): Michael Hamilton, UC James Reserve

Climate Change and Conservation: Scaling Down to the Ground
Presenter(s): Stuart Weiss, Creekside Center for Earth Observation

Climate change driven by accumulation of greenhouse gases refers to broad-scale forcings of global circulation patterns that result in directional changes (on average) of temperature and moisture patterns. But, organisms themselves live in very local climates determined by topography and vegetation, and downscaling climate changes to the organismal scale requires judicious use of environmental biophysics, empirical measurements, and “seat of the pants” GIS-based statistical modeling. The spatial climate hierarchy ranges from macroclimate (broad atmospheric circulation at 100+ km scales), through mesoclimates (regional climates over 1-100 km), topoclimates (10 m to 1 km), and microclimates at the finest spatial scales. This presentation demonstrates how downscaling macroclimate to the appropriate topoclimatic and microclimatic scales can provide key insights into the vulnerability and resiliency of ecosystems in the face of climate change. The approach used distributed networks of inexpensive temperature sensors, GIS modeling of topoclimatic gradients, and hemispherical photography to quantify canopy structure that drives microclimate. The examples include monarch butterflies in Mexico, plant species distributions in the White Mountains of California, and stream temperatures in steelhead trout and red-legged frog habitat in the San Francisco Bay Area.

Identifying Species at Risk from Environmental Change: Habitat Specificity of Amazonian Plants
Presenter(s): Hannah Stevens, The New York Botanical Garden

Knowing the habitat requirements of a plant species is fundamental to understanding its response to environmental change. Using location data from herbarium specimens, this study addresses the questions of how species in the Amazon Basin are distributed, and to what degree they are restricted to particular habitat types. A total of 315 tree species and over 2,700 herbaceous and woody Melastomataceae and Pteridophyte species from a sample of more than 61,000 specimen records were analyzed. Using GIS, a new matrix of habitat types was delineated using climatic and soil data, and the number of habitats that each species occurred in was recorded. Results indicate that for trees, at least ten percent of the species analyzed are restricted in their distribution, i.e. occur in less than 18 habitat types. Preliminary results for herbaceous species suggest even more restricted distributions. Extrapolating this finding to the estimated 45,000 plant species found in the Amazon Basin, at least 4,500 local taxa are potentially threatened by factors such as climate change and habitat loss. The methods developed in this study provide a novel approach for identifying species which may not have otherwise been recognized as potentially threatened.

MACROSCOPE: REDUX
Presenter(s): Michael Hamilton, UC James Reserve

The fusion of real-time and time-series in-situ data streams, with airborne and satellite remote sensing scenes and models engineered for specific ecological scales, provides an extraordinary tool for monitoring, quantifying and ultimately forecasting the complex effects of a shifting climate on natural ecosystems. Collaborative engineering and biological research in the applications of multiscale embedded networked sensors for ecology, based upon decades-long studies that began at the James Reserve, are being developed for the latest University of California Natural Reserve, the 3,620 acre Blue Oak Ranch Reserve, located on the slopes of Mount Hamilton near the city of San Jose, California. Extraordinary new portable sensing systems engineered to increase the spatial extent of automated ecological measurements will continuously and adaptively monitor a spectrum of phenomenon—ranging from soil microbial and fine scale root processes; to incremental fluctuations in life-history phenology of organisms (both plant and animal); and instantaneous calculations of net photosynthesis, respiration and carbon dynamics of the oak woodlands and grasslands in this wildland urban interface zone. Data streams from in-situ below and above-ground sensors and imagers coupled with periodic multispectral satellite data from MODIS and QuickBird will provide a detailed window into the biodiversity and ecosystem dynamics that are most sensitive to both shifting climate and atmospheric deposition of pollutants, caused in part by an expanding and encroaching front of urbanization. Discoveries made by these monitoring and modeling systems will focus scientific research on the future state of these and other at-risk ecosystems, and are proposed to become an integral component of a broad range of academic research investigations and local educational outreach programs.
LandScope America: The Conservation Guide to America’s Natural Places
Presenter(s): Demian Rybock, NatureServe

LandScope America is a collaborative effort by NatureServe and National Geographic to create a definitive online conservation guide and atlas for the US. It offers a sophisticated, information-rich, and interactive resource designed to both inform and inspire people engaged in land and water conservation efforts. It presents detailed geospatial data, along with compelling writing, photography, and video describing conservation priorities, threats, and protected areas, all presented in a seamless and intuitive user experience. This presentation will provide an overview of the initiative and discuss ways of participating in the effort.

Marine Resources and Communities
Room: Heather
Moderator: Robert Rose, Wildlife Conservation Society

Identifying Promising San Francisco Estuary Streams for Steelhead Restoration
Presenter(s): David Asbury, Center for Ecosystem Management and Restoration

With limited funds to restore salmonids, identification of priority locations for restoration is essential, and we have done so for steelhead (Oncorhynchus mykiss) in the San Francisco Bay area. Available references regarding these populations and their rearing habitat in the 58 regional watersheds draining to the estuary were used in a GIS to quantify stream-miles of habitat and evaluate land uses. We present eight “anchor” watersheds and 18 “essential streams” that contain over 50 percent of the available O. mykiss rearing habitat in the region. Most of these essential streams have large amounts of open space in their watersheds, although the level of protection of open lands varies significantly among watersheds.

Our approach will focus restoration efforts upon the region’s most promising locations, helping ensure the conservation of steelhead for future generations and providing a mechanism for watershed management.

Mapping Potential Marine Protected Zones
Presenter(s): Robert Rose, Wildlife Conservation Society

Overfishing, habitat destruction, coastal development and global climate change have dramatically altered marine ecosystems over the past 100 years. With expected increases in human population and significant changes in water temperature due to climate change, marine ecosystems face a tenuous future. To better understand human influence on marine ecosystems, researchers at the Wildlife Conservation Society compiled direct observations and modeled proxies for sixteen major anthropogenic threats to marine ecosystems during the period 1995–2006. The resulting map of human influence on the oceans shows that over 90% of the oceans are influenced at some level by human threats. These results suggest that the future of the world’s oceans depends on conservation steps, taken at a global scale, to protect the remaining marine ecosystems and species.

As a first step in marine conservation planning we used a GIS to map potential protection zones for a set of defined biomes of the ocean. For each biome, a square, no larger than ten percent of the total area of the biome that captures at least ten percent of the biome’s productivity and minimizes human influence was determined.

Combined, these potential protection zones capture 10 percent of the ocean’s productivity while minimizing current human influence. By minimizing human influence, protection of the zones through the elimination of all human impacts comes at a smaller cost. The goal of this analysis was to map a set of protection zones that, if enacted, would be a start in ensuring a healthy future for marine ecosystems.

Developing Tools for Community-Based Marine Resource Management
Presenter(s): Jon Bonkoski, Ecotrust

As California and Oregon proceed with establishing a network of marine protected areas (MPA), questions arise about their impact on coastal communities. Yesterday’s paradigm was to develop MPAs without considering the effect on user groups and communities. Today we are shifting toward balancing this equation. One of Oregon’s goals in establishing MPAs is to avoid adverse social and economic effects on coastal communities and taking these into consideration is a daunting task. However, tools and analyses are being developed to help usher in a new era of community based marine resource management. Here we highlight work to aid Port Orford, OR with their MPA nomination. Ecotrust has developed a web-based decision support tool that provides real-time information to the community by allowing users to run analyses and review reports detailing their MPA nominations. Developed for the web using free and open source geospatial software, this tool provides insight into how
the community will be affected by establishing a given MPA. Having this information immediately allows Port Orford to have a robust and lively debate about where and how many MPAs to nominate. We also discuss the development of this tool and the next steps to develop it further.

**Mapping Maine’s Working Waterfront: Protecting the Soul and Character of Maine’s Coast through Community-Based Mapping**

*Presenter(s): Hope Rowan, Island Institute*

Working waterfronts collectively define the soul and character of Maine’s islands and coast, for residents and visitors alike. Nevertheless, Maine’s working waterfront faces tremendous pressure from conversion to other, incompatible uses; a study by the State Planning Office suggests that the majority of Maine’s coastline will be classified as suburban/urban by 2050. This is a concern for communities, fishermen and conservation groups.

The Island Institute and its partners embarked on a community-based mapping project to quantify the working-waterfront resources for Maine’s 142 coastal towns. Researchers worked hand-in-hand with local community leaders in each of the participating coastal towns to collect data using geographic information systems technology. The result of this research effort is a new tool in the form of a statewide Working Waterfront Access Map to facilitate dialogue between two historically divided coastal constituencies: the conservation community and the commercial fishing community.

This presentation will discuss the challenges and successes of this effort, the community participation process, project findings and how this research fits within the growing waterfront access protection toolkit in the state of Maine. Issues such as defining working-waterfront access, setting protocols for public data access and the sustainability of mapping research will be addressed.

A model methodology will be examined, to explore the potential for this community-based mapping effort to remain current, and to learn whether it has applications in other working-waterfront states.

