The theme for the 2009 Society for Conservation GIS (SCGIS) Conference is Connecting across Boundaries. To achieve our conservation goals, we are often challenged to work and connect across boundaries. These boundaries may be spatial in nature and are often of human origin, such as the boundaries of parks and protected areas, national administrative boundaries (states or provinces), or international boundaries. But we also work hard to cross other boundaries that are not spatial but equally represent barriers that must be crossed as we work with local communities, government agencies, and industry, requiring us to find ways to connect across cultural, religious, administrative, departmental, intellectual, and frequently technical boundaries. Maps and GIS technology often provide the needed catalyst for us to connect across these boundaries to achieve positive conservation outcomes. We will take the opportunity to consider the challenges of working and connecting across boundaries for conservation and the many other challenges we face as members of the conservation GIS community at our 2009 SCGIS Conference.

Gillian Woolmer, WCS Canada
2009 SCGIS Conference Committee Chair
Registration Information

Location
Sawmill, Second Floor, Northwoods Resort and Conference Center

Hours of Operation
Saturday, July 18
7:00 PM–9:00 PM
Sunday, July 19
8:00 AM–9:00 AM/10:30 AM–11:00 AM
Monday, July 20
8:00 AM–9:00 AM

Conference Tips

• Use this agenda 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 all meet each other with great ease.
• Be on time; it is respectful.
• Any questions? Head over to the Sawmill and ask a friendly SCGIS volunteer.
• Attend the evening social event and make new friends.
• Cool off by taking a dip in the heated pool.

Recycle Badges

At the end of the conference, please return your name badge holder in the box provided in the Ballroom.

Thank you for your cooperation.
About Northwoods Resort Conference Center

**Check-in/Checkout:** Check-in time is 4:00 PM and checkout time is noon. Guests arriving prior to check-in time will be accommodated on a space available basis. The Guest Services Department can provide luggage storage and changing areas for guests arriving early or attending functions on their day of departure.

**Northwoods Resort Facilities and Services**

- **Fitness Center**—Fully equipped exercise facility with five-station universal, incumbent bicycle, Life Fitness 8500 Glidestep, sit-up bench, and sauna
- **Outdoor Heated Pool and Spa**—Open year-round for a warm, soothing dip in the pool even in the wintertime
- **Stillwell’s Restaurant**—Scrumptious Big Bear resort dining from dawn to dusk
- **Stillwell’s Lounge**—Complements any evening with a joyful atmosphere and happy hour specials
- **Room Service**—Courtesy of popular Big Bear restaurant
- **Poolside Service**—An extra hint of luxury available during the summer months
- **Gift Shop**—Sundries and souvenirs shop located on-site
- **Complimentary Wireless Internet Access**—Available through the resort
- **Bell and Activity Concierge Service**—To help you plan that perfect day
- **In-room Massage**—By request only

**Northwoods Resort Restaurant and Bar Hours**

**Stillwell’s Restaurant**
Sunday–Thursday 7:00 AM–2:00 PM and 5:00 PM–8:00 PM
Friday–Saturday 7:00 AM–2:00 PM and 5:00 PM–10:00 PM

**Stillwell’s Lounge (Bar)**
Sunday–Thursday 4:00 PM–10:00 PM
Friday–Saturday 4:00 PM–MIDNIGHT
Happy Hour 4:00 PM–6:00 PM

Please see back cover of agenda for Northwoods Resort Conference Center map.

**Conference Meals**

For conference participants who are staying at the Northwoods Resort and have purchased the accommodation and meal package, all meals will be served in the Ballroom located on the first floor.

- **Breakfast Buffet**  7:00 AM–8:30 AM
- **Lunch Buffet**  NOON–1:30 PM
- **Dinner**  6:00 PM seated table service (Please try to be seated by 6:15 PM)

For conference participants who are not staying at the Northwoods Resort and did not purchase the accommodation and meal package, there is a restaurant and lounge/bar at the resort with a breakfast, lunch, and dinner menu. A kids menu is also available.
# Conference at a Glance

## Saturday, July 18

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
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<tbody>
<tr>
<td>8:30 AM–2:00 PM</td>
<td>Hike around Big Bear Lake</td>
<td>Timers</td>
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<td></td>
<td>Meet in the Northwoods Resort reception area at 8:30 AM.</td>
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<tr>
<td>9:00 AM–5:00 PM</td>
<td>Preconference Training Workshops</td>
<td>Timers</td>
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<td>Working with ModelBuilder and Python for Productivity</td>
<td>Boulder Bay</td>
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<td>The Transformative Effect of Web-Based Technologies in Reshaping How</td>
<td>Boulder Bay</td>
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<td>Conservation Happens: Landscope America, Data Basin and the</td>
<td>Metcalf Bay</td>
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<td>Conservation Registry</td>
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<td></td>
<td>Using Arc Hydro Tools for Watershed Delineation and Stream Assessment</td>
<td>Metcalf Bay</td>
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</tbody>
</table>
| 7:00 PM–9:00 PM | Registration and Welcome Reception                                   | Sawmill and Woodlands Lobby | Catch up with old friends and meet new ones at the Saturday night Welcome Reception. You will be able to register and pick up your conference materials at the Sawmill and enjoy an evening of socializing in the Woodlands Lobby.

## Sunday, July 19

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
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<tbody>
<tr>
<td>9:00 AM–10:30 AM</td>
<td>Opening Session</td>
<td>Ballroom</td>
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<tr>
<td>10:30 AM–11:00 AM</td>
<td>Break</td>
<td>Woodlands Lobby</td>
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<tr>
<td>11:00 AM–12:30 PM</td>
<td>Paper Sessions</td>
<td>Timbers and Meadows</td>
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<td></td>
<td>Technical Sessions</td>
<td>Boulder Bay and Metcalf Bay</td>
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<tr>
<td>12:30 PM–2:00 PM</td>
<td>Lunch</td>
<td>Ballroom</td>
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<tr>
<td>1:30 PM–2:00 PM</td>
<td>Special Discussion: National Land Cover Database (NLCD) &quot;In Action&quot;</td>
<td>Timbers</td>
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<tr>
<td>2:00 PM–3:30 PM</td>
<td>Paper Sessions</td>
<td>Timbers and Meadows</td>
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<td></td>
<td>Technical Sessions</td>
<td>Boulder Bay and Metcalf Bay</td>
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<tr>
<td>3:30 PM–4:00 PM</td>
<td>Break</td>
<td>Woodlands Lobby</td>
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<tr>
<td>4:00 PM</td>
<td>SCGIS Board of Directors Meeting</td>
<td>Sawmill</td>
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<tr>
<td>4:00 PM–5:30 PM</td>
<td>Paper Sessions</td>
<td>Timbers and Meadows</td>
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<td>Technical Sessions</td>
<td>Boulder Bay and Metcalf Bay</td>
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<tr>
<td>6:00 PM–7:00 PM</td>
<td>Dinner</td>
<td>Ballroom</td>
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<tr>
<td>7:00 PM–9:00 PM</td>
<td>Map Gallery and Reception</td>
<td>Woodlands Lobby</td>
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</table>

Map products, posters, and multimedia map projects illustrating the achievements of the user community will be on display at the popular Map Gallery. All conference participants are welcome to bring a map or poster to display. The Map Gallery opens with a reception on Sunday evening and will remain on display throughout the conference.
### Monday, July 20

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>9:00 AM–10:30 AM</td>
<td>Paper Sessions</td>
<td>Timbers and Meadows</td>
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<td>Technical Sessions</td>
<td>Boulder Bay and Metcalf Bay</td>
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<tr>
<td>10:30 AM–11:00 AM</td>
<td>Break</td>
<td>Woodlands Lobby</td>
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<tr>
<td>11:00 AM–12:30 PM</td>
<td>Paper Sessions</td>
<td>Timbers and Meadows</td>
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<td>Technical Session</td>
<td>Boulder Bay and Metcalf Bay</td>
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<tr>
<td>12:30 PM–2:00 PM</td>
<td>Lunch</td>
<td>Ballroom</td>
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<td>2:00 PM–3:30 PM</td>
<td>Paper Sessions</td>
<td>Timbers and Meadows</td>
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<td>Boulder Bay and Metcalf Bay</td>
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<td>3:30 PM–4:00 PM</td>
<td>Break</td>
<td>Woodlands Lobby</td>
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<tr>
<td>4:00 PM–5:30 PM</td>
<td>Paper Sessions</td>
<td>Timbers and Meadows</td>
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<td>Technical Sessions</td>
<td>Boulder Bay and Metcalf Bay</td>
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<tr>
<td>6:00 PM–7:00 PM</td>
<td>Dinner</td>
<td>Ballroom</td>
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<tr>
<td>7:00 PM–10:00 PM</td>
<td>Auction and Reception</td>
<td>Ballroom</td>
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You are invited to an evening of celebration to close the SCGIS Conference. The theme for the evening will be Cultures, Communities, and Conservation. Get ready to dress up, celebrate our global heritage, and raise money to support conservationists from around the world!

There will be both silent and live auctions to share treasures and artwork from around the globe. Please bring an item from your culture, community, or country and come prepared to bid on some wonderful and exotic trinkets. All donations are appreciated and cherished, and 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 Scholarship Program, providing travel assistance to fellow conservationists from around the globe.

Items for the auction can be delivered to the Ballroom during breaks and lunch on Monday, July 20, or between 5:30 PM and 6:00 PM. A volunteer will help you complete an item description form.

