

The Society for Conservation GIS e-Newsletter

Volume 2, Issue 2
January 2003



President's Message

Dear SCGIS Members,

This is my first opportunity to address you as president of the board. It is with great excitement and enthusiasm that I report our state of affairs to you.

We have a talented and dedicated membership that continues to amaze me every day. All of our activities rely upon you, as members, as volunteers and as supporters. Thank you. Conservation activists from around the world email me and other board members daily to inquire about SCGIS, and how we as a society can help them utilize GIS technology for their conservation campaigns. We know we are making a difference, read on to see how.

SCGIS is a global and dynamic organization. Many of you experience our annual conference and read our newsletter, but behind the scenes, our committees are busy working every day to ensure the success of SCGIS. To date, there have been two SCGIS conferences in Russia and one in Chile. We are also poised to host seminars in Madagascar and Nigeria. These international conferences attract new members, provide essential training, and thanks to our partnership with the ESRI Conservation Program, deliver software and support. All of these activities greatly enhance the conservation GIS capacity for users and NGO's around the world.

SCGIS is growing, and like most organizations we are experiencing some of the pains

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The Society for Conservation Geographic Information Systems (SCGIS) is a non-profit organization that works to assist conservationists worldwide in using GIS through communication, networking, scholarships, and training. Membership is open to any individual seeking assistance in the achievement of personal or organizational conservation goals.

www.scgis.org

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associated with growth. Nevertheless, the board is busy getting SCGIS's house in order. We are currently working on the annual budget and hope to approve committee budgets shortly. We have also made significant progress on our strategic plan and vision statement. Our committees are working tirelessly to bring SCGIS to you. This newsletter, our website, our conference, our international program, training seminars and international networks are all committees run by volunteer committees.

As a fellow SCGIS member, I encourage you to get involved. You can contribute through volunteer time or by making financial contribution. You can also help by engaging your organization in SCGIS activities. As

always, we are looking for strategic partnerships to further the goals of SCGIS. We have had great success working with the ESRI Conservation Grant Program, The Ecology Center, and American Association for the Advancement of Science (AAAS).

I look forward to seeing you at the 6th Annual SCGIS Conference, which by the way is slated for July 4-6, 2003 in beautiful Asilomar, California.

If you would like to help or have suggestions, please contact me or any other board member directly.

For the Society,
Mike Beltz
beltz@wildrockies.org



Message from the Editor

Hello SCGIS members,

This issue of the newsletter is getting out a little later than usual, perhaps a reflection of the business levels of our volunteers. Nonetheless, it's here to help kick off 2003! If you haven't yet made your new year's resolutions, perhaps one of them can be to become more involved with the Society for Conservation GIS. We are an entirely volunteer-run organization, and we can always use more help on the myriad of tasks required to run our organization. If you're not sure how your skills and interests might fit the Society's needs, check the "volunteers" link on our website (www.scgis.org) to see what opportunities await.

This is the first issue of the SCGIS newsletter since the election of our new board members. You will find an introduction to our three newest board members under "Election News", as well as a message from our new president, Mike Beltz.

This issue once again highlights the international nature of SCGIS, with report from the Russian SCGIS conference from Alexander Yumakayev, and a piece on forest conservation in Madagascar from Trish Consiglio. As well, Ben Best gives a report on a bold new marine mapping initiative housed at Duke University. Finally, this issue also includes the usual member's news and notes.

This issue is a bit slimmer than previous ones, and I hope it doesn't reflect a lack of interest in SCGIS. SCGIS is a volunteer-run organization, and things will only work if members participate. So please consider contributing a piece to the newsletter for future issues. As well, if you think there are regular features that should be included, I'd welcome suggestions for improving the newsletter.

Thanks again to all those who contributed to this issue and to Renee Seaman for doing the layout.

Best wishes for 2003!
Yolanda Wiersma
Editor, SCGIS Newsletter

International News

Second Russian SCGIS Conference Held

We are proud to announce that on August 21-22, 2002, the second Russian SCGIS Conference was held in Yakutsk with generous help from The Ecology Center, Inc. It gathered about 25 participants from all parts of Russia working on conservation issues in scientific and non-governmental organizations and in protected areas. Also involved were representatives of ESRI Conservation Program who continue to provide their kind support to conservation activities in Russia.

The goal of this conference was to promote application of GIS for nature conservation, and to strengthen the scientific and public conservation movement in Russia. The main objectives included collection and analysis of practical GIS experience, discussion of variety of GIS approaches and methods in conservation organizations; finding ways of cooperation between different organizations within Russian Society for Conservation GIS; support of active connections in the motley Conservation GIS community in Russia and the world.