**Technical Session**

**ArcMap Tips and Tricks**

*Room: Marlin*

*Presenter(s): Danielle Hopkins, ESRI*

ArcMap gives you the power to better answer questions, examine relationships in your data, and create cartographic outputs. Become more productive in your daily workflows by learning more efficient ways of performing your regular tasks. This presentation and demonstrations will offer tips and tricks for working with ArcMap.
Keeping Track of Florida Panthers and Snowy Plovers

Presenter(s): Mary Kay Sadighi, Sanibel Captiva Conservation Foundation

Florida Panthers and Snowy Plovers are two of many species in Florida struggling to adapt to habitat fragmentation and loss. The carrying capacity of pre-European settlement Florida is estimated to have been 1,360 panthers. At its lowest in the 1980s, the Florida Panther population dropped to around 30 individuals. Thanks to intensive efforts by government and non-profit agencies, the endangered cats now number around 100. Compared to panthers, tiny Snowy Plovers need far less absolute habitat area, but their habitat preferences coincide with intensive recreational beach use, putting their patchy populations at risk as well. An ESRI program for pro bono conservation work helps track panthers in and around the Florida Panther National Wildlife Refuge and Snowy Plovers of Sanibel Island, Florida, for the Sanibel-Captiva Conservation Foundation. Tracking Analyst (ESRI) produces animations of telemetry data for public outreach programs to illustrate the great distances panthers travel and the habitat types they need to survive long-term as a viable population. Animations of Snowy Plover chicks using busy beach zones illustrate the need for continuing education of beachgoers. Spatial Analyst (ESRI) provides tools such as a generator of random points for study plots to understand the habitat used by nesting and foraging plovers. Surprising results from a recent study of Snowy Plovers suggest optimism for their future on busy barrier islands.

The Why of Where: Using GIS to Investigate Habitat Use by Threatened Reptile Species in a Sand Prairie Ecosystem

Presenter(s): Alan Jensen, Iowa State University Extension

The long-term persistence of numerous plant and animal species requires effective conservation strategies informed by scientific investigations. Two such species are the western hognose snake (Heterodon nasicus) and ornate box turtle (Terrapene ornate), both of which reside in short-grass and sand prairie habitats. Given the extent to which these habitat types have declined and become fragmented, population-level conservation decisions for these species will be critical.

In Illinois, isolated populations reside in a relict sand prairie (Carroll and Whiteside counties), used highly by humans and managed through controlled burns and vegetation removal. Geographic information system (GIS) technologies were used to describe patterns of habitat by these species. Capture locations for individuals have been monitored for the past nine years using global positioning system (GPS) technology. Spatial auto-correlation and patch-level habitat-use patterns were analyzed using GIS. For this, capture locations were mapped on high-resolution orthophotos of the area and the proportion of habitat use was compared to availability. Patterns of local habitat use were also described for 2007 capture locations by recording vegetation composition one square meter around each site. Preliminary data suggest that habitat use is non-random by these species. This information may inform effective conservation and management actions.

Water Resources and Availability

Room: Heather

Moderator: Maria Osiadacz

Population Growth: Where Will Water Quality Be Impacted the Most?

Presenter(s): Tatyana Soroko, EPG

The Sandhills region, located in central North Carolina, is expected to experience dramatic population growth in the next 5 years. Population growth triggers urbanization, which may result in impairment of local water bodies. This study applied GIS analysis and the Environmental Protection Agency’s Analytical Tools Interface for Landscape Assessments (ATtILA) to investigate the effects of alternative patterns of future urban development on water quality in the Sandhills region. GIS tools, along with considerations for population growth and future planned roads, were used to develop two scenarios for future land use: “Less Sprawl” (high housing density near roads) and “More Sprawl” (low density). Then ATtILA was applied to model relative changes for nitrogen and phosphorus area loadings in 12-digit hydrologic units between each scenario. Finally, the site ranking was developed to identify areas of the highest concern.

Creating a GIS Database for Spatial Analysis of Community Access to Clean Water in the Mayange Sector of Rwanda

Presenter(s): Max Baber, The University of Redlands

The University of Redlands—in partnership with the Millennium Villages Project (MVP) and the Centre for Geographic Information Systems at the National University of Rwanda (CGIS NUR)—is using Geographic Information System (GIS) and Global Positioning System (GPS) technologies to compile a database and model community access to clean water supply in the Mayange sector of Rwanda. The project team digitized water access point locations and quantified spatial dimensions of land use characteristics associated with water quality and quantity, and the project team is refining efforts to model data and support more effective diagnoses of problems with existing public water sources.

Water access points were located using GPS, and water usage characteristics were surveyed via personal interview at each
site. Collected field data was added to a regional database composed of environmental and governmental GIS data layers provided by MVP and CGIS NUR. Geographic characteristics associated with good water sources are used to determine suitability as a water access point. A spatial model outputting information regarding access to good quality water is being developed using the collected and available spatial data. Model results will be presented on a map, as a statistical surface revealing relative suitability of all locations within the region. Locations of lower quality water access points will be compared to good areas. The model will allow the team to better diagnose problems at lower quality sites and to identify new areas that may prove to be suitable locations for water source improvement projects.

**Integrating Geospatial Environmental Data to Evaluate the Impacts of NRCS Conservation Programs on Water Quality**
*Presenter(s): Richard Powell, Michigan Tech Research Institute*

As a component of a 4 year Cooperative Agreement between the Michigan Natural Resources Conservation Service and the Michigan Tech Research Institute, water quality data collections, remote sensing, and geospatial analysis techniques have been used to investigate the relationship between land use/land cover, conservation farming practices, and water quality in southern Michigan.

Water quality data collected during the years 2005 to 2007, object-based land use/land cover maps derived from multi-temporal Landsat TM 5 data, and custom watershed-level statistics, developed from USGS 30-m Digital Elevation Model data and the ArcHydro extension to ESRI ArcGIS, indicate that agricultural land use across 26 sub-basins of the Upper Tiffin River Watershed (146 km2) is correlated to turbidity, dissolved oxygen, and conductivity during the study period. The analysis indicates that the effect of intensive crop management practices, such as corn silage harvesting, varies seasonally and that conservation farming practices are associated with decreased levels of turbidity.

**Mapping Connectivity: Evaluating Fragmentation in Stream Networks**
*Presenter(s): Christina Bourne, Memorial University of Newfoundland*

Human activities have had negative impacts on all of the world’s landscapes, including stream networks; the construction of roadways in particular has led to aquatic fragmentation through the installation of culverts which create barriers to fish movement. To evaluate aquatic connectivity within two Canadian National Parks, I used a River Connectivity Index (Cote et al., in review) to obtain measures of fragmentation on the watershed scale, something for which no quantitative method previously existed (Poole 2002, Kondolf et al. 2006). To implement this Index, I used ArcGIS software to map the locations of stream networks within both parks, and a series of tools to obtain the necessary parameters, such as matrices of stream segment lengths. This analysis enabled me to not only demonstrate the direct impacts of aquatic fragmentation; it also provided a way to help reverse these negative effects by modeling which culverts would provide the greatest connectivity gains upon restoration.

**Technical Session**

**Using CorridorDesigner to Design Wildlife Linkages**
*Room: Marlin*

*Presenter(s): Paul Beier, Northern Arizona University*

A wildlife corridor allows animals and plants to migrate and maintain gene flow and reduces human-wildlife conflicts. Working with several groups of ecologists and GIS analysts, I helped design 31 wildlife linkages in Arizona and California. These science-based corridor designs for multiple species are being implemented by counties, federal and state managers and transportation agencies, and conservation groups. In late 2007, Dan Majka and Jeff Jenness (real GIS analysts) and I (a wannabe GIS analyst) developed our GIS tools into CorridorDesigner, a set of ArcGIS 9.2 tools which you can download for free at www.corridordesign.org. This “technical session” will be conceptual. We’ll discuss:

- How to prioritize potential linkages so your analyses focus on the important ones
- Why CorridorDesigner uses least-cost modeling instead of simulated annealing, graph theory, or circuit theory
- How to parameterize a single-species model
- Why the geometric mean is better than the arithmetic mean for combining factors
- Why you should model habitat patches, and how to do so in CorridorDesigner
- The secret that least-cost modelers rarely say out loud: a permeability model is really just a habitat use model in disguise!
- How to give a model “room to run”
- How to pick the “right” corridor slice
- How to evaluate alternative corridor designs
Indigenous Communities, Societies and GIS  
**Room: Chapel**  
**Moderator: Mark Denil, Conservation International**

**Indigenous Knowledge as Spatial Data**  
**Presenter(s): Sabino Padilla, Anthropology Watch**

The paper will illustrate using the ethnographic data the spatial perception of indigenous peoples with regards to the areas they consider as their ancestral domain. The richness of their knowledge about these areas will clearly show a long symbiotic relationship with their environment which they consider not only as their home but the source of their sustenance as well.

**Defining Neighborhoods**  
**Presenter(s): Bernt Wahl, UC Berkeley**

The Neighborhood Project provides neighborhood boundaries and demographic information. A neighborhood is a place built on identity. Neighborhoods (generally) conjure ideas of a geographic character. Some neighborhoods build identities through culture, age, and heritage. Others base their existence on location, a hill, a seaside or a seedy part of town. Each one provides a unique character with a story. Neighborhood Map in Search Internet services become more user focused; the need to provide greater localized content has expanded the requirements for more neighborhoods demographic information. Two key elements driving targeted localized interest are: consumer neighborhood name recognition and neighborhood demographic consistency. By supplying data based on defined locations with common characteristics—which consumers are familiar with—companies and service organizations will be able to target these communities and their inhabitants more effectively.

- Descriptive Boundaries Method: Identifies street boundaries of neighborhoods using combination of data from city planning offices, chambers of commerce, and local real estate firms.
- Deduction Method: Uses satellite images to enhance estimation of neighborhood demarcations.
- Scatter Plot Method: Aggregates user survey responses to modify neighborhood boundaries over time, capturing evolution of neighborhoods caused by bleeding, where desirable or undesirable neighborhoods grow to slowly engulf surrounding areas.