### Tuesday, July 21

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
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<tbody>
<tr>
<td>10:00 AM–11:30 AM</td>
<td>Closing Session</td>
<td>Ballroom</td>
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<tr>
<td>11:30 AM</td>
<td>Box Lunch Pickup</td>
<td>Ballroom</td>
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</tbody>
</table>
Working with ModelBuilder and Python for Productivity
Room: Boulder Bay
Presenter(s): John Schaeffer, Juniper GIS, and Tatyana Soroko, Environmental Planning Group (EPG)
This course will show how to use ModelBuilder and Python to create tools to perform basic geoprocessing and analysis tasks. The course is not designed to be a Python course, but how to use ModelBuilder and Python in the ArcGIS environment, without having to be a programmer. The course will start by showing how to create models and create tools (dialog boxes with user input) in ModelBuilder, and how to export these to Python. Students will also learn how to add Python Scripts to ArcToolbox, which is a much easier environment for testing Python. Then the course will show how to use and modify existing Python scripts for tasks like working with batch operations and reading/writing to Excel or other data files.

The Transformative Effect of Web-Based Technologies in Reshaping How Conservation Happens: LandScope America, Data Basin and the Conservation Registry
Room: Timbers
Presenter(s): Gina LaRocco, Defenders of Wildlife/Conservation Registry; Brendan Ward/Pamela Frost, Conservation Biology Institute/Data Basin; and Lori Scott, NatureServe/LandScope
The transformative effect of web-based technologies is reshaping how conservation happens across all scales, and at every stage of the process, from identifying priorities and projects to sharing data on research and lessons learned. This course will introduce participants to 3 existing and complementary efforts being developed to help conservationists move through the process, including LandScope America (www.landscope.org), an online, easily accessible web site developed by NatureServe and National Geographic that uses multi-media tools to inspire and inform conservation; the Conservation Registry (www.conservationregistry.org), an online, user-friendly tool that can track and easily map all conservation projects across the landscape; and Data Basin (www.databasin.org), an online tool being developed by the Conservation Biology Institute that provides conservation practitioners and scientists access to information and expertise needed to address conservation issues.

Using Arc Hydro Tools for Watershed Delineation and Stream Assessment
Room: Metcalf Bay
Presenter(s): Dean Djokic, ESRI, and Lisa Pierce, California State University, San Bernardino
Arc Hydro is a free downloadable extension for ArcGIS Desktop for watershed delineation and stream assessment.
This workshop will focus on watershed delineation using Arc Hydro tools. There will be a special focus on using the TOPOGRID functions to create elevation models for places in the world where digital elevation model (DEM) data is limited.
This workshop will include an overview of the Arc Hydro data model: core feature classes, properties, and relationships; HydroID as the unique identifier and primary key in all relationships; managing HydroID; and building an elevation surface with TOPOGRID and using the derived surface for creating watersheds and subbasins. This workshop will be especially helpful to people in areas where the existing elevation data is not as accessible due to costs or limited Internet access.
Participants will learn about creating Arc Hydro feature classes through tools; terrain processing and basic network tracing; and combining raster, vector, and network datasets into an integrated data environment.
Opening Session—Sunday, July 19

**Opening Session located in the Ballroom**

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
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<tbody>
<tr>
<td>9:00 AM–9:10 AM</td>
<td>Welcome, Introductions, and Thanks Gillian Woolmer</td>
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<tr>
<td>9:10 AM–9:25 AM</td>
<td>Connecting across Boundaries Charles Convis</td>
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<tr>
<td>9:25 AM–9:35 AM</td>
<td>Introduction of 2009 International Scholars Sasha Yumakaev</td>
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<tr>
<td>9:35 AM–10:20 AM</td>
<td>Keynote: Connecting across Boundaries James Strittholt</td>
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<tr>
<td>10:20 AM–10:30 AM</td>
<td>Announcements and Closing Gillian Woolmer</td>
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**Keynote Speaker**

**James Strittholt**  
*Executive Director, Conservation Biology Institute*

Jim Strittholt is president and executive director of the Conservation Biology Institute and has over 10 years’ experience in applying computer mapping technologies (including GIS and remote sensing) to address various ecological assessments and conservation planning projects in the United States and internationally. He holds undergraduate degrees in botany, zoology, and secondary education from Miami University (http://www.miami.muohio.edu) (Oxford, Ohio), where he also earned a masters in zoology in vertebrate population genetics. Jim earned a Ph.D. in 1994 from Ohio State University (http://www.osu.edu) in a self-designed multidisciplinary program emphasizing landscape ecology, conservation planning, and computer mapping technologies. While a truly multidisciplinary degree, he conducted most of his research and developed most of his technical skills at the Center for Mapping (http://www.cfm.ohio-state.edu/index.php), a NASA Center of Excellence (http://www.hq.nasa.gov/office/codea/codeaf/excellence.htm). While at Ohio State, Jim earned numerous academic achievement awards including University Presidential Fellow during his final year.

Jim has experience working with large mammals, has conducted field research on forests and vertebrates, and has over six years high school teaching experience. Over the last six years, he has been principle investigator on numerous projects including nature reserve designs, conservation gap analyses, forest and watershed assessments, ecological modeling, and remote-sensing applications in conservation. He has also authored numerous reports and peer reviewed articles and white papers. Finally, he has taught numerous workshops on conservation planning. Areas of expertise include conservation planning, landscape ecology, geographic information systems, and remote sensing.
Session Matrix—Saturday, July 18

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<thead>
<tr>
<th>Time</th>
<th>Room</th>
<th>Timbers</th>
<th>Meadows</th>
<th>Boulder Bay</th>
<th>Metcalf Bay</th>
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<tr>
<td>8:30 AM–2:00 PM</td>
<td>Hike</td>
<td>Hiking</td>
<td>Around</td>
<td>Big Bear</td>
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<td>9:00 AM–5:00 PM</td>
<td>Preconference Workshops</td>
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<td>7:00 PM–9:00 PM</td>
<td>Registration</td>
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<td>Sawmill</td>
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<td></td>
<td>Welcome Reception</td>
<td>Located</td>
<td>in the</td>
<td>Woodlands</td>
<td>Lobby</td>
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## Session Matrix—Sunday, July 19

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<td>Opening Session</td>
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<td>Located in the Ballroom</td>
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<td>10:30 AM–1:00 AM</td>
<td>Break</td>
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<td>Located in the Woodlands Lobby</td>
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<td>11:00 AM–12:30 PM</td>
<td>GIS in Conservation Education</td>
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<td>GIS for Forest Protection and Restoration</td>
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<td>Technical Session</td>
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<td>Crossing Boundaries in Secondary Science Curriculum: GIS and Information Technologies as Tools for Teaching about Biodiversity</td>
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<td>The Use of GIS in Forest Restoration as a New Conservation Approach in Indonesia</td>
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<td>Lessons Learned from Teaching Tanzanians</td>
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<td>Mapping and Monitoring Central and North European Russia Forests by Remote Sensing</td>
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<td>Editing Tips and Tricks</td>
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<td>Mashup Your Data Workshop</td>
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<td>Community Based Conservation: Using GIS to Save Two Birds with One Strategy</td>
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<td>Conservation Planning in the Congo Basin—Mapping Roads and Access for Sustainable, Living Forests</td>
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<td>12:30 PM–1:30 PM</td>
<td>Lunch</td>
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<td>Located in the Ballroom</td>
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<td>1:30 PM–2:00 PM</td>
<td>Special Discussion: National Land Cover Database (NLCD) “In Action”—Located in the Timbers</td>
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<td>2:00 PM–3:30 PM</td>
<td>GIS Building Conservation Capacity, Partnerships, and Collaboration</td>
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<td>GIS and Climate Change Issues</td>
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<td>Technical Session</td>
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<td>Building Conservation Partnerships in E-learning: A New GIS Course for Conservationists</td>
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<td>Working with Geodatabase Topology</td>
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<td>The Conservation Success Index: A Range-Wide Assessment Tool for Salmonid Fisheries</td>
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<td>3:30 PM–4:00 PM</td>
<td>Break</td>
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<td>Located in the Woodlands Lobby</td>
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<tr>
<td>4:00 PM–5:30 PM</td>
<td>Forecasting Climate Change Effects on Species Distributions: Approaches for Reducing Uncertainty</td>
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<td>National Conservation GIS</td>
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<td>Technical Session</td>
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<td>Forecasting Species Response to Climate Change</td>
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<td>A Gap Analysis of the Western United States</td>
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<td>An Introduction to Symbology</td>
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<td>Web-Based GIS for Data Collection, Mapping, Analysis and Distribution</td>
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<td>6:00 PM–7:00 PM</td>
<td>Dinner</td>
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<td>Located in the Ballroom</td>
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<td>7:00 PM–9:00 PM</td>
<td>Map Gallery and Reception—Located in the Woodlands Lobby</td>
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</table>
### Session Matrix—Monday, July 20

<table>
<thead>
<tr>
<th>Time</th>
<th>Room</th>
<th>GIS for Regional Conservation Planning</th>
<th>GIS for Wildlife</th>
<th>Technical Session</th>
<th>Technical Session</th>
<th>ArcMap Tips and Tricks</th>
<th>No Session Scheduled</th>
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<td>Application of GIS for Conservation Awareness in the Protected Areas of Nepal</td>
<td>Determination of the Ranging Patterns of Chimpanzees Using GPS Points in Bwindi Impenetrable National Park, South Western Uganda</td>
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<td>Oil and Natural Gas Resource Analysis of the Rocky Mountain States</td>
<td>Modeling Mammal Corridors in the Champlain Valley: A FunConn and Corridor Designer Sensitivity Analysis</td>
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<td>Building a Water Quality Management System</td>
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<td>Economic Valuation of Agricultural Production vis-à-vis Large-Scale Mining in Bgy. Paquet, Kasibu Municipality, Nueva Vizcaya, Philippines</td>
<td>Foraging Areas of Cayenne, Royal and South American Terns Breeding in Northern Patagonia, Argentina</td>
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<td>Web-Based Decision Support System for Conservation Planning</td>
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<td>Visualising Community Values of Ecosystem Service</td>
<td>A Predictive Model of Snow Leopard Habitat Change due to Shifting Climate in the Eastern Himalayan Landscape, Nepal, India, and Bhutan</td>
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<td>Visualizing Lost Landscapes on the Web: A Case Study from the Mannahatta Project</td>
<td>Development of Protected Areas Database of Russian Far Eastern Network</td>
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Session Descriptions—Sunday, July 19

**Paper Sessions**

**GIS in Conservation Education**
*Room: Timbers*
*Moderator: Paul Angelino, The Nature Conservancy*

**Crossing Boundaries in Secondary Science Curricula: GIS and Information Technologies as Tools for Teaching about Biodiversity**
*Presenter(s): Karen Edelstein, Finger Lakes Institute*

Crossing Boundaries is an innovative professional development program in New York State for middle- and high school teachers. With a focus on international environmental conservation issues in Brazil, Mexico, and Kenya, teachers are trained to use GIS, along with information and communication technologies (podcasts, wikis, and blogs), to engage students in inquiry-based explorations. Students use both ArcGIS and Google Earth to investigate conservation issues abroad, and contrast and compare these topics with local and regional environmental concerns. In addition, students learn about the work of conservation professionals world-wide to discover how people in careers that utilize these technologies are playing key roles in protecting biodiversity. Crossing Boundaries is a collaborative effort between Hobart and William Smith Colleges (Geneva, NY) and the Cornell Laboratory of Ornithology (Ithaca, NY).