Although due to financial limitation the conference was rather small, it allowed better communication between participants who presented very interesting papers and posters on how they apply GIS for nature conservation. Of course, The Russian Society for Conservation GIS will need certain time to grow and take a shape, but the main achievement of the two conferences was the beginning and development of the process that will bring fruits someday. First, it was decided to build a website, which could publish papers from both conferences and host society membership information. This website is currently under construction and should be up and running by mid-winter. Also, plans were made to develop an ArcIMS for certain areas of Russia. This would give The Russian Society for Conservation GIS an opportunity to share their data with other conservation organizations in Russia who do not have the capability to use GIS. Now, with the help of ESRI, the ArcIMS software has been made available. Stay tuned for more details regarding these future websites.

After the conference there was a field trip organized to the banks of the Lena River, with a visit to where the first European Russians landed in Yakutia. This site has been given historical status, so it included a wonderful museum tour on the Yakutian culture and early Russian exploration of the region. After our tour, we proceeded on for a fun night of camping on the Lena to conclude the conference.

Having now organized two conferences, we are finding it realistic to organize them on a biennial schedule. Our next conference is currently scheduled for 2004 in the beautiful Altai Mountains of southwestern Siberia. Hopefully with continued growth and support it will be the largest and finest Russia Society for Conservation GIS conference yet.

Alexander Yumakaev
Mikhail Paltsyn
Rankin Holmes



International News

Satellite Image Analysis and GIS: Tools for Identifying and Conserving Madagascar's Littoral Forests



Madagascar is the fourth largest island in the world and home to a stunning array of flora and fauna. A high degree of endemism and diverse land types add to the island's rich ecology leading the Conservation community to label it one of the world's "hotspots". Most of Madagascar's tropical forest occurs in the east, with the narrow coastal strip of tropical forest occurring on sand known as littoral forest. Deforestation in Madagascar has been especially rapid in the coastal areas. It is estimated that over 80% of original littoral forest has been lost. Adding to the urgency of conserving these forests is their contribution to sheltering important sites of endemism, diversity, and a large number of threatened species.

The Missouri Botanical Garden (MBG) has been active in botanical research in Madagascar for several decades, and has recently begun a project to conduct extensive botanical inventories of selected remnant stands of Madagascar's highly threatened and species-rich east coast littoral forests. In order to prioritize collection areas, a preliminary list of littoral forest sites was compiled from maps, specimen data residing in MBG's Tropicos database, and knowledge from botanists working in these areas. However, much of the maps and data are decades old and tell us little about the current distribution and size of remaining forest patches. To accomplish this task, recent (2000-2001) Landsat images were analyzed using ArcView's Image Analysis software, and a map of identified forest patches was combined with road, river, city, and protected areas data to coordinate collection activities.

Methods

Radiometrically and geometrically corrected Landsat 7 level 1G images covering the study area were obtained from the Global Landcover Facility website at <http://gorgonzola.umiacs.umd.edu:8811/glcf/esdi?command=search>, and the Museum of Natural History in New York. These images range in date from 1989-2000. The most recent images with low cloud cover were selected to categorize potential littoral forest areas along the entire eastern coast. Images were imported into ArcView and analyzed using ArcView Image Analysis Extension. Images were stacked and further georectified using river and road layers. Identification of known littoral sites was done using Du Puy and Moat's (1996) map of estimated remaining primary vegetation in Madagascar along with ground truth data and field knowledge of areas recently

visited by MBG botanists. The characteristics of these areas were then used to identify other spectrally similar areas within a 6km radius inland from the coastline. Littoral forest is known to occur close to the coastline and forest further inland is more commonly characterized by laterite soils.

Results

Our goal was to identify six of the largest intact sites represented along the entire coast. Each potential site was converted to a polygon and its area calculated using an area calculation script within ArcView (Zhou, G. 2000) downloaded from the ESRI arcscripts website. Shapefiles for protected areas, rivers, roads, and cities were then combined with the forest polygon and satellite image, and each site evaluated in terms of size, proximity to protected areas, ports, roads, and major cities (Figure 1). This analysis was done to provide the field staff with adequate location descriptions for planning the logistics and ultimately finding these forest patches. Selection of the six sites was done by working closely with the Principal Investigator and the Malagasy project coordinator because of their intimate knowledge of Madagascar and their knowledge of other sites that are known to be extant forest patches.