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**Creation of the Cameroonian Chapter of the Society for Conservation GIS: Progress Made and Lessons Learned**  
**Presenter(s): Gideon Shu, Global Forest Watch Cameroon**

Since March 2007, Mr. Nsoyuni Ayenika Lawrence, the initiator of the Cameroonian Chapter of the Society for Conservation GIS (SCGIS Cameroon), put in place a local committee to coordinate activities leading to the creation of SCGIS Cameroon. In this committee I have actively played the role of assistant coordinator of the chapter creation process. The paper titled “The Creation of the Cameroonian Chapter of the Society for Conservation GIS: Progress Made and Lessons Learned” will focus on the activities of SCGIS Cameroon under creation dwelling on the initial challenges and the vision that lies ahead of this Chapter.

**The ‘World Wide Web Academy’: Connectivity between the Virtual, Physical, and Temporal Realities of 21st Century Niche Dwellers**  
**Presenter(s): Brian J. Racin, South River Environmental & Shade Tree Commission**

Twenty-first century societies in developed countries around the globe have become increasingly disconnected from their rootedness in the natural world, especially regarding their ‘top of the chain’ position in the world wide web of life. Although the majority of the younger generations seem to be tech-savvy and continually ‘plugged in’ to their virtual and electro-communicative worlds, there still exists a large gap in basic understandings of how that virtual world is ultimately derived from and closely related or connected to the physical world in which we dwell no matter what anyone’s ‘avatar’ would have us otherwise believe. Through proper presentation of the real world to youth leadership and school user groups using the spatial and temporal resolution available through use of GIS, a bridge may be made to enable all users to associate the thermodynamic paths enabling our virtual, physical and temporal worlds to thrive, although our current abundance may truly be ephemeral. A school in natural surroundings, or a wilderness setting, away from the built environment, which uses GIS capabilities as one tool to immerse students as an integral function of their place in the web of life, coupled with training and practice in the subsistence, wilderness, or hands-on trophic functioning of humanity may instill an attitude toward coping with any perceived ‘ecosystem emergencies’ in a way that avoids attempts to legislate social change or codify our response to our evolving habitat.
Remote-Sensing Techniques
Room: Heather
Moderator: Miriam Schmidts, ESRI

Forest Crown Closure Assessment and Tree Species Classification Using Multispectral Imagery
Presenter(s): Juwairia Mahboob, IGIS, NUST

Forests are a key element of environment. The conservation and management of these forests is vital for maintaining environmental stability and ecological biodiversity. The management of forests especially in response to human activities, such as tourism and livestock grazing, requires information on quality and quantity of vegetation. Forest inventories have traditionally been used for acquiring quantitative and qualitative information of forests in Pakistan. The parameters that are collected and measured in the forest include species type, age, height, crown diameter, volume etc. With the advent of technology, remote sensing has been found to provide an alternative for forest mapping and monitoring at less time and low cost. This research poses to study two of the parameters, i.e. type of species and crown closure with SPOT & ALI imageries of Ayubia National Park. Crown closure is the percentage or proportion of ground area covered by the vertical projection of tree crowns. Crown closure is a bio-physical parameter important for quantifying the energy and mass exchange characteristics of terrestrial ecosystems such as photosynthesis, respiration, transpiration and rainfall interception. It is an important variable in the estimation of stand volume and in evaluating silvicultural operations and ecological conditions. It has a significant influence on snow pack accumulation and snow melt. Spectral reflectance of plant species varies with wavelength to different degrees. Spectral difference among plant species, has been found by visually looking at the shape of vegetation spectra. Small spectral differences of canopies may be distinguished from multispectral sensors having more bands in Infrared region of spectrum. But the high spatial resolution in multispectral sensors (e.g. SPOT) does not have high spectral resolution. On the other hand, ALI imagery having high spectral resolution in infrared region is expected to give better results. But, the spatial resolution of ALI imagery is low for analyzing individual tree species. Hence, this study employs both SPOT & ALI multispectral imageries for classification of forest tree species. In this study, crown closure was assessed by employing feature extraction methods such as Principal Component Analysis. Species classification was carried out with object oriented classification techniques such as Nearest Neighbour Classification and Decision Tree Algorithm. A DEM was generated based on 1:50,000 scale topographical sheet. The contours were digitized at an interval of 50 feet. Moreover, aspect & slope were also derived from DEM. The field data was collected by visiting sites in the field, measuring several parameters (crown closure etc.) and determining coordinates with GPS. 12 sample plots were taken in the field for measuring crown closure. Ayubia National Park was selected as the study area for this research as the National Park has a diverse variety of coniferous and broadleaf tree species in their natural environment. The primary objective of a national park is to protect the landscape, flora and fauna in its natural state and to which the public is allowed access for the purpose of recreation, education and research. Hunting, shooting, trapping, killing or capturing any wild animal within a 3 mile radius of the boundaries of the park and felling of trees and clearing any land in the park is prohibited. Managers require an understanding of the spatial distribution of species composition and crown closure to manage forest resources for particular uses such as recreation, wildlife production, forestry and watershed management. This study will help assist forest managers in the management of forests and will open up new avenues for research in the field of forest inventory and remote sensing in Pakistan.

Harnessing VSATs, Geonetcast and CBERS to Build Local Decision-Support Capacity
Presenter(s): Chris Nicholas, Conservationist

Linking rural areas to the world with the Internet is a powerful agent of change. The vast majority of rural communities have had little prospect to benefit from advances in satellite monitoring and state-of-the-art GIS technologies until now, until the Internet has started to reach their towns and villages. A thin-wire architecture benefiting farmers, foresters, environmental decision-makers, and relief workers worldwide who can access the Internet is discussed, that provides targeted applications bundled with relevant, location-specific data within an online workspace they can share with others. The framework provides access to a global network of experts and project managers who can provide real-time, interactive advice, and harnesses the wealth of free remote sensing data to be made available for Africa, Brazil and beyond.

Relationships between Satellite Derived Vegetation Indices and Leaf Biomass for Mid and Up Country Tea Plantations in Sri Lanka
Presenter(s): Ranjith Premalal De Silva, University of Peradeniya, Sri Lanka

Tea is a major export crop in Sri Lanka. Assessment of trends in tea yield is important to predict the future of this industry. Leaf biomass is the most important part in terms of tea yield. Accordingly, remote sensing approaches can be used to derive relationships between leaf biomass of tea and the yield. These estimations will be helpful in future carbon trading purposes as well. This study focused on the above ground biomass estimation in up and mid country tea plantations in Sri Lanka using medium resolution satellite imagery.

Medium resolution satellite images of ASTER, IRS LISS II and III and Landsat were utilized to develop vegetation indices namely, NDVI, DVI and RVI for St. Coombs and Hantana estates repre
senting up and mid country of Sri Lanka. By classifying these vegetation index images, biomass maps were prepared. Field survey was conducted to study the ground characteristics and to identify the fields. Field information on plucked green leaf and factory yield was collected for selected fields in each estate. Tea factory yield and plucked biomass of each field were plotted against the mean vegetation index value of the respective field to study the relationships.

It revealed that the vegetation index values are higher in up country tea reflecting higher density of tea over mid country tea. Also, it was not possible to establish a significant relationship between tea yield/plucked green leaf with vegetation index values derived from spectral responses of medium resolution imagery. The highest volume of biomass was identified in 1998 for Hantana while St. Coombs does not show much variation over 1992, 1998 and 2001. In comparison to RVI, NDVI and DVI were proven more suitable in studying the biomass variation in tea. It is recommended to use high resolution satellite imagery and to take a better representative sample for up and mid country by including more than one tea estate to improve this study.

**Land Cover Assessment of Strictly and Sustainable Use Atlantic Forest Protected Areas in Brazil**

*Presenter(s): André Cunha, Laboratório de Mastozoologia e Manejo de Fauna, Universidade Federal de Minas Gerais*

Protected areas are the main tool to protect biodiversity and ecosystems. Strictly protected areas are most capable to assure nature conservation, although recent investments in the Atlantic Forest of Brazil benefit the soft or sustainable use reserves, where the direct use of natural resources and human settlements are allowed. In the last world protected area congress, it was announced that more than 10% of land surface was protected in reserves. However, these protected areas are not evenly distributed, and important ecosystems or vegetation types continue to be disproportionally under-protected.

To evaluate vegetation types protection and the integrity of strictly (IUCN categories I-III) and sustainable use reserves (IUCN IV-VI) in the Brazilian Atlantic forest, a land cover assessment of the Atlantic forest protected areas is conducted, intersecting 82 federal and 300 state reserves with the official Brazilian biome land cover assessment based on Landsat images from 2002, with object-oriented analysis in e-cognition. Preliminary results for Rio de Janeiro state show that only 2.5% of the 1975 km2 semi-deciduous (dry) forest are in nature reserves, while 41.6% of the 9604 km2 evergreen (moist) forest are under some kind of protection. Mangroves and coastal shrub vegetation have 19.3% and 19.4% of their area (466 km2 and 1080 km2 respectively) in protected areas. However, there are great differences in the land cover of strictly vs. sustainable use reserves. Strictly protected areas still harbor remnants of natural habitats on 92% of their area, while 45% of sustainable use reserves protect anthropogenic areas, mostly pastures, urban areas, and agricultural fields. Semi-deciduous forests are severely threatened, only 23.6 km2 or 1.2% of the remnant area are within strict reserves, and other 1.3% in sustainable use areas. Mangroves are relatively underrepresented in strict reserves, only 18.8 km2 of the 466 km2 are under true protection, while other 71 km2 are in sustainable use reserves, where, in practice, nature conservation is not a priority. Almost half of the whole area of sustainable use reserves is composed by entirely human altered landscapes. Conservation efforts need to focus on creation of strictly protected areas and in less protected vegetation types, such as semi-deciduous forests and mangroves.