**Lessons Learned from Teaching Tanzanians**
*Presenter(s): Kellee Koenig, Conservation International*

As part of a CEPF grant amendment, I went to Morogoro, Tanzania in February 2009 to teach a one-week cartography course to our partners at Sokoine University of Agriculture. They were comfortable with ArcView 3.3, but needed to transition to ArcGIS 9.2 to make quality cartographic products. This presentation will discuss the challenges in building cartographic and GIS capacity with conservation partners in the field.

**Community Based Conservation: Using GIS to Save Two Birds with One Strategy**
*Presenter(s): Doreen Whitley, Grange Insurance Audubon Center*

The Grange Insurance Audubon Center is currently in development near downtown Columbus, Ohio. It is housed in an Important Bird Area that includes a brownfield under remediation with a history of ecological and industry disturbance. The center is slated to open in September 2009 and has been offering education programs as a means to meet measurable conservation outcomes at both the site and MS River regional level. This approach to programming, community based conservation, is effective in meeting both short and long term goals for conservation. Primarily, habitat restoration in the short term, and inspiring a new generation of conservationists in the long term. During the spring of 2009 six highschool students participated in a center GPS training program. Students learned GIS theory, GPS protocols for checking data out and in, worked as GPS technicians in the field, differentially corrected and exported the data. Using Trimble Juno SBs students created vegetation layers from a 1.5 acre habitat restoration site to be used in a temporal analysis of restoration efforts to understand the timing of emergence of new invasive species during restoration. The analysis resulted in conservation action. It was used to create a calendar for invasive species management that was adopted by the resource management team on site. This project saved two birds with one strategy by filling a need in our resource management and effort to reduce and control invasive species, it also gave at-risk highschool students comprehensive training in acquiring spatial data using GPS and applying spatial analysis to conservation.

**Transcending Boundaries through E-learning: A New Course on GIS for Conservation**
*Presenter(s): Jessica Forrest, World Wildlife Fund*

Over the past 20 years, geographic information systems have gained increasing appeal as tools for supporting decisions on biodiversity conservation, natural resources management and land use. The use of GIS for conservation has, however, been limited in part by the number of people trained to use the tool. Indeed, traditional training methods in instructor-led environments have been restrictive for the conservation community in terms of expense and time. Moreover, courses often limit participation according to geographic location. In an effort to transcend boundaries inherent in these traditional methods, we are developing an e-learning course for beginning GIS students working in conservation. Developed by the TNC Technology Learning Center and content experts at WCS, WWF, and TNC, this course has several distinct features to enhance learning, including animation, audio, demos and simulations, videos, take home exercises, and assessments. The course will be made available via the internet or download to students located anywhere in the world. To further connect students and experienced GIS staff globally, we are building a network of mentors to support students through the course. The goal of this course is to increase the capacity of GIS practitioners across the conservation community.
GIS for Forest Protection and Restoration

Room: Meadows
Moderator: Aurelie Shapiro, World Wildlife Fund

The Use of GIS in Forest Restoration as a New Conservation Approach in Indonesia

Presenter(s): Hultera, Harapan Rainforest

The commercialization of natural forest for timber production in Indonesia started in 1970. From 1970s until the late 1990s timber harvesting operations in Indonesia played an important role in national development. However it also had a negative impact on the country’s forest ecosystem. A large portion of Indonesia forest biodiversities have been destroyed on a massive scale. During the period 1900–1997 the Sumatra dry lowland forest has decreased from an original 16 million ha to 2.2 million ha. Now only 650,000 ha of this habitat still remains and this will soon be lost if no serious and immediate efforts to save it.

Harapan Rainforest is 101,000 hectares of good forest and forest that has been logged in the past. It is managed for forest restoration with an aim to return the whole forest to its original condition. The site is managed by a new type of license for ecosystem restoration in Indonesia. It is the first and only place in Indonesia that has this type of license to manage previous production/flogging forest for conservation. It is a special chance for new and exciting forest management. It can also help inform other restoration projects in Indonesia and globally.

We will ground truth and map different forest habitats in Harapan using habitat survey data collected on tree species composition. This information will be used in GIS to classify and identify different forest areas based on habitat cover and species composition. We will then use this information to identify which areas of the site are most suitable for different forest restoration strategies. The four strategies we will use are:

1) Protection of an area and leave it to regenerate naturally
2) Assisted natural regeneration
3) Supplementary planting
4) Planting specific framework species

Harapan Rainforest supports a wide variety of wildlife, 290 bird species include nine species hornbill and seven threatened birds, like Storm’s Stork and Wallace’s Hawk-eagle, and more than 50 mammal species such as Sumatran Tiger, Asian Elephant, Malayan Sun Bear, Asian Tapir and Agile Gibbon. The forest is home to a small community of indigenous people, the Batin Sembilan whose traditional lifestyle depends on a forest ecosystem and whose presence is compatible with conservation purpose. Management of Harapan Rainforest will prevent forest fire, illegal logging and forest degradation from encroachment, and protect endangered species and will involve local communities in sustainable forest management to conserve and restore the forest.

GIS will be extremely important in guiding these decisions that will help restore the forest for the benefit of biodiversity and local communities. At the same time we will use GIS and remote sensing to assess carbon value of the forest and monitor changes in carbon that are either through natural regeneration or from our restoration approaches. We hope that this will show forest restoration can be done in Indonesia and that it is a good finance approach to forest conservation e.g. for carbon sequestration in degraded forests. This will help stop forest clearance in Sumatra and Indonesia.

Mapping and Monitoring Central and North European Russia Forests by Remote Sensing

Presenter(s): Ilona Zhuravleva, Greenpeace, Russia

Greenpeace produced the map that is the combination of earlier Greenpeace Russia map products (Russia’s forests. Dominating forests types and their canopy density http://www.forestforum.ru/info/pictures/engmap.pdf; Intact Forests Landscapes of Northern European Russia http://www.forestforum.ru/info/pictures/map2.pdf) and forest cover change maps with disturbed criteria in mind. Intact forest landscapes borders were verifying due to 2008. Forest cover change analysis was done using different types of satellite images: Terra/Modis, Landsat-5/ TM, Landsat-7/ETM+, Terra/Aster (Terralook collection) for 2 periods (1980-2000, 2000-2008). Dominating forests types were displayed as disturbed or non-disturbed. The main result of this work is recent and reliable map of forests, showing the follows:

• According to official statistics the forests of European Russia are still rich, but this map shows the most part of these forests are already disturbed and government misleads people.
• Large unpopulated areas comparatively unprofitable to use as their remoteness, and cheap to conserve because of low current economic value. Greenpeace notices forestry has no economy capacity and should have no rights to extend towards non-disturbed areas. We define this limit border according intactness criteria and real border of disturbances by remote sensing.
• The map contains recent data on IFLs borders monitoring (the last time it was 2004).
• The map shows different age underwood and deforested areas distribution. The main reason of deforestation defined as logging; on the north fires play a significant role; natural windfalls sometimes became the reason of deforestation in middle-boreal forests.
• The forest cover change detection using Landsat satellite images can be presented in details (it was done by me). Other methodologies can be presented generally (they were done by other specialists).
Conservation Planning in the Congo Basin—Mapping Roads and Access for Sustainable, Living Forests
Presenter(s): Aurelie Shapiro, World Wildlife Fund

Deforestation in the Congo Basin is not as prevalent or as severe as in the Amazon of Indonesia. The main threats to biodiversity in Congolese forests are industrial logging concessions, and roads that provide access into the forest. Conservation planning in the Congo Basin has primarily involved mapping new roads and routes into forests, which pave the way for human access, environmental degradation and the lucrative bushmeat trade. WWF has been using satellite imagery to map new roads over time, and GIS to evaluate trade routes from sources to markets. In addition, patch analysis is being used to determine fragmentation of forest blocks over time, and identify key areas for the enforcement of trespassing, where to explore alternatives such as agricultural expansion, aquaculture or raising of livestock as well as concessions to target for FSC certification.

Technical Sessions

Editing Tips and Tricks
Room: Boulder Bay
Presenter(s): John Schaeffer, Juniper GIS

This workshop will briefly review some editing basics, including hot-keys, snapping, and other tricks that improve productivity; demonstrate seldom used tools and techniques that provide additional editing power, and then show some advanced editing tools. Time will also be spent with table edits and using VBA and other tricks for editing tables. We will also cover non-geodatabase topology editing; ways to create and maintain coincident geometry outside of the Geodatabase and without having to have an ArcEditor license. If time permits, we might also show how to create domains in a Geodatabase to improve attribute editing.