Future Work

Fieldwork for this project began last year and the next series of inventories will be undertaken in Fall 2002. Maps of the selected areas have been printed and will be taken to the field. In addition, a low flying aerial survey of each area will provide greater detail of forest composition and enhance the degree of accuracy in mapping areas of remaining littoral forests along the coast of Madagascar. Future analysis will also include a time series comparison that delineates the forest cover change between the periods 1989/1990 and 2000 for each site using the same set of Landsat Images. Ultimately, we hope the results of this project will be used to help conserve these endangered forests by providing detailed analyses of the composition, location, size, and type of human impact at each study site.

Trish Consiglio

GIS Analyst, Missouri Botanical Garden

<http://www.mobot.org/MOBOT/Research/gis>

Feature Articles

OBIS - SEAMAP:

A long acronym for a new marine mapping project a Duke

Project Rationale

Once viewed as the ultimate wilderness, it is increasingly apparent that the oceans have been heavily affected by human activities, including over-exploitation of fisheries, by-catch, and the degradation of entire ecosystems. Our ability to quantify the magnitude of these anthropogenic impacts on marine species and their habitats requires a detailed understanding of the spatial and temporal patterns of species distribution and diversity.

Project Description

In 1997-98, the Sloan Foundation and the National Oceanographic Partnership Program initiated the Census of Marine Life (CoML) initiative, a decade-long program to promote and fund research to quantify and explain the distribution, abundance, and diversity of marine organisms in the world oceans. The CoML initiative has stimulated large-scale biogeographic studies aimed at quantifying the global patterns of species distribution and diversity for invertebrates, fishes, marine mammals, seabirds and marine turtles.

As part of the Census of Marine Life initiative, the Duke University Marine Laboratory, in conjunction with a number of domestic and international partners, has initiated an ambitious three-year effort (May 2002 - April 2005) to create a data base of marine mammal, bird and turtle data for OBIS. The OBIS-SEAMAP project will compile existing at-sea and colony-based datasets into a coherent and standardized format and will develop a publicly-available web-based system to allow the interactive display, query, and analysis of this database. Because the intended audience includes educators, students and researchers, we will provide the raw abundance data as well as a variety of processed products, including species range maps and profiles, and various tabular data summaries. Additionally, to facilitate the use of this database for research, we will also provide the associated meta-data describing the techniques used to conduct surveys and to process the raw abundance data.

Project Scope

The OBIS project can include any existing data that can be used to better understand the spatial and temporal patterns of species distribution and diversity in the global ocean. These data sources can thus

include at-sea surveys, stranding data, fisheries bycatch information, land-based counts, and information on individual movements including tagging and telemetry studies. Initially, we are focusing our efforts on three data types:

- georeferenced at-sea distribution data
- land-based observations of breeding individuals and strandings
- information on individual movements

At-sea observations will be the most numerous, including three distinct data types: (i) primary data including vessel-based and aerial surveys using standardized methods; (ii) secondary data including primary surveys and fishery-dependent data which, to preserve confidentiality and proprietary rights, will be averaged into coarser spatial (1 X 1 degree) or temporal (monthly totals) scales; and (iii) tertiary data including sightings and survey tracks from published reports, and other surveys without standardized survey effort such as opportunistic sightings by fishery observers.

Land-based data will include counts of individuals at colonies and breeding sites, and information on strandings.

Information on individual movements will include mark-recapture information from tagging studies, as well as more detailed telemetry information, such as movement tracks, diving depth information, and raw satellite / radio tracking locations.

How can you help?

This ambitious initiative will greatly advance the conservation of threatened marine vertebrates and their oceanic ecosystems. However, this project will only work with the cooperation of a large number of partners across the globe. We sincerely hope you can help us.

Should you want additional information about contributing data to this project, please go to the OBIS-SEAMAP website (<http://obismap.env.duke.edu>) or contact David Hyrenbach (khyrenba@duke.edu) directly. We welcome your inquiries, comments and suggestions, and look forward to working closely with many of you.

Ben Best
Research Associate, Duke University



Election News

SCGIS recently elected several new board members. There were many nominations for three positions, indicating a high level of enthusiasm for the organization. The following new members joined the Board this year. Their biographical statements are included so you can get to know them better.