**How to Count Wildlife from Space; Using Space Based Satellite Imagery to Improve the Accuracy of Wildlife Counts**

*Presenter(s): Scott Bergen and Eric Sanderson, Wildlife Conservation Society*

Can high spatial resolution satellite imagery be used to count wildlife? And if so, which species and under what circumstances? To answer this question we designed two experiments at the Bronx Zoo, New York, taking advantage of the large diversity of species on display in semi-natural conditions. We also placed targets of selected sizes and colors in different habitats to systematically evaluate the capacity of QuickBird-2 imagery to identify wildlife. Animal size, color, vegetation height and presence of shadow all significantly impact the identification of individual animals. From our experimental targets we developed a multivariate logistical regression model that predicts the detection probability of different species within specific habitat types. This model was validated by testing the observed frequency of animals detected in the imagery versus the frequency generated by the logistic model. Our results demonstrate that it is possible to count wildlife from space based remote sensing imagery, but environmental conditions and species specific characteristics dramatically influence detection and identification. In the field, we have successfully used QuickBird-2 imagery to count wildlife in natural conditions. At the Nation Elk Refuge in Jackson, WY, USA, counts based on satellite imagery had a higher accuracy relative to ground counts taken in synchrony with image acquisition, and had a 98% accuracy when compared to aerial counts. In coastal Patagonia (Peninsula Valdes National Park, Argentina), high resolution satellite imagery counts had above 90% accuracy for counting adult southern elephant seals, while pup counts accuracy was less due to the smaller and darker individuals. We had a very low accuracy in identifying African wildlife in Ruaha National Park, Tanzania, where weather, image resolution, faunal diversity and high vegetation cover hindered accurate counting. We find that using high resolution satellite imagery for the purposes of counting wildlife can increase the accuracy of the counts relative to ground and aerial census methods. It is still necessary for ground observation to occur in synchrony with satellite image acquisition to insure that the proper area is acquired and collect further data on the target conditions?
specie(s). Population of large bodied mammals occurring in remote locations are the species most likely to benefit from the use of space-based satellite imagery, where transportation and logistics are prohibitive. Examples of such wildlife spectacles still exist and include large pinniped calving grounds (southern and northern elephant seals, Atlantic and Pacific walrus, southern fur seals as examples), and where large wild herds still exist and migrate (Serengeti wildebeest and zebra, barren ground caribou (Rangifer sp.) especially during calving season, white-eared kob, mongella gazelles and Tiang in Boma, Southern Sudan).

Technical Session

Getting Started with ArcGIS Server

*Room: Marlin*

*Presenter(s): Danielle Hopkins, ESRI*

Are you interested in ArcGIS Server but don’t know where to start? Perhaps you’ve worked with ArcIMS and want to know what ArcGIS Server can offer you. In both cases, this is the session for you! You will learn how to make your maps, globes, and other GIS resources available to others by publishing them on a server. You will see how to create Web applications with ArcGIS Server Manager without having to write code. You will also be introduced to using ArcGIS Online, caching maps for performance, adding tasks to your applications, securing your GIS server, and finding the best help resources.
variation in model accuracy and discuss the implications of these differences on the use of distributional modeling as a tool to focus monitoring efforts and inform management decisions.

Testing Methods to Estimate Abundance of Magellanic Penguins Using GIS
Presenter(s): Cecilia Villanueva, Centro Nacional Patagonico (CENPAT)

Estimating population sizes is essential for many ecological analyses. However, in many cases it is difficult to establish accurately the limits of the distribution of a population or the number of individuals. Although several sampling methods have been used to establish the size of Magellanic penguin colonies, their relative performance has never been assessed. In this study we tested the efficiency of three sampling methods frequently applied in Patagonia using geostatistical tools and simulation-estimation trials developed in a GIS. We generated a virtual colony with spatial parameters estimated for a real colony of Magellanic penguins located at Peninsula Valdes Argentina, applying kriging interpolation techniques. On this virtual colony three sampling methods were applied using a range of sampling fractions from 1% to 25% of the area covered: random sampling with quadrats of 100 m², systematic sampling with quadrats of 100 m², and systematic sampling with fixed-width transects. Simple design-based estimators were used assuming that the area occupied by the colony was known. Systematic sampling with quadrats gave the most accurate estimates for any given sampling fraction.

Effects of Urbanization on Avian Species Richness in the Phoenix Metropolitan Area: Patterns in Vegetation Remnants
Presenter(s): Jennifer Litteral, Arizona State University

The world is becoming ever more urbanized, both in terms of area occupied by urban land cover and in terms of the portion of the human population that lives in urban landscapes. Urbanization is an important driver of habitat loss and fragmentation which, in turn, drives biodiversity loss. However, relatively few conservation studies have been completed in urban areas. Birds are ideal study organisms for estimating the effects of urbanization on species richness. If habitat loss and fragmentation are limiting the avifauna community, it is likely that less mobile organisms are being affected as well. I used a stratified random sampling approach, generated using Hawth’s Spatial Ecology tools in ArcGIS, to assess the species richness of songbirds in fifteen native vegetation remnants in the Phoenix metropolitan area. Species richness and community composition were compared to landscape variables including size, perimeter-to-area ratio, distance from city center, distance to outlying desert and distance to nearest native vegetation fragment calculated using the Maricopa County Association of Government’s county land use map. The results of this analysis can be used to under-
stand whether fragments in the city function as habitat islands or as a system of habitats. These results can also be used to set guidelines for the effective design of urban parks and preserves for bird conservation as urban areas continue to grow.

Conservation GIS at the Ecosystem Level
Room: Heather
Moderator: Robert Norheim, University of Washington

Fire and Biodiversity Conservation in the U.S.: Assessing Current Conditions and Predicting Future Trends
Presenter(s): Colleen Ryan, The Nature Conservancy

Fire regime alteration is a known threat to the conservation of biological diversity. Specifically, altered fire regimes often result in changes in plant and animal species composition and ecosystem structure. Poor understanding and management of fire in the past have produced ecosystems that are highly departed from reference vegetation and fire regimes. Looking to the future, climate change and continued changes in land use are expected to create even greater threats to biodiversity from altered fire regimes. Spatially explicit information about past and present ecosystems and fire regimes is a key resource to conservation professionals seeking to implement ecologically sound fire management. The LANDFIRE project recently produced a series of GIS data products and tools, including ecological departure layers, Fire Regime Group layers and vegetation dynamics models for the U.S. that can assist in assessing current fire conditions and help predict future trends. We present the findings of a GIS-based spatial assessment of the ecological role and integrity of fire regimes across the conterminous U.S. based on LANDFIRE Rapid Assessment data. We also give examples of potential applications of the LANDFIRE data and vegetation dynamics models that highlight their utility in predicting future trends. Examples include assessing the influence of invasive species, predicting landscape conditions and vegetation shifts under different climate scenarios and quantifying the effects of management actions over time. Although LANDFIRE products only cover the U.S., the non-spatial vegetation dynamics models can be adapted for use in other geographies.

Papahanaumokuakea Marine National Monument Information Management System
Presenter(s): Kaylene Keller, NOAA Papahanaumokuakea Marine National Monument

Research and resource management have been occurring in the Northwestern Hawaiian Islands since the early 1900’s. The Papahanaumokuakea Information Management System (PIMS) is in the early phases of development but incorporates past data collected by the management agencies and researchers, current data collection efforts and looks towards building systems to work with future data collection.

In order to provide managers with the most current information the system will access data from a distributed network of data providers within the co-trustee agencies as well as other partners. The first phase of the project will focus on developing tools that will be used to analyze the potential cumulative impacts of activities conducted within the Monument. Using ArcGIS Server technology managers can begin to evaluate cumulative impacts of proposed projects by searching for past work or on-going projects by location or keyword and comparing it to the proposed projects.

Mangrove Species Management In Cameroon
Presenter(s): Buh Wung Gaston, Limbe Botanic Garden

Cameroon mangroves are biologically productive with estuarine which serve as nursery, feeding and breeding ground for many kinds of marine organisms. Over the years, this productive coastal ecosystem has experienced the concentration of population, exploitation of natural resources, discharge of waste effluent and municipal sewage. Lack of adequate Geospatial data on distribution of these resources remains a hindrance to natural resource management in developing nations like Cameroon. The Limbe Botanic Garden GIS/RS Department was contracted by FAO of the United Nations to ascertain mangrove zones along the coastline of Cameroon. We classified the different mangrove species, developed an accurate Geo-spatial database with the distribution of mangrove zones relative to other land cover/land use types and provided training on data collection, storage and analysis to collaborating local institutions, Non Governmental Organizations, and Community Based Organizations helping local communities in their application and management of these reserves.

Mangrove Species Management In Cameroon
Presenter(s): Luciana Santos, University of São Paulo

Mangroves play crucial roles for coastal productivity and stabilization, sustaining populations of fish, shellfish and wildlife. The São Francisco River Estuary (State of Sergipe Brazilian Northeast coast) is a tropical coastal landscape where human activities, such as shrimp aquaculture, deforestation and coconut plantations, are the major threats to mangrove conservation. This paper considers the use of GeoCover Landsat ETM+ image mosaic (2000) in GIS to detect human pressures on mangroves within the São Francisco River estuary study area. Landsat images were processed using SPRING, a product of Brazil’s National Institute for Space Research (INPE). The spatial arrangement of the landscape was analyzed. Linear contrast on composite images (R7G4B2), supervised classification (MaxVer-ICM), and class vectorial edition were assisted by aerial photographs (2003,1:25.000) and class quantification was applied. A map of landscape features was produced. The results show mangrove
areas (23,4Km²) were strongly pressured by human activities (11,5Km²). Human activities have directly affected the conservation state of mangroves through conversion (reclamation) degradation, and fragmentation, actions that are generally irreversible, or leave long-lasting residuals or abiotic legacies that can impair restoration by the modifications of the topography that modify the tidal flooding regime. There has been considerable discussion on the literature about the development of management strategies that mimic natural disturbances, but the changes generated by human disturbances in the study area appear to be so severe that they cannot be easily mitigated. This paper also highlights the potential of GIS and remote sensing products for monitoring and enforcing conservation and management on relatively remote coastal landscapes.