Mashup Your Data Workshop
Room: Metcalf Bay
Presenter(s): Brian Embley, The Nature Conservancy

In this workshop, we will present an online mashup web application publishing spatial data from a small, conservation non-profit organization. The mashup will publish the vector data on a Google Maps base map and integrate live map services from The Nature Conservancy’s ArcGIS map server. In this workshop, we will provide the HTML and JavaScript code and show you how to publish your own vector data. This workshop is designed for the non-programmer.

Special Lunch Discussion

National Land Cover Database (NLCD) “In Action”
Room: Timbers
Presenter(s): Paul Wickman, North Star Geographics

This discussion session is for anybody using or considering using the NLCD 2001 database. This will be an informal discussion about projects and an opportunity to ask questions related to the NLCD datasets. We will also discuss changes in NLCD 2006 database.

Paper Sessions

GIS Building Conservation Capacity, Partnerships, and Collaboration
Room: Timbers
Moderator: Gillian Woolmer, WCS Canada

Building Conservation Partnerships in E-learning: A New GIS Course for Conservationists
Presenter(s): Jamie Chesser, The Nature Conservancy

Collaborate is not a new word in our vocabulary, but it certainly has gotten a lot of attention over the last several years. With the development and release of Microsoft SharePoint, an online collaboration tool and content management system, and the growing popularity and use of blogs and wikis, collaboration is at the forefront of many conversations. Building partnerships through project collaboration in the conservation world is common and is a win-win situation for all organizations, project team members, and particularly those who will benefit from the conservation outcome.

Approximately one year ago, conservation GIS professionals from The Nature Conservancy (TNC), Wildlife Conservation Society (WCS), and World Wildlife Fund (WWF) began a three way partnership in developing an introductory GIS web course for conservationists. The course, slated to debut late summer 2009, is a collaboration of conservation experiences, technological expertise in GIS, and instructional design techniques, and promises to develop and secure a global network of mentors and partners who will help shape and develop the next generation of GIS users. This project and course has the ability to touch so many involved in GIS and conservation around the world. In this presentation, individuals from TNC, WCS, and WWF, participating in the GIS project, will discuss the various phases of the
project and the successes and challenges they have experienced, as well as their developing partnerships and the benefits of collaboration they have realized.

The Conservation Registry: Promoting Strategic Conservation and Collaboration Across Jurisdictions

Presenter(s): Gina LaRocca, Defenders of Wildlife

Defenders of Wildlife and many partners have developed an online tool, the Conservation Registry, that allows all types of users, including agencies, organizations, private landowners, and policy makers, to record, track and map conservation projects occurring across the landscape, ranging from restoration projects and management plans to land acquisitions. It features a friendly, easy-to-use format for data entry and retrieval and uses Google Maps technology, making it a comfortable environment for users who do not have special GIS or database management knowledge. Other databases often track projects in isolation of one another and fail to capture projects that other groups are doing in the same area, resulting in inefficiencies and lost opportunities for collaboration. The registry, however, is a synthesis tool that can bring in multiple types of project information from multiple types of sources, as well as act as a project management tool for those agencies and organizations that do not currently have the capacity to electronically track projects. In addition, the registry can help users determine the degree to which projects are taking place within priority conservation areas; aid policy-makers and investors in understanding where public and private money is being spent; help conservationists find partners, funding, and advice for projects; help everyone learn from the successes and challenges experienced by others doing similar projects; and demonstrate that it is possible and useful to integrate information across jurisdictions and ownerships.

Data Basin—Expanding Access to Conservation Mapping via the Internet

Presenter(s): James R. Stritholt, Conservation Biology Institute

Data Basin is a new Internet-based system being designed in partnership with ESRI to link conservation scientists with conservation practitioners in a dynamic new way. Data Basin allows users to share and gain access to thousands of conservation spatial datasets and to map these datasets with an easy-to-use web-based mapping platform that provides users control over their visualizations. Saved maps can be downloaded, printed, and easily shared. Datasets and maps can be kept private, restricted to user-defined groups, or made public. If made public, maps can be searchable by the system by anyone, opened in a new mapping session, modified, and saved again. For more experienced GIS users, Data Basin is a valuable resource for conservation datasets (including complete metadata) that can be easily downloaded.

Data Basin is being constructed to be a very large one-stop location for important datasets pertinent to conservation, including biological, cultural, and socio-economic. Data Basin not only contains many traditional “raw” datasets, but it also includes numerous value-added maps from institutions and individuals (e.g., maps and datasets from Ph.D. and Master’s theses). Now traditional datasets can be viewed together with synthesized products. Data Basin will also house entire collections of datasets and maps (e.g., books and atlases) for users to search, view, and download.

Besides datasets and maps, Data Basin provides searchable people profiles to help conservationists find one another and promote collaboration. Self-managed “groups” is also a feature in Data Basin, which allows users to setup and manage their own private workspaces in which to collaborate.

GIS and Climate Change Issues

Room: Meadows

Moderator: Paul Wickman, North Star Geographics


Presenter(s): Faviana Godoy and Tim Killeen, Conservation International

Tropical deforestation accounts for up to 20% of global anthropogenic emissions of carbon dioxide, making it the second largest contributor for climate change. The parties to the UNFCCC are considering policy approaches to reduce emission from deforestation and degradation (REDD). Countries with large carbon stock and high historical deforestation rate will have the greater financial return from REDD policies. Guyana on the other side has historical deforestation rate extraordinarily low and REDD revenues might be limited under some proposals. We modeled Guyana deforestation, between 1990-2040 and estimate the carbon emission, under four different scenarios:

1. Nostalgic past scenario: uses the historical deforestation patterns as a reference level and no major infrastructure systems are improved;
2. Timber, gold and cattle scenario: provides a perspective of future deforestation under development infrastructure improvement in a similar pace as happened in the other Amazonian regions;
3. Insufficient REDD scenario: assumes that Guyana government implements policies to avoid increases in the historical deforestation rates, however REDD revenues are likewise limited and are insufficient to protect the forest and therefore deforestation rate returns to a high level;
4. Effective REDD scenario: assumes that Guyana government implements REDD policies and the funding from REDD is enough to control forest conversion because the emission
reductions are projected to a realistic reference scenario based on probable future development. The comparison of four scenarios demonstrates that relative small changes in deforestation rate can lead to very large differences in carbon emission and the potentiality for generating REDD revenues. We estimated that Guyana would be able to avoid 1 Gton of CO2 yearly.

**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, 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.

**Technical Sessions**

**Working with Geodatabase Topology**  
*Room: Boulder Bay*

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

This presentation will discuss what Geodatabase Topology is and the tools available, and then show how to create and edit data using these tools. Using Geodatabase Topology for cleaning data is very important any time a user has large amounts of data that might have been created under less than ideal conditions. Data used will be burn unit and fuels data from the Florida Panther Refuge and streams from the Wenatchee National Forest.

**The Conservation Success Index: A Range-Wide Assessment Tool for Salmonid Fisheries**  
*Room: Metcalf Bay*

*Presenter(s): Kurt Fesenmyer, Trout Unlimited*

Increasing our ability to synthesize and compare fisheries assessment data among species and across geographic boundaries should facilitate a better understanding of the broad-scale condition of fish resources and necessary management strategies. We describe the Conservation Success Index (CSI), a geospatial tool developed by Trout Unlimited to analyze the status of native salmonids and develop place-based conservation strategies for protection and restoration efforts across their historic range. The CSI provides a common framework to quantitatively evaluate each species or sub-species across 20 indicators related to range-wide conditions, population and habitat integrity, and future security. The future security assessment includes an expanded analysis of four climate change impacts: increased summer temperature, winter flooding, wildfire, and drought. The CSI was specifically developed to prioritize our organization's conservation work and to assist our members in understanding broad-scale conservation needs, but may be useful to other organizations as a fisheries management or environmental education tool. In this workshop, we describe in detail the rationale and methods of analysis employed by the CSI. Using the Brook trout in the eastern US and Bonneville cutthroat trout in Utah, Wyoming, Idaho, and Nevada as examples, we examine how TU has used the CSI with public land management agencies and non-profit conservation organizations to develop strategies and priorities for protecting and restoring aquatic resources. We conclude with a tutorial on how other groups and individuals can use the summary and mapping tools on TU's CSI website (www.tu.org/csi) to inform their conservation efforts.

**Paper Sessions**

**Forecasting Climate Change Effects on Species Distributions: Approaches for Reducing Uncertainty**  
*Room: Timbers*  
*Moderator: Healy Hamilton, California Academy of Sciences*

This special session will present 3 talks that discuss various sources of uncertainty in projecting species range shifts induced by global change. Forecasting of target species potential future distributions is one critically important component of designing management responses in support of biodiversity adaptation to climate change. However, multiple sources of uncertainty plague the outcomes of such ecological forecasts, including spotty biogeographic data sampling of species current distributions, the validity of climate envelope algorithms as a means of predicting species distributions, the variability in current gridded climate surfaces, the wide range of outputs from global climate models, issues surrounding the downscaling of coarse global climate model outputs to create finer scale future climate surfaces, and the uncertainty in future greenhouse gas emissions. In this symposium, we will discuss these sources of uncertainty and various approaches for reducing and quantifying uncertainty, in order to create ecological forecasts of direct use in conservation planning.
Forecasting Species Response to Climate Change
Presenter(s): Healy Hamilton, California Academy of Sciences

Forecasting of species future distributions is one critically important component of designing management responses in support of biodiversity adaptation to climate change. However, multiple sources of uncertainty plague the outcomes of such ecological forecasts. This overview talk will discuss the need for predicting the biogeography of climate change, introduce the sources of data, tool, and methods used in such projections, review the sources of uncertainty in ecological forecasting, and will discuss potential solutions. Examples will be presented for several North American flagship species.