Dick Cameron

Dick Cameron received a B.A. in Geography from Middlebury College (VT) in 1994, and moved to Santa Fe, New Mexico shortly thereafter to setup a GIS program for an organization called Forest Conservation Council (FCC) which later became Forest Guardians. By implementing principles of conservation biology and using GIS, FCC challenged destructive land use practices and created alternative management plans. In 1996, FCC received a CTSP advanced grant and launched the Southwestern Wildlands Initiative to develop strategies and tools for landscape conservation in the Southwestern U.S. and northern Mexico.

Dick received an M.A. from University of Colorado in Geography in 2000. His thesis research was on the scale dependence of GIS-based forest fragmentation and landscape structure analysis. Since 2000, he has been working for GreenInfo Network, an organization based in San Francisco that brings the power of mapping and spatial analysis through GIS to non-profits throughout the U.S. He has conducted GIS trainings and needs assessments for non-profits and helped organizations use GIS for a range of issues including renewable energy, wildlife conservation and land management.

Kristin Barker

Kristin Barker is the principal software engineer on NatureServe's decision support system, a professional-grade GIS-based application to bring biodiversity into local land-use planning decisions. Kristin began her technical career with a BA in Computer Science from the University of Texas, Austin and went on to positions at Hewlett-Packard, Intuit Inc. and OffRoad Technologies. At Hewlett-Packard, Kristin contributed to the early development of the HP's Distributed Applications Architecture which later became the CORBA standard (www.corba.org). At Intuit, she was one of the original software developers of QuickBooks, the dominant small business accounting software (www.quickbooks.com). As the engineering project manager, she then lead the development of several successful QuickBooks releases and helped to define Intuit's small business Internet strategy. Kristin then served as Director of Engineering at OffRoad Technologies, developing an Internet-based marketplace for private capital financing (www.offroadcapital.com). Kristin joined NatureServe in October of 2001 and, in addition to leading the development of the decision support system, she also contributes to NatureServe's technology and organization strategies (www.natureserve.org).

Ossai Augustine

Ossai Chukwuma Augustine attended Edo State University, Ekpoma-Edo State, Nigeria, through a scholarship from National Mathematics Center, Abuja Nigeria, where he obtained a B.SC (HONS) Degree in Industrial Mathematics.

He served on a Community Development Service Project, during his National Youth Service Programme (NYSC). The project was on Poverty Alleviation; and inspired his book, titled THE GROANING OF THE PEOPLE- the way forward, a five-chapter book that dealt with poverty alleviation problems, solutions and recommendation, particularly the rural areas.

Presently, Ossai is the Managing Director of a Non-Governmental Organization, POVERTY ALLEVIATION CRUSADERS (PAC). PAC is working for the overall development of Communities in Nigeria, particularly the Eastern Region. PAC focuses on Training, Research and Community Service to assist in alleviating poverty through social mobilization and orientation on survival techniques through Agriculture, Health, Education, Organization and Communication.



In addition to electing three new members, the Board shuffled officers around. The structure of the Board includes Mike Beltz, President; Lizz Wandag, VP; Dick Cameron, Secretary; and Kristin Baker, Treasurer. For contact info for any Board members, please go to the SCGIS web page and follow the links to "Society Information".

Thanks to everyone who put forth their name in the election and to the volunteers who ran it! The on-line voting system ran very smoothly this year, indicating that democracy is alive and well at SCGIS.

News and Notes

Upcoming Conferences

U.S. Chapter of the International Association for Landscape Ecology 18th Annual Symposium

"Beyond Borders - Linking Landscapes" The U.S. Chapter of the International Association for Landscape Ecology (US-IALE) is hosting its 18th Annual Symposium on April 2-6, 2003 in Banff, Alberta, Canada. The deadline for submitting an abstract for oral/poster presentations is December 6, 2002. Instructions for abstract submission, symposium registration forms, and a tentative schedule are available on the symposium web site. Please visit www.zoo.utoronto.ca/US-IALE_2003 for more details.

The United States Regional Association of the International Association for Landscape Ecology (US-IALE) has a program to support attendance at the annual meeting by landscape ecologists from foreign countries and to foster international exchange about advances in landscape ecology. Participants from the US and Canada are not eligible. For more information, please see U.S. IALE: www.usiale.org
Foreign Scholar Travel Award: www.msu.edu/~riffells/fsta2003.htm.

News and Notes

Educational Opportunities

Graduate Research Assistantship at the University of Florida

A Graduate Research Assistantship is available in the Department of Wildlife Ecology and Conservation, University of Florida, for Fall Semester 2003 to conduct research on predator/prey dynamics and barn owls in agricultural landscapes north of the Everglades.