**Technical Session**

**Understanding Projections for ArcGIS**

*Room: Marlin*

*Presenter(s): John Schaeffer, Juniper GIS*

This presentation will take the mystery out of projections, coordinate systems, and datums. We’ll start with an overview of projection concepts, and then specifically discuss how these concepts and issues apply to GIS and also how to apply this knowledge correctly working with ArcGIS. This presentation is useful for anyone working with GIS or GPS, and is especially useful for people working with different projections in ArcGIS. Although this is pretty basic, it is always very popular. He had a standing-room only group last year.

**11:00 a.m.–12:30 p.m.**

**Conservation Effectiveness and Awareness**

*Room: Chapel*

*Moderator: Steve Farone, The Nature Conservancy*

**Measuring the Status of Effective Conservation**

*Presenter(s): Steve Farone, The Nature Conservancy*

The Nature Conservancy is widely recognized for partnering with others to promote biodiversity conservation planning based around shared goals for conservation. GIS has vastly increased our ability to collect and analyze data for use in planning, yet even with sophisticated conservation plans in hand, we still ask “How are we doing?”; “What is the status of biodiversity?”; “Where are we winning, and where are we losing the battles?”

“Measures of Effective Conservation” is a GIS-based methodology for defining these questions and their answers. Through developing measures of effective conservation, we are beginning to track the geospatial information that can answer questions such as:

1) Where is biodiversity effectively conserved and expected to persist into the future?
2) How do we quantify gaps that exist in protecting species and ecosystems?
3) How can developing measures of conservation help us prioritize our opportunities and track the progress of conservation work over time?

**The Challenge of Incorporating Well-Being Indicators in Natural Resources Management: The Case of Wetlands in Uganda**

*Presenter(s): Florence Landsberg, World Resources Institute*

Conservation practitioners look increasingly at better integrating poverty considerations in their strategies to preserve natural resources. Equally, decision-makers in charge of poverty reduction programs try to better incorporate sustainable use of natural resources to provide the rural poor with a basis for subsistence livelihoods and production. Beside strong political will, such cross-sectoral collaboration requires common identification of issues and definition of criteria for decision-making.

We will present some results from the forthcoming publication “Incorporating Poverty and Census Maps in Wetlands Management in Uganda”, which results from a collaborative effort between the Wetlands Management Department of Uganda, the Uganda Bureau of Statistics, the International Livestock Research Institute, and the World Resources Institute.

In the context of the Ugandan Poverty and Eradication Action Plan, this publication examined spatial distributions of various types of data such as the latest poverty data of Uganda and socio-ecological indicators extracted from the Wetland Database. The resulting map overlays and their analyses can provide policymakers with spatial information to help them prioritize wetlands that have a potential to contribute to poverty reduction and where wetland resources are potentially at risk of degradation. The publication ends with a showcase about how spatially valuating papyrus harvesting from existing data compares, at a sub-national base, to the minimum amount of money theoretically necessary to get all poor people out of poverty.

The analysis brings out that poverty and other socio-economic considerations provide inputs for wetland management and the development of strategies and interventions.

**Application of GIS for Conservation Awareness in the Protected Areas of Nepal**

*Presenter(s): Ashok Pathak, Society for Wetland and Biodiversity Conservation Nepal (WBC Nepal)*

Community GIS concepts increase conservation awareness in protected areas of Nepal, with application of GIS introduced by
WBC Nepal and SCGIS Nepal to enhance local people’s spatial thinking and geographical approach with colorful maps, satellite imagery, and group discussions. Due to poverty and population growth, people are extracting resources from protected areas of Nepal without considering sustainability. To increase conservation awareness for the local people we started different income generating activities reducing pressure in conservation areas. We came to know that Community mobilization is very essential for conservation awareness. For this we have prepared protected areas GIS database, and shared it with local people. They are very interested when they see their grazing areas, firewood collection areas, houses and settlements on a map and satellite images. They add more information to habitat assessment map, wildlife corridor map, vegetation type map and so on. With this experience we came to know that GIS and RS technology is very useful to increase conservation awareness in developing countries where local people have never seen a map and satellite imageries of their surrounding landscape. Considering this we have started community GIS to increase conservation awareness.

For preparation of GIS database of protected areas of Nepal we have been using the topographic map of 1:25000 scale by survey department of Nepal. We are preparing different vector layers of these areas. We are using satellite imagery and Google Earth to prepare colorful maps. After preparing the database we conduct field verification and stakeholder consultation workshop in the study area. Based on the field verification we prepare different thematic maps: habitats, wildlife corridors, landuse/land cover change, settlement distribution, resource extraction and so on. Dissemination of GIS work with local people is very important for conservation programs. We call this process Community GIS. After preparation of GIS database and different maps we go to the community and share the map with them. For this we conduct 2-5 days basic GIS training for the local people. This training includes the basic map reading as well as basic interface with ArcView to display GIS output on computers. After this training we establish community GIS center to handle the map and GIS database and to incorporate local information.

**Mapping the KBAs: Maintaining Cartographic Consistency in a Dynamic Situation**
*Presenter(s): Kellie Koenig, Conservation International*

Key Biodiversity Areas (KBAs) are site-scale conservation targets used by Conservation International (CI) and identified in collaboration with partners. CI’s Conservation Mapping Program is tasked with creating an ongoing series of professional cartographic products showing these KBAs. This presentation focuses on the cartographic challenges in creating a global series of maps showing site-scale priorities at a regional scale. Setting standards against emerging challenges demands continual engagement for that standard to remain relevant and applicable to distinct regional needs. While this presentation deals with a specific map series, the principles presented can be applied to the broader field of conservation mapping.

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**Wildlife-Human Conflicts**
*Room: Heather*

**Vessel Response to Recommended Measures to Reduce Ship Strikes in the North Atlantic Right Whale Calving Ground**
*Presenter(s): Kerry Lagueux, New England Aquarium*

The North Atlantic right whales (Eubalaena glacialis) population remains precariously low due in large part to lethal injury from vessel collisions. The southeastern United States (SEUS) Critical Habitat Area is the only known calving ground for this species. In the past few years, government managers have employed two recommended conservation measures in the SEUS Critical Habitat Area to protect right whales from ship-strikes: recommended routes and speed limits for vessels. Vessel speed and location information were collected with an Automatic Identification System receiver during aerial surveillance of the right whale calving ground from December to March, 2005 to 2008. Recommended routes were implemented and placed on nautical charts before the 2nd field season and recommended speeds were included in navigational aids over the last several years, with all materials posting a recommended speed by March 2007. The timeframe of AIs data collection allowed for an assessment of vessel response to these recommended measures. There was a small increase in use of the recommended routes in the first year following implementation (a 3% increase of vessels tracks within the recommended routes), and a moderate increase in compliance the second year after implementation (28% increase). The number of vessels that slowed to the recommended speed has increased over the past three field seasons as awareness among mariners increased, but the overall compliance rate is very low (0.96% (year 1), 1.06% (year 2), and 9.7% (year 3)). These results support the need for a mandatory vessel speed limit to successfully reduce the likelihood of ship strike deaths of right whales in the southeast United States.

**Observed Changing on Habitat Utilization of Mothers and Calves Humpback Whales, Megaptera Novaeangliae, between 2002 and 2006 in Antongil Bay**
*Presenter(s): Tiana Rakotosamimanana, Wildlife Conservation Society—Madagascar Country Program*

Humpback whales migrate to breed and calve in warm, sheltered areas and relatively shallow waters in the tropical zones during the austral winters. The 1996 and 2001 monitoring of humpback whale population wintering in Antongil Bay in
the northeastern Madagascar showed that mother-calf pairs showed a preference for a shallow water (<20m). Here, we report the observed changing on habitat utilization of mothers and calves during the period of 2002 and 2006. Population monitoring was carried on during these five years in Antongil Bay. Boat based surveys were conducted daily, weather permitting, in the northern extent of the bay which has a mean depth of 23m. Random points that were served as the survey's direction were generated to minimize sample bias. Coordinates were recorded using Gecko 201, Global Positioning System for each group types of whales sighted. Spatial analysis using home range extension (kernel) in animal movement was conducted to calculate the probability of the surface used by the humpback whales in Antongil bay. A total of 71 mother-calf pairs and 33 mother-calf-escorts were observed during 2002 and 2006 in Antongil Bay. Referred to the 1996 and 2001 findings where 60% of mother-calf pairs were observed in waters <20m, our analysis showed a significant shift of spatial utilization of mother-calf pairs during the last five years of the monitoring. Most of the groups (74.5%) were observed in waters ≥ 20m deep, particularly between 20m and 40m. Our findings may indicate a potential depth change of the near shores waters in Antongil Bay that may be associated with sedimentation due to agriculture and runoff from deforested land and logging. Other parameters such as level of disturbance within the near shore region may induce this change and will need to be evaluated for the future management of Antongil Bay.