New Levels of Uncertainty in Species Ecological Modeling
Presenter(s): Miguel Fernandez, California Academy of Sciences

Ecological niche modeling (ENM) integrates geostatistical tools and environmental data to produce a set of rules that identify the multidimensional space where a species has been collected or observed. These environmental rules are then projected into geographic space, resulting in a modeled distribution map. Even though ENM has made essential contributions to our knowledge of species distributions and the effects of global change on biodiversity, ENM are still controversial. Most of the critiques center around the assumptions of niche equilibrium, in the sense that species’ niches are assumed to be static in time and space. Although we consider that testing for these assumptions is important for the theoretical development of the field and formulation of null hypotheses, here we focus on other sources of uncertainty derived from practical aspects of ENM: 1) the uncertainty associated with positional accuracy of the collection localities, 2) the temporal climatic variability, and 3) the spatial density of weather stations from which the environmental layers were derived. Together, these three elements provide additional levels of unpredictability beyond the uncertainty usually associated with ENM. We propose additional steps in the modeling process that can address these uncertainties: 1) pre-modeling quality assessment of the geographic accuracy of the locality description, 2) a post-model inclusion of temporal climatic variability represented by standard deviations, and 3) a post modeling inclusion of weather station density represented by a spatial density function. Each can provide another dimension to current predicted maps and will not only better represent what we know about species distributions but also what we don’t know about the environment where species occur.

Expanding the Evaluation of Species Distribution Models to Guide Their Assessment of Climate Impacts
Presenter(s): Helen Regan, University of California, Riverside

Climate change may profoundly impact biodiversity due to shifts in species’ suitable habitat. The predominant tool used to project potential range shifts is species distribution models (SDMs) that provide spatial predictions of habitat suitability under climate change. Considering their widespread use, it is important to identify factors that affect SDM model performance and to estimate sources of uncertainty in predictions. Here, we evaluate: 1) the relative effects of species’ disturbance response, ecological and range characteristics, and model type, on prediction accuracy, 2) how map predictions vary among model types, 3) the selection and relative importance of environmental variables, and 4) what factors affect spatial correspondence of prediction maps. We used four methods (GLMs, GAMs, classification trees, Random Forests) to predict plant species distributions for 45 species in southern California, USA. We further evaluated climate change impacts on plant functional groups by linking predicted shifts in habitat suitability to population models, which has the advantage of integrating projected landscape-level spatial changes in habitat suitability with demographic dynamics at the population level. SDM model performance varied widely among species, and disturbance-response functional types explained most variation in accuracy. Nevertheless, prediction maps and environmental variable selection varied among methods. For most species, climate variables were more important than terrain or soil in predicting their distributions, which underlines the critical role of climate in limiting distributions—and the potential impacts of climate change in shaping future distributions. SDMs are important tools for projecting climate change impacts on biodiversity, but multiple factors affect their performance; thus, several methods should be explored to ascertain the degree of uncertainty associated with their predictions. Since current threats will likely continue under climate change, and in many cases will be exacerbated, integrated spatial and population-level evaluations are necessary to attain a fuller picture of the fate of biodiversity in the future.

National Conservation GIS
Room: Meadows
Moderator: David Asbury, Center for Ecosystem Management and Restoration

A Gap Analysis of the Western United States
Presenter(s): Anne Davidson, USGS

The completion of consistent vegetation maps and updated stewardship data for the Western United States by the Gap Analysis Program (GAP) makes possible for the first time a uniform Gap Analysis for this region. The Southwest regional Gap land cover completed in 2004, the California Gap land completed in 2008, and the Northwest regional Gap land cover completed in 2009 all used the 2001 Landsat imagery as a base layer and Classification and Regression Tree (CART) modeling approach. All three projects used the Ecological System classification system; developed by NatureServe, Ecological Systems represent a midscale vegetation classification system designed to be map-able with Landsat 30 meter resolution imagery. This resolution provides detailed information on vegetation pattern and
allows for the capture of rare vegetation types. The similarities in land cover modeling techniques and the uniform classification system used enable analysis of vegetation patterns across the 11 States in the Western United States.

An updated stewardship layer documenting the location of protected areas across the U.S. was recently completed by GAP and its partners in PAD-US project. The stewardship layer contains data on the extent to which areas of land in the United States are managed for the protection of natural processes and the protection of wildlife habitat. Each land unit is assigned a Gap Status code ranging from Status 1 lands which have perma-

vent protection and a mandated management plan to Status 4 lands which lack an irrevocable easement or mandate to prevent conversion of natural habitat.

The Western Gap Analysis intersected the land cover and stewardship layers calculating the Ecological Systems comprising each protected area. This allows for the tabulation of the area and percent of total extent of each Ecological System that occurs in each status category. This process allows for the identification of Ecological Systems that may be under protected in the existing protected lands and identifies potential conser-

vation priorities. The Western Gap Analysis considers multiple scales, identifying potential conservation priorities at the scale of the Western United States as a whole, for each of the eleven western states separately, and at the scale of the Omernik level IV ecoregion.

The **National Map in 2009**

*Presenter(s): Drew Decker, USGS*

The **National Map** is the suite of products and datasets that comprise the nation’s topographic mapping strategy for the 21st century. Updated mapping products built from digital base map datasets provide a collection of map services and products in different formats available through a number of sources. The **National Map** is best illustrated as two complementary groups of components: (1) the source data layers and (2) the resulting map services and products. Digital versions of the source data layers have been available for several years through USGS data repositories and other data libraries accessible through the web. These layers include orthoimagery, elevation, hydrography, boundaries, land cover, geographic names, trans-

portation, and structures. These data, in turn, will be integrated, vertically aligned, and continuously improved through steward-

ship; automated extraction procedures are used to create a versatile collection of new topographic maps.

This talk will focus on the processes currently in development for management and generation of products, with a specific look at the first edition of products for California.

### Technical Sessions

#### An Introduction to Symbology

*Room: Boulder Bay*

*Presenter(s): Kellee Koenig, Conservation International*

This workshop introduces the difference between quantitative and qualitative symbology for points, lines, and polygons. It will also teach how to change and apply the most appropriate symbology in ArcGIS, and is designed for those from a non-GIS background, or those with limited cartography skills who would like to improve the quality of their maps.

#### Web-Based GIS for Data Collection, Mapping, Analysis and Distribution

*Room: Metcalf Bay*

*Presenter(s): Mike Engels, International Crane Foundation*

Conservation work spans multiple boundaries. Regardless of project scale or location, it is important to have efficient, afford-

able methods to collect, analyze and easily disseminate field data. With achievements in areas such as open source software, GiS standards and industry leadership there are many ways to erase former technological boundaries between open source and commercial software. This allows even small organizations to reach across continents, enlist other resources and enable local communities to get more involved. The workshop will open with a brief presentation on the International Crane Foundation’s Sandhill Crane program and how GIS is applied. Attendees will then be introduced to three open source GiS tools and will learn how to easily share data with other web mapping and GIS analysis platforms including ArcGIS. They will create their own PostGIS database and populate it with spatial data using Quantum GIS desktop. The basics of GeoServer will also be covered and users will learn how their new database can be connected to a variety of web-based and desktop GIS application such as ArcGIS Desktop, OpenLayers and MS Virtual Earth. The workshop will close with a demonstration of other open source software used to create an environment for rapid development of web-based data entry forms and associated maps. Using CodeIgniter/PHP, OpenLayers and PostGIS, attend-

ees will learn how data that has accumulated in the database can be directly accessed by ArcGIS Desktop in order to carry out advanced GIS and statistical analysis. With any remaining time, the attendees will get a view of how ICF is “mappin’ Mobile!” to record Whooping Crane observations in the field. No pro-

gramming experience is required to attend. An understanding of GiS data types/analysis and basic Internet skills are assumed (viewing web pages, filling out forms, etc.). Experience with desktop GIS is very helpful.
Multi-scale Digital Imagery Enhances Conservation Planning in Pennsylvania
Presenter(s): Joseph Bishop, Penn State University
To date most landscape level conservation planning in Pennsylvania has been conducted using coarse-scale Landsat derived land cover calibrated by expensive on-the-ground field surveys. The Pennsylvania Mapping Program (PAMAP) offers a new alternative. PAMAP, a new electronic map of Pennsylvania, is being created as a seamless, consistent, high-resolution set of digital, geospatial data products.

The map is being compiled from new high-resolution aerial photography and elevation data, from LiDAR, as well as from existing digital map resources developed by state and federal agencies, counties, regional agencies, and municipalities. As examples, Conservation Action Planning (CAP) of the Western Pennsylvania Conservancy and the Important Bird Area (IBA) program of Pennsylvania Audubon are being enhanced with these new resources. Using on-screen interpretation ecotones can be more accurately identified and threats, such as increasing impervious surfaces, can be mapped. Where previous data only identified larger land cover blocks the 1-foot resolution digital imagery also helps identify smaller conservation targets such as vernal pools, thickets, and tree snags. We are only beginning to imagine the conservation potential of these new resources.

Catawba River, “The Most Endangered River in America”
Presenter(s): Rodney Jackson, Central Piedmont Community College
In April 2008, American Rivers named the Catawba River the most endangered river in America, citing lack of planning and effects of urbanization as major threats. Mecklenburg County (NC) is the largest urban area along the course of the Catawba River, and is characterized by streams that are “impaired” or only “partially supporting” their designated uses. Degradation of these urban streams impacts recreational opportunities, property values, and public health. This analysis uses ENVI software and Landsat data to examine land cover changes in the Catawba River Watershed (1992-2001) and in tributary sub-watersheds originating within Mecklenburg County (2001-2007). This analysis demonstrates how Remote Sensing, GPS, and GIS may be integrated into a single analysis of urban land cover change and potential impacts on stream water quality.
GIS for Wildlife
Room: Meadows
Moderator: Janet Nackone, University of Maryland

Determination of the Ranging Patterns of Chimpanzees Using GPS Points in Bwindi Impenetrable National Park, South Western Uganda
Presenter(s): James Musinguzi, Uganda Wildlife Education Centre

World over today, one of the greatest concerns is bush meat which is illegally, commercially and/or unsustainably derived from illegal methods of hunting which include wire snares and unregistered guns. Great apes are being hunted to extinction for commercial bush meat in the equatorial forests of Africa.