The student selected for the RA will have broad latitude in designing this research project. Applicants should be highly motivated individuals with a keen interest in linking ecological theory and conservation at the landscape scale. Field skills, ability to work independently, and a strong background in ecology are required. Interest in population ecology and landscape ecology (including behavioral landscape ecology) are highly desirable. Skills in population and/or landscape modeling are preferred but not required. This project is a joint project between faculty of the Department of Wildlife Ecology and Conservation and the Everglades Research and Education Center of the University of Florida. A stipend and tuition waivers are available for up to 4 years.

Interested students should send a CV, statements of research interests and career goals, copies of transcripts (unofficial copies are ok) and names, affiliations, and e-mail addresses of three references to Lyn Branch, Department of Wildlife Ecology and Conservation, P.O. Box 11430, University of Florida, Gainesville, FL 32611 (BranchL@wec.ufl.edu). Please include cumulative GPA and GRE scores in the CV. Ph.D. students will be given preference for this position, but highly qualified M.S. students also are encouraged to apply. See the following website for further information: www.wec.ufl.edu/faculty/BranchL.

US Environmental Protection Agency

NHEERL Post-Doctoral Project Description

Title of project: Population models for wildlife risk assessment

Description of project: This project focuses on development, verification, and evaluation of population models for predicting risks to wildlife and aquatic populations from multiple stressor impacts, including chemical exposure, habitat loss, and disturbance. A goal of this effort is to develop modeling approaches and extrapolation methods to enhance the Agency's ability to understand and predict how populations respond to anthropogenic stress in a spatial context. Models and methods will be demonstrated in case studies supporting wildlife risk assessment. This project includes review and synthesis of the scientific literature concerning population model verification and validation. The incumbent will work within a multidisciplinary, cross-divisional research team to assist in developing and evaluating a tiered framework for predicting risks to wildlife species.

Requirements: PhD in ecological sciences, conservation biology, natural resources, or related field. Knowledge of population modeling and verification techniques; experience with population viability analysis and geographically-based information systems (GIS) software and tools desirable.

Contacts: Diane Nacci (nacci.diane@epa.gov)

JOB ANNOUNCEMENT

Department of Forest Science Texas A&M University Position Announcement - Assistant Professor in Remote Sensing

Appointment: This position will be a 12-month, tenure-track appointment in the Department of Forest Science and involve 50% teaching and 50% research responsibilities

Starting Date: June 2003 or as negotiated

Closing Date: 31 January 2002 or until suitable candidate is found.

Qualifications: Required Ph.D. in Forest Science, Geography, Agricultural Engineering or related disciplines with expertise in remote sensing and its application in natural resources; potential to generate external funding; and excellent verbal and written communication skills.

Preferred: Postdoctoral experience in remote sensing and/or spatial sciences, a proven track record in acquiring external grants. Sound understanding of spatial statistics and GIS, experience in real-time application development and/or experience interacting with state and federal regulatory agencies and private industry for spatial analyses are a plus.

For more information contact:

g-hyden@tamu.edu

www-ssl.tamu.edu or

www.forestry.tamu.edu

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Free access to electronic version of the science journal Nature is being made available to the world's poorest countries. The access will be provided through the Health InterNetwork Access to Research Initiative (HINARI), a scheme launched by the World Health Organisation in January to increase access to scientific literature in developing countries, whose research institutions are often unable to afford the subscription fees charged by journal publishers (see WHO initiative gives free electronic access to journals).

At present, researchers in countries with a Gross National Product (GNP) below US\$1,000 per capita can gain free access to almost 1,000 journals through HINARI. From next year, it is intended that the journals will also be available at greatly reduced prices to countries with a GNP between US\$1,000 and US\$3,000 per capita.

Here is the link to the journals:
www.healthinternet.org/scipub.php?lang=en

Here is the link to register for access if you are in a developing country: www.healthinternet.org/src/registration.php

SCGIS is now listed as a collaborator with GISD (Geographic Information for Sustainable Development). (www.opengis.org/gisd/txt/go/go_coordcontacts.php). This will help us get a wider audience from around the world.

The new international journal, "ECOLOGICAL INDICATORS: Integrating Monitoring, Assessment and Management," is soliciting publication-worthy manuscripts in the areas of biology and ecology, addressing indicators of condition, research, case studies, assessment and related. For more information, please refer to:
www.elsevier.com/locate/ecolind

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Have something to contribute to the next SCGIS newsletter?

We would love to hear from you.

Contact the editor for details: Yolanda Wiersma,

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