Application of GOS Collected Location Data in Understanding the Black Bear Human Conflict in the Kashmir Valley

Presenter(s): Mudasir Ali, P.G. Dept. Environmental Science, University of Kashmir

The information on both the Asiatic Black Bear (Ursus thibetanus) and the Himalayan Brown Bear (Ursus arctos isabellinus) in the Kashmir Valley (1560m-4200m asl) lying in the north-west of the Himalayas is very limited, though the former species is quite abundant with increasing population, and the latter species with its dwindling range. From the past three years, there has been a significant increase in the black bear-human interactions resulting in the casualties and threats to the property. In order to understand the reasons involved in the recent carnivore-human conflicts, the study was undertaken from May to July 2007. The secondary data regarding the black bear-human interactions was collected from the state wildlife department. The victims were visited and the situations and circumstances under which the interactions took place were recorded. A Global Positioning System receiver was used for storing the spatial locations of the bear attacks. In addition, unrecorded cases encountered during the study were also analyzed so as to monitor the effectiveness of the reporting system. Important waypoints such as hospitals, police stations, etc. were recorded so as to formulate a disaster mitigation unit in the delineated conflict zones, and develop a bear information management system for quick handling of the intense trauma situations during and after the conflict, and thereby reducing the potential for negative bear-human or vice-versa interactions through a variety of management tools.

The study was carried out in the South Kashmir division which comprises of about 33.74 percent of the total land area of the Kashmir Division (15,948 km²) and harboring nearly 34 percent of the total human population.

From a total of 160 incidents (June 2001–May 2007) of human injury and death cases, maximum cases (58.12%) were encountered during autumn season, and followed by summer (30%). The proportion of interactions during winter and spring was low (3.75% and 8.12% respectively).

This work examines the environmental profiles of the incident locations and attempts to understand those variables that are important indicators of potential conflicts; with resultant implications for management.

Does Livestock Grazing Affect Suitability of Red Deer (Cervus elaphus) Distribution?

Presenter(s): Kamal Thapaliya, PRDS

The effect of livestock grazing on spatial distribution was not addressed properly in previous research. The aim of this study is to explore and analyze the spatial distribution of red deer in relation to livestock grazing. 301 species' point records (15*15 m) for cow, horse, deer, sheep/goat and gazelle based on dung (pellets) counts and 30 environmental predictors were prepared in GIS environment to map probability of spatial distribution of deer in Hustai National Park, Mongolia. Chi Square illustrates significant association of park management and distribution of the deer pellets (X² =94, df =3, P<0.001) as well as the distribution of marmots burrows (X² =16.4, df =3, P<0.001). Our study of livestock association with red deer demonstrated significant negative association (X² =137, df =9, P<0.00) for sheep/goat pellets and negative association (X² =79, df =9, P<0.001) for cow dung abundance. But positive association (X² =18.3, df =9, P=0.03) was observed with horse dung abundance. Logistic model (R² =.752) shows highest probability of deer distribution with increasing elevation, higher slope, nearer to river and farther away from the roads. Elevation (R² =.654) alone explains deer distribution similar to our final model. Further analysis of elevation related factors was carried and this confirms human disturbance and livestock grazing in the lower elevation is the causative factor governing occurrence of red deer in the higher elevation.
Technical Session

The Practice of Cartography
Room: Marlin

Presenter(s): Mark Denil, Conservation International

This technical session will review some of the many concerns impinging upon the making of maps.

A brief overview of some basic theoretical principals will be followed by a discussion of some of the issues not usually covered in GIS centered cartographic training. These issues will include workflow planning and execution, page design and architecture, color models and use, typography, and other facets of practical map making and production.

A general map critique will close the technical session. Some example maps will be considered. Participants are encouraged to bring maps for discussion and evaluation.

Special Lunch Session

Conservation GeoPortal: Current Status, Future Plans, Feedback Session
Room: Chapel

Presenter(s): Demian Rybock, NatureServe

Conservationmaps.org was developed by a group of conservation organizations in 2006 to support the discovery and sharing of conservation-related maps, data, and map services. This presentation will provide an overview of the effort and discuss its current status and future plans. Feedback and ideas from users will also be gathered.

Paper Sessions

Analytical Methods for Conservation GIS
Room: Chapel
Moderator: Kent Reeves, County of Yolo Parks & Resource Department

Comparison of Spatial Unit Delineation Approaches for Ecological Monitoring
Presenter(s): Peter Cutter, University of Minnesota

Defining the spatial configuration of survey units is a critical and early step in many survey, monitoring, and planning efforts. A uniform grid approach is often used due to the ease in which regular units can be mapped and because of perceived logistical and analytical advantages. However, irregular survey units have several advantages and can be readily implemented with today’s GIS tools. In this paper, I compare uniform and irregular survey unit approaches from the perspectives of statistical analysis, ecological interpretation, laboratory and field logistics, and management relevance. Many aspects of survey unit definition and design have associated and ongoing costs and consequences so it is important that these considerations be taken into account in the early stages of a monitoring program. I conclude that, under many conditions, including those commonly encountered in ecological research, an irregular survey unit approach can have many practical advantages.

The Use of GIS and Bioclimate Envelope Modeling for the Assessment of IUCN/Red List Spatial Criteria
Presenter(s): Holly Porter-Morgan, The New York Botanical Garden

As the global interest in biodiversity loss has increased over the past few decades, Red List evaluations of threatened species have become increasingly important in assigning priorities for conservation programs. The standard procedures for Red List category assessment are delineated by the World Conservation Union (IUCN) and include several quantitative parameters that reflect various aspects of geographic distribution. Among the most important of these spatial criteria in terms of assigning threat status is the Extent of Occurrence (EOO). However, the most commonly-used methods for calculating EOO contain many sources for error. To address this issue, GIS and bioclimate envelope modeling (BEM), specifically the program Maxent, are being used to refine estimates of EOO for a number of endemic plant species in Eastern Brazil. The advantages and implications of using BEM for calculating Red List spatial criteria will be discussed, and BEM methodology will be compared to the standard measures for calculating EOO. Additional applications
of bioclimate envelope modeling in determining threat status are being developed, including measurement of habitat change over time and shifts in species distribution due to climate change.

Using Geographical Information System (GIS) to Support Traditional and Adaptive Approaches to Manage, Conserve and Sustain the Use of Biological Diversity of Dryland Ecosystems in East Africa
Presenter(s): Simon Kang’ethe, National Museums of Kenya, East African Herbarium

Plant biodiversity harvesting by both livestock and human, remains the major available and accessible livelihood support system in the dry land regions of Eastern and North Eastern (NEP) Kenya. Local communities collect wild fruits, roots, tubers, medicinal herbs, gums/resins and vegetables amongst others for their nutritive value, while livestock take the pasture for fodder. Sustainability of this resource will ensure improved community development hence improved livelihoods. Dryland biodiversity is threatened by habitat loss, exacerbated by population pressure, subsistence agriculture and over-harvesting for fodder, fuel wood, timber, food, fruit, medicine, fiber amongst others, as well as by adverse climatic changes and poverty.

There is need to develop a comprehensive GIS-plant biodiversity database of the dryland region of East Africa which remains the most vulnerable due to climatic change as a way to enhance livelihood developmental agenda for the local communities as well as a tool for conservation. For a long time, this has been hampered by scattered information on plant biodiversity and plant utility to both livestock and communities. Consolidating a single coordinated GIS-plant biodiversity into one source to form a reference for collective and coordinated community developmental use remains a prerequisite. Indigenous knowledge which is in scientific form needs to be reworked to make it suitable for use by local communities in improving community development and plant biodiversity management. The distribution patterns of plant biodiversity utility, plant hotspots as well as migratory routes for the wildlife and livestock are governed by the natural resources availability of particular plants and using GIS to map these resources remains fundamental to conservation and livelihoods support systems development.

Conservation Landscapes for Wildfire
Room: Heather
Moderator: James Sheppard, Zoological Society of San Diego

Sandhill Cranes and the Changing Landscape
Presenter(s): Mike Engels, International Crane Foundation

By the 1930s the Sandhill Crane had largely disappeared from much of the Upper Midwest. Thanks to conservation efforts and the crane’s remarkable ability to adapt to changing landscapes some estimates show these birds now exceed 13,000 in Wisconsin and adjoining states. While Sandhills still depend on wetlands for nesting and nighttime roosting they have successfully adapted their feeding habits to agriculture lands that have largely replaced native prairies in the region. This workshop discusses research and GIS efforts led by the International Crane Foundation into the crane’s behavior and interaction with the landscape.

The lens by which cranes examine their environment combined with seasonally changing crops creates a unique ecological study requiring flexible methods for spatial modeling and analysis. While a valuable food source for the crane, feeding on crops can cause significant losses to local economies. In cooperation with local farmers ICF developed field observation techniques and GIS management and analysis tools, enabling researchers to track land cover change and the crane’s use of the land at an extremely fine temporal and geographic scale.

This workshop describes issues surrounding the cranes and their chosen food sources and demonstrates a set of GIS-based tools used to assess the changing habitat and corresponding behavior of Sandhill Cranes in agriculture lands of south-central Wisconsin. A hands-on portion of the workshop will give attendees an opportunity to “test-drive” some of the GIS analysis techniques and contemporary spatial database software upon which these tools were developed.