In Africa, approximately 5,000 chimpanzees are killed by poachers for the bush meat trade every year. Infant chimpanzees are taken alive from forests, bound for the pet trade throughout Africa and the rest of the world. Chimpanzees are being hunted to extinction for commercial bush meat in the equatorial forests of East, west and central Africa.

This paper presents the rescue of chimpanzees from poachers and illegal activity and their eventual rehabilitation for reintroduction in the wild. It highlights the efforts and the use of GIS in the rehabilitation centre and in the protected areas where the chimpanzees are reintroduced, especially for purposes of monitoring and mapping as well as determining their ranging and feeding patterns.

Cross Boundary Species Conservation—Setting Rangewide Conservation Priorities for Asian Elephants
Presenter(s): Robert Rose, Wildlife Conservation Society

Surprisingly little is known about the status of Asian Elephant (Elephas maximus) populations. For some large parts of the species’ geographic range we do not even know where the populations are, or whether they are still extant. Obtaining a better understanding of elephant distribution, abundance, habitat use, population threats and other key characteristics, across its entire geographic range, is needed to set appropriate conservation goals and priorities. This understanding must transcend limitations to elephant conservation due to analyses contained by park, landscape or national borders. To this end, the Wildlife Conservation Society in collaboration with the IUCN/SSC Asian Elephant Specialist Group organized an Asian elephant Rangewide Priority setting workshop, held in October 2008 in Phnom Penh, Cambodia. This workshop brought together conservationists, scientists, government officials, and other stakeholders from 13 range countries in order to develop a spatially explicit summary of the status and distribution of the species across its range, establish conservation priorities for the species in all the major, ecologically distinct settings in which it occurs and to arrive at those priorities through a consensual process involving all the major current data holders and conservation groups working on the species. Through the collaborative workshop, over 400 confirmed or probable elephant range polygons, representing almost 900,000 Km2 across 24 different ecoregions, were identified. From these, a set of 160 range polygons that represent viable populations across the different habitat types was selected and are being considered for inclusion in a final set of Asian elephant priority conservation sites.

GIS Application for Bird Conservation in Nepal
Presenter(s): Bashyal Dhruba Sharma, Bird Education Society Nepal

Nepal is rich in biodiversity resource, bird diversity in Nepal is highest than other part of the world. About 824 species of birds are found in Nepal. Because of the rapid population increase, climate change, and use of pesticide in agriculture, birds habitat of Nepal are in great threats. Because of the diverse physiographic and climatic variation bird diversity is high in Nepal but detail information regarding to bird density in regional and local level is still lacking. This paper describes the application of GIS, GPS and Remote Sensing for bird conservation in Nepal. This paper discusses the GIS application to increase the conservation awareness through the research and dissemination. This paper has divided in two parts. First part is related to the management of bird inventory database in a scientific way and prepares various thematic maps. It is very difficult to maintain the coordinate value at micro scale. For convenient, study areas have divided into various blocks and information are kept accordingly. This part also includes the land use land cover change analysis to monitor the bird habitat. Second part of this paper is about the GIS application to increase conservation awareness among the local community.

Technical Session

ArcMap Tips and Tricks
Room: Boulder Bay

Presenter(s): Danielle Hopkins and Carserina Kurria, 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.
Building a Water Quality Management System
Presenter(s): Bruce Lakin, University of Azuay

I have been retired for several years and have been working as a volunteer for conservation studies for the last two years in Ecuador. In this capacity I assisted the biology department at the University of Azuay to obtain a competitive grant of $75,000 to develop a water quality monitoring system for the province. Our proposal was to designate 100 collection sites, collect 400 samples and macro-invertebrate surveys, perform a variety of laboratory tests and deliver our results using a GIS database.

Upon receiving the grant we applied for and received a grant from ESRI for ArcInfo and the Spatial Analyst extension. We assembled a team of 12 recent graduates from the university’s biology department to collect and perform the laboratory tests. ESRI software was used to identify the monitoring points and store, analyze and visualize the results. E. Zarate and A. Crespo, professors from the biology department, managed the project and wrote up the results.

The presentation will describe the role of GIS software in the project. ArcInfo was used to download the model, define the structure of the geodatabase and built a hydrological model. Spatial Analyst and hydrological extension processed the grids and layers to populate the geodatabase. The monitoring points were selected based upon the sub-basins (an output of the hydrological model) and analysis of layers including area, kilometers of principal rivers, population centers and road networks to name a few of the factors. The field and laboratory measurements were collected over a six month period and time series data were input into the model. The Crystal reporting function was invaluable in the analysis of over 11,000 measurements to produce graphs and table summary data in conjunction with the visualization capability of our GIS software.

Several additional projects have resulted from this study. The university has upgraded their ArcGIS 9.x. Time series data continues to be added to the model.

Economic Valuation of Agricultural Production vis-à-vis Large-Scale Mining in Bgy. Paquet, Kasibu Municipality, Nueva Vizcaya, Philippines
Presenter(s): Kail Zingapan, Philippine Association for Intercultural Development, Inc. (PAFID)

The policy of developing a large-scale mining industry in the Philippines assumes increased tax effort and real incomes from mining over existing modalities. Many have been sited in nature reserves and critical watersheds that sustain rice and agricultural production. The paper investigates the processes driving the watershed-farmland pattern in an area scheduled for conversion...
as an open-pit mine for gold and copper. It proposes to combine economic valuation approaches, participatory rural appraisal, and GIS analysis to determine the economic contributions of agricultural production vis-à-vis the Didipio Gold-Copper Project of Oceana Gold in Bgy. Paquet, Kasibu, Nueva Vizcaya, the Philippines.

Park City Municipal Environmental WebGIS
Presenter(s): Jeff Schoenbacher, Park City, Utah

In 2002, Park City started compiling datasets for the implementation of an Environmental GIS to manage all environmental issues and risks related to a century of active silver mining. During the 1800’s the Park City mining district produced millions of ounces of silver in addition to a substantial amount of mine tailing waste. Park City has now implemented the Environmental GIS for managing these environmental impacts and risks posed by the mining era. The following are datasets used extensively by all city departments on a daily basis:

- Soils Ordinance Boundary Search
- Soils Ordinance Capping Compliance
- Known Mine Tailings Area
- Mine Hazards
- FEMA Flood Zone Delegations
- City Zoning
- Regulated Streams
- Jurisdictional Wetlands
- Watershed Boundaries
- Drinking Water Source Protection Zones
- 10’ Elevation Contours
- Designated Open Space Purchases
- Conservation Reserve Program

Most recently, Park City launched the first municipal Environmental WebGIS site in Utah, providing free, public access to environmental data and conditions in the City. The Environmental WebGIS allows users to gather and map a wide range of local environmental information including compliance with the City’s soils ordinance, the location of mine hazards and tailing sites, regulated flood zones and wetlands areas and watershed boundaries. The inclusion of the unique environmental challenges related to the City’s silver mining legacy is notable not only within the state, but nationally as well.

Park City’s Environmental GIS has proven to be a necessity for the City and the Environmental WebGIS has proven to be a valuable resource for all stakeholders that do due diligence in the city limits. The success of these applications is experienced every day by Park City for answering important environmental questions.

GIS for Wildlife Habitat Modeling
Room: Meadows
Moderator: Carolyn Hughes, The Nature Conservancy

Modeling Mammal Corridors in the Champlain Valley:
A FunConn and Corridor Designer Sensitivity Analysis
Presenter(s): Walter Burwell, Middlebury College

Connectivity has gained considerable importance as a conservation goal. To achieve increased connectivity, many conservation planners from different organizations use GIS-based corridor modeling programs, such as FunConn and Corridor Designer. However, many practitioners have had difficulty utilizing these tools to their full extent, not properly understanding the range of assumptions associated with each tool. Planners have called for sensitivity analyses of corridor modeling programs and highlighted 16 areas of uncertainty that need to be addressed when modeling corridors. I conducted a sensitivity analysis of both FunConn and Corridor Designer, testing five different simulations of black bear (Ursus americanus) movement in the Champlain Valley of Central Vermont and Upstate New York. These simulations sought to address four of the highlighted areas of uncertainty, including (1) what landscape factors should the model include, (2) how should a corridor terminus be delineated, (3) how should habitat patches be delineated, and (4) how should linkage design address barrier and management practices? I compared the output of the two programs to see how each would respond to each situation. In general, I found FunConn to be both more sensitive to inputs and a more appropriate representation of the way animals use the landscape. Land Cover Preference was the most sensitive input for both programs. Thus, correctly classifying the land-cover preference of a corridor target animal has the highest importance to identifying locations for effective connectivity. I also highlight scenarios in which it is more appropriate to use FunConn or Corridor Designer to model animal movement.

A Spatially Interpolated Hierarchical Regression Model to Explicitly Predict the Distribution of Species
Presenter(s): Alejandro Ordonez, University of Groningen

Many critical ecological issues require the analysis of large spatial point data sets—for example, modelling species distributions, abundance and spread from survey data. But modelling spatial relationships between occurrences and environmental conditions presents major challenges, particularly as predictions from these models must account for uncertainties in observation, sampling, and parameters. Here we propose a spatially interpolated hierarchical regression model to explicitly predict the distribution of a species. This approach was selected as it allows accounting for the various sources of uncertainty and can incorporate scientific judgment in a probabilistically consistent manner.
The proposed method is based on Royle and Nichols (2003) model and implemented in a maximum likelihood framework. The approach used here differs from previous hierarchical modeling approaches on both the way detection probability is defined (as a function of population parameters) and the use of spatial interpolation techniques to extrapolate the estimated parameters across a region of interest.