Changing Federal Land Management Planning for Oil and Gas Development: Evaluating Wildlife Impacts
Presenter(s): Janice Thomson, The Wilderness Society

Oil and gas development creates a complex network of roads, well pads, pipelines and other infrastructure across the landscape. Increasingly, scientific studies are demonstrating the negative impacts that these networks can have on wildlife. However, the federal land management planning process used for oil and gas development seldom utilizes this science to the extent required under the National Environmental Policy Act and the Data Quality Act. With the goal of changing the way future federal planning is conducted, tools and methods were developed to project wildlife impacts for a range of development alternatives. Spatial build-outs of well pads and roads...
were developed for a hypothetical oil and gas field for a range of well pad densities commonly proposed in land management plans. Habitat fragmentation analysis of each spatial build-out scenario lead to the development of tabular data listing the percent area of habitat experiencing direct impacts and graphs showing the area of indirect impacts. These results, used in conjunction with the appropriate biological literature on species-specific impacts, provide a means for land management agencies and stakeholder groups to quickly estimate the impacts of different development proposals. More importantly, the methods developed illustrate how site-specific build-out analysis can easily be conducted to ensure the latest science on wildlife impact analysis is incorporated as required for each federal land management plan and environmental impact statement.

GIS Application in the Management of Zambia’s Wildlife Resources
Presenter(s): Chaka Kaumba, Zambia Wildlife Authority (ZAWA)

The paper and poster will demonstrate the application of GIS use in conservation of wildlife efforts by the Zambia Wildlife Authority citing details on the historical use, capture and storage/retrieval of geographic data by ZAWA for the period of 7 years of ZAWA’s existence. The poster will give an impression of the GIS application efforts, outputs and association with other GIS practitioners in the country and sub region that ZAWA is currently involved in.

The Eastern Steppe’s Living Landscape
Presenter(s): Ochirkhuyag Lkhamjav, Wildlife Conservation Society–Mongolia Country Program

Mongolia, with a territory of 1.6 million square kilometers, lies at 42°-52° N between the boreal forests of Siberia and the Gobi desert, and spans the southernmost border of the permafrost and the northernmost deserts of Central Asia. The Eastern Steppe of Mongolia is perhaps the world’s largest intact grassland ecosystem. Treeless flat plains, rolling hills and a surprising amount of important wetlands characterize the Eastern Steppe. The Eastern Steppe is home to one of the world’s last great spectacles of migrating ungulates, the Mongolian gazelle (Procapra gutturosa), that was estimated in 2005 at a population of 1.2 million based on surveys performed by the Wildlife Conservation Society. Numerous other unique mammals live on the steppe, and there are many rare or critically threatened birds, including six species of cranes (almost half the world’s species). The Eastern Steppe is also one the most important habitats in eastern Asia for migratory birds. The WCS Living Landscapes Program strives to conserve the valuable biodiversity, ecosystem service, and functional integrity of large wild places, including the Eastern Steppe, through the implementation of a participatory, wildlife-based strategy for landscape conservation. This approach, called the Landscape Species Approach, is designed to identify and map the needs of a representative suite of focal species (e.g., the Mongolian gazelle), across both political and ecological borders. We also identify and map the human activities which have the largest impacts on the ecosystem. By overlaying the needs of species and human activities, we are able to identify key conflicts (e.g., livestock competing with gazelle) and prioritize conservation resources to help resolve them.

Technical Session

Suitability Modeling with Spatial Analyst and ModelBuilder
Room: Marlin

Presenter(s): John Schaeffer, Juniper GIS

This workshop will first discuss the concepts of suitability modeling, including determining criteria and setting ranks and weighting, and how raster GIS is well suited for this task. Then we will demonstrate how suitability modeling can work by showing some examples using Spatial Analyst and ModelBuilder.

Paper Sessions

GIS Tools for Protected Areas and Site Prioritization
Room: Chapel
Moderator: Gillian Woolmer, WCS Canada

Protected Area Tools (PAT) for ArcGIS 9.2: Helping Countries Fill Protected Area Gaps
Presenter(s): Steve Schill, The Nature Conservancy

Many countries are seeking technical assistance to meet the requirements laid down in the Seventh Conference of the Parties (COP-7) Global Program of Work (PoW) on Protected Areas (PAs). The PoW mandates an established global network of representative and effectively managed national and regional PAs on land by 2010 and at sea by 2012 (CBD, 2001). TNC has a vested interest in helping countries develop science-based PA networks and has pledged support through the development of country-driven National Implementation Support Programs (NISPs). One way to help overcome the technical challenges and daunting process of evaluating and filling protected area gaps is the development and training in the use of GIS-based user-friendly tools. The development of the Protected Area Tools (PAT) for ArcGIS 9.2 was conceived as part of an ongoing process to help fill the technical void that exists in many countries and was funded by the Interamerican Biodiversity Information...
Conservation Prioritization in the Democratic Republic of Congo
Presenter(s): Aurelie Shapiro, World Wildlife Fund

The Democratic Republic of Congo contains over half of the total rainforests in Africa, comprising the second largest piece of intact rainforest in the world. After a transition from a long episode of war, political instability and economic crisis, a new government elected in 2006 has committed to promoting sustainable management of the country's unique natural assets, which are also a vital resource for the Congolese people and the global environment. WWF, along with local partners evaluated and identified important areas for conservation in rainforests and savannas of DRC using GIS and decision support systems (DSS) along with expert review.

Targets for protection of each of these habitats were defined according to government criteria and MARXAN was used to select sites (8km hexagons) that meet all targets while maximizing the conservation potential. The cumulative selection of sites was mapped to demonstrate the locations of unique sites with a distinctive combination of terrestrial and freshwater habitats.

This coverage was provided to experts to guide their prioritization and site selection for specific taxa in and around current protected areas. The final results of the workshop were a collection of priority areas defined by biological importance and connected by corridor areas. The overlap of mining and forest concessions within priority areas was then completed and workshop results and summaries are currently being submitted to the government for concession negotiations and the consultation process to create new protected areas and community reserves. This project evaluates the similarities and differences between an entirely computer driven approach and expert review.

Defining Critical Conservation Sites and Guiding Conservation Investment to Safeguard Biodiversity in the Eastern Arc Mountains and Coastal Forest Region
Presenter(s): Alex Njuri Ngari, East Africa Natural History Society (Nature Kenya)

Biodiversity worldwide is threatened by the loss of native habitat that supports species and productive systems that are crucial in provision of ecosystem services. Species that are facing and experiencing imminent extinction and severe pressure have been identified especially for birds and amphibians. Though various systems have been partly set up to preserve such fragile systems, there lacks a dedicated effort to continue defining critical areas e.g. protected areas hence lack mechanisms that adequately address emerging issues. One of the most efficient and effective means of guiding habitat conservation efforts is through the identification of globally significant sites for biodiversity conservation. Nature Kenya and the Wildlife Conservation Society of Tanzania, with the support of the Critical Ecosystem Partnership Fund (CEPF), collaborated to identify globally important sites for the conservation of a number of taxa. These efforts are being up scaled to employ GIS technology.

The Northern Appalachian Ecoregion: A Collaborative Approach to Identifying Conservation Priorities Using Irreplaceability vs. Threats Framework
Presenter(s): Gillian Woolmer, Wildlife Conservation Society Canada

The Northern Appalachian ecoregion spans a complex administr-ative and ecological geography from New York State (U.S.A.) to Nova Scotia (Canada). Achieving ecoregion-wide transbound-ary conservation is a challenge that conservation scientists from across the region are addressing under the umbrella of the conservation collaborative Two Countries, One Forest (2C1Forest). Four conservation planning initiatives have been completed including a Conservation Design by The Nature Conservancy and the Nature Conservancy Canada, a Wildlands Network Design by the Wildlands Project, a regional Human Footprint by the Wildlife Conservation Society Canada and 3 scenarios of Future Human Footprint by 2C1Forest. The results of these initiatives have now been synthesized to identify conservation priorities by applying Irreplaceability vs. Threats framework using multiple spatial units to divide the landscape—planning units, hydrological units and ecological units.
Paper Sessions

GIS Tools for Species and Distributions
Room: Heather
Moderator: Serene Ong, The Redlands Institute

Using GIS Methods in Conservation Programs on Endangered Species
Presenter(s): Anna Barashkova, Siberian Environmental Center
One of the directions of nature conservancy is conservation of endangered species and landscapes. Our organization has a special Steppe Program in order to save steppe ecosystems of Siberia. Pallas’ Cat and birds of prey are of separate interest because these species can serve as indicators of steppes. The IUCN classifies Pallas’ Cat as near threatened due to decreasing population trends and increasing threats from hunting and habitat loss. Almost all raptors are listed in national Red Data Book and IUCN Red List. So we gather information on these species in order to understand its conservation status and evaluate places of high conservation value needing great attention (being preserved). For threatened species it is also the understanding of threats to global species populations. As we deal with spatial data be it species distribution or distribution of natural factors or threats’ sources it is necessary to have the special tool in order to present and to analyze a big set of different data. GIS methods we use for this are very helpful and irreplaceable in solving the problems of endangered species conservation. Using GIS methods in conservation programs on endangered species will be presented in this paper by the sample of species we study.

Spatial Distributions and Patterns of Associations in Invasive Exotic Ants Found in Hawai'i
Presenter(s): Camie Martin, Brigham Young University
Ants are a key indicator taxon in studies of diversity and ecosystem function, and they are involved in relationships with plants and other insects. The Hawaiian Islands contain no native ant species making the impact of these invasive exotic ants rather unique. Most remain confined to human-modified habitats and rely on humans for dispersal and survival, however range sizes are increasing. Invasive ants are an important conservation concern because of their broad and steadily increasing geographical range, high local abundance, and potential to disrupt ecosystems. Geographic Information Systems (GIS) are used to characterize the habitat and location of the invasive ants that are currently located on six islands of the Hawaiian archipelago (Kauai, Molokai, Lanai, Oahu, Maui, and Hawai‘i). This information has been used to create a predictive model projecting the sites susceptible to further invasion of exotic ants with the intention of alerting managers to these patterns and variables. Some of the variables of interest include distance from ports, slope, aspect, elevation, vegetation cover, and habitat type. This will aid in predictions of future invasions and improve rational decision making in the management of invasive species and conservation programs.