The implications and applicability of the proposed methodology is discussed in the context of an application to invasive plant secrecies, and the development of exotics screening programs.

Invasive species were selected as the study organism given their significant impacts on native biotic communities, and the interest of conservation agencies in developing a predictive framework to prevent and reduce the damages caused by biological invasions.

The results from this application showed the main benefits of the proposed method. These are its intuitive and simple yet flexible enough framework, which allows to accommodate various specifications and sources of uncertainty (e.g., such as the uncertainty in detection); that it provides a tangible and easy to understand graphical output (in addition to numerical output) where prediction variability is considered and represented; and that it is based on rigorous data-driven statistical methodology.

**Foraging Areas of Cayenne, Royal and South American Terns Breeding in Northern Patagonia, Argentina**

**Presenter(s):** Alejandro Javier Gatto, Centro Nacional Patagónico (CENPAT), Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET)

Cayenne (*Thalasseus sandvicensis eurygnathus*), Royal (*Thalasseus maximus*) and South American Terns (*Sterna hirundinacea*) breed sympatrically in Patagonia, Argentina. Very little is known on the breeding/foraging areas and feeding patterns of these species and thus studies are needed to understand their role in coastal ecosystems and develop adequate management strategies. We present information on the use of foraging areas by these species at a mixed species colony in the Punta León Protected Area (43° 04′ S, 64° 29′ W), and in the Punta Loma Protected Area (42° 49′ S, 64° 53′ W) Chubut, Argentina. Radio-transmitters were deployed on eight nesting adults of each species, which were tracked during the late incubation. Feeding areas were identified during foraging trips by means of radio-telemetry from the coast, using two fixed tracking stations for each colony, consisting each of two attached 9-element Yagi antennae. Terns foraged often between the colony and 35 km away. However, lack of signal reception in some of these trips, indicate that foraging can also take place in waters further away. In general, individual birds were consistent in the use of one particular area. Implications for foraging area partitioning between terns and the coastal management and conservation guidelines will be discussed.

**Technical Session**

**Getting Started with ArcGIS Server**

**Room: Boulder Bay**

**Presenter(s):** Danielle Hopkins and Canserina Kurnia, ESRI

**Audience:** Beginning ArcGIS Server users or anyone interested in learning how ArcGIS Server works

**Prerequisites:** None

Are you interested in ArcGIS Server but don’t know where to start? Perhaps you’ve worked with ArcIMS before and want to know what ArcGIS Server can offer you. In both cases, this is the session for you! You will learn 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 any 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.

**Paper Sessions**

**GIS for Community-Based Conservation**

**Room: Timbers**

**Moderator:** Karen Beardsley, University of California

**Presenter(s):** Karen Beardsley, University of California

While California land use decisions occur at the city and county levels, there has been a recent movement to build consensus among local entities so that they can view their choices within a larger regional context. The Regional Blueprints program helps foster consensus among community leaders, local governments, and stakeholders toward a vision for preferred growth and land-use for regions throughout the State. These Blueprints help people in the regions understand and address the impacts to their air quality, water quality, transportation and growth, affordable housing, and natural resources created by different development options.

To facilitate Regional Blueprints, the Information Center for the Environment (ICE) at the University of California, Davis has developed a simple GIS urban growth model called UPlan that is capable of running different growth scenarios for the future based on policy choices. This model is currently being applied in California to develop, adopt, and begin implementation of the Regional Blueprints. In this session I will present applications of the UPlan model in the San Joaquin Valley of California.
Tugens are agropastoralist who communally graze livestock and with a Tugen community, Sandai, in the Rift Valley in Kenya. This interdisciplinary research was undertaken in collaboration conflicting priorities and values attached to ecosystem services. Level will aid policy-makers to understand the complex and often on the ground is masked. Mapping with stakeholders at a local and generalise the issues, and the sense of community values at global, national or regional scales but these studies reduce ecosystems provide is being heralded as a way forward to social evaluation of ecosystem services based on the functions well-being depends on a healthy environment. Economic and protection and restoration efforts across their historic range. The CSI provides a common framework to quantitatively evaluate each of fish resources and necessary management strategies. We increasing our ability to synthesize and compare fisheries assessment data among species and across geographic boundaries should facilitate a better understanding of the broad-scale condition of fish resources and necessary management strategies. We describe the Conservation Success Index (CSI), a geospatial tool developed by Trout Unlimited to analyze the status of native salmonids and develop place-based conservation strategies for protection and restoration efforts across their historic range. The CSI provides a common framework to quantitatively evaluate each species or sub-species across 20 indicators related to range-wide conditions, population and habitat integrity, and future security. The future security assessment includes an expanded analysis of four climate change impacts: increased summer temperature, winter flooding, wildfire, and drought. The CSI was specifically developed to prioritize our organization’s conservation work and to assist our members in understanding broad-scale conservation needs, but may be useful to other organizations as a fisheries management, landscape evaluation, or environmental education.
tool. Trout Unlimited maintains a website for the CSI (www.tu.org/csi), complete with Google Earth and Google Maps applications, to facilitate its use by other groups and individuals.

**Spatialization of Collection Records from Serra dos Órgãos National Park, Brazil**
*Presenter(s): Cecilia Cronemberger de Faria, Parque Nacional da Serra dos Órgãos*

A survey was carried out to find specimens of fauna and flora collected at Serra dos Órgãos National Park and deposited in various scientific collections in Brazilian institutions. Based on the description of the collection locality, it was possible to map part of the registers. Results show that Serra dos Órgãos region has been studied since the 19th century, that most researchers did not worry about the accuracy of description of their collecting points, and that, nevertheless this preoccupation has been raising recently, we still have many data with low description accuracy, making it difficult to run spatial analyses. Collection points are concentrated around easy access localities, such as the park’s headquarters and some well established trails, leaving space gaps unexplored by science, which may contain different sets of species or even unknown species. Priority areas for research were defined, and new projects will be stimulated to survey these areas.

**A Predictive Model of Snow Leopard Habitat Change due to Shifting Climate in the Eastern Himalayan Landscape, Nepal, India, and Bhutan**
*Presenter(s): Jessica Forrest, World Wildlife Fund*

The Snow leopard (*Uncia uncia*) is an endangered and cryptic predator inhabiting the mountain ranges in northern and central Asia. In the Eastern Himalayas, where this project takes place, snow leopards tend to be found in high alpine areas, in a narrow belt approximately between 3000-4500m. It is in this zone that snow leopards can spot and easily track down prey such as marmots and blue sheep. This alpine habitat is threatened by climate change, since forest cover is expected to shift upslope in response to changing temperature and precipitation. In this study, we used statistical methods to examine the current climate envelope of the high alpine grassland zone from Nepal, east through the Sikkim region of India, to Bhutan. We next calculated change in monthly temperature and precipitation under medium-high (A2) and medium-low (B2) increased emissions scenarios, using a regional climate model developed by the Hadley Center and the Indian Institute of Tropical Meteorology. We used the change model to predict future change in habitat for the snow leopard. The findings help us to recommend ‘climate proof’ management areas for the snow leopard through the year 2100.

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**Technical Sessions**

**Suitability Modeling with Spatial Analyst and ModelBuilder**
*Room: Boulder Bay*

*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.

**Starting and Operating Local SCGIS Chapters**
*Room: Metcalf Bay*

*Presenter(s): Mark van Bakel, Islands Trust*

If you get excited about what you experience at each year’s SCGIS conference, and wonder how to keep that kind of energy flowing all year long, this workshop is for you. We will explore how to start a local chapter, and how to make it successful. Topics will cover such challenges as recruiting members, organizing chapter leadership, planning effective chapter meetings, organizing chapter projects, gaining support of sponsors, connecting with government/educational/conservation/software organizations, communication with members, and handling finances. Hear about the learning experiences from previous chapter startups.

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**Paper Sessions**

**GIS for Awareness and Visualization**
*Room: Timbers*

*Moderator: Rob Rose, Wildlife Conservation Society*

**TNC’s Information Systems for Conservation Projects**
*Presenter(s): Paul Angelino, The Nature Conservancy*

TNC has a conservation projects database with associated web applications and map services that comprise a rich information system. The web applications that interface to this database, “ConPro” and “ConPro Spatial”, have recently become publicly available, as have the associated map services. The ConPro application also provides data interchange with the Miradi application, a desktop tool for defining conservation projects developed jointly by the Conservation Measures Partnership and Benetech. The presentation will give a high-level demonstration of these various information system components, focusing on the publicly accessible portions and on the data interchange capabilities.
**Visualizing Lost Landscapes on the Web: A Case Study from the Mannahatta Project**
*Presenter(s): Kim Fisher, Wildlife Conservation Society*

Presenting complex conservation GIS data to the public over the web can be challenging because of both technical and user-interface hurdles. This presentation will show how over 1900 data layers from the Mannahatta Project at the Wildlife Conservation Society were processed into navigable form using a customized combination of Python/Perl/ARC Macro Language (AML) programming and then visualized within a relatively easily implemented Google Maps Flash API over the Internet (themannahattaproject.org). The GIS data layers represent various aspects of a pre-historical landscape, including species distributions, as probability maps at 10 m resolution. These distributions were made user-friendly using two strategies: 1) ecological community data were rendered as a semi-realistic aerial "photo" of Manhattan island in 1609, which was then "sliced" by a Python script into transparent images corresponding to modern city block polygons; and 2) species probability distributions were aggregated into city-block probabilities and stored in a MySQL database using a second Python script. When these data are presented using PHP and a Flash Google Maps instance, a user is able to see both what his/her block looked like four hundred years ago, a feature exploited for fundraising purposes, and the probability of seeing various species would have been. Non-spatial ecological relationships were visualized using the Java network visualization library prefuse.