Paper Sessions

U.S. Geological Survey Science and Data Frameworks
Room: Heather
Moderator: Serene Ong, The Redlands Institute

NHD Stewardship Program—National Data from Local Knowledge
Presenter(s): Drew Decker, U.S. Geological Survey
The National Hydrography Dataset (NHD) is a comprehensive, high resolution digital dataset developed jointly by U.S. Geological Survey (USGS) and the Environmental Protection Agency (EPA). NHD is a nationwide collection of seamless water features and systems and provides details on streams and rivers, lakes and ponds, wetlands, springs, wells, canals, and more. The integrated nature of the data allows upstream and downstream effects to be traced and lets us examine water features as part of an interrelated system. NHD is a dynamic and ever-improving dataset. To achieve this, NHD needs input from people who are most familiar with some of the many features that comprise NHD. USGS is sponsoring a stewardship program whereby an organization takes responsibility for maintaining the data for their jurisdiction. Many entities such as state agencies, regional GIS coordinating groups, and counties have filled stewardships roles in states across the country. Stewards apply their knowledge by reviewing the water features in their region and notifying the USGS of edits and new features. Stewards thus identify and endorse data that are local in detail and familiarity yet provide a critical link in the national coverage. USGS can also provide funds and NHD tools training to NHD stewards.

Presenter(s): Alan Mikuni, U.S. Geological Survey
In 2007, the U.S. Geological Survey (USGS) developed a science strategy outlining the major natural-science issues facing the Nation in the next decade. The science strategy consists of six science directions of critical importance, focusing on areas to which science can make a substantial contribution to the well-being of the Nation and the World. The science directions are: Understanding Ecosystems and Predicting Ecosystem Change;
4:15 p.m.–5:00 p.m. (continued)

Climate Variability and Change; Energy and Minerals for America's Future; Natural Hazards, Risk, and Resilience Assessment; the Role of Environment and Wildlife in Human Health; and a Water Census of the United States. Addressing these societal issues offers opportunities for growth in USGS programs and the ability to help decision-makers make wise, informed decisions. A seventh science direction, Data Integration and Beyond, ensures strong scientific linkages among the major science thrusts. This session will provide an overview of how the National Map, geospatial data, and geographic information systems can contribute to data integration and to the accomplishment of the USGS’ Science Strategy.

4:00 p.m.–5:30 p.m.

Technical Session

Working with ModelBuilder

Room: Marlin

Presenter(s): John Schaeffer, Juniper GIS

This will be a practical look at working with ModelBuilder, including using scripts, branching, iteration, and creating Tool dialogs. To better understand how ModelBuilder works, we will briefly review how ModelBuilder fits within the ArcGIS 9.x geoprocessing environment, how this affects its operation, and how ModelBuilder can work with the other geoprocessing methods. Then we will look at the “nuts and bolts” of creating, modifying, and exporting models, along with some tips and tricks we’ve learned along the way.
## Closing Session Schedule • Friday, August 15

### Closing Session Located in Chapel

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
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<tbody>
<tr>
<td>Acknowledgments, Gillian Woolmer</td>
<td>10:00 a.m.–10:10 a.m.</td>
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<tr>
<td>Closing Remarks, Mark van Bakel and Charles Convis</td>
<td>10:10 a.m.–10:30 a.m.</td>
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<tr>
<td>SCGIS Membership Meeting</td>
<td>10:30 a.m.–11:30 a.m.</td>
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</table>
SCGIS International Scholars

The Society for Conservation GIS would like to extend our warmest welcome to all the 2008 Conference Scholarship awardees. These people have come from all over the world, where they are doing important conservation work, to attend the SCGIS training and conference.

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Board of Directors 2007–2008

The Board of Directors is the governing body of SCGIS. The board is responsible for steering the society and has all final decision-making authority for the society. Members of the Board of Directors are elected every three years. Once a complete board is elected, members of the board elect the president, vice president, treasurer, and secretary. Officers are in office for one year. Elections usually occur after the annual conference.

Mark van Bakel
President
Mark the Spot GIS Services
Canada

Rankin Holmes
Vice President
Montana Water Trust
USA

Karl Keough
Treasurer
Protected Areas Association of Newfoundland and Labrador
Canada

Lisa Pierce
Secretary
Water Resources Institute
USA

Alexander Yumakaev
Member
ESRI
USA

Lata Iyer
Member
Water Resources Institute
USA

Lucy Chege-Waruungi
Member
African Conservation Centre
Kenya

Lynn Kutner
Member
NatureServe
USA

Michelle Kinzel
Member
Oregon State University
USA

Susan Miller
Member
The Nature Conservancy
USA
SCGIS Advisory Council

Leslie Backus  
Chambers Group, Inc.

Steve Beckwitt  
Sierra Biodiversity Institute

Joe Bremen  
University of Hawaii

Anna Barashkova  
Siberian Environmental Center

Charles Convis  
ESRI Conservation Program

Sandra Coveny  
Marys River Watershed Council

Michelle Gudorf  
Vermont Association of Conservation Districts

Michael Hamilton  
James San Jacinto Mountains Reserve, University of California Natural Reserve System

Prashant Hedao  
Auroville Tsunami Relief Effort

Roberta Pickert  
Archbold Biological Station

Kai Snyder  
E&S Environmental

SCGIS Committees

Data Access Committee  
Chair: Hugh Irwin
Purpose: The primary objective is to handle the broad issues of data access: how and where conservation groups can share their data and metadata and how they can gain access to other available data. This will involve education addressing metadata development and distribution among data clearinghouses and data management.

Domestic Scholarship Committee  
Chair: Miriam Schmidts
Purpose: The primary objective of the Domestic Scholarship Committee is to foster communication and networking among conservationists through a well-defined scholarship program. Funding from this program will be distributed to residents within the USA and limited to covering the costs of SCGIS conference registration fees and assisting with lodging/food expenses incurred during the SCGIS conference.

Domestic Chapters Committee  
Chair: John A. Young
Purpose: The purpose is to facilitate the creation of local SCGIS chapters in the United States that support the mission of SCGIS. We are starting with five pilot chapters in Arizona, Colorado, Hawaii, Utah, and Washington, D.C.

Communications Committee  
Chair: August Froehlich
E-newsletter Editor: Miguel Garriga
Newsletter Editor-in-Chief of Conservation Geography: Charles Convis
Purpose: The Communications Committee is responsible for the coordination of all official correspondence to/from SCGIS and communication tasks that lie outside the scope of other committees. Examples include handling formal requests to/from other societies; ensuring consistency between and within the SCGIS newsletter, brochures, announcements, and Web site; handling or routing all requests from members directed to the society; and assisting in newsletter development under the direction of the newsletter editor-in-chief.
SCGIS Committees (cont.)

Conference Committee
Chair: Gillian Woolmer
Purpose: Assigned the goal of hosting the annual conference to promote information exchange and develop a network of expertise to support conservation efforts worldwide. Charged with the task of coordinating the conference as specified in the SCGIS Strategic Plan, 1999–2004. The committee chairperson will report to board of directors with details requiring vote (site selection), keep other committees informed that rely on relative information, and report monthly to treasurer. The treasurer will review and sign any negotiated contracts.

International Committee
Chair: Charles Convis
Purpose: This committee is strongly tied to the primary mission and goals of the society, as evident by the presence of a worldwide focus. The primary objective of the International Committee is to foster communication and networking among conservationists through a well-defined scholarship program, the development and support of regional groups, the creation of reverse scholarship programs, training and technical support programs, and a number of other activities. An international mentoring program may be an additional focus of this committee. The International Committee has historically been the largest of the SCGIS standing committees, currently exceeding 40 volunteer committee members.

Fund-raising
Chair: Dave Neufeld
Purpose: Charged with the task/goals of expanding SCGIS membership (and monetary base) through marketing plans, writing proposals, and fund-raising and with recovering the costs of the newsletter through advertisements by the year 2004. Additionally, charged with conducting an SCGIS user community assessment identifying strengths, weaknesses, opportunities, and threats in 1999, as specified in the SCGIS Strategic Plan, 1999–2004.

International Networks Committee
Co-chairs: Prashant Hedao and Lata Iyer
Purpose: The purpose is to facilitate, support, and assist in the creation of local in-country SCGIS chapters or conservation GIS user networks and help them become self-sustainable. Currently we have very successful SCGIS chapters in Russia and Madagascar and an informal network in Chile. We are currently working on forming networks in Colombia, Kenya, the Philippines, and Cameroon. We also collaborate with other similar networks and organizations that do conservation work in various countries.

Membership Committee
Chair: Danielle Hopkins
Purpose: Charged with the task of administering all memberships (new and old) as specified in the SCGIS Strategic Plan, 1999–2004. Activities include developing and distributing new member packets, maintaining the membership database, and addressing any membership issues that may arise. In addition, the committee will mail the SCGIS newsletter to new members and current members who didn’t attend the annual conference. The committee chair will work closely with the treasurer.

Web Site Committee
Chair: Tom Robinson
Listserve Administrator: Peter August
Purpose: This committee is responsible for the management and function of the SCGIS Listserv (CONSGIS, SCGIS, SCGISBD) and Web site (www.scgis.org). The e-mail administrator and Web czar are the technical contacts for maintenance and updates. It is the duty and obligation of this committee to ensure that all information representing SCGIS is accurate and has the blessing of the SCGIS Board of Directors. Members of this committee are responsible for developing content, assisting in maintenance, and any other technical or conceptual tasks deemed worthy.
<table>
<thead>
<tr>
<th>Name</th>
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