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**GIS in Protected Areas**
*Room: Meadows*
*Moderator: Nanette Bragin, The Denver Zoo*

**Newly Updated and Revised Protected Areas Database of the US (PAD-US): Development and Application to Conservation**
*Presenter(s): Lisa Audin, USGS National Gap Analysis Program/University of Idaho*

In April 2009, the USGS Gap Analysis Program (GAP) released the first version of PAD-US on behalf of the PAD-US Partnership, which includes USGS, BLM, USFS, Conservation Biology Institute, GreenInfo Network, and TNC. In addition to serving many uses in the US, these data were also incorporated into the World Database on Protected Areas (WDPA). These national and international linkages facilitate collaboration among and between conservation organizations and land managers by establishing a consistent understanding of protected lands status, whether the focus is global or local. Available information includes: geographic boundaries of public land ownership and voluntarily provided private conservation lands (e.g., TNC preserves); combination of land owner, manager, management designation, parcel name, IUCN category, and GAP status codes intended to provide a measurement of management commitment for long-term biodiversity protection. With over 700,000 records the dataset supports endless opportunities such as regional ecological assessments, land trust prioritization, and identification of gaps in the long-term protection of species and habitats. For more information and to view PAD-US:  http://gapanalysis.nbii.gov/PADUS.

**Development of Protected Areas Database of Russian Far Eastern Network**
*Presenter(s): Yulia Kalashnikova, WWF Russia*

The paper will answer the following questions: why it is necessary to create such a database, what is the methodology of its creation and how it will help in planning, management and decision making. I will elaborate on these questions with a special emphasis on the planning of PAs.
Technical Sessions

Understanding Projections for ArcGIS
Room: Boulder Bay

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. Last year was standing-room only.

Conservation Planning from the Bottom Up: A Practical Guide to Tools and Techniques for the Twenty-first Century
Room: Metcalf Bay

Presenter(s): Lance Craighead, Craighead Institute

This is a workshop on a new conservation planning book being developed by the Craighead Institute and ESRI, to be published in 2010 by ESRI Press. Contributions are being solicited and there will be a major role for GIS experts to become involved in creating example maps, talking about your own cartographic and GIS methodologies, and helping with peer review for the book. Book chapters to be discussed will include:

Chapters:
1. Introduction. A Personal History of Conservation Planning. Lance Craighead and Charles Convis
2. Landcover Data: The Foundation for Planning. Tom Olenicki
3. Habitat Suitability 1: Identifying Important Terrestrial Habitat and Bird Habitat for Conservation
5. How to Determine Appropriate Focal Species: Selecting Focal Species for a Comprehensive Conservation Umbrella. Eric C. Atkinson & Brent L. Brock
6. How to Identify and Map Habitat Cores. Richard Church
7. Modeling Conservation Linkages. Peter Singleton [sample outline]
10. Planning to Ensure Viability of Populations and Metapopulations. Chris Ray
11. Integrating Conservation Planning with Local Self-Sustaining Human Economies. Murray Rudd and Rich Wallace
12. Integrating Conservation Planning across Multiple Scales. Robert Unnasch
13. Integrating Conservation Planning with Projected Trends in Land-Use. Dave Theobald
15. Summary and Discussion. Frank Davis

Some of the authors listed will be present.
Closing Session—Tuesday, July 21

**Closing Session located in the Ballroom**

<table>
<thead>
<tr>
<th>Time</th>
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<tr>
<td>10:00 AM–10:10 AM</td>
<td>Acknowledgments</td>
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<td></td>
<td><em>Gillian Woolmer</em></td>
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<tr>
<td>10:10 AM–10:30 AM</td>
<td>Closing Remarks</td>
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<tr>
<td></td>
<td><em>Charles Convis</em></td>
</tr>
<tr>
<td>10:30 AM–11:30 AM</td>
<td>SCGIS Membership Meeting</td>
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<tr>
<td>11:30 AM</td>
<td>Close</td>
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</tbody>
</table>
SCGIS Domestic and International Scholars

The SCGIS International Scholarship Program is not a typical scholarship program. It is designed to allow conservation GIS practitioners from all over the world to travel to California for four weeks to attend the ESRI User Conference and SCGIS Annual Conference and receive two weeks of GIS training specifically designed and programmed for the scholarship recipients.

The Society for Conservation GIS would like to extend its warmest welcome to all the 2009 conference scholarship awardees and encourages conference participants to greet this year’s scholars and attend their presentations to find out more about their conservation projects:

- Alejandro Javier Gatto, Centro Nacional Patagónico (CENPAT), Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina (alegatto@cenpat.edu.ar)
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- Kail Zingapan, Philippine Association for Intercultural Development, Inc. (PAFID), Philippines (kail.zingapan@gmail.com)
- Yulia Kalashnikova, WWF, Russia (yulia.snowsun@gmail.com)

Susan Miller Scholarship

The Susan Miller Scholarship was created in 2005 to honor the many years of compassionate management and volunteer service that Susan gave and still gives to SCGIS.

The award goes to a returning scholar who has helped to create an SCGIS community in their home country that best exemplifies Susan’s values of service, family, and community. This is not to diminish the incredible work done by hundreds of SCGIS volunteers around the world each year; indeed, building a community and keeping it united takes the hard work and sacrifice of everyone. This award is simply a way to remind us each year of the debt we owe Susan by highlighting the work of one scholar who shows that the SCGIS values of service to others is indeed a universal value.

In 2008, the Susan Miller scholarship was designated to Sabino “Abe” Padilla, a lifelong conservationist, former political prisoner, defender of indigenous rights, and early mobilizer of the Philippines SCGIS chapter.

For many years, the Philippines chapter has functioned like a family, with constant attention to ensure that all voices, even the quiet ones, are heard and a constant willingness to selfless actions to ensure that everyone gets a chance.

Society for Conservation GIS
WWW.SCGIS.ORG
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.

**President**  
Michelle Kinzel  
Oregon State University, USA

**Vice President**  
Rankin Holmes  
Montana Water Trust, USA

**Treasurer**  
Karl Keough  
GIS and 3D Visualization Services, Canada

**Secretary**  
Lisa Pierce  
Water Resources Institute, USA

**Member**  
Sasha Yumakaev  
ESRI, USA

**Member**  
Lata Iyer  
Auroville Tsunami Relief Effort, India

**Member**  
Lucy Chege-Waruungi  
African Conservation Centre, Kenya

**Member**  
Lynn Kutner  
NatureServe, USA

**Member**  
Mark van Bakel  
Islands Trust, Canada

**Member**  
Susan Miller  
The Nature Conservancy, USA

**Advisory Council**

Leslie Backus  
Chambers Group, Inc.

Steve Beckwitt  
Sierra Biodiversity Institute

Joe Bremen  
University of Hawaii

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**

**Domestic Chapters Committee**  
Chair: Position Open

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.

**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 to assist with lodging/food expenses incurred during the SCGIS Conference.

**Communications Committee**  
Chair: Position Open  
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.

**Conference Committee**  
Chair: Gillian Woolmer

Purpose: This committee is assigned to host the annual conference to promote information exchange and develop a network of expertise for supporting conservation efforts worldwide. It is also charged with the task of coordinating the conference as specified in the SCGIS Strategic Plan, 1999–2004. The committee chairperson will report to the board of directors with details requiring vote (site selection), keep other committees informed and report monthly to the treasurer. The treasurer will review and sign any negotiated contracts.
SCGIS Committees (cont.)

Fund-Raising
Chair: Eric Sandoval
Purpose: This committee is charged with the task/goals of expanding SCGIS membership (and monetary base) through marketing plans, writing proposals, fund-raising, and with recovering the costs of the newsletter through advertisements by the year 2004. Additionally, the committee is responsible for 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
Chairs: Prashant Hedao and Lata Iyer
Purpose: The purpose of this committee is to facilitate, support, and assist in the creation of local in-country SCGIS chapters or conservation GIS users networks and help them become self-sustainable. Currently, there are very successful SCGIS chapters established in Russia and Madagascar and an informal network in Chile. The committee is currently working on forming networks in Colombia, Kenya, Philippines, and Cameroon. It also collaborates with other similar networks and organizations already doing conservation work in various countries.

Membership Committee
Chair: Position Open
Database Administrator: Marcelle Caturia
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 a new member packet, 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
Programming and Database Support: Bryan Baker and Marcelle Caturia
Listserv 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 and assisting in maintenance and any other technical or conceptual tasks deemed worthy.

Acknowledgments
The 2009 SCGIS Conference would not have been possible without the efforts of a great many individuals. It is impossible to acknowledge everyone who has played a role in making this conference happen, as so many have contributed; however, there are a few people that we feel require special recognition. First we would like to send special thanks to Pingkham Rattanababpha and her team at ESRI who have provided extensive organization and logistical support for this year’s event. We would like to thank Kay Sadighi who provided extensive support preparing the conference schedule. Huge thanks go to the fabulous folks of the SCGIS Web team—Tom Robinson, Bryan Baker, and Marcelle Caturia. They provided constant and reliable support throughout. They kept the conference Web site up-to-date and all the online registrations working. Finally, we need to thank Lisa Pierce, who went to great personal effort to ensure that we had a venue for this year’s conference. Thank you, everyone.
## Attendee List

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## Important Contacts

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Society for Conservation GIS

SCGIS Annual Conference
July 18–21, 2009
Northwoods Resort and Conference Center
Big Bear Lake, California

2008 Conference Photo